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ENGLISH FOR MEDICAL PURPOSES: STRUCTURE AND MAIN SYSTEMS OF THE HUMAN BODY

(Learning Materials and Active Vocabulary)

LEARNER'S GUIDE

for the discipline «ENGLISH FOR SPECIFIC PURPOSES»
for International English-Speaking Students of Medical Specialties
at Higher Educational Institutions

Uzhhorod – 2020

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ДЕРЖАВНИЙ ВИЩИЙ НАВЧАЛЬНИЙ ЗАКЛАД
«УЖГОРОДСЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ»
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КАФЕДРА ГРОМАДСЬКОГО ЗДОРОВ'Я І ГУМАНІТАРНИХ ДИСЦИПЛІН

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АНГЛІЙСЬКА МОВА ДЛЯ МЕДИЧНИХ ЦІЛЕЙ: БУДОВА ТА ОСНОВНІ СИСТЕМИ ЛЮДСЬКОГО ТІЛА

(навчальні матеріали та активна лексика)

НАВЧАЛЬНИЙ ПОСІБНИК

із дисципліни «ІНОЗЕМНА МОВА
(ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ)»
для англомовних іноземних студентів медичних спеціальностей ЗВО

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Англійська мова для медичних цілей: Будова та основні системи людського тіла (навчальні матеріали та активна лексика) : навчальний посібник з дисципліни «Іноземна мова (за професійним спрямуванням)» для англомовних іноземних студентів медичних спеціальностей ЗВО / Уклад . : Т. М. Вайнагій. – Ужгород : Поліграфцентр “Ліра”, 2020. – 154 с.

Навчальний посібник “Англійська мова для медичних цілей: Будова та основні системи людського тіла (навчальні матеріали та активна лексика)” містить ряд тем професійного характеру. Кожна тема умовно складається з трьох блоків: ввідного блоку, представленого активною лексикою у вигляді словника найуживаніших фахових термінів; основних навчальних матеріалів, що складаються із текстів на професійну тематику та широкого спектру вправ, які супроводжуються професійно орієнтованими аудіо- та відеоматеріалами; заключного блоку, що має на меті узагальнення і закріплення вивченого матеріалу.

Пропоноване видання рекомендовано для іноземних студентів медичних спеціальностей ЗВО, які здобувають освіту англійською мовою.

Посібник призначений як для аудиторної роботи, так і для самостійного опрацювання та самоконтролю.

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PREFACE

The learner's guide is intended for international students of medical specialties of higher educational institutions who use English as a medium of instruction. The aim of the guide is to provide international students with learning materials in order to form and develop their English professionally oriented competence within the proposed topics.

The purpose of this guide is to teach future doctors to distinguish between professional anatomical and clinical terms and their colloquial equivalents, as well as terms of Greek-Latin origin; to adequately employ the learned vocabulary in the prepared and unprepared English professionally oriented speech and other situations of future professional activity.

The learner's guide has been structured in full compliance with the requirements of the syllabus for the discipline "English for Specific Purposes" at the Department of Public Health and Humanitarian Disciplines of the Medical Faculty № 2 at State Higher Educational Institution «Uzhhorod National University» and embraces 8 chapters, which represent the structure and functions of the main organs and systems of the human body: "Human Body and its Structure", "Skeletal System", "Muscular System", "Respiratory System", "Digestive System", "Cardiovascular System", "Nervous System", "Human Brain", and Appendices that contain illustrations and self-study exercises.

Each topic can be divided into three blocks:

- The lead-in block, presented by the active vocabulary in the form of a glossary of the most commonly applied professional terms and links to online sources where students can listen to the variants of pronunciation and practice their own skills in pronouncing medical terms, as well as warm-up activities that provide a transition into the topic of the class and get students to begin focusing on it.

- Core learning materials, consisting of professionally themed texts and a wide range of exercises (oral and written; linguistic and conversational; receptive, receptive-reproductive, productive and receptive-productive; communicative and conditionally-communicative; individual, pair and group, etc.). The tasks are organized according to the degree of complexity: from the easiest with the gradual transition to more complex. All exercises have a communicative nature and are aimed at developing the ability to freely dwell on the professional topics. Some tasks are accompanied by professionally oriented audio and video materials, which contribute to the more effective formation of English-speaking professionally oriented competence of students majoring in "Medicine".

- The conclusive block that aims to summarize and consolidate the learned material.

The learner's guide is intended for classroom work as well as for self-study and self-control.

It can also be used by medical students of specialized secondary and higher educational institutions, who use Ukrainian as a medium of instruction in the process of studying the discipline "English for Professional Purposes", as well as by teachers who teach English for Medical Purposes.

The proposed publication can be used as a reference book.

ПЕРЕДМОВА

Навчальний посібник призначений для іноземних студентів медичних спеціальностей ЗВО, які здобувають освіту англійською мовою. Метою посібника є забезпечити іноземних студентів навчальним матеріалом для формування і розвитку у них англомовної професійно орієнтованої компетентності у межах запропонованих тем.

Призначення посібника – навчити майбутніх лікарів розмежовувати фахові анатомічні і клінічні терміни та їх розмовні еквіваленти, а також терміни грецько-латинського походження; адекватно використовувати вивчений лексико-граматичний матеріал у підготовленому та непідготовленому англомовному професійно орієнтованому говорінні та інших ситуаціях майбутньої фахової діяльності.

Посібник структурований відповідно до вимог робочої навчальної програми дисципліни «Іноземна мова (за професійним спрямуванням)» кафедри громадського здоров'я і гуманітарних дисциплін медичного факультету № 2 ДВНЗ «УжНУ» та містить 8 розділів, у котрих представлена будова і функції основних органів та систем тіла людини: «Людське тіло і його будова», «Скелетна система», «М'язова система», «Дихальна система», «Травна система», «Серцево-судинна система», «Нервова система», «Мозок людини», а також Додатки, які вміщують унаочнення та вправи для самостійного опрацювання.

Кожна тема умовно складається з трьох блоків:

- Ввідного блоку, представленого активною лексикою у вигляді словника найуживаніших фахових термінів та посиланнями на онлайн джерела, де студенти можуть прослуховувати варіанти вимови і тренувати власні навички вимови медичних термінів, а також ввідні вправи, які покликані забезпечити поступовий перехід до теми заняття та зосередити на ній увагу студентів.

- Основних навчальних матеріалів, що складаються із текстів на професійну тематику та широкого спектру вправ (усних і письмових; мовних і мовленнєвих; рецептивних, рецептивно-репродуктивних, продуктивних і рецептивно-продуктивних; комунікативних та умовно комунікативних; індивідуальних, парних і групових тощо). Завдання організовані за рівнем складності: від найлегших з поступовим переходом до складніших. Усі вправи мають комунікативний характер і спрямовані на розвиток уміння самостійного висловлювання за темами. Окремі завдання супроводжуються професійно орієнтованими аудіо- та відеоматеріалами, які сприяють ефективнішому формуванню англомовної професійно орієнтованої компетентності у студентів спеціальності «Медицина».

- Заключного блоку, що має на меті узагальнення і закріплення вивченого матеріалу.

Навчальний посібник призначений як для аудиторної роботи, так і для самостійного опрацювання та самоконтролю.

Навчальним посібником також можуть послуговуватися україномовні студенти медичних спеціальностей середніх спеціальних та вищих навчальних закладів у процесі вивчення дисципліни «Англійська мова за професійним спрямуванням», а також викладачі, котрі викладають англійську мову для медичних цілей.

Пропоноване видання може бути використане як довідник.

CONTENTS

LIST OF ABBREVIATIONS

adj. – adjective

n. – noun

v. – verb

sing. – singular

pl. – plural

BrE – British English

AmE – American English

syn. – synonym

inf. – informal

HUMAN BODY AND ITS STRUCTURE

Active Vocabulary:

	Term (singular form)	Transcription	Plural form	Adjective	Ukrainian translation	Definition
			Head			
1.	**head**	/hɛd/	heads	headless / -headed (e.g. bald-headed) / head / headlike	голова	the upper part of the human body, or the front or upper part of the body of an animal, typically separated from the rest of the body by a neck, and containing the brain, mouth, and sense organs
2.	**scalp**	BrE /skalp/ AmE /skælp/	scalps	scalpless	скальп, шкіра голови	the skin covering the head, excluding the face
3.	**hair** (uncountable)	/heə/	–	hairy / -haired (e.g. black-haired) / hairless / hairlike	волосся	hair growing on the body of a person or an animal
4.	**a hair** (countable)	/heə/	hairs	–	волосина	a piece of hair from a person or an animal
5.	**forehead**	BrE /ˈfɔrɪd/ AmE /ˈfɔːrhed/	foreheads	-foreheaded (e.g. low-foreheaded)	чоло	the part of the face above the eyebrows
6.	**temple**	/ˈtɛmp(ə)l/	temples	temporal	скроня	the flat part of either side of the head between the forehead and the ear
7.	**eye socket**	/ˈsɒkɪt/	eye sockets	socketless / socketlike / socketed	очна впадина	the cavity in the skull which encloses an eyeball with its surrounding muscles
8.	**eye**	/aɪ/	eyes	ocular	око	each of a pair of globular organs of sight in the head of humans and vertebrate animals
9.	**eyebrow**	/ˈʌɪbraʊ/	eyebrows	eyebrowed / eyebrowless	брова	the strip of hair growing on the ridge above a person's eye socket
10.	**eyelid (top / bottom)**	/ˈʌɪlɪd/	eyelids	eyelidded / eyelidless	повіка (верхня / нижня)	each of the upper and lower folds of skin which cover the eye when closed
11.	**eyelash**	BrE /ˈʌɪlaʃ/ AmE /ˈaɪlæʃ/	eyelashes	-lashed	вія	each of the short-curved hairs growing on the edges of the eyelids, serving to protect the eyes from dust

12.	**pupil**	/ˈpjuːp(ɪ)l/	pupils	pupillary / pupilled / pupilar / pupilless	зіниця	the dark circular opening in the centre of the iris of the eye, which varies in size to regulate the amount of light reaching the retina
13.	**iris**	BrE /ˈaɪərɪs/ AmE /ˈaɪrɪs/	irises	–	райдужна оболонка	a flat, coloured, ring-shaped membrane behind the cornea of the eye, with an adjustable circular opening (pupil) in the centre
14.	**sclera**	/ˈsklɪərə/	scleras, sclerae	scleral	склера	the white outer layer of the eyeball at the front of the eye it is continuous with the cornea
15.	**cornea**	/ˈkɔːnɪə/	corneas	corneal	рогівка	the transparent layer forming the front of the eye
16.	**tear duct**	/ˈtɪə dʌkt/	tear ducts	tearlike / lacrimal	сльозова протока	a passage through which tears pass from the lachrymal glands to the eye or from the eye to the nose
17.	**nose**	BrE /nəʊz/ AmE /noʊz/	noses	nasal	ніс	the part projecting above the mouth on the face of a person or animal, containing the nostrils and used for breathing and smelling
18.	**nostril / nare**	/ˈnɒstr(ə)l/ /neə/	nostrils / nares	-nostrilled / narial	ніздря	either of two external openings of the nasal cavity in vertebrates that admit air to the lungs and smells to the olfactory nerves
19.	**cheek**	/ʧiːk/	cheeks	-cheeked / cheekless	щока	either side of the face below the eye
20.	**cheekbone**	BrE /ˈʧiːkbəʊn/ AmE /ˈʧiːkboʊn/	cheekbones	cheekbone / zygomatic	вилиця	the prominence below the eye that is formed by the zygomatic bone
21.	**chin**	/ʧɪn/	chins	-chinned / chinless / chinlike	підборіддя	the protruding part of the face below the mouth, formed by the apex of the lower jaw
22.	**mouth**	/maʊθ/	mouths	-mouthed / mouthless / mouthlike / mouthy	рот	the opening and cavity in the lower part of the human face, surrounded by the lips, through which food is taken in and vocal sounds are emitted
23.	**oral cavity**	/ˈɔːr(ə)l ˈkævəti/	oral cavities	oral cavitary	ротова порожнина	the cavity of the mouth

24.	**lip (upper / lower)**	/lɪp/	lips	liplike / labial	губа (верхня / нижня)	either of the two fleshy parts which form the upper and lower edges of the opening of the mouth
25.	**upper jaw**	/ˈʌpə(r) dʒɔː/	upper jaws	jawed / jawy / jawless / jawlike	верхня щелепа	the jaw or jawbone, specifically the upper jaw in most vertebrates. in humans it also forms part of the nose and eye socket
26.	**maxilla**	BrE /makˈsɪlə/ AmE /mækˈsɪlə/	maxillae	maxillary		
27.	**lower jaw**	/ˈləʊə(r) dʒɔː/	lower jaws	jawed / jawy / jawless / jawlike	нижня щелепа	a lower jaw consisting of a single bone or of completely fused bones
28.	**mandible**	BrE /ˈmandɪb(ə)l/ AmE /ˈmændɪbl/	mandibles	mandibular		
29.	**tooth**	/tuːθ/	teeth	toothed / toothless / toothlike / dental	зуб	each of a set of hard, bony enamel-coated structures in the jaws of most vertebrates, used for biting and chewing
30.	**gum**	/gʌm/	gums	gummy / gumless / gumlike	ясна (від pl.: gums)	the firm area of flesh around the roots of the teeth in the upper or lower jaw
31.	**tongue**	/tʌŋ/	tongues	tongued / tongueless / tonguelike / lingual	язик	the fleshy muscular organ in the mouth of a mammal, used for tasting, licking, swallowing, and (in humans) articulating speech
32.	**ear**	BrE /ɪə/ AmE /ɪr/	ears	-eared / earless / earlike	вухо	the organ of hearing and balance in humans and other vertebrates, especially the external part of this
33.	**earlobe**	BrE /ˈɪələʊb/ AmE /ˈɪərloʊb/	earlobes	lobar / lobelike / lobeless / lobed	мочка вуха	a soft, rounded fleshy part hanging from the lower margin of the ear
34.	**neck**	/nɛk/	necks	-necked /neckless / necklike/ cervical	шия	the part of a person’s or animal’s body connecting the head to the rest of the body
35.	**nape**	/neɪp/	napes	–	потилиця	the back of a person’s neck

			Trunk			
1.	**trunk**	/trʌŋk/	trunks	trunklike / truncal / trunkless	тулуб	a person's or animal's body apart from the limbs and head
2.	**torso**	/ˈtɔːsəʊ/	torsos, torsi	torsoed / torsolike / torsoless	торс, тулуб	the trunk of the human body
3.	**chest**	/tʃɛst/	chests	chesty / chestly / chestless / -chested / chestlike	груди, грудна клітка	the front surface of a person's or animal's body between the neck and the stomach
	thorax	/ˈθɔːraks/	thoraces, thoraxes	thoracic	грудна клітка	the part of the body of a mammal between the neck and the abdomen, including the cavity enclosed by the ribs, breastbone, and dorsal vertebrae, and containing the chief organs of circulation and respiration; the chest
4.	**breast**	/brɛst/	breasts	-breasted / beastless / brestlike / mammary	молочна залоза, груди	either of the two soft, protruding organs on the upper front of a woman's body which secrete milk after childbirth
5.	**mamma**	/ˈmamə/	mammae, mammas	mammary	молочна залоза	
6.	**nipple**	/ˈnɪp(ə)l/	nipples	nippled / nippleless / nipplelike	сосок	the small projection in which the mammary ducts of female mammals terminate and from which milk can be secreted
7.	**abdomen** (syn.: **stomach, belly, tummy** (*inf.*))	BrE /ˈabdəmən/ AmE /ˈæbdəmən/ /ˈstʌmək/ /ˈbɛli/ /ˈtʌmi/	abdomens	abdominal stomachlike bellylike	живіт	the part of the body of a vertebrate containing the digestive and reproductive organs; the belly
8.	**navel**	/ˈneɪv(ə)l/	navels	navel-like / navelless	пупок	a rounded knotty depression in the centre of a person's belly caused by the detachment of the umbilical cord after birth; the umbilicus
9.	**bellybutton**	/ˈbɛlibʌt(ə)n/	bellybuttons	–		
10.	**umbilicus**	/ʌmˈbɪlɪkəs/	umbilici, umbilicuses	umbilical		
11.	**waist**	/weɪst/	waists	-waisted / waistless	талія	the part of the human body below the ribs and above the hips, often narrower than the areas above and below

12.	**back**	/ˈbæk/	backs	-backed / backless	спина	the rear part of the human body especially from the neck to the end of the spine
13.	**small of the back / lower back**	/ˈbæk/	– / lower backs	lumbar	поперек	the lower part of the back where it curves
14.	**loin**	/lɔɪn/	loins			the part of the body on both sides of the spine between the lowest (false) ribs and the hip bones
			Extremities			
1.	**extremity (upper / lower)**	/ɪkˈstrɛmɪti/	extremities	extremital	кінцівка (верхня / нижня)	a leg or arm of a human being
2.	**limb**	/lɪm/	limbs	limbless	кінцівка	
			Arm			
1.	**arm**	/ɑː(r)m/	arms	armlike / armless	рука	each of the two upper limbs of the human body from the shoulder to the hand
2.	**shoulder**	/ˈʃəʊldə(r)/	shoulders	-shouldered / shoulderless / shoulderlike	плече	the upper joint of each of a person's arms and the part of the body between this and the neck
3.	**upper arm**	/ ˈʌpə(r) ɑː(r)m/	upper arms	–	верхня частина руки	the part of the arm between the shoulder and the elbow
4.	**armpit**	/ˈɑː(r)mpɪt/	armpits	-armpitted / axillary	пахва	a hollow under the arm at the shoulder
5.	**axilla**	/akˈsɪlə/	axillae	axillary		
6.	**elbow**	/ˈɛlbəʊ/	elbows	-elbowed / elbowless / elbowlike	лікоть	the joint between the forearm and the upper arm
7.	**cubitus**	/ˈkjuːbɪtəs/	cubiti	cubital	ліктьовий суглоб	
8.	**forearm**	BrE /ˈfɔːrɑːm/ AmE /ˈfɔːrɑːrm/	forearms	-forearmed	передпліччя	the part of a person's arm extending from the elbow to the wrist or the fingertips
			Hand			
9.	**hand**	/hænd/	hands	-handed	кисть, рука	the end part of a person's arm beyond the wrist, including the palm, fingers, and thumb

10.	**wrist**	/rɪst/	wrists	-wristed / wristless / carpal	зап’ястя	the joint connecting the hand with the forearm
11.	**carpus**	/ˈkɑː(r)pəs/	carpi	carpal		the group of small bones between the main part of the forelimb and the metacarpus in terrestrial vertebrates
12.	**fist**	/fɪst/	fists	-fisted / fistlike	кулак	a person’s hand when the fingers are bent in towards the palm and held there tightly, typically in order to strike a blow or grasp something
13.	**finger / digit**	/ˈfɪŋgə(r)/ /ˈdɪdʒɪt/	fingers / digits	-fingered / fingerlike / fingerless	палець	each of the four slender jointed parts attached to either hand (or five, if the thumb is included)
14.	**thumb**	/θʌm/	thumbs	-thumbed / thumblike / thumbless	великий палець на руці	the short, thick first digit of the human hand, set lower and apart from the other four and opposable to them
15.	**index finger / forefinger**	/ˈɪndɛks ˈfɪŋgə(r)/ /ˈfɔː(r)fɪŋgə(r)/	index fingers / forefingers	–	вказівний палець	the finger next to the thumb
16.	**middle finger**	/ˈmɪd(ə)l ˈfɪŋgə(r)/	middle fingers	–	середній палець	the finger next to the forefinger
17.	**ring finger**	/rɪŋ ˈfɪŋgə(r)/	ring fingers	–	безіменний палець	the finger next to the little finger, especially of the left hand, on which the wedding ring is worn
18.	**little finger / pinky**	/ˈlɪt(ə)l ˈfɪŋgə(r)/ /ˈpɪŋki/	little fingers / pinkies	–	мізинець	the smallest finger, at the outer side of the hand, furthest from the thumb
19.	**nail / fingernail**	/neɪl/ /ˈfɪŋgə(r)neɪl/	nails / fingernails	nailless / naily	ніготь / ніготь на руці	the flattish horny part on the upper surface of the tip of each finger
20.	**cuticle**	/ˈkjuːtɪk(ə)l/	cuticles	cuticular / cuticularised	кутикула	the dead skin at the base of a fingernail or toenail
21.	**knuckle**	/ˈnʌk(ə)l/	knuckles	-knuckled / knucklelike	суглоб пальця	a part of a finger at a joint where the bone is near the surface, especially where the finger joins the hand

			Leg			
1.	**leg**	/lɛg/	legs	-legged / leggish / legless / leglike	нога	each of the limbs on which a person or animal walks and stands
2.	**buttock**	/ˈbʌtək/	buttocks	-buttocked / buttocklike / buttockless	сідниця	either of the two round fleshy parts of the human body that form the bottom
3.	**butt-cheek**	/ˈbʌt̬ʧiːk/	butt-cheeks	–		
4.	**nates (pl.)**	/ˈneɪtiːz/	nates	–	сідниці	the buttocks
5.	**groin**	/grɔɪn/	groins	inguinal	пах	the area between the abdomen and the upper thigh on either side of the body
6.	**hip**	/hɪp/	hips	hiplike	бедро	a projection of the pelvis and upper thigh bone on each side of the body in human beings and quadrupeds
7.	**coxa**	/ˈkɒksə/	coxae	coxal	тазостегновий суглоб	the hip bone or hip joint
8.	**thigh**	/θʌɪ/	thighs	-thighed / thighless	стегно	the part of the human leg between the hip and the knee
9.	**femur**	/ˈfiːmə(r)/	femora	femoral	бедро, бедренна кістка	the bone of the thigh, articulating at the hip and the knee.
10.	**knee**	/niː/	knees	-kneed / kneelike / kneeless	коліно	the joint between the thigh and the lower leg in humans
11.	**knee cap**	/niː kæp/	kneecaps	kneecapped	колінна чашечка	the convex bone in front of the knee joint
12.	**patella**	/pəˈtɛlə/	patellae, patellas	patellar	патела, колінна чашечка	
13.	**lower leg**	/ˈləʊə(r) lɛg/	lower legs	–	гомілка	the lower part of the leg between the ankle and the knee
14.	**shin**	/ʃɪn/	shins	shinless	гомілка	the front of the leg below the knee
15.	**calf**	/kɑːf/	calves	calfless	литка	the fleshy part at the back of a person’s leg below the knee
			Foot			
1.	**foot**	/fʊt/	feet	-footed / footless / footlike	стопа	the lower extremity of the leg below the ankle, on which a person stands or walk
2.	**ankle**	/ˈæŋkl/	ankles	-ankled / ankleless	щиколотка	the joint connecting the foot with the leg

3.	**tarsus**	/ˈtɑː(r)səs/	tarsi	tarsal	передплесно	a group of small bones between the main part of the hindlimb and the metatarsus in terrestrial vertebrates
4.	**sole**	BrE/səʊl/ AmE /soʊl/	soles	-soled	підошва	the undersurface of a person's foot
5.	**heel**	/hiːl/	heels	-heeled / heelless	п'ята	the back part of the human foot below the ankle
6.	**toe**	/təʊ/	toes	-toed / toeless / toelike	палець на нозі	any of the five digits at the end of the human foot
7.	**big toe**	/bɪg təʊ/	big toes	–	великий палець на нозі	the largest toe, on the inner side of the foot
8.	**toenail**	/ˈtəʊneɪl/	toenails	toenailed	ніготь на пальці ноги	the nail at the tip of each toe
9.	**arch of foot**	/ɑː(r)tʃ ɒv fʊt/	arches of the foot	–	звід стопи	any of the four vaulted structures in the foot: the internal (medial) longitudinal, the outer (lateral) longitudinal, and two transverse
10.	**ball of foot**	/bɔːl ɒv fʊt/	balls of feet	–	підйом зводу стопи	the padded portion of the sole of the human foot between the toes and the, on which the weight of the body rests when the heel is raised
11.	**instep**	/ˈɪnstɛp/	insteps	–	підйом, преплесно	the part of a person's foot between the ball and the ankle
Body Covering						
1.	**skin** (uncountable)	/skɪn/	–	dermal / -skinned / skinless	шкіра	the thin layer of tissue forming the natural outer covering of the body of a person

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Discuss the following statements with your partner or in the group.

Check out these fascinating facts about human body…

- Humans are the only animals with chins.
- The human nose can detect about 1 trillion smells.
- Belly buttons grow special hairs to catch lint.
- Your mouth produces about one liter of saliva each day.
- The satisfying sound of cracking your knuckles comes from gas bubbles bursting in your joints.
- Thumbs have their own pulse.
- The foot is one of the most ticklish parts of the body.
- You lose about 4kg of skin cells every year.
- Hair grows fast – about 15 centimeters per year. The only thing in the body that grows faster is bone marrow.
- Babies do not shed tears until they are at least one month old.
- No one really knows what fingerprints are for, but they might help wick water away from our hands, prevent blisters, or improve touch.
- Blushing is caused by a rush of adrenaline and humans are the only species known to blush.

Text 1

1. Read the text given below.

HUMAN BODY

The head is connected with the trunk by the neck. The windpipe (trachea) and gullet (esophagus) pass through the neck. The bony framework of the head, enclosing the brain, is the skull. The front part of the head is the face. Its upper part is composed of the forehead and

the temples. The two sides of the lower face are called the cheeks. The two jaws (upper and lower) form the framework of the mouth. The lower jaw also gives shape to the chin. The oral cavity contains the tongue and the teeth, the necks of which are enveloped into the gums. The two margins of the mouth are the lips. The organs of the special senses in the face are the eyes and the nose. The eye is set in a bony socket called the orbit. The eyes are protected by the eyelashes and the eyebrows. The ear includes three principal parts: the external ear, the middle ear and the internal ear. The nose which we use for smelling, breathing and sneezing has two openings called nostrils. The top and the back part of the head are covered with hair.

The trunk consists of the chest, the abdomen and the back. The upper cavity, the chest (thorax), contains the heart and lungs. In the lower cavity, the abdomen, there are the kidneys, the stomach, the liver, the gall bladder, the spleen, the urinary bladder and the intestine or bowel.

The lungs belong to the respiratory system. The lungs are the essential organs of breathing. They are two spongy organs, situated one on either side of the thoracic cavity. In adults they are usually blue in color, but in infants they are quite pink. The kidneys and the bladder are parts of the urinary system. They excrete waste products. The heart, the arteries, the capillaries and the veins constitute the cardiovascular system. The mouth, the gullet, the stomach and the intestines form the alimentary canal. The juices of many glands further the process of the digestion of our food.

We have four limbs: two arms and two legs. The arms are the upper extremities and the legs form the lower extremities. The upper extremity is divided into the shoulder, the upper arm, the forearm and the hand. Between the upper arm and the forearm there is an elbow. The joint between the forearm and the hand is called the wrist. Each hand has four fingers and one thumb. At the tips of the fingers there are the fingernails. The parts of the lower extremity are the thigh, the lower leg and the foot. The back of the lower leg is called the calf. Between the thigh and the lower leg there is the knee joint. The joints between the lower legs and the feet are the ankles. The foot consists of the heel, the sole and the toes. The body is covered with the skin.

2. Answer the following questions.

1) What principal parts is the human body composed of?
2) What is the bony framework of the head?
3) How many parts does the head consist of?
4) What are the parts of the face?
5) What are the parts of the ear?
6) What is located inside the oral cavity?
7) What are the organs of special senses? Where are they located? What is their structure?
8) How is the head connected to the trunk?
9) What parts does the trunk consist of?
10) How many cavities does the trunk have? What organs are located in these cavities?
11) What is the structure of the upper limbs?
12) What is the structure of the lower limbs?
13) What is the body covered with?

3. Complete the following sentences choosing suitable words from the box.

internal	face	mouth	lower	trunk	trunk
upper	middle	abdominal cavity	skeleton	external	lungs
brain	principal	upper extremity	body	neck	

1) We breathe with the …….. .
2) The ear has three …….. parts: the …….. ear, the …….. ear and the …….. ear.
3) The tongue is in the …….. .
4) The legs are …….. extremities, and the arms are …….. extremities.
5) The skull contains the …….. .
6) The forehead is a part of the …….. .
7) The …….. connects the head with the …….. .
8) The spleen is in the …….. .
9) The shoulder connects the …….. with the …….. .
10) The framework of bones is called the …….. .
11) The skin covers the …….. .

4. Say whether the following statements are true or false.

1) The framework of bones is called the skeleton.
2) The forehead is one of the parts of the chest.
3) The skin covers the body.
4) The legs are upper extremities.
5) The spleen is the part of the face.
6) The most important muscle in the body is the heart.
7) Bronchi are the part of the skeleton.

Text 2

1. Read the text given below.

BODY REGIONS

The body is commonly divided into several regions. They are the head, trunk, and limbs.

The head is divided into the cranial and the facial parts. The facial bones form the structure of the face. The forehead, the temples, eyes, eyebrows, the cheeks, the cheekbones, nose, oral cavity and chin compose the face.

The upper limb (or extremity) is divided into the arm, elbow, forearm, wrist, and hand. The arm extends from the shoulder to the elbow, and the forearm extends from the elbow to the wrist. The upper limb is attached to the body by the shoulder, or pectoral girdle (the bony structure by which the limbs are attached to the body). The lower limb is divided into the thigh, knee, leg, ankle, and foot. The thigh extends from the hip to the knee, and the leg extends from the knee to the ankle. The lower limb is attached to the body by the hip, or pelvic girdle. Note that the terms arm and leg, contrary to popular usage, refer only to a portion of the respective limb.

The trunk can be divided into the thorax (chest), abdomen (region between the thorax and pelvis), and pelvis (the inferior end of the trunk, associated with the hips). The major or-

gans are located in the trunk, such as: the heart, the lungs, the stomach, the liver, the spleen, the large and small intestines, the kidneys, the gallbladder, and bladder.

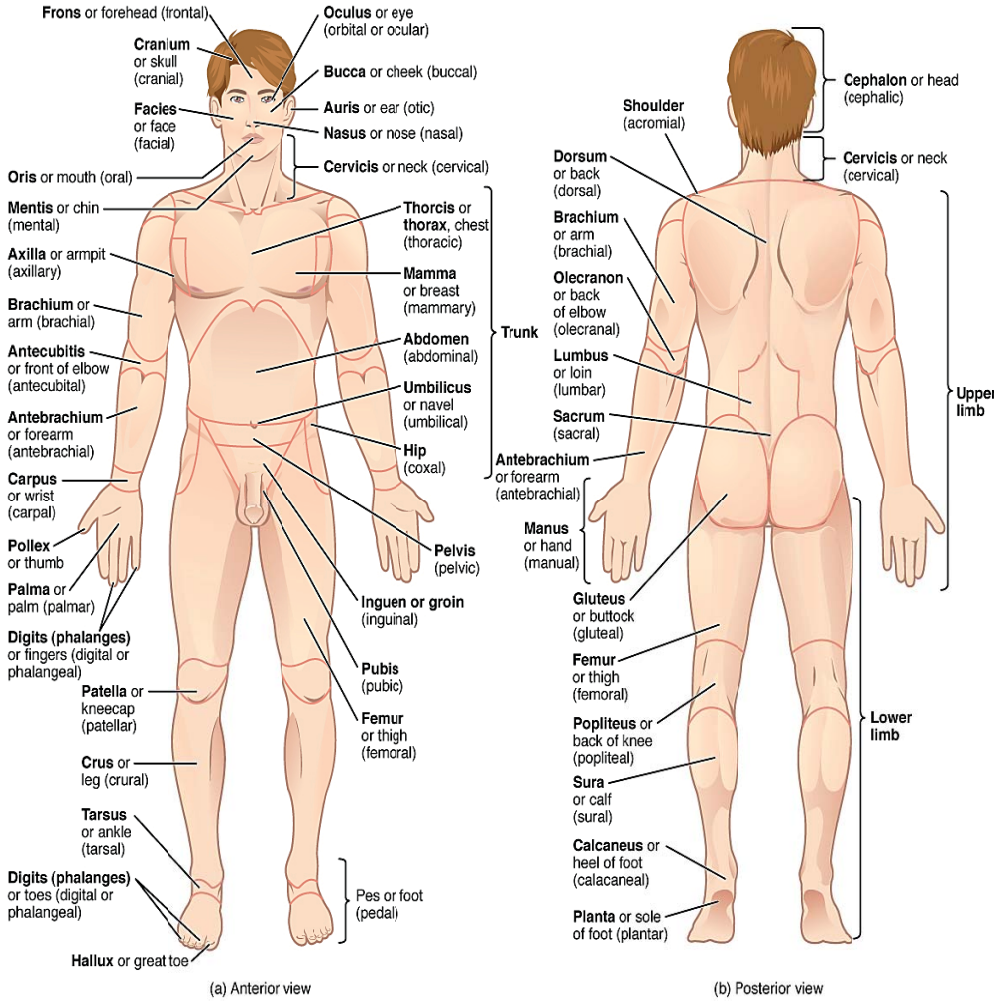
The abdomen is often subdivided superficially into four quadrants. They include the upper right, upper left, lower right, and lower left quadrants. The four-quadrant approach is commonly used by clinicians to describe the location of some organs or of a clinical problem such as pain or a tumor.

2. Answer the following questions.

1) What regions is the human body divided into?
2) What parts is the upper limb divided into?
3) What parts does the lower limb consist of?
4) What girdle connects the upper limb with the trunk?
5) What girdle connects the lower limb with the trunk?
6) What parts is the trunk divided into?
7) What internal organs are located in the trunk?

3. Cover the left and right sides of the figure "Body Regions and Structures" and complete the table given below. One is done for you.

BODY REGIONS AND STRUCTURES



Structure	Region
mouth	*oral*
nose	
armpit	
chest	
breastbone	
neck	
abdomen	
hip	
wrist	
ankle	
shoulder	
thigh	
leg	
arm	
elbow	
forearm	
fingers	
foot	
toes	
forehead	
eye	
cheek	
hand	
knee	
head	
sole	
ear	
face	

4. a) Write common English words for the corresponding anatomical terms in the table using Active Vocabulary, the figure "Body Regions and Structures" and your medical background knowledge.

	Anatomical term	Common word
1.	abdomen	
2.	axilla	
3.	carpus	
4.	coxa	
5.	cubitus	
6.	mamma	

7.	nates	
8.	patella	
9.	thorax	
10.	umbilicus	
11.	mandible	
12.	maxilla	
13.	mentis	
14.	pollex	
15.	oris	

b) In pairs, take turns to say an anatomical term and ask your partner to provide the common word for it, or give a common word and ask for the anatomical term.

5. a) Paraphrase anatomical terms in order to complete patients' statements.

	Anatomical term	Patient's statement
1.	inguinal swelling	I've got a lump in the ..... .
2.	abdominal pain	My little boy's got a(n) ..... ache.
3.	periumbilical rash	I've got some spots around my ..... .
4.	thoracic pain	I've got a pain in the middle of the ..... .
5.	enlarged axillary node	There's a painful swelling in my ..... .
6.	mandibular pain	I've got a pain in my ..... .

b) In pairs, practice explaining anatomical terms. Student A, you are a patient; you should ask your consulting physician what the diagnosis/symptom in your patient record means. Student B, you are a consulting physician; you should explain to the patient what the diagnosis/symptom means using informal words. Swap roles and practice again.

6. Study the table "Directional Terms for Humans" and the figure "Body Directions". Check what you remember from your Latin classes. In pairs, take turns to say a term / definition and ask your partner to provide a proper explanation of it.

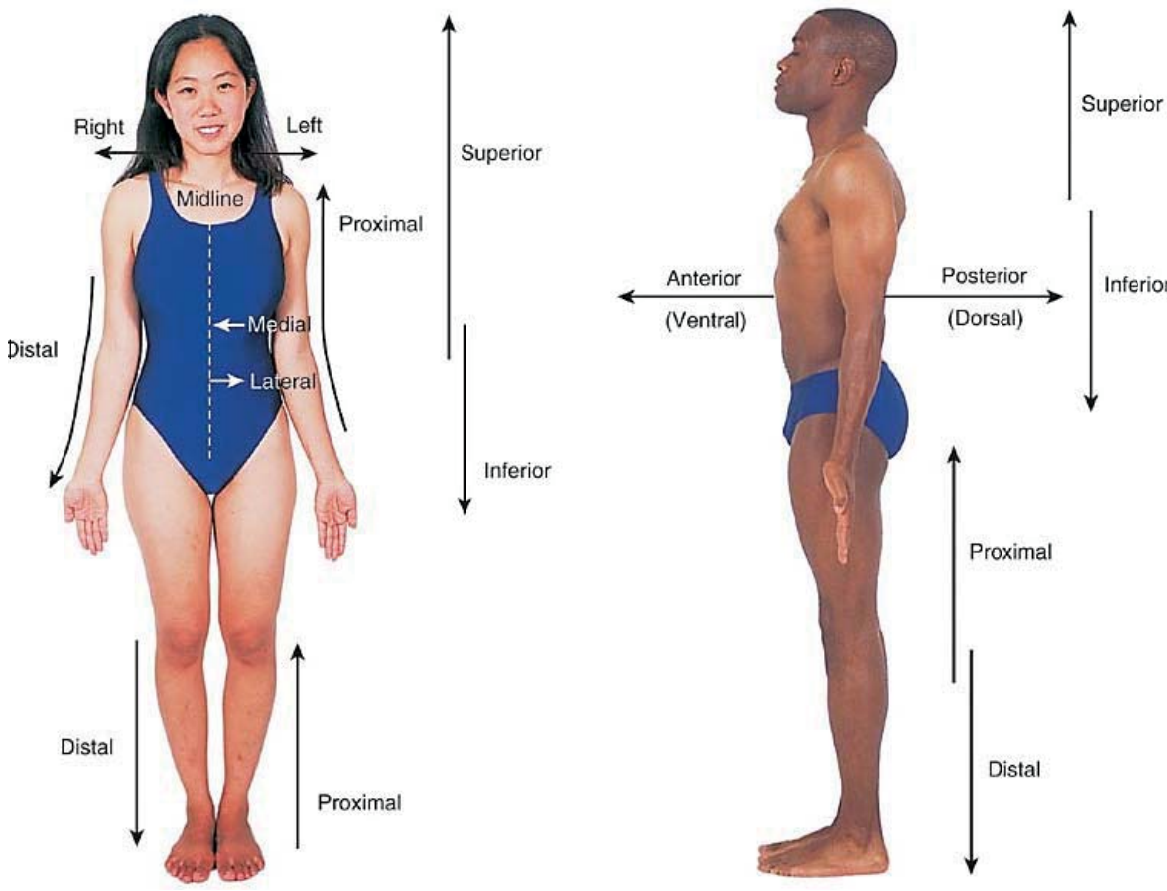
DIRECTIONAL TERMS FOR HUMANS

Term	Etymology	Definition
Left		Toward the left side
Right		Toward the right side
Superior	L, higher	A structure higher than another (usually synonymous with cephalic)
Inferior	L., lower	A structure lower than another (usually synonymous with caudal)
Proximal	L. *proximus,* nearest	Closer than another structure to the point of attachment to the trunk

Distal	L. *di-* plus *sto,* to stand apart or to be distant	Farther than another structure to the point of attachment to the trunk
Medial	L. *mediahs,* middle	Toward the middle or the midline of the body
Lateral	L. *latus,* side	Away from the middle or midline of the body
anterior	L., before	The front of the body (synonymous with ventral)
Posterior	L. *posterus*, following	The back of the body (synonymous with dorsal)
Superficial	L. *superftcialis*	Toward or on the surface

NOTE:
L – Latin

BODY DIRECTIONS



7. Complete the following sentences with expressions given below. Use the table "Directional Terms for Humans".

away from the midline; proximal; more toward the interior of the body; nearest; to be distant; close to the surface of the body; distal; toward the midline

When describing parts of the body, it is often important to refer to their relative positions. Proximal means …….., whereas distal means …….. . These terms are commonly used in reference to the structure in the limbs; each limb is attached at its

proximal end of the body, and the other end, the distal end (the hand or foot), is some distance away. Proximal and distal may also be used in reference to tubular systems such as the kidney or the digestive tract. The …….. end of the small intestine is attached to the stomach, and the …….. end of the small intestine connects to the large intestine. Medial means …….., and lateral means …….. . The nose is located in a medial position in the face, and the eyes are lateral to the nose. The terms superficial and deep refer to the structure …….. and …….. . The skin is superficial to muscle and bone.

8. a) Decide upon the correct category.

Body parts – categories

	arm	**hand**	**leg**	**foot**	**torso**	**head**
abdomen						
Achilles tendon						
ankle						
buttock						
calf						
chest						
chin						
ear						
elbow						
eye						
eyebrow						
eyelash						
eyelid						
finger						
forearm						
forehead						
gum						
hip						
knee						
knuckle						
lip						
nail						
navel						
neck						
nipple						
nose						

palm						
rib						
scalp						
shoulder						
sole						
temple						
thigh						
thumb						
toe						
tongue						
tooth						
wrist						

b) Find appropriate synonyms to the names of the body parts given in the table. Use Active Vocabulary, Appendix I and your background knowledge.

c) Produce plural forms of the body parts. Pay attention to irregular plurals.

d) Provide derivative adjectives of the names of the body parts. Produce as many medical word combinations with these adjectives as you can remember from your medical background knowledge.

9. Work in pairs. Student A, you are a physician; Student B, you are a patient. Student A, you should collect anamnesis and general complaints of your patient. Then you should paraphrase the collected information into professional medical terms to fill in the patient record.

The doctor's notes should include information about:

- **pain in the: neck, wrist, arm, upper/lower jaw, belly, buttock, thigh, etc.;**
- **rash on/in/around: skin, navel, eye, mouth, elbow, groin, armpit, etc.;**
- **swelling in/on: armpit, hand, finger, toe, hip, abdomen, cheek, chin, etc.;**
- **enlarged nodes.**

Present your dialogues and the patient record to the group.
Swap roles and practice again.

SKELETAL SYSTEM

Active Vocabulary:

1.	**bone (n.)** **bony (adj.)** **osseous (adj.)**	BrE /bəʊn/ AmE /boʊn/ BrE /ˈbəʊni/ AmE /ˈboʊni/ BrE /ˈɒsɪəs/ AmE /ˈɑːsiəs/	кістка кістковий / кістлявий кістковий	any of the hard parts that form the skeleton of the body of a human or an animal
2.	**joint (n.)**	/dʒɔɪnt/	суглоб	a place where two bones are joined together in the body in a way that enables them to bend and move
3.	**skeleton (n.)** **skeletal (adj.)**	/ˈskelɪtn/ BrE /ˈskɛlɪt(ə)l/ AmE /ˈskelətl/	скелет скелетний	the structure of bones that supports the body of a person or an animal
4.	**skull (n.) /** **cranium (sing.)** **craniums, crania (pl.)** **cranial (adj.)**	/skʌl/ /ˈkreɪniəm/ /ˈkreɪniə/ /ˈkreɪnɪəl/	череп черепний	the bone structure that forms the head and surrounds and protects the brain
5.	**vertebra (sing.)** **vertebrae (pl.)**	/ˈvɜːtɪbrə/ BrE /ˈvɜːtɪbreɪ/ AmE /ˈvɜːrtɪbreɪ/ BrE /ˈvɜːtɪbriː/ AmE /ˈvɜːrtɪbriː/	хребець хребці	any of the small bones that are connected together to form the spine
6.	**vertebral column (n.)** **spine** **spinal column** **backbone**	BrE /ˈvɜːtɪbrəl ˈkɒləm/ AmE /ˈvɜːrtɪbrəl ˈkɑːləm/ /spaɪn/ BrE /ˌspaɪnl ˈkɒləm/ AmE /ˌspaɪnl ˈkɑːləm/ /ˈbækbəʊn/	хребетний стовп хребет	the row of small bones that are connected together down the middle of the back
7.	**rib (n.)** **costal (adj.)**	/rɪb/ BrE /ˈkɒstl/ AmE /ˈkɑːstl/	ребро реберний	any of the curved bones that are connected to the spine and surround the chest

8.	**clavicle (n.) /** **collarbone** **clavicular (adj.)**	/ˈklævɪkl/ BrE /ˈkɒləbəʊn/ AmE /ˈkɑːlərboʊn/ /kləˈvɪkjələr/	ключиця ключичний	either of the two bones that go from the base of the neck to the shoulders
9.	**scapula (sing.)** **scapulae (pl.)** **/** **shoulder blade** **scapular (adj.)**	/ˈskæpjʊlə/ /ˈskæpjʊliː/ /ˈʃəʊldə bleɪd/ /ˈskapjʊlə(r)/	лопатка лопатковий	either of the two large flat bones at the top of the back
10.	**sternum (sing.)** **sternums, sterna (pl.)** **/** **breastbone** **sternal (adj.)**	/ˈstɜːnəm/ /ˈstɜːnə/ BrE /ˈbrestbəʊn/ AmE /ˈbrestboʊn/ /ˈstəːn(ə)l/	грудина грудна кістка грудинний, стернальний	the long flat bone in the chest that the seven top pairs of ribs are connected to
11.	**pelvis (n.)** **pelvic (adj.)**	/ˈpɛlvɪs/ /ˈpɛlvɪk/	таз тазовий	a basin-shaped complex of bones that connects the trunk and the legs, supports and balances the trunk, and contains and supports the intestines, the urinary bladder, and the internal sex organs connected with the pelvis
12.	**ilium (n.)**	/ˈɪlɪəm/	клубова кістка	the large broad bone forming the upper part of each half of the pelvis
13.	**pubis (n.)**	/ˈpjuːbɪs/	лобкова кістка	either of a pair of bones forming the two sides of the pelvis
14.	**ischium (n.)**	/ɪˈskɪəm/	сіднична кістка	the curved bone forming the base of each half of the pelvis
15.	**humerus (sing.)** **humeri (pl.)** **humeral (adj.)**	/ˈhjuːmərəs/ /ˈhjuːməraɪ/ /ˈhjuːm(ə)r(ə)l/	плечова кістка плечовий	the large bone in the top part of the arm between the shoulder and the elbow

16.	**ulna (sing.)** **ulnae (pl.)** **ulnar (adj.)**	/ˈʌlnə/ /ˈʌlniː/ /ˈʌlnər/	ліктьова кістка ліктьовий	the longer bone of the two bones in the lower part of the arm between the elbow and the wrist, on the side opposite the thumb
17.	**radius (sing.)** **radii (pl.)** **radial (adj.)**	/ˈreɪdiəs/ /ˈreɪdiaɪ/ /ˈreɪdɪəl/	променева кістка променевий (напр. про кістки); радіальний (напр. про розташування волокон)	the shorter bone of the two bones in the lower part of the arm between the elbow and the wrist, on the same side as the thumb
18.	**femur (n.)** **femurs, femora (pl.) /** **thigh bone** **femoral (adj.)**	/ˈfiːmər/ /ˈfemərə/ /θaɪ bəʊn/ /ˈfemərəl/	стегнова кістка стегновий	the large thick bone in the top part of the leg between the hip and the knee
19.	**tibia (sing.)** **tibiae (pl.) /** **shin bone** **tibial (adj.)**	/ˈtɪbiə/ /ˈtɪbiiː/ BrE /ˈʃɪn bəʊn/ AmE / ˈʃɪn boʊn/ /ˈtɪbiəl/	великогомілкова кістка великогомілковий, тібіальний	the front and larger bone of the two bones in the lower part of the leg between the knee and the ankle
20.	**fibula (sing.)** **fibulae (pl.)** **fibular (adj.)**	/ˈfɪbjələ/ /ˈfɪbjəliː/ /ˈfɪbjələr/	малогомілкова кістка малогомілковий, фібулярний	the outer bone of the two bones in the lower part of the leg between the knee and the ankle
21.	**talus (n.)**	/ˈteɪləs/	таранна кістка	the large bone in the ankle, which articulates with the tibia of the leg and the calcaneus and navicular bone of the foot
22.	**calcaneus (n.)**	/kæl'keɪnɪəs/	п’яткова кістка	the large bone forming the heel. it articulates with the cuboid bone of the foot and the talus bone of the ankle, and the Achilles tendon is attached to it

23.	**cervix (n.)** **cervical (adj.)**	/ˈsəːvɪks/ /ˈsəːvɪk(ə)l/	шия, шийка шийний	1. the neck 2. the narrow passage forming the lower end of the uterus
24.	**lumbar (adj.)**	/ˈlʌmbə(r)/	поперековий	relating to the lower part of the back
25.	**sacrum (n.)** **sacral (adj.)**	/ˈseɪkrəm/ /ˈseɪkr(ə)l/	криж крижовий	a triangular bone in the lower back formed from fused vertebrae and situated between the two hip bones of the pelvis
26.	**coccyx (sing.)** **coccyxes, coccyges (pl.) / tailbone** **coccygeal (adj.)**	/ˈkɒksɪks/ /ˈkɒksɪdʒiːz/ /ˈteɪlbəʊn/ /kɒkˈsaɪdʒiəl/	куприк куприковий	the small bone at the bottom of the spine
27.	**suture (n.)**	/ˈsuːtʃər/	шов, сутура	an immovable junction between two bones, such as those of the skull
28.	**(un)ossified (adj.)**	/(ʌn)ˈɒsɪfaɪd/	(не)кістковий (не)закостенілий	turned into bone or bony tissue; free of bone(s), lacking a bony structure
29.	**fontanelle (n.)**	/fɒnˈteɪnɪlɪ/	тім'ячко, джерельце, фонтанель	any of the spaces closed by membranous structures between the uncompleted angles of the parietal bones and the neighboring bones of a fetal or young skull
30.	**fossa (n.)**	/ˈfɒsə/	ямка	an anatomical pit, groove, or depression
31.	**maxilla (sing.)** **maxillae (pl.)** **maxillary (adj.)**	BrE /makˈsɪlə/ AmE /mækˈsɪlə/ BrE /makˈsɪliː/ AmE /mækˈsɪiː/ BrE /makˈsɪləri/ AmE /mækˈsɪləri/	верхня щелепа верхньощелепний	an upper jaw
32.	**mandible (n.)** **mandibular (adj.)**	BrE /ˈmandɪb(ə)l/ AmE /ˈmændɪbl/ BrE /ˈmanˈdɪbjələ/ AmE / mænˈdɪbjələr/	нижня щелепа нижньощелепний	a lower jaw

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Say whether the following statements are true (T) or false (F). Use your background knowledge of Anatomy to justify your answers.

- Your skeletal system is made up of bones, joints, and connective tissue.
- The vertebrae support your body and protects your spinal cord.
- Tendons connect bone to bone.
- Ligaments connect muscle to bone.
- Your nose and ears are made of cartilage.
- A baby's skeleton consists of over 300 bones.
- Joints are the points at which bones meet.
- The bones of your cranium protect your heart and lungs.
- Making blood cells is a function or job of the skeletal system.
- Exercise, good posture, and having a healthy diet are ways of keeping the skeletal system healthy.
- The skeleton supports our body and gives it shape.
- The mandible and clavicle make up the upper and lower jawbones.

Text 1

1. Read the text given below.

SKELETON

The skeleton is the bony framework of the body supporting the soft tissues and protecting the vital organs within the skull, rib cage and pelvis. The 206 bones comprise the adult human skeleton. Interestingly, infants are born with many more bones, between 300 and 350, which merge as the body develops. Skeletal bones are usually divided for the purpose of study into two parts: the central axial skeleton, consisting of the bones of the skull, rib cage and the vertebral column, and the appendicular skeleton, consisting of the bones of the shoulders, arms, hips and legs. The axial skeleton is designed primarily for the support and protection and therefore is quite rigid although the flexibility of the vertebral column allows it a certain degree of movement.

The skull is made up of the bones of the cranium and the bones of the facial skeleton. The cranium, containing and protecting the brain, consists of 8 bones united by immovable joints called sutures. The bones of the face include 14 bones of which only the mandible is an independent and mobile one.

The trunk contains 12 pairs of ribs. The first seven pairs extend from the vertebral column to the breastbone. They articulate with the sternum anteriorly through cartilaginous attachments called costal cartilages. These ribs join the back with the vertebral column and are called the true ribs. The next five pairs are called false ribs because instead of joining the sternum directly they converge and join the seventh rib at a point before the sternum is reached. The floating ribs are the last two pairs of false ribs, which are completely free at their anterior extremities.

The vertebral column serving as the main supporting structure is composed of a number of separate bones, the vertebrae. The 33 vertebrae can be divided into 5 regions according to where they are found: the 7 cervical vertebrae located in the neck, 12 thoracic vertebrae contained at the back of the chest, 5 lumbar in the small of the back, and 5 sacral and 4 coccygeal fused together to form the sacrum and the coccyx, respectively. The first two vertebrae are known as the atlas and the axis.

The appendicular skeleton consists of the bones of the extremities, as well as the bones of the shoulder and hips which attach the bones of the extremities to the axial skeleton. The shoulder is composed of the clavicle and the scapula. The clavicle, or the collarbone, is a thin bone forming the front of the shoulder. It is attached medially to the sternum and laterally to the scapula. The scapula, or shoulder blade, is a large flat bone located in the upper part of the back. The arm contains only one large bone – the humerus. The forearm is composed of two bones, the radius and the ulna. Proximally, the radius articulates with the humerus and distally – with two of the carpal bones of the wrist and the ulna. The wrist consists of eight carpal bones articulating with the metacarpals of the hand. The finger bones are known as phalanges. The pelvic girdle is composed of two large hip bones forming the sides and front, and the sacral and coccygeal vertebrae that form the back.

Analogically to the arm, the thigh also contains one bone. It is the femur, the longest and the heaviest bone of the body. The lower leg is composed of two bones, the tibia and fibula. The bones of the ankle are known as tarsals. Five smaller tarsal bones and five metatarsals from the remainder of the foot. The toes, like the fingers, are composed of 14 bones referred to as phalanges.

2. a) Match the names of body parts with the Latin-derived adjectives referring to the same body parts.

1.	bone	**a.**	pulmonary
2.	brain	**b.**	hepatic
3.	cheek	**c.**	cranial
4.	chest	**d.**	cardiac
5.	heart	**e.**	renal
6.	kidney	**f.**	thoracic
7.	liver	**g.**	cerebral
8.	lung	**h.**	osseous
9.	mouth	**i.**	gastric
10.	skin	**j.**	dental
11.	skull	**k.**	buccal
12.	stomach	**l.**	ocular
13.	tongue	**m.**	oral
14.	tooth	**n.**	dermal
15.	eye	**o.**	lingual

b) In pairs, take turns to say a body part and ask your partner to provide the Latin-derived adjective for it, or give a Latin-derived adjective and ask for the body part.

3. Put the appropriate numerals in the gaps.

1. There are … vertebrae in the cervical part of the spine.
2. There are … vertebrae in the thoracic part of the spine.
3. There are … vertebrae in the lumbar part of the spine.
4. There are … vertebrae in the sacral part of the spine.

4. Fill in the correct words from the box.

Skull ribs breastbone side adult skeleton femur

1. The …….. is the largest and the longest bone in the body.
2. The skeleton of the head is called the …….. .
3. In the anatomy class medical students study the bones of the …….. .
4. In the …….. the bones of the extremities are longer than in the child.
5. On each …….. of the chest there are seven …….. which are connected with the …….. .

5. a) Match the following medical terms for bones with their common names.

1.	humerus	**a.**	breastbone
2.	clavicle	**b.**	lower jaw bone
3.	scapula	**c.**	wrist bone
4.	maxilla	**d.**	medial lower arm bone
5.	sternum	**e.**	finger or toe bones
6.	mandible	**f.**	the lower and posterior bone of the pelvis
7.	ulna	**g.**	tailbone
8.	carpals	**h.**	thigh bone
9.	radius	**i.**	upper jaw bone
10.	phalanges	**j.**	lateral lower arm bone
11.	fibula	**k.**	larger of two bones of the lower leg
12.	femur	**l.**	shoulder blade
13.	tibia	**m.**	smaller of two bones of the lower leg
14.	patella	**n.**	the upper and largest bone of the pelvis
15.	tarsals	**o.**	ankle bones
16.	ilium	**p.**	upper arm bone
17.	ischium	**q.**	knee cap
18.	coccyx	**r.**	collar bone

b) In pairs, take turns to say a medical term for the bone(s) and ask your partner to provide its common name, or give a common name and ask for the medical term.

c) In pairs, take turns to say a medical term for the bone(s) and ask your partner to provide and spell its plural form.

Comment on the terms which have Latin-derived plural forms, terms which form their plurals according to the rules of modern English, and terms which have two possible plural forms. Use Active Vocabulary to check your answers.

Practice pronouncing singular and plural forms of bone names. Use links from "Individual work" section to listen to variants of their pronunciation.

Text 2

1. Read the text given below.

BONES OF THE THORAX

The **sternum** (or breastbone) is a flat bone located at the **anterior aspect** of the thorax. It lies in the midline of the chest and has a 'T' shape.

As part of the bony thoracic wall, the sternum helps protect the internal thoracic viscera – such as the heart, lungs and oesophagus.

Parts of the Sternum

The sternum can be divided into three parts; the **manubrium, body** and **xiphoid** process. In children, these elements are joined by cartilage. The cartilage ossifies to bone during adulthood.

Manubrium

The **manubrium** is the most superior portion of the sternum. It is **trapezoid** in shape.

The superior aspect of the manubrium is concave, producing a depression known as the **jugular notch** – this is visible underneath the skin. Either side of the jugular notch, there is a large fossa lined with cartilage. These fossae articulate with the medial ends of the clavicles, forming the **sternoclavicular joints**.

On the lateral edges of the manubrium, there is a **facet** (cartilage lined depression in the bone), for articulation with the costal cartilage of the 1st rib, and a **demifacet** (half-facet) for articulation with part of the costal cartilage of the 2nd rib.

Inferiorly, the manubrium articulates with the body of the sternum, forming the **sternal angle**. This can be felt as a transverse ridge of bone on the anterior aspect of the sternum. The sternal angle is commonly used as an aid to count ribs, as it marks the level of the 2nd costal cartilage.

Body

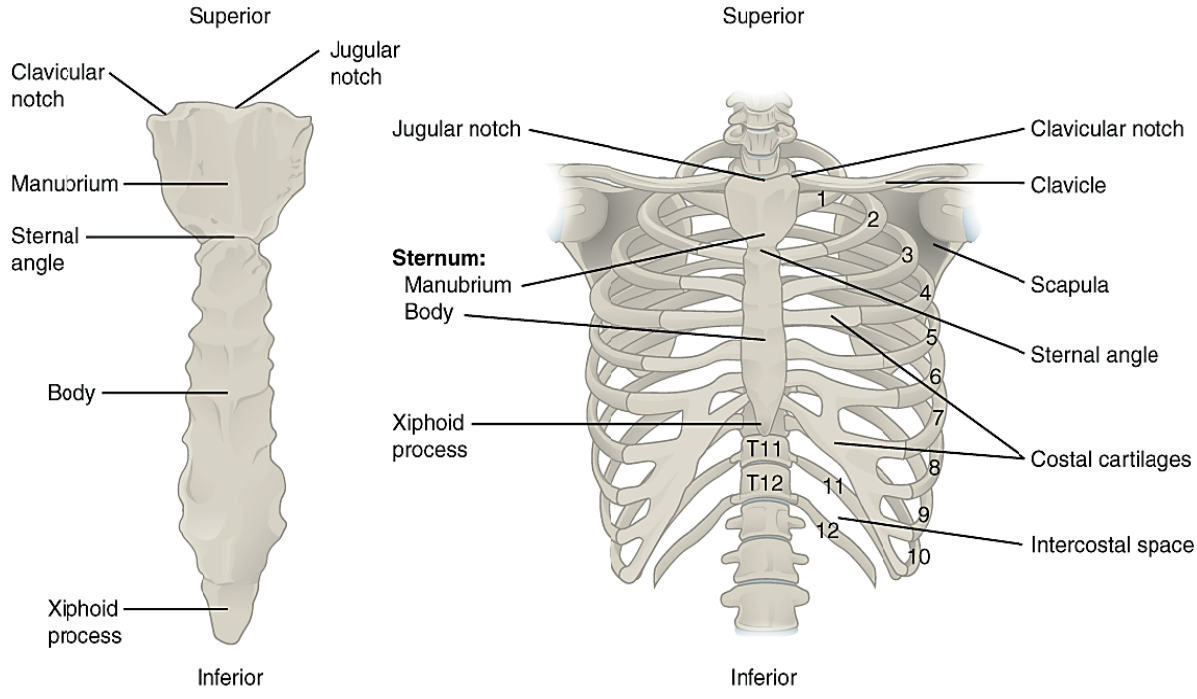
The **body** is flat and elongated – the largest part of the sternum. It articulates with the manubrium superiorly (manubriosternal joint) and the xiphoid process inferiorly (xiphisternal joint).

The lateral edges of the body are marked by numerous **articular facets** (cartilage lined depressions in the bone). These articular facets articulate with the costal cartilages of ribs 3-6. There are smaller facets for articulation with parts of the second and seventh ribs – known as demifacets.

Xiphoid Process

The **xiphoid process** is the most inferior and smallest part of the sternum. It is variable is shape and size, with its tip located at the level of the T10 vertebrae. The xiphoid process is largely cartilaginous in structure, and completely ossifies late in life – around the age of 40.

In some individuals, the xiphoid process articulates with part of the costal cartilage of the seventh rib.



(a) Anterior view of sternum

(b) Anterior view of skeleton of thorax

The **ribs** are a set of twelve bones which form the protective 'cage' of the **thorax**. They articulate with the vertebral column posteriorly, and terminate anteriorly as cartilage (known as costal cartilage).

As part of the bony thorax, the ribs protect the internal thoracic organs. They also have a role in breathing – during **chest expansion** the ribcage moves to permit lung inflation.

Rib Structure

There are two classifications of ribs – atypical and typical. The typical ribs have a generalised structure, while the atypical ribs have variations on this structure.

Typical Ribs

The typical rib consists of a head, neck and body:

The **head** is wedge shaped, and has two articular facets separated by a wedge of bone. One facet articulates with the numerically corresponding vertebrae, and the other articulates with the vertebrae above.

The **neck** contains no bony prominences, but simply connects the head with the body. Where the neck meets the body there is a roughed tubercle, with a facet for articulation with the transverse process of the corresponding vertebrae.

The body, or **shaft** of the rib is flat and curved. The internal surface of the shaft has a groove for the neurovascular supply of the thorax, protecting the vessels and nerves from damage.

Atypical Ribs

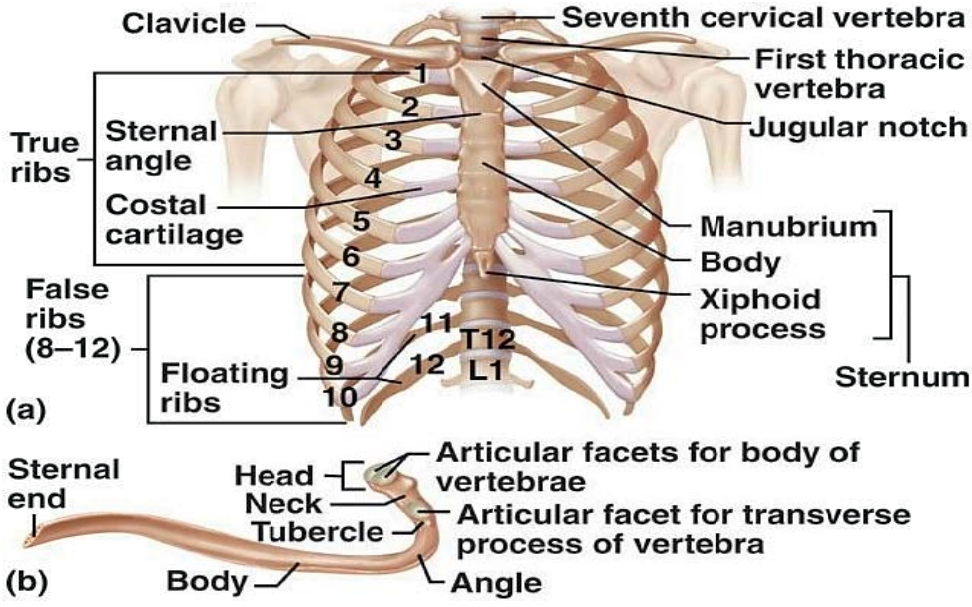
Ribs 1, 2, 10 11 and 12 can be described as 'atypical' – they have features that are not common to all the ribs.

Rib 1 is shorter and wider than the other ribs. It only has one facet on its head for articulation with its corresponding vertebrae (there isn't thoracic vertebrae above it). The superior surface is marked by two grooves, which make way for the subclavian vessels.

Rib 2 is thinner and longer than rib 1, and has two articular facets on the head as normal. It has a roughened area on its upper surface, where the serratus anterior muscle attaches.

Rib 10 only has one facet – for articulation with its numerically corresponding vertebrae.

Ribs 11 and **12** have no neck, and only contain one facet, which is for articulation with their corresponding vertebrae.



The **thoracic spine** is the second segment of the vertebral column, located between the cervical and lumbar vertebral segments. It consists of twelve vertebrae, which are separated by intervertebral discs.

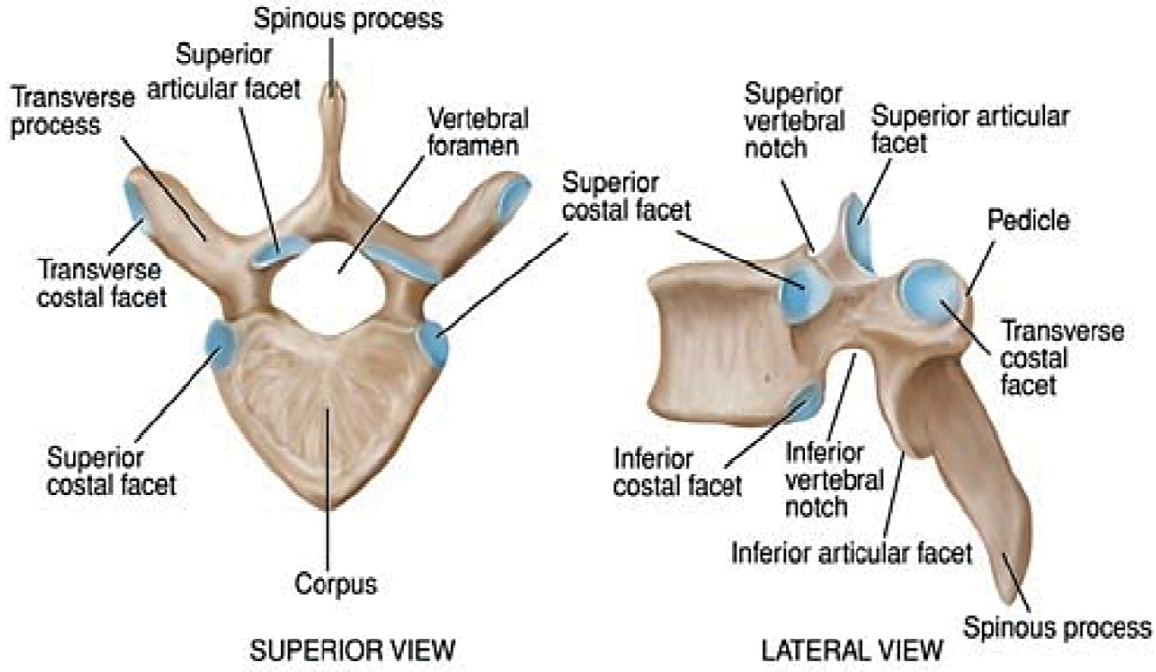
Along with the sternum and ribs, the thoracic spine forms part of the thoracic cage. This bony structure helps protect the internal viscera – such as the heart, lungs and oesophagus.

This article will look at the osteology of the thoracic vertebrae, examining their characteristic features, joints and clinical correlations.

Characteristic Features

The thoracic vertebrae have four features which distinguish them from other vertebrae:

- Vertebral body is **heart shaped**.
- Presence of **demi-facets** on the sides of each vertebral body – these articulate with the heads of the ribs.
- Presence of **costal facets** on the transverse processes – these articulate with the tubercles of the ribs. They are present on T1-T10 only.
- The **spinous processes** are long and slant inferiorly. This offers increased protection to the spinal cord, preventing an object such as a knife entering the spinal canal.



2. a) In groups, read the text and fill in the table about a particular type of thoracic bones.

	Location	Structure	Function(s)
Sternum			
Ribs			
Thoracic spine			

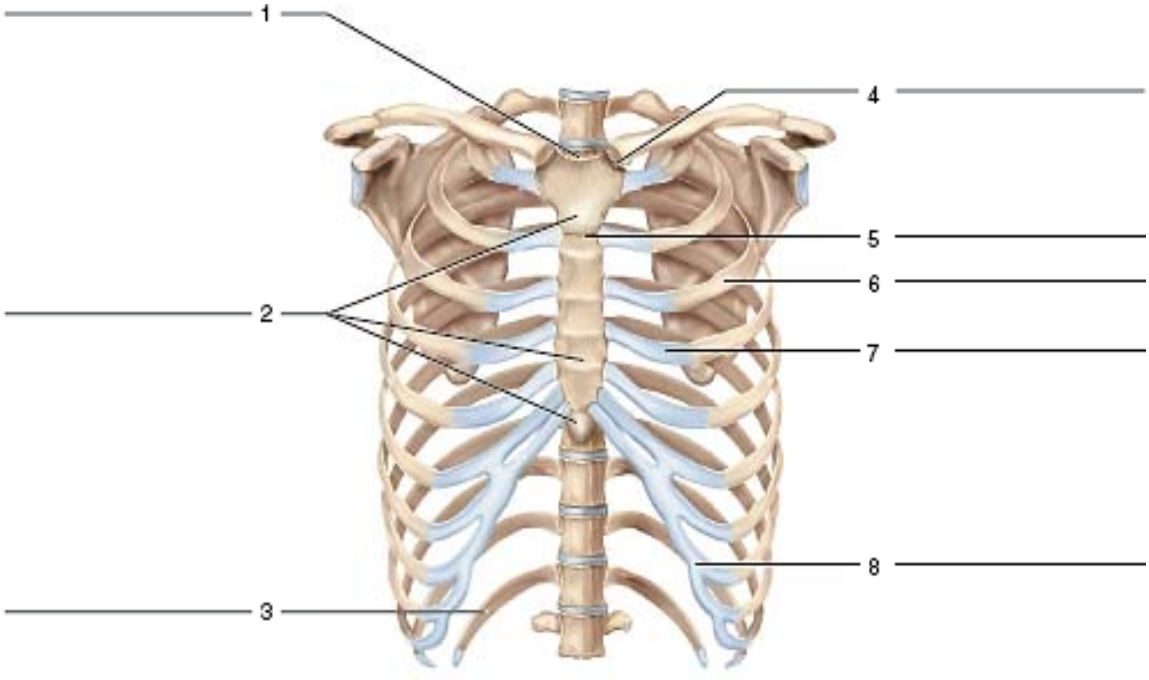
b) Choose two representatives from each group whose task will be to circulate and share the information obtained by your group with two other groups.

c) Present and discuss obtained information.

3. In pairs, take turns to discuss the structure and functions of each type of bones located in the thorax. Student A, you are a doctor, Student B, you are a medical student. Swap roles and practice again.

4. Label parts of the rib cage.

Costal cartilage of false rib	**Clavicular notch**	**Jugular notch**	**Sternum**
Costal cartilage of true rib	**Floating rib**	**Sternal angle**	**True rib**



Text 3

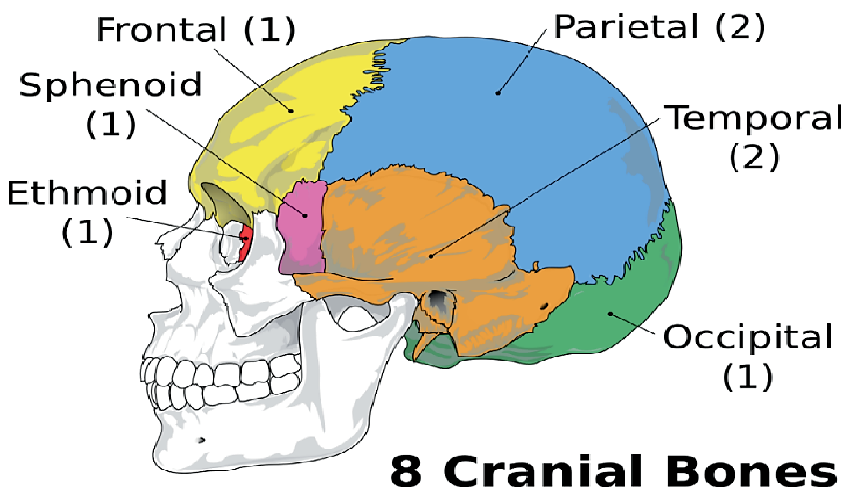
1. Read the text given below.

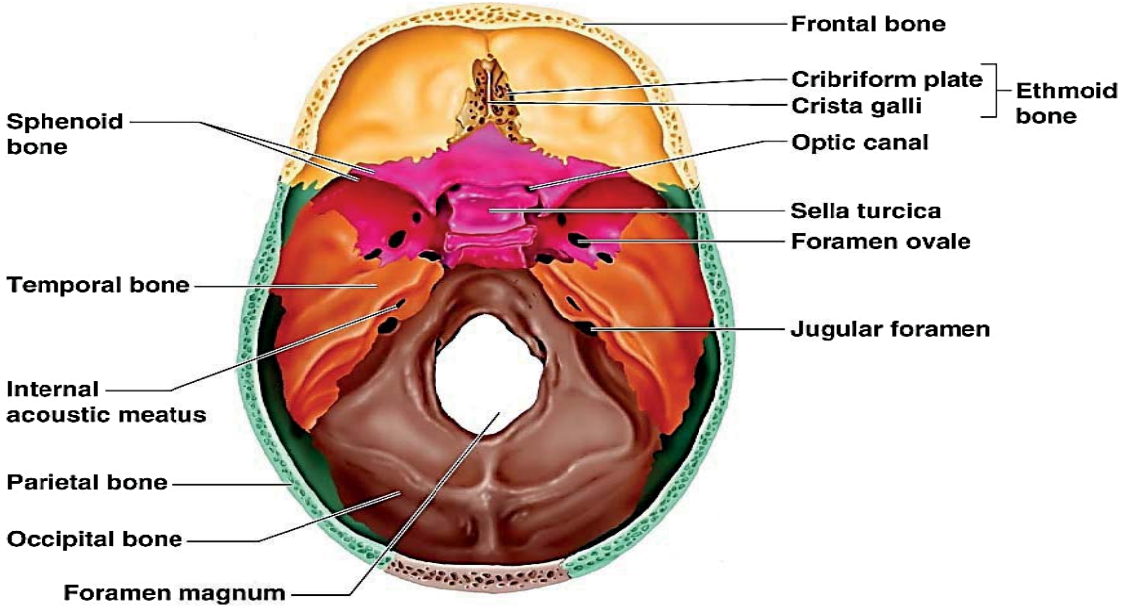
CRANIAL BONES

The bones of the skull, or cranium, protect the brain and the structures related to it, such as the sense organs. Muscles for controlling head movements and chewing motions are connected to the cranial bones. Sinuses, or air cavities, are located in specific places within the cranial bones to lighten the cranium and warm and moisten air as it passes through.

The cranial bones of a newborn child are not completely joined. There are gaps of unossified tissue in the skull at birth. These are called soft spots, or fontanelles (little fountains). The pulse of blood vessels can be felt under the skin in those areas.

Figure “8 Cranial Bones” below illustrates the bones of the cranium:





(1) frontal bone — forms the forehead and bony sockets which contain the eyes;

(2) parietal bone — there are two parietal bones which form the roof and upper part of the sides of the cranium;

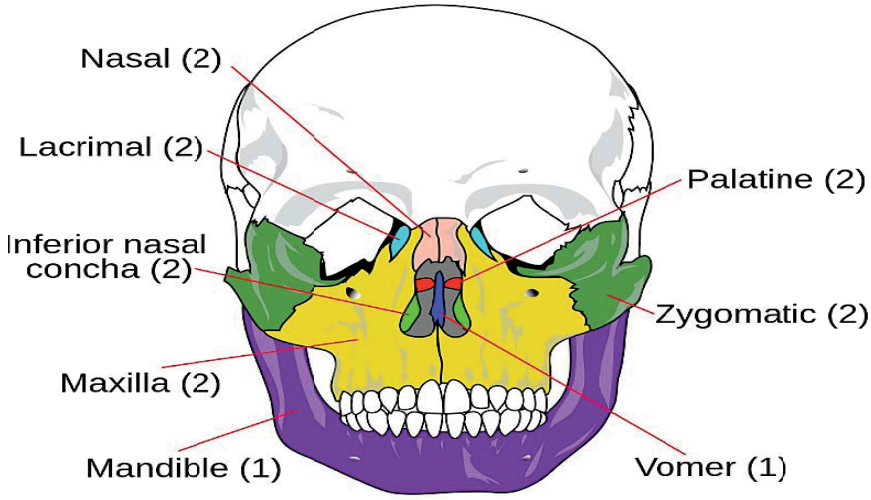
(3) temporal bone — two temporal bones form the lower sides and base of the cranium. Each bone encloses an ear and contains a fossa for joining with the mandible (lower jaw bone). The mastoid process is a round behind the ear;

(4) occipital bone — forms the back and the base of the skull and joins the parietal and temporal bones, forming a suture (juncture line of cranial bone). The inferior portion of the occipital bone has an opening called the **foramen magnum** through which the spinal cord passes;

(5) sphenoid bone — this bat-shaped bone extends behind the eyes and forms part of the base of the skull. Because it joins with the frontal, occipital, and ethmoid bones, it serves as an anchor to hold those skull bones together (**sphen**\o means wedge);

(6) ethmoid bone — this delicate bone is composed primarily of spongy cancellous bone. It supports the nasal cavity and forms part of the orbits of the eyes (**ethm**\o means sieve).

All of the facial bones, except one, are joined together by sutures so that they are immovable. The mandible (lower jaw bone) is the only facial bone capable of movement. This ability is necessary for activities such as mastication (chewing) and speaking.



14 Facial Bones

(1) nasal bones — two slender nasal (**nas\o** = nose) bones support the bridge of the nose. They join with the frontal bone superiorly and form part of the nasal septum;

(2) lacrimal bones — two paired lacrimal (**lacrim\o** = tear) bones are located one at the corner of each eye. These thin, small bones contain fossae for the lacrimal gland (tear gland) and canals for the passage of the lacrimal duct;

(3) maxillary bones — two large bones compose the massive upper jaw bones (maxillae). They are joined by a suture in the median plane. If the two bones do not come together normally before birth, the condition known as cleft palate results;

(4) mandibular bone — this is the lower jaw bone. Both the maxilla and mandible contain the sockets called alveoli in which the teeth are embedded;

(5) zygomatic bone — two bones, one on each side of the face, form the high portion of the cheek;

(6) vomer — this thin, single, flat bone forms the lower portion of the nasal septum.

2. a) Match the cranial bones names with their locations.

1.	parietal	**a.**	lower sides and base of the cranium
2.	occipital	**b.**	forehead and part of eye sockets
3.	frontal	**c.**	bat-shaped bone behind the eyes and part of base of skull
4.	temporal	**d.**	delicate bone supporting the nasal cavity and orbits of eyes
5.	ethmoid	**e.**	upper part of sides of the skull and roof
6.	sphenoid	**f.**	back and base of the skull

b) In pairs, take turns to explain the location of a cranial bone and ask your partner to provide the name of the bone which location you have described, or name any bone and ask for its location.

3. a) Identify the following facial bones.

1.	mandible	**a.**	cheek bone
2.	nasal	**b.**	lower jaw bone
3.	maxilla	**c.**	upper jaw bone
4.	lacrimal	**d.**	bone of the nose
5.	vomer	**e.**	lower portion of the nasal septum
6.	zygomatic	**f.**	bone located at the corner of the eye; contains fossae for tear glands

b) In pairs, take turns to name a facial bone and ask your partner to provide the common name for it, or give a common name and ask for the medical term of the facial bone.

4. Match the sentence beginnings with their endings.

1.	The bones of the trunk are…	**a.**	one large cavity and some smaller cavities.
2.	The bones of the skull consist of…	**b.**	is called the cranial cavity.
3.	The bones of the skeleton form…	**c.**	the lower extremities with the trunk.
4.	The large cavity…	**d.**	a head, neck and body.
5.	The breastbone is…	**e.**	cranial and facial parts.
6.	Each rib is composed of…	**f.**	a long bone in the middle of the chest.
7.	The bones of the skeleton are connected together by…	**g.**	the joints or by cartilages and ligaments.
8.	The pelvis connects…	**h.**	the spinal column and the chest.

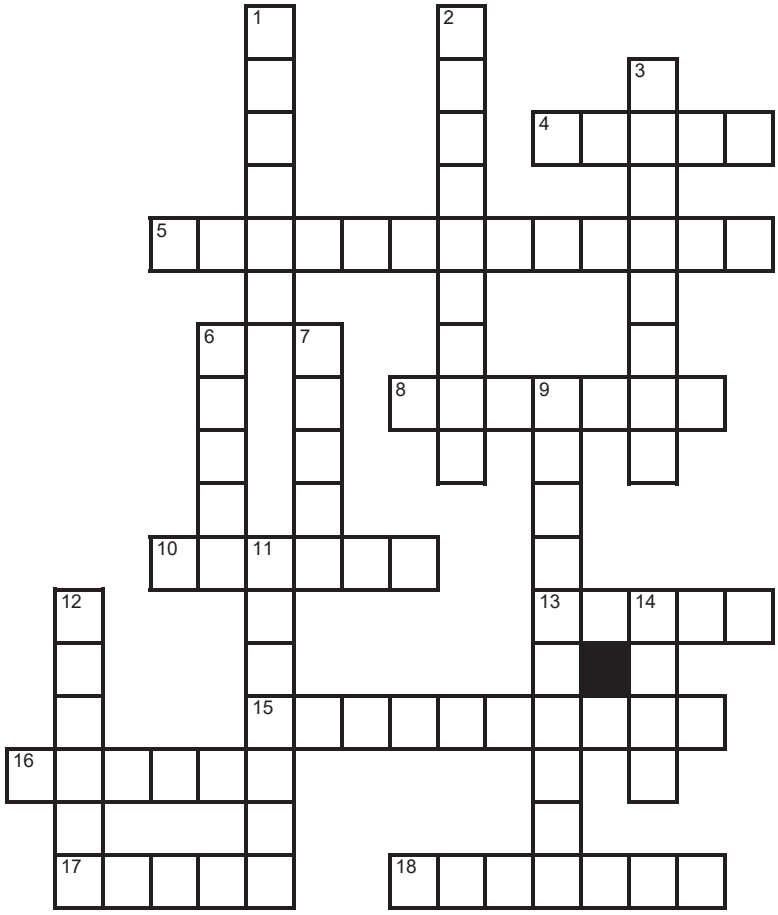
5. a) Match the body cavities with the organs contained in them. Use Appendix II.

Cavity		***Organs***	
1.	cranial	**a.**	nerves of the spinal cord
2.	thoracic	**b.**	brain
3.	abdominal	**c.**	lungs, heart, esophagus, trachea, thymus gland, aorta
4.	pelvic	**d.**	stomach, large and small intestines, spleen, liver, gall bladder, pancreas
5.	spinal	**e.**	urinary bladder, urethra, ureters;

b) In pairs, take turns to name an organ (set of organs) and ask your partner to define the cavity in which it/they are located, or name a cavity and ask your partner to name the organs that are placed in it.

6. Complete the crossword puzzle to find principal parts of the skeletal system.

The Skeletal System



Across

4. The place where two bones meet.
5. The triangle shaped bone in your upper back.
8. The bone that holds your lower teeth.
10. The substance inside a bone that makes blood cells.
13. The bone that protects your brains.
15. The bone in your shoulders.
16. One of the lower leg bones.
17. Your backbone.
18. The upper arm bone a.k.a. your funny bone.

Down

1. Something that joins muscles to bone.
2. One of the bones in your spine.
3. Something that joins bone to bone.
6. One of the lower leg bones.
7. The largest bone in the human body.
9. The bone in the center of the chest between the ribs.
11. The collection of bones that protect your lungs.
12. One of the forearm bones.
14. One of the forearm bones.

7. a) Listen to the "Bones" Song and fill in the gaps. (Follow the link: https://www.youtube.com/watch?v=UYSOe06j4ps).

"BONES" SONG

_____ arm-humerus bone it's true The _____ is separated in two It is made radius/ulna _____ – wrist bones, _____ are fingers Four types of bones broken up Flat bones ribs in your _____ Long bones are curved at a place Fingers making a fist They can be short, knobby nuggets Like your _____ and _____ But if complicated shapes Irregular don't fit Cranium – _____, _____ – mandible Scapula's the _____ _____ The _____ (vertebrae) Three bones make _____ _____ is clavicle Sternum is the _____ plate The _____ (femur) The tail's the _____ And now we move to legs to learn it all The femur is the _____, the patella –_____ Fibula and tibia – _____ Tarsals – _____, metatarsals – _____ bones Four types of bones broken up Flat bones ribs in your _____ Long bones are curved at a place Fingers making a fist They can be short, knobby nuggets Like your _____ and _____ But if complicated shapes Irregular don't fit	Cranium – _____, _____ – mandible Scapula's the _____ _____ The _____ (vertebrae) Three bones make _____ _____ is clavicle Sternum is the _____ plate The _____ (femur) The tail's the _____ Axial – _____, backbone, rib _____ Skeleton is divided in two _____ skeleton, yeah Arms, legs, and _____ too Four types of bones broken up Flat bones ribs in your _____ Long bones are curved at a place Fingers making a fist They can be short, knobby nuggets Like your _____ and _____ But if complicated shapes Irregular don't fit Cranium – _____, _____ – mandible Scapula's the _____ _____ The _____ (vertebrae) Three bones make _____ _____ is clavicle Sternum is the _____ plate The _____ (femur) The tail's the _____ Oh (that's why) Three bones make _____ Oh (that's why) The tail's the _____

b) Look through the song again and find the bones mentioned in it. Identify whether the name is formal or informal and fill in the table. Give synonyms for either formal and informal bone names.

Formal Name	Informal Name
Bones of the skull	
Bones of the trunk	
Bones of the upper extremity	
Bones of the lower extremity	

c) Provide plural forms of formal and informal names of the bones. Practice spelling Latin-derived plural forms with your partner.

d) Discuss the structure of the skeleton with your partner. Use Appendix III.

MUSCULAR SYSTEM

Active Vocabulary:

1.	**epithelial (adj.)**	BrE /ˌɛpɪˈθiːlɪ(ə)l/ AmE /epəˈθeljəl/	епітеліальний	relating to or denoting the thin tissue forming the outer layer of a body's surface and lining the alimentary canal and other hollow structures
2.	**contract (v.)** **contraction (n.)** **contractility (n.)** **contracted (adj.)**	/ˈkɒntrækt/ /kənˈtrækʃn/ /ˌkɒntrækˈtɪlɪtɪ/ /kənˈtræktɪd/	скорочуватися скорочення скоротливість скорочений	to decrease in size, number, or range
3.	**elasticity (n.)** **elastic (adj.)**	BrE /ɛlaˈstɪsɪti/ AmE /ˌiːlæˈstɪsəti/ /ɪˈlæstɪk/	еластичність еластичний	the ability of an object or material to resume its normal shape after being stretched or compressed; stretchiness
4.	**excitability (n.)** **excite (v.)** **excitable (adj.)**	/ɪkˌsaɪtəˈbɪlɪti/ /ɪkˈsʌɪt/ /ɪkˈsʌɪtəb(ə)l/	збудливість збуджувати збудливий	capability of responding to stimuli
5.	**extensibility (n.)** **extend (v.)**	/ɪksˌtensəˈbɪlɪtɪ/ /ɪkˈstend/	розтяжність розтягуватися	the ability to be extended or stretched
6.	**striated / non-striated (adj.)**	/strʌɪˈeɪtɪd/	посмугований / непосмугований	striped or streaked
7.	**oblique (adj.)**	/əˈbliːk/	косий	neither parallel nor at right angles to a specified or implied line; slanting
8.	**abduct (v.)** **abduction (n.)** **abductor (n.)** **abducted (adj.)**	/əbˈdʌkt/ /əbˈdʌkʃn / /əbˈdʌktər/ /əbˈdʌktɪd/	відводити відведення абдуктор, відвідний м'яз відведений	(of a muscle) to move (a limb or part) away from the midline of the body or from another part

9.	**adduct (v.)**	/əˈdʌkt/	приводити	(of a muscle) to move (a limb or other part of the body) towards the midline of the body or towards another part
	adduction (n.)	/əˈdʌkʃən/	приведення	
	adductor (n.)	/əˈdʌktər/	аддуктор, привідний м’яз	
	adducted (adj.)	/əˈdʌktɪd/	приведений	
10.	**extend (v.)**	/ɪkˈstend/	розгинати	to stretch part of your body, especially an arm or a leg, away from yourself
	extension (n.)	/ɪkˈstenʃn/	розгинання	
	extensor (n.)	/ɪkˈstensɔːr/	розгинач	
	extended (adj.)	/ɪkˈstendɪd/	розігнаний	
11.	**flex (v.)**	/fleks/	згинати	to bend, move or stretch an arm or a leg, or contract a muscle
	flexion (n.)	/ˈflɛkʃ(ə)n/	згинання	
	flexor (n.)	/ˈflɛksər/	згинач	
	flexed (adj.)	/flekst/	зігнений	
12.	**rotate (v.)**	/rə(ʊ)ˈteɪt/	обертати	to move or cause to move in a circle round an axis or centre
	rotation (n.)	/rə(ʊ)ˈteɪʃ(ə)n/	обертання	
	rotator (n.)	/rə(ʊ)ˈteɪtər/	обертач	
	rotated (adj.)	/rəʊˈteɪtɪd/	обернений	
13.	**pronate (v.)**	/ˈprəʊneɪt/	пронувати	turn or hold (a hand, foot, or limb) so that the palm or sole is facing downwards or inwards
	pronation (n.)	/prəʊˈneɪʃən/	пронація	
	pronator (n.)	/prəʊˈneɪtər/	пронатор	
	pronated (adj.)	/ˈprəʊneɪtɪd/	пронований	
14.	**supinate (v.)**	/suːpɪˈneɪt/	супінувати	turn or hold (a hand, foot, or limb) so that the palm or sole is facing upwards or outwards
	supination (n.)	/suːpɪˈneɪʃən/	супінація	
	supinator (n.)	/ˈsuːpɪneɪtər/	супінатор	
	supinated (adj.)	/suːpɪˈneɪtɪd/	супінований	

15.	**tissue (n.)**	/ˈtɪʃuː/	тканина	any of the distinct types of material of which animals or plants are made, consisting of specialized cells and their products
16.	**fiber (n.)** **fibrous (adj.)**	/ˈfaɪbər/ /ˈfʌɪbrəs/	волокно волокнистий	a thread or filament from which a vegetable tissue, mineral substance, or textile is formed

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Discuss the following statements with your partner or in the group.

Check out these fascinating facts about the muscular system…

- The smallest muscles in the body are in your inner ear.
- Muscles cannot push, they can only pull. The reason the arm can push is muscles in the back of the arm pulling on the elbow!
- The strongest muscles in the body? Pound for pound, it is the muscles that you chew with – called the masseters!
- Humans are born with all of the muscle fibers they will ever have. They do not grow new fibers, they just grow thicker.
- If all of the muscles in the body could all pull in one direction, it would create a force of 25 tons!
- Smiling takes 17 muscles in the face, while frowning takes 43!
- The hardest working muscle in the body is the heart.
- Some of your busiest muscles are those controlling eye movements.
- Most of the heat produced in your body comes from muscle contraction.

Text 1

1. Read the text given below.

MUSCLES

The body is composed of four primary tissue types: **(1) epithelial tissue, (2) connective tissue, (3) nerve tissue and (4) muscle tissue**. Each has its own unique features that distinguish it from the other tissues. Tissues come together, both structurally and functionally, to form organs. Organs that have related functions are grouped together and described as an organ system.

There are 650 muscles in the human body. The muscles are fibers, characterized by **(1) contractility, (2) elasticity, (3) excitability and (4) extensibility**. The muscle consists of the muscular fibers connected together by connective tissue. Blood vessels and nerves are in the muscle. Muscles contraction and relaxation causes most body movements. The muscles are subdivided into three groups. These groups are the muscles of the trunk, head, and limbs.

Additionally, muscle tissue is sometimes described as striated or non-striated muscle tissue or voluntary or involuntary muscle tissue.

As for the **structure**, the muscles are divided into three major parts: **skeletal, cardiac, and smooth**. **Skeletal muscle** with its associated connective tissue comprises approximately 40% of the bod's weight and is responsible for facial expressions, posture, and many body movements. Its function is controlled by our consciousness. **Smooth muscles** are in the walls of hollow organs and tubes, in the internal portions of the eyes, in walls of blood vessels, and in other areas. Smooth muscles perform a variety of functions, including propelling urine through the urinary tract, mixing food in the stomach and intestine, dilating and constricting the pupil, and the regulation of blood flow through blood vessels. **Cardiac muscles** are found only in the heart, and their contractions provide the major force for propelling blood through the circulatory system. Unlike skeletal muscles, smooth and cardiac muscles contract spontaneously.

Categorization of Muscle Tissue			
Striated	**Non-striated**	**Voluntary**	**Involuntary**
Cardiac and Skeletal	Smooth	Skeletal	Cardiac and Smooth

As for the **form** of the muscles, they can be **long, short,** and **wide**. The **long** muscles form the limbs, the **short** ones compose the facial part, and the **wide** muscles form the walls of the body cavities.

Muscles are attached to bones, internal organs, and blood vessels. Most skeletal muscles extend from one bone to another and cross at least one joint. Some muscles of the face, however, are not attached to bone at both ends but they are attached to the skin, which moves when the muscles contract.

Muscles are **named** according to their **location, size, number of heads,** or **function**.

Location. Some muscles are named according to their location. For example, a pectoral (chest) muscle is located in the chest, and a brachial (arm) muscle is located in the arm.

Size. Muscle names may also refer to the size of the muscle. For example, the *gluteus maximus* (large) is the largest muscle of the buttock, and the *gluteus minimus* (small) is the smallest muscle of the gluteal group.

Shape. Some muscles are named according to their shape: the deltoid (triangular) muscle is triangular.

Orientation. Muscles are also named according to the structure of their fibers: an oblique muscle lies oblique to the longitudinal axis of the body.

Number of heads. The number of heads, which a muscle has, may also be used in naming the muscle. A biceps muscle has two heads.

Function (action). Muscles are also named according to their function. An abductor moves a structure away from the midline.

The collective functions of muscular system can be summarized as follows: (**1) movement, (2) support, (3) form sphincters at body entrances and exits, (4) posture, (5) and temperature homeostasis**; with each muscle contributing, in varying degrees, to these functions.

2. Answer the following questions.

1) What are the four primary tissue types in the human body?
2) What are the main characteristics of muscles?
3) What does a muscle consist of?
4) What major muscle groups do you know?
5) What are skeletal muscles responsible for?
6) Where are smooth muscles located?
7) What are the functions of smooth muscles?
8) Where is a cardiac muscle located? What is its function?
9) What do the terms “striated” and “non-striated” mean?
10) Which muscles can be characterized as striated? Why?
11) Which muscles can be characterized as non-striated? Why?
12) What do the terms “voluntary” and “involuntary” mean?
13) Which muscles can be characterized as voluntary? Why?
14) Which muscles can be characterized as involuntary? Why?
15) Where are long and short muscles located?
16) Where are wide muscles located?
17) How are the muscles named?
18) What muscles’ names do you know?
19) What are the collective functions of muscles?
20) How are the muscles classified?

3. Complete the following sentences.

1. The muscles of the human body are characterized by _____.
2. The muscles consist of the muscular fibers and contain _____.
3. Skeletal muscles with their associated connective tissue are responsible for _____.
4. Smooth muscles are located in the walls of blood vessels and hollow organs, _____ and other body regions.

5. Smooth muscles propel urine through the urinary tract, mix food in the intestine and stomach, _____ and perform many other functions.
6. The contractions of cardiac muscles provide the major force for _____.
7. Some facial muscles are not attached to bone _____.
8. The most muscles are named according to their _____.
9. The largest muscle of the buttock is _____.
10. The deltoid muscle has _____ shape.
11. An oblique muscle lies oblique to the _____.
12. The long muscles compose _____.
13. The short muscles form the _____ part.
14. Muscles are attached to bones, _____ and blood vessels.

4. a) Complete the table given below.

	Term	Derivative Adjective(s)	Word Combinations
1.	muscle		
2.	connect		
3.	contract		
4.	elasticity		
5.	excite		
6.	extend		
7.	flex		
8.	abduct		
9.	adduct		
10.	rotate		
11.	pronate		
12.	supinate		
13.	fiber		
14.	heart		
15.	skeleton		
16.	striate		
17.	face		
18.	dilate		
19.	constrict		
20.	propel		

b) In pairs, take turns to say a term and ask your partner to provide the adjective for it together with the word combination, or give an adjective and ask for the term.

5. a) Study the table "Major Muscles: Origins, Insertions, and Actions". Use Appendix IV "Gross Anatomy of the Muscular System" to help you.

MAJOR MUSCLES: ORIGINS, INSERTIONS, AND ACTIONS

Muscle Name	*Muscle Location*	*Muscle Origin*	*Muscle Insertion*	*Muscle Action*
Biceps brachii	anterior upper arm	scapula	radius	flexes arm at the elbow
Triceps brachii	posterior upper arm	proximal humerus & scapula	posterior ulna (proximal)	extends arm at the elbow
Orbicularis oculi	encircles eye	frontal, maxilla, and orbit	eyelid	closes eyelid
Masseter	jaw or mandible	zygomatic arch	mandible	closes jaw
Sternocleidomastoid	anterolateral neck	sternum & clavicle	mastoid process	flexes and rotates head
Pectoralis major	chest	clavicle, ribs, sternum	proximal humerus	flexes, rotates, and adducts arm
Deltoid	shoulder	clavicle & scapula	proximal humerus	abducts arm
Intercostals:	between ribs			assist in ventilation
external		inferior rib	superior rib	elevate rib cage
internal		superior rib	inferior rib	depress rib cage
Diaphragm	floor of thoracic cavity	inferior rib cage & sternum	central tendon	prime mover of inspiration
Gluteus maximus	buttocks	ilium, sacrum, & coccyx	proximal femur	extends thigh
Hamstring group	posterior portion of thigh	ischium	tibia	flexes leg at knee
Quadriceps group	anterior portion of thigh	pelvis	patella & tibia	extends leg at knee
Tibialis anterior	anterior of lower leg	proximal tibia	metatarsals	dorsiflexes foot
Gastrocnemius	main muscle of calf (posterior lower leg)	distal femur	calcaneus via calcaneal (Achilles) tendon	plantar flexes foot
Vastus lateralis	anterior thigh	femur	tibia	extends the leg; also used as site for njections

b) In pairs, take turns to ask your partner about locations, origins, insertions and actions of the muscles listed in the table.

c) Explain the relationship between the origin, insertion, and action of skeletal muscles.

6. Fill in the blanks to check your understanding of the table "Major Muscles: Origins, Insertions, and Actions".

1) The _____ are the primary knee flexors.

2) The _____, knee extensors, originate on the _____ and insert on the _____ and _____.

3) The _____ originates on the sternum and clavicle and inserts on the mastoid process.

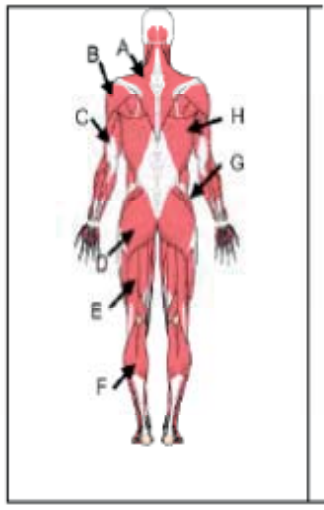
4) This muscle inserts via the Achilles tendon _____.

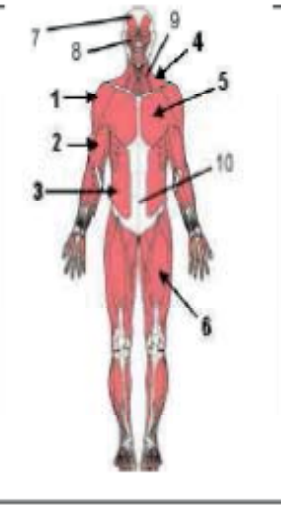
5) The _____, an elbow flexor, is the antagonist of the _____, an elbow extensor.

6) Ben is in the middle of the Olympic trials for the 400-meter hurdles when he falls to the ground, clutching his leg. Upon examination he has pain in the posterior thigh and cannot flex his knee. Which muscles are injured? _____

7) The muscle in the leg used for an injection site is _____.

7. a) Work with a partner, discuss and decide on the best classification for the muscles identified by the letters and numbers on the muscle figures. Name the muscles labeled with the letters and numbers. Use Appendix IV "Gross Anatomy of the Muscular System".





Axial:	Appendicular:

b) In pairs, take turns to say a muscle name ask your partner whether it is axial or appendicular.

c) List criteria for naming skeletal muscles and give examples.

8. Insert the missing prepositions (on, to, in, for, of, over).

1. The muscles form approximately 40% ___ the body weight. 2. The long muscles compose the free limbs, and the wide ones lie ___ the trunk and form the walls of the body cavities. 3. Muscles are attached ___ the bones, internal organs, and blood vessels. 4. They allow us to make internal or external movements due ___ their contraction and relaxation. 5. As ___ the structure of the muscles there are three types of them: striated (skeletal) muscles, smooth

(visceral) muscles, and a cardiac muscle. 6. The striated muscles move all the bones, face, and eyes ___ the human body. 7. The smooth muscles move the internal organs such as the organs ___ the digestive tract, blood vessels, and secretory ducts. 8. We have no control ___ visceral muscles and a cardiac muscle. 9. There are many nerves and blood vessels ___ the muscles.

9. Insert the missing words and word combinations given below.

to produce; are equipped; is called; spinal cord; tendons; internal organs; throughout; smooth; skeletal; weight.

1. Muscle is attached to bone by _____ and other tissues.
2. Muscles are made up of millions of tiny protein filaments, which work together _____ motion in the body.
3. Each of more than 600 muscles is served by nerves, which link the muscle to the brain and _____.
4. We _____ with three types of muscles.
5. Cardiac muscles, found only in the heart, power the action that pumps blood _____ the body.
6. Smooth muscles surround or are part of the _____.
7. Both cardiac and _____ muscles are called involuntary muscles, because they cannot be consciously controlled.
8. The third type of muscles _____ skeletal muscles.
9. The _____ muscles carry out voluntary movements.
10. Skeletal muscles are the body's most abundant tissue, comprising about 23% of a woman's body _____ and about 40% of a man's body _____.

10. In pairs, speak on the muscles' location, size, shape, orientation, and functions. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again.

11. Work with a partner and match the muscle with its criterion or criteria for naming. One blank indicates one criterion.

Muscle name	Criteria for naming
1. Tibialis anterior _____ _____ 2. Gluteus medius _____ _____ 3. Deltoid _____ 4. Pectorialis major _____ _____ 5. Rectus femoris _____ _____ 6. Triceps brachii _____ _____ 7. Trapezius _____ 8. Frontalis _____ 9. Flexor carpi ulnaris _____ _____ _____ 10. Vastus medialis _____ _____	A. shape of the muscle B. number of heads / special feature of the size of the muscle C. location of the muscle in the body D. size of the muscle E. orientation of muscle relative to axis of the body F. function (action) of the muscle

Text 2

1. Read the text given below.

MOVEMENT TERMINOLOGY

Certain terms are utilized to describe the direction of body movement.

Rotation describes circular movement that occurs around an axis. Rotation occurs, for example, when you turn your head from left to right or right to left.

Circumduction is the movement of a limb in a circle. Making arm circles is an example of circumduction.

Abduction means to move *away* from the midline of the body. When you raise your arm to point when giving directions, you are performing abduction.

Adduction occurs when you produce a movement that moves *toward* the midline of the body. When you bring your arm back down to your side from pointing, you are performing adduction.

Extension is a term used for *increasing* the angle between two bones connected at a joint. Extension is needed when you kick a football. In this situation, extension occurs when your leg straightens during the kick. The muscle that straightens the joint is called the **extensor muscle**.

Flexion is the opposite of extension. In this situation, you *decrease* the angle between two bones. Flexion occurs when you bend your legs to sit down. Flexion and rotation occur when you get your arm into position to arm wrestle. The muscle that bends the joint is called the **flexor muscle**.

Pronation describes a rotational movement of the forearm that results in the palm facing *posteriorly*. It is a dynamic movement of the foot that includes dorsiflexion, eversion, and abduction. The term pronation is sometimes inappropriately used to signify dysfunctional foot mechanics. Pronation is a normal part of movement, but excessive pronation is called *overpronation* or *hyperpronation*. Overpronation occurs when an individual moves either too far or too fast through the phases of pronation, placing more weight on the medial side of the foot during gait.

Supination describes the motion of turning the palm *anteriorly*. Most often these motions occur with the hands in front of the body to accommodate grasping and holding types of activities, so supination is considered turning the palm of the hand *upward*, and pronation is considered turning the palm *downward*.

2. In pairs, take turns to ask your partner about what particular muscle actions mean and give examples of movements (situations) when the they can occur.

3. a) Work with a partner and match the muscle actions in column A with their general descriptions in column B. Use Appendix IV "Types of Muscle Actions". Discuss the meanings of the words in bold print and create your own sentences using these words.

A	B
1. Abduction ___ 2. Adduction ___ 3. Extension ___ 4. Flexion ___ 5. Rotation ___ 6. Pronation ___ 7. Supination ___ 8. Circumduction ___	A. **Bending** over at the **waist** to pick up something from the floor. (vertebral column) B. **Turning** your **head** from left to right to say "no". (vertebral column) C. Bringing your hand up to **rub** your **eye**. (elbow) D. **Lifting** a **bag** of groceries out from your side. (shoulder) E. Turning a **knob** on a radio **counter clockwise**. (wrist) F. **Pushing** a **door** open. (elbow) G. **Performing** a **serve** in tennis. (wrist) H. Turning a **knob** on a radio **clockwise**. (wrist)

b) In pairs, take turns to name a muscle action and ask your partner to provide the description of it, or describe a muscle action and ask for the muscle action name.

4. Work with a partner and examine the four pictures and then decide which of the descriptions below match what is seen in the pictures. Use Appendix IV. Discuss with your partner the exact meaning of the words in bold print. Number 1 has been done as an example.

Muscle Actions

A

B

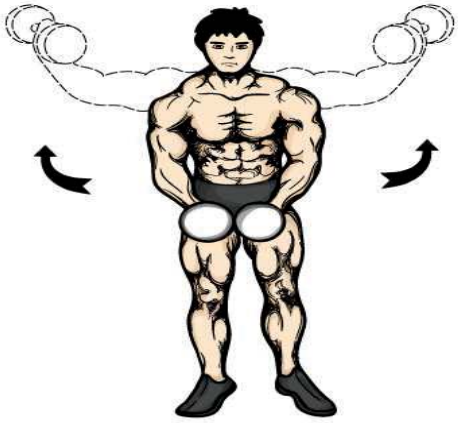
C

D

1. Elbows **fully extended**. A, B, C (not D)
2. Knees **flexed**.
3. Spine **extended**.
4. Neck **rotated**.
5. Digits of the hand **extended**.
6. Spine **flexed anteriorly**.
7. Wrists **hyper-extended**.
8. Neck **partially hyper-extended**.
9. Spine **flexed laterally**.
10. Arms **abducted**.
11. Digits of the hand **flexed**.
12. Neck **partially flexed**.
13. Thighs **flexed**.
14. Thighs **extended**.
15. Digits of the hand **abducted**.
16. Digits of the hand **adducted**.

5. Work with a partner. Have your partner use one or two small objects to simulate the dumbbells. Take turns giving detailed instructions for correct body positions and movements needed to do the exercises shown in pictures A – H. Make sure to describe the desired starting and ending positions, distance between arms, legs, feet and hands, palms forward, palms backward, elbows bent, elbow straight, knees bent, knees straight, etc. Use exercises 10 and 11. Use Appendix IV "Types of Muscle Actions". Swap roles and practice again.

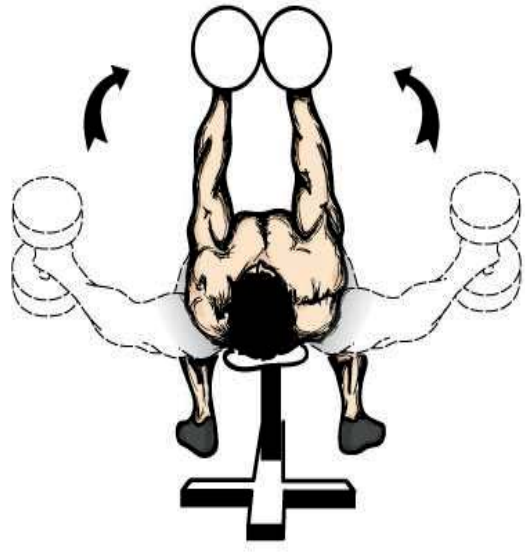
A



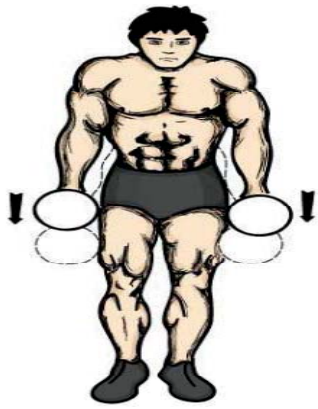
B

C

D



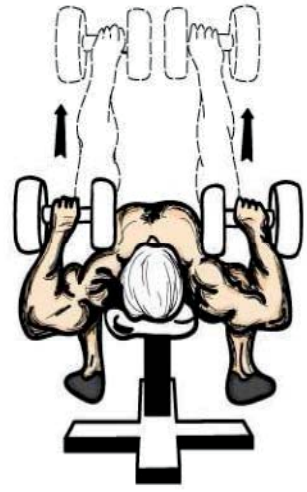
E



F

G

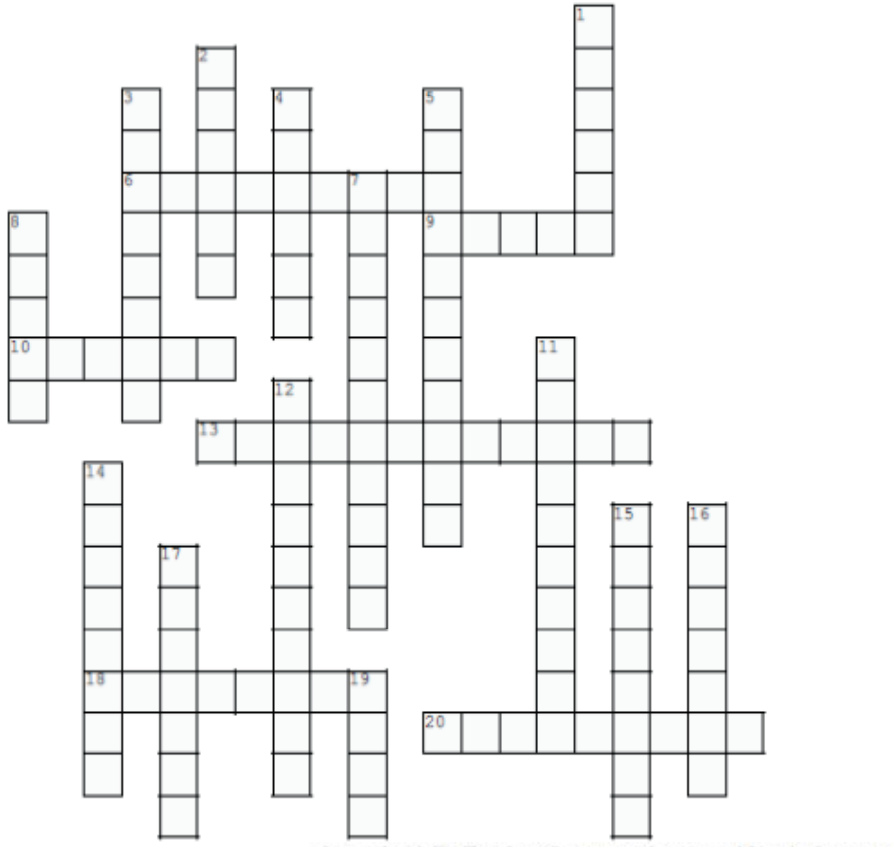
H



6. Complete the crossword “Muscular System”.

Muscular System

Complete the crossword below



Created with TheTeachersCorner.net Crossword Puzzle Generator

Across

6. A movement away from the mid-line of the body
9. Quadriceps is located in the...
10. 'To join' in other words
13. Any of of the skeletal muscles of the limbs
18. A movement in which a muscle revolves around a single long axis
20. Rotation of the hand and forearm so that the palm faces backwards or downwards

Down

1. Muscles located in walls of hollow organs and tubes
2. A flexible but inelastic cord of strong fibrous collagen tissue attaching a muscle to a bone
3. Arm muscle
4. A muscle with two heads
5. Activation of tension-generating sites within muscle fibers
7. An uncontrollable andunintended movement of muscles
8. A skeletal muscle of the trunk or head
11. he lengthening that characterizes inactive muscle fibers or muscles
12. One of four primary tissue types
14. Chest muscle
15. A muscle that is characterized by transverse stripes
16. A movement decreasing the angle between articulating bones
17. A triangular muscle
19. Trapezius is located in the....

7. Listen to the "Muscles Make You Stronger" Song and fill in the gaps. (Follow the link: https://www.youtube.com/watch?v=vvBWnQJHGBs**).**

"MUSCLES MAKE YOU STRONGER" SONG

You know your body _____ Coming from muscles You know that muscles _____ All the things you do Your body has got six-forty _____ muscles in fact Attached to the skeleton with _____ When it _____ pulls the bone But it can't come pushing back So you need another back to position Muscle _____ it makes you stronger Stand a little taller Tendons will _____them right to the bone _____ will give you movement Footsteps on the pavement _____ work all alone When muscles work, they will get _____, _____ Contract get small and _____ But they cannot go back get longer Need a muscles _____ They will work in _____ never alone You heard that cardiac muscles do _____ ____ your heart I'll tell you that they're _____, never tire, no no The upper set it will _____ Lower part blood _____ Lower _____ blood to arteries	Muscle _____ it makes you stronger Stand a little taller Tendons will _____them right to the bone _____ will give you movement Footsteps on the pavement _____ work all alone When muscles work, they will get _____, _____ Contract get small and _____ But they cannot go back get longer Need a muscles _____ They will work in _____ never alone Thanks to _____ organs in bodies Contract slowly rhythmically, not tired Thanks to them it moves the food inside me You know muscles contract and move food through your digestive system _____ intestines Muscle _____ it makes you stronger Stand a little taller Tendons will _____them right to the bone _____ will give you movement Footsteps on the pavement _____ work all alone When muscles work, they will get _____, _____ Contract get small and _____ But they cannot go back get longer Need a muscles _____ They will work in _____ never alone Never alone

RESPIRATORY SYSTEM

Active Vocabulary:

1.	**lateral (adj.)**	/ˈlætərəl/	бічний	connected with the side of something or with movement to the side
2.	**mediastinum (n.)**	/ˌmiːdɪəˈstʌɪnəm/	середостіння	a membranous partition between two body cavities or two parts of an organ, especially that between the lungs
3.	**pleura (n.) (plural: pleurae)**	/ˈplʊərə/ /ˈplʊəriː/	плевра	one of the two membranes that surround the lungs
4.	**apex (n.)**	/ˈeɪpeks/	вершина	the top or highest part of something
5.	**convex (adj.)**	/ˈkɒnveks/	опуклий	(of an outline or a surface) curved or rounded outward like the exterior of a sphere or circle
6.	**posterior (adj.)**	/pɒˈstɪərɪə(r)/	задній	located behind something or at the back of something
7.	**serous coat**	/ˈsɪrəs kəʊt/	серозна оболонка	a thin layer of tissue that covers a surface, lines a cavity, or divides a space or organ
8.	**visceral (adj.)**	/ˈvɪsərəl/	вісцеральний	relating to the viscera
9.	**parenchyma (n.)**	/pəˈrɛŋkɪmə/	паренхіма	the functional tissue of an organ as distinguished from the connective and supporting tissue
10.	**diaphragm (n.)**	BrE /ˈdʌɪəfram/ AmE /ˈdaɪəfræm/	діафрагма	a dome-shaped muscular partition separating the thorax from the abdomen in mammals. It plays a major role in breathing, as its contraction increases the volume of the thorax and so inflates the lungs
	diaphragmatic (adj.)	/ˌdaɪəfrægˈmætɪk/	діафрагмальний	

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Discuss the following statements with your partner or in the group.

Check out these fascinating facts about the respiratory system…

- The lungs are the only organs that can float on water.
- If the lungs were unfolded and expanded out to their fullest size, they would be roughly the size of a tennis court.
- A portion of the air you breathe never reaches the alveoli. It is referred to as dead air because it is not used in gas exchange.
- Chest movement during breathing is not the result of air movement.
- It is possible to live with just one lung.
- We do not have to think about breathing because the medulla oblongata – a part of the brainstem – triggers us to inhale.
- Most people only breathe through one nostril at a time. Some people notice that which nostril being used switches at sunrise and sunset.
- Some people can hold their breath for more than 20 minutes.

Text 1

1. Read the text given below.

THE LUNGS

The lungs are the main organs of the respiratory system. There are two lungs in the human body located in the lateral cavities of the chest. The lungs are separated from each other by the mediastinum. The lungs are covered with the pleura. They are conical in shape. Each lung has the base, apex, two borders and three surfaces.

The lung has the apex extending upward 3-4 centimetres above the level of the first rib.

The base of the lung is located in the convex surface of the diaphragm.

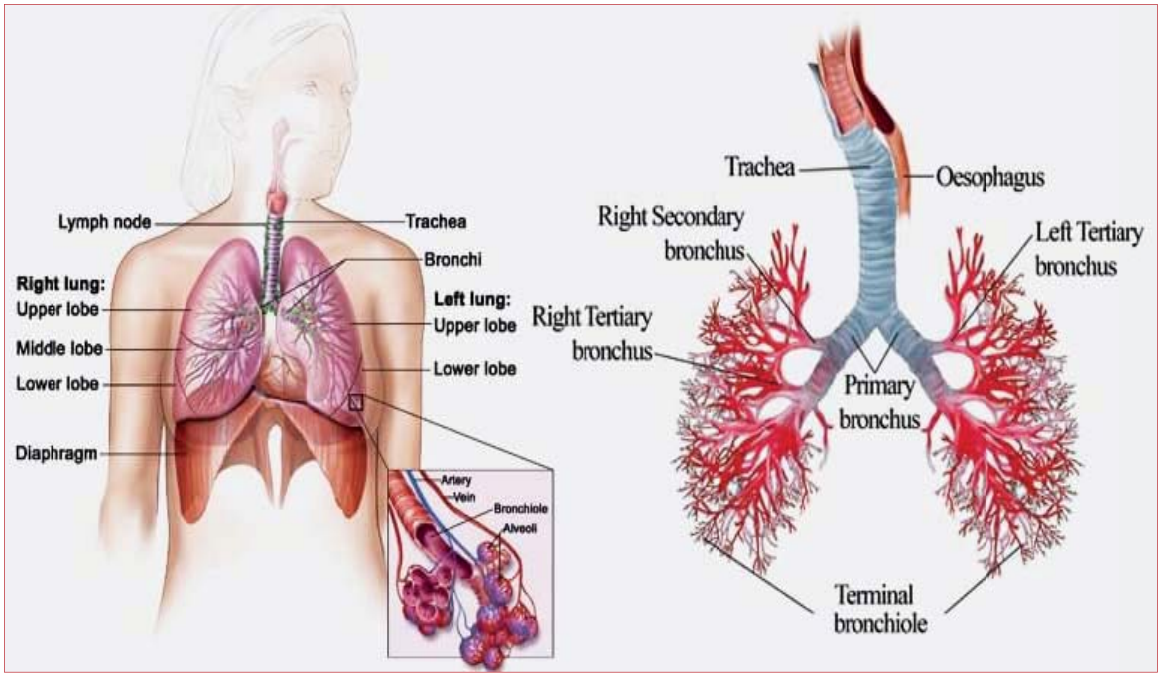
The posterior borders of the lungs are on each side of the spinal column. The anterior borders thin and overlap the pericardium.

The weight of the lungs varies according to many conditions. In the adult male the weight of the lungs is about 1,350 gr. The right lung is about 15% heavier than the left one. The vital capacity of the lungs is 3.5-4 litres in the male and it is 3-3.5 litres in the female.

The right lung consisting of three lobes is heavier than the left one because the latter consists only of two lobes. The lower lobe of the left lung is larger than the upper one.

In infants the lungs are of a pale rose colour, but later they become darker.

The lung is covered with an external serous coat, i.e. with visceral layer of the pleura. The parenchyma or proper substance of the lungs consists of the bronchial tree with elastic tissue and vessels.



2. Provide answers to the following questions.

1) What are the lungs?
2) Where are the lungs situated?
3) Are the lungs separated from each other?
4) What are the lungs covered with?
5) What is the shape of lungs?
6) What structure do the lungs have?
7) Where is the apex of the lung located?
8) Where is the base of the lung located?
9) Where are the borders of the lungs located?
10) What is the weight of each lung?
11) Are the lungs the same size?
12) What is the structure of the lungs?

13) What colour are the lungs?
14) What is the vital capacity of the lungs?
15) How many surfaces are the lungs covered with? Name them.

3. In pairs, practice explaining the structure of the lungs. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again. Use Appendix V.

4. Grammar spot. Study the plural forms of the following words from the text "Respiratory System". Practise their pronunciation.

bronchus (plural: bronchi)	/ˈbrɒŋkəs/ /ˈbrɒŋkaɪ/	бронх	any one of the system of tubes which make up the main branches of the windpipe through which air passes in and out of the lungs
alveolus (plural: alveoli)	/ælˈviːələs/ /ælˈviːəlaɪ/, /ælˈviːəliː/	альвеола	one of the many small spaces in each lung where gases can pass into or out of the blood
cilium (plural: cilia)	/ˈsɪlɪəm/ /ˈsɪlɪə/	війка	a short, microscopic, hair-like vibrating structure

Text 2

1. Read the text given below.

THE RESPIRATORY SYSTEM

Breathing is the process that brings oxygen in the air into your lungs and moves oxygen through your body. Our lungs remove the oxygen and pass it through our bloodstream, where it is carried off to the tissues and organs that allow us to walk, talk, and move. Our lungs also take carbon dioxide from our blood and release it into the air when we breathe out.

The **SINUSES** are hollow spaces in the bones of your head. Small openings connect them to the nasal cavity. The sinuses help to regulate the temperature and humidity of air you breathe in, as well as to lighten the bone structure of the head and to give tone to your voice.

The **NASAL CAVITY** (nose) is the best entrance for outside air into your respiratory system. The hairs that line the inside wall are part of the air-cleansing system.

Air can also enter through your **ORAL CAVITY** (mouth), especially if you have a mouth-breathing habit or your nasal passages may be temporarily blocked.

The **ADENOIDS** are overgrown lymph tissue at the top of the throat. When your adenoids interfere with your breathing, they are sometimes removed. The lymph system, consist-

ing of nodes (knots of cells) and connecting vessels, carries fluid throughout the body. This system helps your body resist infection by filtering out foreign matter, including germs, and producing cells (lymphocytes) to fight them.

The **TONSILS** are lymph nodes in the wall of your pharynx. Tonsils are not an important part of the germ-fighting system of the body. If they become infected, they are sometimes removed.

The **PHARYNX** (throat) collects incoming air from your nose and passes it downward to your trachea (windpipe).

The **EPIGLOTTIS** is a flap of tissue that guards the entrance to your trachea. It closes when anything is swallowed that should go into the esophagus and stomach.

The **LARYNX** (voice box) contains your vocal cords. When moving air is breathed in and out, it creates voice sounds.

The **ESOPHAGUS (gullet)** is the passage leading from your mouth and throat to your stomach.

The **TRACHEA** (windpipe) is the passage leading from your pharynx to the lungs.

The **RIBS** are bones supporting and protecting your chest cavity. They move a small amount and help the lungs to expand and contract.

The trachea divides into the two main **BRONCHI** (tubes), one for each lung. The bronchi, in turn, subdivide further into bronchioles.

The **RIGHT LUNG** is divided into three **LOBES**, or sections.

The **LEFT LUNG** is divided into two **LOBES**.

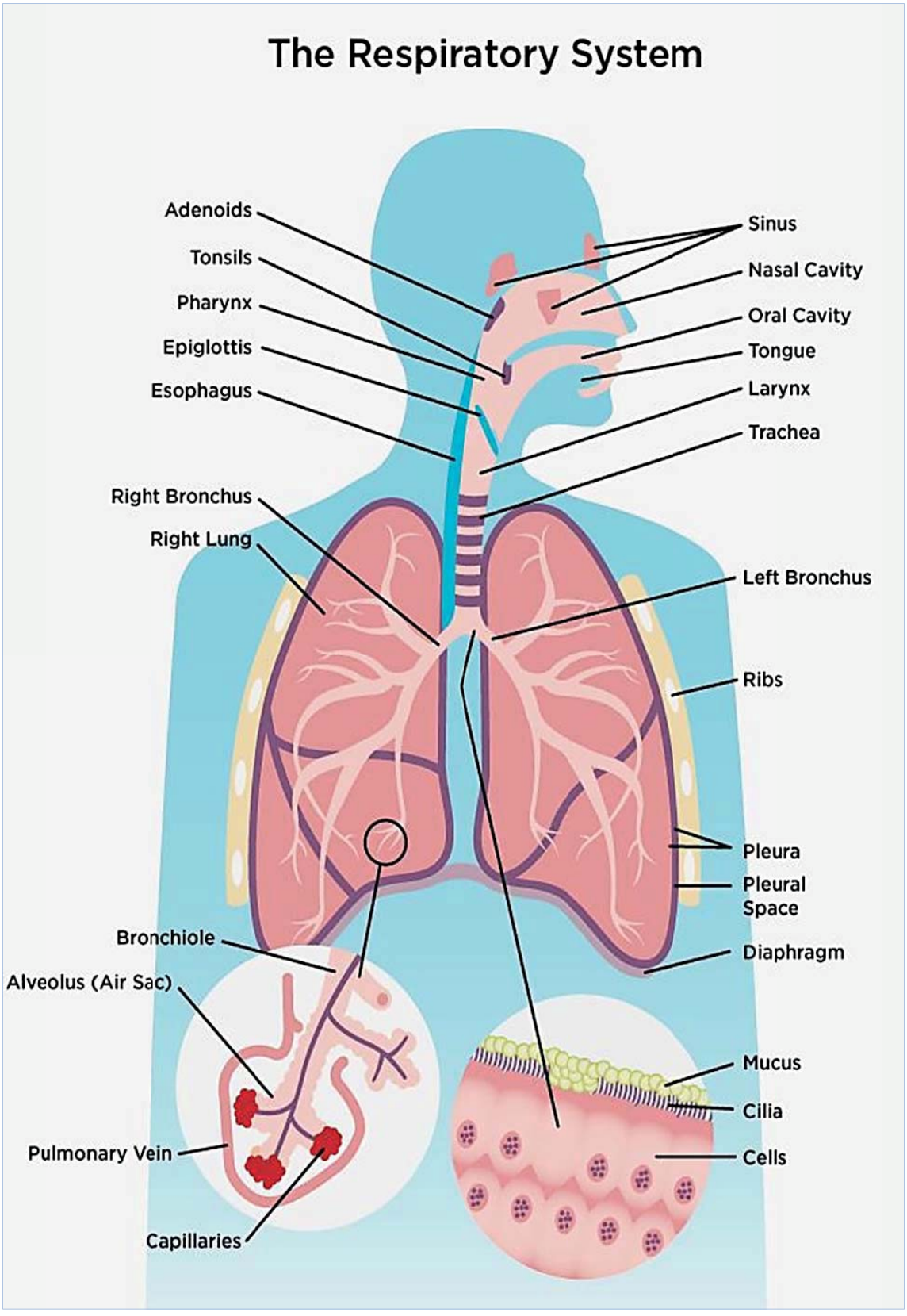
The **PLEURA** are the two membranes that surround each lobe of your lungs and separate the lungs from your chest wall.

The bronchial tubes are lined with **CILIA** (like very small hairs) that have a wave-like motion. This motion carries **MUCUS** (sticky phlegm or liquid) upward and out into the throat, where it is either coughed up or swallowed. The mucus catches and holds much of the dust, germs, and other unwanted matter that has invaded your lungs. Your lungs get rid of the mucus through coughing.

The **DIAPHRAGM** is the strong wall of muscle that separates your chest cavity from your abdominal cavity. By moving downward, it creates suction to draw in air and expand the lungs.

The smallest section of the bronchi is called **BRONCHIOLES**, at the end of which are the alveoli (plural of alveolus).

The **ALVEOLI** are the very small air sacs that are the destination of air that you breathe in. The **CAPILLARIES** are blood vessels that are imbedded in the walls of the alveoli. Blood passes through the capillaries, brought to them by the **PULMONARY ARTERY** and taken away by the **PULMONARY VEIN**. While in the capillaries, the blood moves carbon dioxide into the alveoli and takes up oxygen from the air in the alveoli.


The Respiratory System
Adenoids
Tonsils
Pharynx
Epiglottis
Esophagus
Right Bronchus
Right Lung
Bronchiole
Alveolus (Air Sac)
Pulmonary Vein
Capillaries
Sinus
Nasal Cavity
Oral Cavity
Tongue
Larynx
Trachea
Left Bronchus
Ribs
Pleura
Pleural Space
Diaphragm
Mucus
Cilia
Cells

2. Provide answers to the following questions.

1) What are the main parts of the respiratory system?
2) What are the sinuses? Where are they located? What are their functions?
3) What is the nasal cavity? What is its function?
4) What is the oral cavity? What function does it perform in terms of respiration?
5) What are adenoids? Where are they located? What is their function? Can they interfere with breathing?
6) What are the tonsils? Where are they located? What function do they perform?
7) What are pharynx and larynx? What functions do they perform?
8) What are the functions of ribs? Where are they located?
9) What are the functions of the diaphragm? Where is it located?
10) Where are bronchioles located? What is their structure and functions?
11) What is mucus? What function does it perform?
12) What are cilia? What functions do they perform?

3. Fill in the table given below.

Part of the Respiratory System	Location	Structure	Function(s)

4. In pairs, practice explaining functions and importance of respiratory organs and their parts in the process of respiration. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again.

5. Read the list of new words and phrases from the Active Vocabulary to the text "The Process of Respiration". Practise pronouncing them:

Active Vocabulary:

respiration	ˌrɛspəˈreɪʃən	дихання
gas exchange	gæs ɪksˈʧeɪnʤ	газообмін
carbon dioxide (***also***: gas carbon)	ˈkɑːbən daɪˈɒksaɪd **(**gæs ˈkɑːbən)	діоксид вуглецю (також: вуглекислий газ)
to occur	əˈkɜː	відбуватися
nare (***also:*** nostril)	neə **(**ˈnɒstrɪl)	ніздря
cilia	ˈsɪlɪə	вії (у носовій порожнині)
mucous	ˈmjuːkəs	слизовий
mucus	ˈmjuːkəs	слиз
moisten	ˈmɔɪsn	зволожуватися
passageway	ˈpæsɪʤweɪ	прохід
epiglottis	ˌɛpɪˈglɒtɪs	надгортанник, надгортанний хрящ
flap	flæp	клапан
to swallow	ˈswɒləʊ	ковтати
to prevent from	prɪˈvɛnt frɒm	запобігати від
vocal folds (***also:*** vocal cords)	ˈvəʊkəl fəʊldz (ˈvəʊkəl kɔːdz)	голосові зв’язки
to collapse	kəˈlæps	послаблювати (-ся), стискати (-ся)
spongy	ˈspʌnʤi	губчастий
breathing	ˈbriːðɪŋ	дихання
to breathe	briːð	дихати
breath	brɛθ	подих
to breathe in = to inhale	briːð ɪn / ɪnˈheɪl	вдихати
to breathe out = to exhale	briːð aʊt / ɛksˈheɪl	видихати
expansion	ɪksˈpænʃən	розширення
to expand	ɪksˈpænd	розширюватися
contraction	kənˈtrækʃən	скорочення
to contract	ˈkɒntrækt	скорочуватися
to subdivide	ˌsʌbdɪˈvaɪd	поділяти (-ся), підрозподіляти (-ся)
branch	brɑːnʧ	гілка, відгалуження
single-layer	ˈsɪŋgl-ˈleɪə	одношаровий

cell	sɛl	клітина
to take place	teɪk pleɪs	відбуватися
oxygenated air	ɒkˈsɪʤɪneɪtɪd eə	збагачене киснем повітря
diffusion	dɪˈfjuːʒən	дифузія, розповсюдження
to diffuse	dɪˈfjuːs	розповсюджуватися, поширюватися

6. a) Complete the text with the missing words from the box below.

cavity air alveoli carbon dioxide pharynx nares cells blood respiratory oxygen bronchial breathing larynx

The Process of Respiration

The _____ system moves air through the nose, pharynx, larynx, trachea, and bronchus to the _____ where the gas exchange between oxygen and carbon dioxide occurs.

_____ are the openings to the nose. The nasal _____ is lined with cilia, mucous membranes, and blood capillaries. The air is filtered by cilia, moistened by mucous membranes, and warmed by the _____.

Air moves into the _____ or throat – the common passageway for food and air. Air continues on to the _____. The epiglottis, a flap of tissue in front of the larynx, closes off the larynx when swallowing to prevent food from entering. A larynx, or voice box, contains the vocal folds.

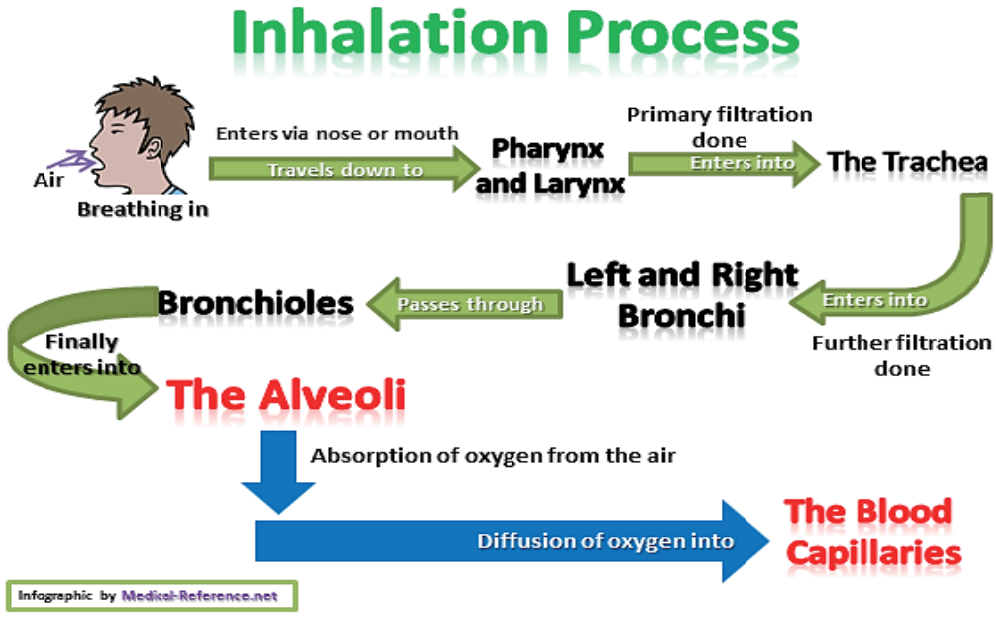
The trachea, or wind pipe, connects the larynx to the _____ tree. The cartilage rings of the trachea prevent the trachea from collapsing.

Lungs are spongy tissue with alveoli and blood capillaries. _____ occurs because of the expansion and contraction of the lungs. The bronchi, carrying the air, subdivide into smaller branches called bronchioles. At the end of each bronchiole are the alveolar sacs. The alveolar sacs are surrounded by blood capillaries and contain millions of single-layer alveoli _____, where the gas exchange takes place.

Oxygenated _____ goes from the nose to the pharynx, larynx, trachea, and bronchus, and alveoli. By the process of diffusion _____ in the air moves from alveoli to the capillaries. _____ _____ moves from the capillaries to the alveoli, and is exhaled. This process is called respiration.

b) Listen to the recording of the text "The Process of Respiration" and check your answers. (Follow the link: https://www.youtube.com/watch?v=zRv5tNCMpyY&t=7s).

7. Study the scheme of respiration (inhalation) process given below. Then describe it in a chain. Use the list of new words and phrases before the text.



8. a) Match the nouns on the left with their derivative adjectives on the right.

1.	lung	**a.**	alveolar
2.	lobe	**b.**	laryngeal
3.	bronchus	**c.**	nasal
4.	pharynx	**d.**	tonsillar
5.	larynx	**e.**	spongy
6.	trachea	**f.**	thoracic
7.	alveolus	**g.**	pulmonary
8.	nose	**h.**	diaphragmatic
9.	mouth	**i.**	pharyngeal
10.	thorax	**j.**	bronchial
11.	spine	**k.**	tracheal
12.	diaphragm	**l.**	oxygenated
13.	mucus	**m.**	costal
14.	pleura	**n.**	lingual
15.	voice	**o.**	cellular
16.	sponge	**p.**	mucous
17.	cell	**q.**	vocal
18.	oxygen	**r.**	pleural
19.	rib	**s.**	spinal
20.	tonsil	**t.**	lobar
21.	tongue	**u.**	oral

b) In pairs, take turns to say a noun and ask your partner to provide the adjective for it, or give an adjective and ask for the noun.

c) Try to recall as many word combinations with adjectives from the table as you can.

9. a) Match the medical terms (1-7) to their meanings (a-g).

1.	inspiration	**a.**	at four litres per minute
2.	inspiratory rate	**b.**	the rate at which a person breathes out (expressed as breaths per minute)
3.	respirations	**c.**	breaths – that is, movement of air in and out of the lungs
4.	respiratory rate	**d.**	the rate at which a person breathes in (expressed as breaths per minute)
5.	expiration	**e.**	breathing in
6.	expiratory rate	**f.**	the rate at which a person breathes is and out (expressed as breaths per minute)
7.	@4l/min	**g.**	breathing out

b) In pairs, take turns to say a word and ask your partner to define it, or give a definition and ask for the word.

10. a) Provide synonyms for the terms listed below.

	Term	**Synonym(s)**
1.	contract	
2.	expand	
3.	breathe in	
4.	breathe our	
5.	vocal fold	
6.	nostril	
7.	nose hair	
8.	mouth	
9.	throat	
10.	voice box	
11.	gullet	
12.	wind pipe	
13.	lateral	
14.	posterior	
15.	anterior	
16.	mucus	
17.	gas carbon	

b) In pairs, take turns to say a term and ask your partner to provide the synonym(s) for it, or give any synonym out of the list and ask for the term.

11. a) Provide antonyms for the terms listed below.

	Term	Antonym(s)
1.	breathe in	
2.	oxygenated	
3.	contract	
4.	swallow	
5.	posterior	

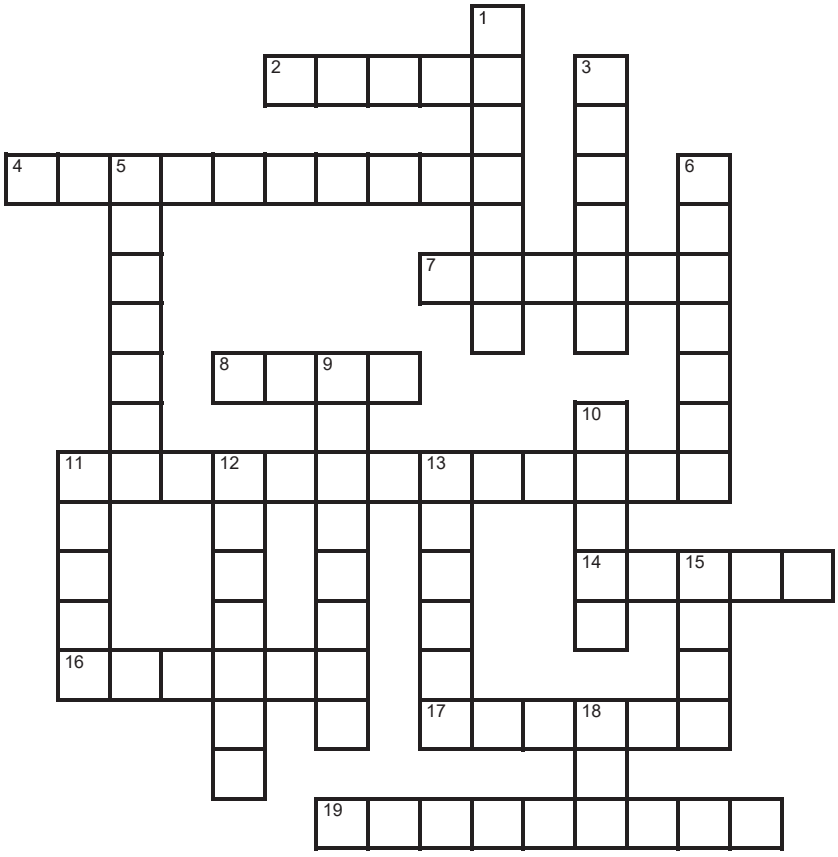
b) In pairs, take turns to say a term and ask your partner to provide the antonym(s) for it, or give any antonym out of the list and ask for the term.

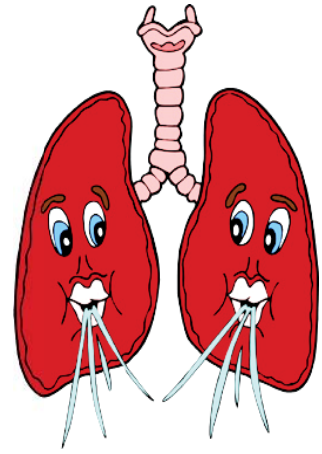
12. Answer TRUE (T) or FALSE (F) to these statements about respiration.

1.	Respiration occurs in the lungs.	
2.	Each lung consists of two lobes.	
3.	The blood transports oxygen to every cell in the body.	
4.	Carbon dioxide is a waste product of respiration.	
5.	The vital capacity of the lungs is the same in males and females.	
6.	The circulatory system is an important part of respiration.	
7.	There are about three hundred million alveoli in your lungs.	
8.	In adults lungs are of a pale rose colour.	
9.	Alveoli are muscles attached to the base of your lungs.	
10.	There are capillaries surrounding your alveoli.	
11.	Breathing, like other types of body movement, requires the use of muscles.	
12.	The walls of the alveoli and capillaries are very thick and nothing can pass into or out of the alveoli or capillaries.	
13.	Your trachea is connected to your bronchi.	
14.	The word “inhale” means to “breathe out”.	
15	The word “exhale” means to “breathe in”.	
16.	Oxygen that you breathe in travels to the lungs and passes from the alveoli into blood.	

13. Complete the “The Respiratory System” crossword.

The Respiratory System





Across

2. One of two places where air enters your body.

4. When we exhale, we breathe this plus carbon dioxide.

7. You do this when something irritates your nose.

8. You do this when you don't get enough oxygen to your blood.

11. A gas that you breathe out. It is a waste gas.

14. The place where oxygen enters the blood.

16. You do this when something irritates your diaphragm.

17. Breathe out.

19. Large muscle that controls the lungs.

Down

1. This prevents food from going down your lungs.

3. All animals need this gas to make energy from food.

5. Scientific name for the windpipe.

6. Inhale and exhale.

9. Common name for the trachea.

10. Fish have these instead of lungs.

11. You do this when something irritates your trachea or bronchi.

12. Two tubes that connect the trachea to the lungs.

13. Breathe in.

15. One of two places where air enters your body.

18. What we breathe.

14. Listen to the song "Respiratory System" and fill in the gaps. (Follow the link: https://www.youtube.com/watch?v=p4zOXOM6wgE&t=18s).

"RESPIRATORY SYSTEM" SONG

Each day I'm _____ air in,
I'm _____ air in
The air is sucked through
_____ and _____
_____ it warms and moistens, it warms and moistens
The _____ the air goes down

Yeah, the _____ divides in two
Both primary _____ too
And you know it do, know it do
Yeah, branch off tertiary too
And then branching narrow tubes,
_____

Let's go, respiratory system is made of your _____
And passages that lead them
_____ to _____
It travels round your body organs, everyone
Breathe out _____
_____
And these are the lungs
Oh...
Oh...
And these are the lungs
Oh...
That's right it's the lungs
Respiratory system

Each bronchiole's a cluster, an air sac cluster
_____, they do engulf
Oxygen through _____ to
_____
_____ respiration's done

Get out, _____
_____ removed
Body breathing out for you, make it right

Let's go, respiratory system is made of your
_____
And passages that lead them _____ to
_____
It travels round your body organs, everyone
Breathe out _____ _____
And these are the lungs
Oh...
Oh...
And these are the lungs
Oh...
That's right it's the lungs
Respiratory system

Ventilation, that is right, _____ flattens, it rises for life
The respiratory system
The respiratory system

Let's go, respiratory system is made of your
_____
And passages that lead them _____ to
_____
It travels round your body organs, everyone
Breathe out _____ _____
And these are the lung

Respiratory system is made of your _____
And passages that lead them _____ to
_____
It travels round your body organs, everyone
Breathe out _____ _____
And these are the lungs

Respiratory, respiratory, respiratory system
Respiratory, respiratory, respiratory system
Respiratory, respiratory, respiratory system

That's right, it's the lungs
Respiratory system

DIGESTIVE SYSTEM

Active Vocabulary:

1.	**alimentary (adj.)**	/alɪˈmɛnt(ə)ri/	травний	relating to nourishment or sustenance
2.	**digestive (adj.)**	/dʌɪˈdʒɛstɪv/, /dɪˈdʒɛstɪv/	травний	- relating to the process of digesting food; - break down (food) in the alimentary canal into substances that can be absorbed and used by the body; - the process of digesting food
	digest (v.)	/dʌɪˈdʒɛst /, /dɪˈdʒɛst/	перетравлювати	
	digestion (n.)	/dʌɪˈdʒɛstʃ(ə)n/, dɪˈdʒɛstʃ(ə)n/	травлення	
	digested /	BrE /dɪˈdʒestɪd/ AmE /ˈdaɪˌdʒestəd/	перетравлений /	
	undigested (adj.)	BrE /ʌndɪˈdʒɛstɪd/ AmE /əndiˈjestid/	неперетравлений	
3.	**gastrointestinal (adj.)**	/ˌgastrəʊɪnˈtɛstɪn(ə)l/	шлунково-кишковий	relating to the stomach and the intestines
4.	**musculomembranous (adj.)**	/ˌmʌskjələʊˈmembrənəs/	м'язово-перетинчастий	relating to or consisting of both muscle and membrane
5.	**canal (n.)**	/kəˈnæl/	канал	a tube inside the body through which liquid, food or air can pass
6.	**mouth (n.)**	/maʊθ/	рот	the opening in the face used for speaking, eating, etc.; the area inside the head behind this opening
7.	**oral cavity**	/ˈɔːrəl ˈkævəti/	ротова порожнина	the cavity of the mouth
8.	**palate (hard / soft)**	/ˈpælət/	піднебіння (тверде / м'яке)	the top part of the inside of the mouth

9.	**saliva (n.)**	/səˈlaɪvə/	слина	the liquid that is produced in your mouth that helps you to swallow food
10.	**salivary gland**	/ˈsælɪvəri glænd/ /səˈlaɪvəri glænd/	слинна залоза	any of various glands that discharge a fluid secretion and especially saliva into the mouth cavity
11.	**uvula (sing.)** **uvulae (pl.)** **uvular (adj.)**	/ˈjuːvjələ/ /ˈjuːvjəliː/ /ˈjuːvjələ(r)/	язичок язичковий	a fleshy extension at the back of the soft palate which hangs above the throat
12.	**starch (n.)** **starchy (adj.)**	stɑː(r)tʃ /ˈstɑːtʃi/	крохмаль крохмальний	- a carbohydrate that is the chief form of stored energy in plants, especially wheat, corn, rice, and potatoes - (of food) containing a lot of starch
13.	**chew (v.)** **chewable (adj.)** (**syn.:** tender, edible, succulent, eatable, soft, tenderized, not tough, easily chewed) **chewed (adj.)** (**syn.:** bitten, eaten, gnawed, mangled, masticated, mouthed, nibbled, tasted)	/tʃuː/ /tʃuːəb(ə)l/ /tʃuːd/	жувати жувальний прожований, пережований	to bite food into small pieces in your mouth with your teeth to make it easier to swallow capable of being chewed that has been chewed; masticated

14.	**crush (v.)**	/krʌʃ/	подрібнювати	to break something into small pieces or into a powder by pressing hard
	crushed (adj.)	/krʌʃt/	подрібнений	broken, rendered into small, disconnected fragments
	crushing (adj.)	/ˈkrʌʃɪŋ/	подрібнюючий	that crushes
	crushable (adj.)	/ˊkrʌʃəb(ə)l/	подрібнюваний	that can be crushed
15.	**swallow (v.)**	/ˈswɒləʊ/	ковтати	to make food, drink, etc. go down your throat into your stomach
	swallowed (adj.)	/ˈswɒləʊd/	проковтнений	that passed down the throat
	swallowable (adj.)		той, який можна проковтнути	capable of being swallowed
16.	**bolus (n.)**	/ˈbəʊləs/	болюс, кулька	a small round mass of substance, especially chewed food that is swallowed
17.	**seize (v.)**	/siːz/	захоплювати	take hold of suddenly and forcibly
18.	**pyloric sphincter**	/pʌɪˈlɔːr ik ˈsfɪŋktər/	пілоричний сфінктер	a small piece of smooth visceral muscle that acts as a valve and regulates the flow of partially digested food from the stomach to the duodenum
19.	**stomach (n.)**	/ˈstʌmək/	шлунок	the internal organ in which the major part of the digestion of food occurs, being (in humans and many mammals) a pear-shaped enlargement of the alimentary canal linking the oesophagus to the small intestine connected with the stomach
	gastric (adj.)	/ˈgæstrɪk/	шлунковий	
20.	**acid (n., adj.)**	/ˈæsɪd/	кислота	sharp-tasting or sour
	acidity (adj.)	/əˈsɪdɪti/	кислотність	

21.	**absorb (v.)** **absorption (n.)** **absorbed (adj.)**	/əbˈzɔːb/, /əbˈsɔːb/ /əbˈzɔːpʃn/, /əbˈsɔːpʃn/ /əbˈzɔːbd/, /əbˈsɔːbd/	поглинати, абсорбувати поглинання, абсорбція поглинутий, абсорбований	to take in a liquid, gas or other substance from the surface or space around the process of a liquid, gas or other substance being taken in
22.	**intestine / bowel (n.)** **intestinal (adj.)**	/ɪnˈtestɪn/, /ˈbaʊəl/ BrE /ɪntɛˈstʌɪn(ə)l/ AmE /ɪnˈtestɪnl/	кишечник кишковий	the lower part of the alimentary canal from the end of the stomach to the anus
23.	**duodenum (sing.)** **doudenums / duodena (pl.)** **duodenal (adj.)**	/ˌdjuːəˈdiːnəm/ /ˌdjuːəˈdiːnə/ /ˌdjuːəˈdiːnəl/	дванадцятипала кишка дванадцятипалий	the first part of the small intestine, next to the stomach
24.	**jejunum (sing.)** **jejuna (pl.)** **jejunal (adj.)**	/dʒɪˈdʒuːnəm/ /dʒɪˈdʒuːnə/ /dʒɪˈdʒuːnəl/	тонка кишка тонкокишковий	the second part of the small intestine
25.	**ileum (sing.)** **ilea (pl.)** **ileal (adj.)**	/ˈɪliəm/ /ˈɪliə/ /ˈɪliəl/	клубова кишка клубовий	the third part of the small intestine
26.	**pancreas (n.)** **pancreatic (adj.)**	/ˈpæŋkriəs/ /ˌpæŋkrɪˈætɪk/	підшлункова залоза підшлунковий	an organ near the stomach that produces insulin and a liquid that helps the body to digest food
27.	**liver (n.)** **hepatic (adj.)**	/ˈlɪvə(r)/ BrE /hɪˈpatɪk/ AmE /hɪˈpætɪk/	печінка печінковий	a large organ in the body that cleans the blood and produces bile

28.	**gallbladder (n.)**	/ˈgɔːl blædə(r)/	жовчний міхур	an organ attached to the liver in which bile is stored
29.	**colon (n.)**	/ˈkəʊlən/	товста кишка	the long, coiled, tube-like organ that removes water from digested food
30.	**transverse colon**	/ˈtrænzvɜːs ˈkəʊlən/	поперечна ободова кишка	the middle part of the large intestine, passing across the abdomen from right to left below the stomach
31.	**ascending colon**	/əˈsendɪŋ ˈkəʊlən/	висхідна ободова кишка	the first main part of the large intestine, which passes upwards from the caecum on the right side of the abdomen
32.	**descending colon**	/dɪˈsendɪŋ ˈkəʊlən/	низхідна ободова кишка	the part of the large intestine which passes downwards on the left side of the abdomen towards the rectum
33.	**cecum (sing.)** **ceca (pl.)**	/ˈsiːkəm/ /ˈsiːkə/	сліпа кишка	a pouch connected to the junction of the small and large intestines
34.	**appendix (sing.)** **appendices, appendixes (pl.)** **appendical (adj.)**	/əˈpendɪks/ /əˈpendɪsiːz/, /əˈpendɪksɪz/ /əˈpendɪkəl/	апендикс апендикулярний	a tube-shaped sac attached to and opening into the lower end of the large intestine
35.	**rectum (sing.)** **rectums, recta (pl.)** **rectal (adj.)**	/ˈrektəm/ /ˈrɛktə/ /ˈrɛkt(ə)l/	пряма кишка ректальний	the end section of the tube where food waste collects before leaving the body through the anus
36.	**anus (sing.)** **anuses, ani (pl.)** **anal (adj.)**	/ˈeɪnəs/ /ˈɑːni/ /ˈeɪn(ə)l/	задній прохід анальний	the opening in a person's bottom through which solid waste leaves the body

37.	**duct**	/dʌkt/	протока	a tube in the body or in plants through which liquid passes
38.	**bile (n.)** **bile (adj.)**	/baɪl/	жовч жовчний	a bitter greenish-brown alkaline fluid which aids digestion and is secreted by the liver and stored in the gall bladder
39.	**peristalsis (sing.)** **peristalses (pl.)** **peristaltic (adj.)**	/ˌperɪˈstælsɪs/ /ˌperɪˈstæltɪk/	перистальтика перистальтичний	the wave-like movements of the intestine, etc. caused when the muscles contract and relax
40.	**nourishment (n.)** **nourish (v.)** **nourishing (adj.)**	/ˈnʌrɪʃmənt/ /ˈnʌrɪʃ/ /ˈnʌrɪʃɪŋ/	харчування, живлення живити поживний	food that is needed to stay alive, grow and stay healthy
41.	**nutrition (n.)** **nutritious (adj.)**	/njuˈtrɪʃn/ /njuˈtrɪʃəs/	харчування поживний	the process by which living things receive the food necessary for them to grow and be healthy
42.	**excrete / pass out (v.)** **excretion (n.)** **excrement (n.)** **excretory (adj.)** **excreted (adj.)**	/ɪkˈskriːt/ /ɪkˈskriːʃ(ə)n/ /ˈɛkskrɪm(ə)nt/ /ɪkˈskriːtəri/ /ɪkˈskriːtɪd/	виводити виведення, екскреція екскремент вивідний виведений	to pass solid or liquid waste matter from the body (in living organisms and cells) the process of eliminating or expelling waste matter waste matter discharged from the bowels; faeces relating to or concerned with excretion separated and expelled as waste (a substance, especially a product of metabolism)

43.	**eliminate (v.)**	/ɪˈlɪmɪneɪt/	виводити, елімінувати	expel (waste matter) from the body
	elimination (n.)	/ɪlɪmɪˈneɪʃ(ə)n/	виведення	the expulsion of waste matter from the body
	eliminatory (adj.)	/ɪˈlɪmɪnət(ə)rɪ/	вивідний	relating to the system through which elimination of digestive waste occurs; excretory
	eliminated (adj.)	/ɪˈlɪmɪneɪtɪd/	виведений	expelled (waste matter) from the body
44.	**enzyme (n.)**	/ˈenzaɪm/	фермент	a substance, produced by all living things, which helps a chemical change happen or happen more quickly, without being changed itself
45.	**ruga (sing.)**	/ˈrʌgeɪ/	складка	a series of ridges produced by folding of the wall of an organ
	rugae (pl.) /			
	folds	/fəʊldz/		

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Say whether the following statements are true (T) or false (F). Use your background knowledge of Anatomy to justify your answers.

- ❖ Small intestine is larger than large intestine.
- ❖ Bacteria and germs found in food are killed by digestive juice.
- ❖ Pointed teeth are used in tearing of food.
- ❖ Pointed teeth are called premolars.
- ❖ Flat teeth are called premolars and molars.
- ❖ Gastric juice consists entirely of water and hydrochloric acid.
- ❖ Absorption of many nutrients starts in the stomach.
- ❖ The liver is the body's largest gland.

Text 1

1. Read the text given below.

DIGESTIVE SYSTEM

The **alimentary tract** is a **musculomembranous canal** about 8.5 meters in length. The **alimentary canal** begins at the **mouth** and ends at the **anus**. It consists of the **oral cavity**, the **gullet** or **esophagus**, the **stomach**, the **intestines**. The **glands** which **pour juices of secretion** into the alimentary canal are: the **salivary glands** secreting **saliva** into the mouth where the **digestion** of the **starchy parts** of the food begins; the **gastric glands** in the stomach secreting **gastric juice** which is **acid** and acts on meats; the **liver** which **excretes** about two pints of **bile** a day which helps in the **breaking up of fats**; the **pancreas** secreting **pancreatic juice** which acts on all classes of food continuing the **action of** the saliva and gastric juice; the glands of the **small intestine** secreting **intestinal juice** which **completes the digestion** of the meat foods in the intestine.

In the oral cavity the food by the movements of the tongue and cheeks is **turned about** and **chewed** or **crushed** between the teeth, while at the same time saliva flows into the mouth and is thoroughly **mixed with** the food to form a **bolus** which can be **swallowed**. This is done by the tongue **pushing** it into the upper part of the **throat (pharynx)** whose **muscles seize** it and pass it quickly over the top of the **larynx** and down through the gullet into the stomach. In the stomach much of the process of digestion occurs by means of the gastric juices. From the stomach the food is **passed into** the upper end of the small intestine. A short distance down the **duodenum**, **ducts** open into it carrying bile produced in the liver and digestive juice secreted by the pancreas. While the food is passing down the small intestine, the **dissolved nutritious part** is **absorbed** into the blood through the capillaries on the inside of the **bowels** and passed into the veins, through the liver, into the general circulation for the **nourishment** of the body. The process of digestion is completed in the large intestine by the **absorption** of water. The

undigested parts of the food mixed with the **useless remains** of the **digesting fluids** and some substances **excreted** from the system are **passed out of the body**. The whole mass is colored by the bile.

2. Answer the following questions.

1) Do the terms “digestive system” and “alimentary tract/canal” have the same meaning? Why? / Why not?
2) What is the length and structure of the alimentary tract?
3) What are the portions of the alimentary canal?
4) What is the structure of the oral cavity?
5) What is the function of the oral cavity in terms of digestion?
6) What is the function of teeth?
7) What is the function of the tongue?
8) What is a bolus?
9) What are the functions of the hard and soft palates?
10) What are salivary glands? What is their function?
11) What are the functions of musculomembranous tubes in the alimentary canal? Name them.
12) What is the structure and functions of stomach?
13) What substances / elements are produced in the stomach?
14) What is the structure and functions of the small intestine?
15) What is the structure and functions of the large intestine?
16) What is the final stage of digestion?
17) What is the function of bile?
18) What juices / liquids are produced in the digestive system? What are their functions?

3. In pairs, practice explaining how the process of digestion is carried out and the roles of digestive organs and their parts, juices and glands in it. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again. Use Appendix VI.

4. Identify what parts of the alimentary system belong to each heading.

Alimentary Canal	Accessory Organs	Juices

5. a) Match the definitions and the terms.

1.	It serves to collect and temporarily store the wastes before they are finally excreted.	**a.**	pyloric sphincter
2.	Here the food is taken, bitten and chewed.	**b.**	large intestine
3.	It serves as a valve to regulate the passage of food from the stomach.	**c.**	pancreas
4.	It secretes the juice acting on all classes of food.	**d.**	mouth
5.	Here the process of digestion is completed.	**e.**	rectum
6.	The movements produced by the muscles of the esophagus.	**f.**	bile duct
7.	This tube serves to conduct the bile into duodenum.	**g.**	teeth
8.	The function of this organ is to produce an acid to digest proteins and fats.	**h.**	water absorption
9.	The food is crushed by means of these bony structures.	**i.**	stomach
10.	The terminal part of digestion.	**j.**	peristalsis

b) In pairs, take turns to say a term and ask your partner to define its function, or give a function and ask for the term.

6. Fill in the gaps with the appropriate words given in the right column.

1.	The liver excretes about 2 pints of ... a day.	**a.**	enzymes
2.	Glands in the stomach secrete ... which acts on meat.	**b.**	bile
3.	Salivary glands secrete ... into the mouth.	**c.**	anus
4.	Food is digested and converted into simpler substances by ...	**d.**	acid
5.	All the undigested remains are finally eliminated through …	**e.**	saliva

7. Match the sentence beginnings with their endings.

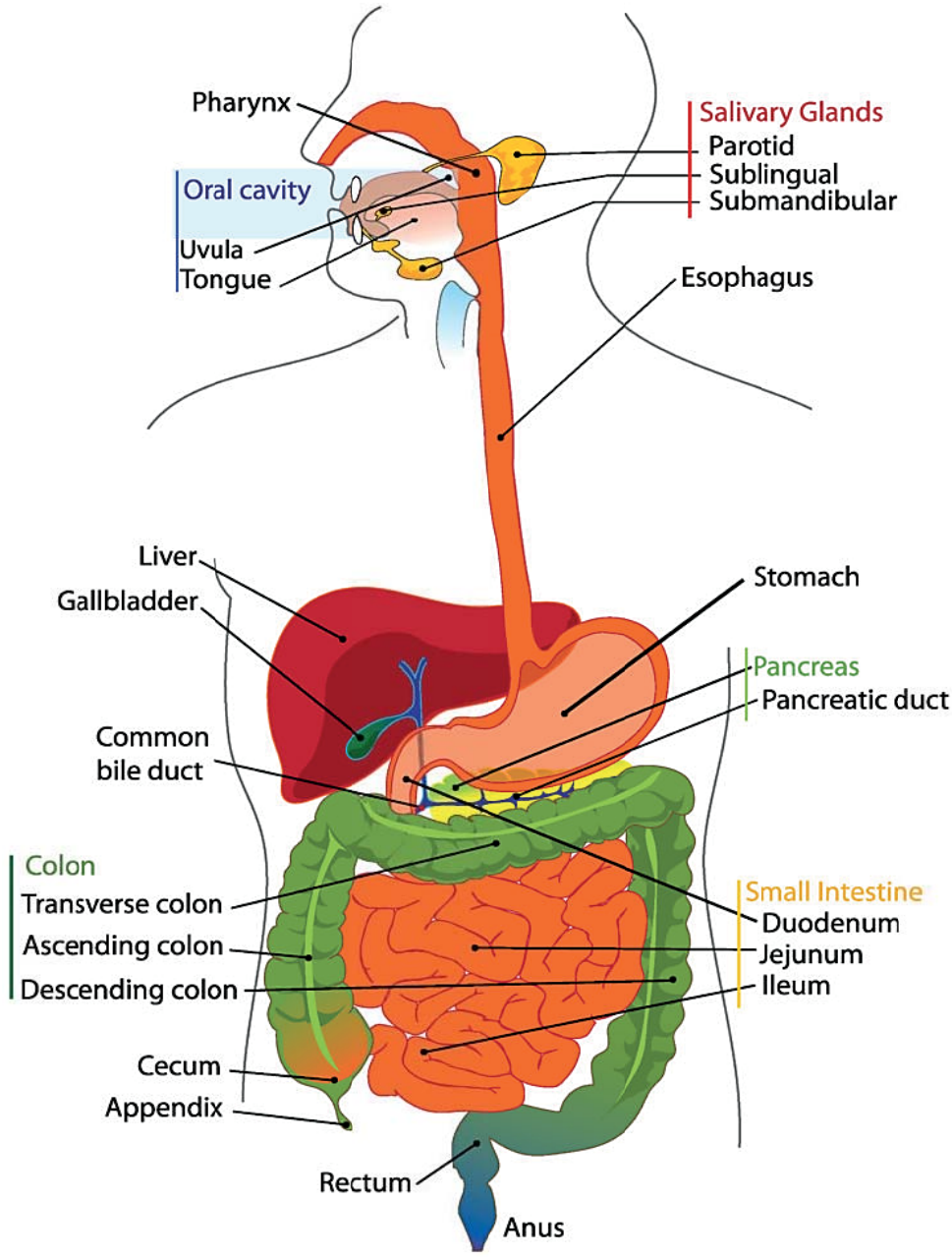
1.	The gastrointestinal tract begins ...	**a.**	an external secretion and insulin.
2.	The alimentary canal includes ...	**b.**	with oral cavity or mouth.
3.	The accessory organs are ...	**c.**	from the pharynx to the stomach.
4.	The stomach is ...	**d.**	alimentary canal and accessory organs.
5.	The liver ...	**e.**	a dilated portion of the alimentary canal.
6.	The pancreas forms ...	**f.**	a thin-walled muscular tube.
7.	The esophagus conveys food …	**g.**	secrets bile.
8.	The small intestine is ...	**h.**	a hollow sac.
9.	The gall bladder is ...	**i.**	the mouth, pharynx, esophagus, stomach, intestine and rectum.
10.	The digestive system consists of …	**j.**	the teeth, tongue, salivary glands, palates, liver, gall bladder and pancreas.

Text 2

1. Read the text given below.

MAJOR DIGESTIVE ORGANS AND THEIR FUNCTIONS

PORTIONS OF THE DIGESTIVE SYSTEM



PHARYNX

The pharynx consists of three parts: the nasopharynx, the oropharynx, and laryngopharynx. Normally, only the oropharynx and laryngopharynx transmit food. The oropharynx communicates with the nasopharynx superiorly, the larynx and laryngopharynx inferiorly, and mouth anteriorly. The laryngopharynx extends from the oropharynx to the esophagus and is posterior to the larynx. The posterior walls of the oropharynx and laryngopharynx consist of three muscles, the superior, middle, and inferior pharyngeal constrictions, which are arranged like three stacked flower pots, one inside the other. The oropharynx and the laryngopharynx are lined with moist, stratified squamous epithelium, and the nasopharynx is lined with ciliated pseudostratified epithelium.

ESOPHAGUS

The esophagus is that portion of the digestive tube that extends between the pharynx and the stomach. It is approximately 20-25 cm long and lies in the mediastinum. The esophagus transports food from the pharynx to the stomach. It has thick walls consisting of the four tunics common to the digestive tract: mucosa, submucosa, muscularis, and adventitia.

STOMACH

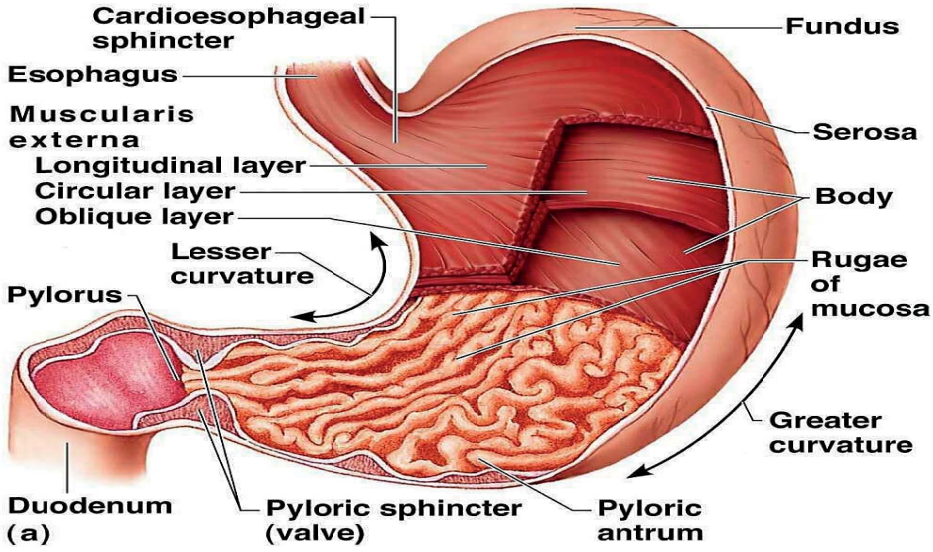
The stomach stores and mixes the ingested food. The major function of the stomach is to prepare the food chemically and mechanically so it can be received in the small intestine for further digestion and absorption into the blood. Only small amounts of such food as simple sugars, alcohol, and some medications are actually absorbed in the stomach.

The stomach is an enlarged segment of the digestive tract. It is located in the left superior portion of the abdomen. Its shape and size vary from person to person.

The opening from the esophagus into the stomach is gastroesophageal, or cardiac (located near the heart), opening. The region of the stomach around the cardiac opening is the cardiac region. The stomach consists of the fundus (upper part), the body (middle part), and the antrum (lower distal part). The largest portion of the stomach is the body, which turns to the right, thus creating a greater curvature and a lesser curvature. The body narrows to form the pyloric region, which joins the small intestine. The opening between the stomach and the small intestine is the pyloric opening, which is surrounded by a ring of smooth muscles called the pyloric sphincter. The cardiac sphincter relaxes and contracts to move food from the esophagus into the stomach. The pyloric sphincter allows food to leave the stomach when it has been sufficiently digested.

The walls of the stomach consist of various layers of powerful muscles. The mechanical activity of these muscles breaks the food into smaller and smaller pieces. The glands of the stomach secrete gastric juice. This juice contains pepsins (digestive enzymes) and hydrochloric acid. Pepsin converts proteins into smaller substances. Hydrochloric acid is necessary for the correct action of pepsin.

Food leaves the stomach in two phases. The upper portion of the stomach contracts first, pushing the more liquid material into small intestine. The more solid food leaves later, primarily by the action of the muscles in the lower part of the stomach. The partially processed food then travels through the pyloric canal into the first portion of small intestine, the duodenum.



STOMACH FUNCTIONS

The major stomach functions are to store and mix the ingested food.

Secretions of the stomach. Stomach secretions include mucus, hydrochloric acid, gastrin, intrinsic factor, and pepsinogen, the inactive form of the protein-digesting enzyme pepsin. Mucus protects the stomach lining. Pepsinogen is converted to pepsin, which digest proteins. Hydrochloric acid promotes pepsin activity and kills microorganisms. Intrinsic factor is necessary for vitamin B12 absorption.

Regulation of stomach secretion. Approximately 2 to 3 L of gastric secretions (gastric juice) are produced each day. Diet dramatically affects the secretion amount; up to 700 ml are secreted as a result of a typical meal. Both nervous and hormonal mechanisms regulate gastric secretions. Regulation of stomach secretion is divided into 3 phases: cephalic, gastric, and intestinal. The cephalic phase is initiated by the sight, smell, taste, or thought of food. Nerve impulses from the medulla stimulate hydrochloric acid, pepsinogen, and gastrin secretion. The gastric phase is initiated by distention of the stomach, which stimulates gastrin secretion and activates central nervous system and local reflexes that promote secretion. The intestinal phase is initiated by acidic chime, which enters the duodenum and stimulates neuronal reflexes and the secretion of hormones that induce and then inhibit gastric secretions.

Mixing of stomach contents. Ingested food is mixed with the secretions of the stomach glands to form a semi-fluid material called juice (chime). This mixing is accomplished by gentle mixing waves, which are peristaltic-like contractions that occur every 20 seconds to mix the ingested material with the secretions of the stomach. Peristaltic waves occur less frequently. They are more powerful than mixing waves, and force the chime near the periphery of the stomach toward the pyloric sphincter. Roughly 80% of the contractions are mixing waves, and 20% are peristaltic waves.

Regulation of stomach emptying. The amount of time food remains in the stomach depends on the number of factors, including the type and volume of food. Liquids exist in the stomach within 1 and ½ hours to 2 and ½ hours after ingestion. After a typical meal the stomach is usually empty within 3 to 4 hours. Gastrin and stretching of the stomach stimulate stomach emptying.

Regulation of stomach movements. If the stomach empties too fast, the efficiency of digestion and absorption is reduced. If the rate of emptying is too slow, the highly acidic contents of the stomach may damage the stomach wall and reduce the rate at which nutrients are digested and absorbed. Stomach emptying is regulated to prevent these two extremes. Stomach stretches and relaxes to increase volume. Conversely, many of the hormonal and neural mechanisms decrease the rate of the stomach emptying.

SMALL INTESTINE

The small intestine consists of three portions: the duodenum, the jejunum, and the ileum. The entire small intestine is approximately 6.5 m long; the duodenum is approximately 25 cm long (the term duodenum means 12, suggesting that is 12 inches long); the jejunum, constituting approximately two fifths of the total length of the small intestine, is approximately 2.5 m long, and the ileum, constituting three fifths of the small intestine, is approximately 3.5 m long. Two major glands, the liver and pancreas, are associated with the duodenum.

GALLBLADDER

The gallbladder is a saclike structure on the inferior surface of the liver that is approximately 8 cm long and 4 cm wide. Three layers form the gallbladder wall: an inner mucosa folded into rugae that allow the gallbladder to expand; a muscularis of smooth muscle that allows the gallbladder to contract; and outer covering of connective tissue. The gallbladder is connected to the common bile duct by the cystic duct.

PANCREAS

The pancreas is a complex organ composed of both endocrine and exocrine tissues that perform several functions. The pancreas consists of a head, a body, and a tail, which extends to the spleen.

The endocrine portion of the pancreas consists of pancreatic islets (islets of Langerhans). The islet cells produce insulin and glucagons, which are very important in controlling blood levels of nutrients such as glucose and amino acids, and somatostatin, which regulates insulin secretion.

The exocrine portion of the pancreas consists of acini (grapes), which produce digestive enzymes. The acini connect to a duct system that forms the pancreatic duct, which empties into the duodenum.

LARGE INTESTINE

The large intestine consists of the cecum, colon, rectum, and anal canal. The cecum is the proximal end of the large intestine and is the portion where the large and small intestines meet. The colon consists of four portions. The mucosal lining of the large intestine consists of simple columnar epithelium. It has numerous straight tubular glands. The rectum is a straight, muscular tube. It begins at the termination of the sigmoid colon and ends at the anal canal. The last 2 to 3 cm of the digestive tract is the anal canal. It begins at the inferior end of the rectum and ends at the anus. The smooth muscle layer of the anal canal forms the internal anal sphincter and external anal sphincter.

2. In pairs, practice explaining the structure and functions of digestive organs and their parts. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again.

3. a) Match the following terms with their meanings.

1.	deglutition	**a.**	bringing food back up the gastrointestinal tract
2.	absorption	**b.**	breakdown of complex substances
3.	mastication	**c.**	new opening up between two hollow organs or fibers
4.	digestion	**d.**	contraction and relaxation of muscles to propel food along the gastrointestinal tract
5.	peristalsis	**e.**	formation of wastes and their removal from the body
6.	excretion	**f.**	passage of simple nutrients into the blood stream
7.	anastomosis	**g.**	swallowing
8.	regurgitation	**h.**	chewing

b) In pairs, take turns to say a term and ask your partner to provide its meaning, or give a meaning and ask for the term.

4. Provide synonyms for the terms listed below. Explain their meanings.

	Term	**Synonym(s)**	**Definition**
1.	digest		
2.	mouth		
3.	chew		
4.	crush		
5.	seize		
6.	pass out		
7.	intestine		
8.	excrement		
9.	swallow		

b) In pairs, take turns to say a term and ask your partner to provide the synonym(s) and the definition for it, or give the definition and ask for the term and its synonym(s).

5. a) Complete the table given below.

	Noun in Singular	Noun in Plural	Derivative Adjective
1.	digestion		
2.	mouth		
3.	saliva		
4.	uvula		
5.	stomach		
6.	acid		
7.	absorption		
8.	bowel		
9.	intestine		
10.	duodenum		
11.	jejunum		
12.	ileum		
13.	appendix		
14.	rectum		
15.	anus		
16.	peristalsis		

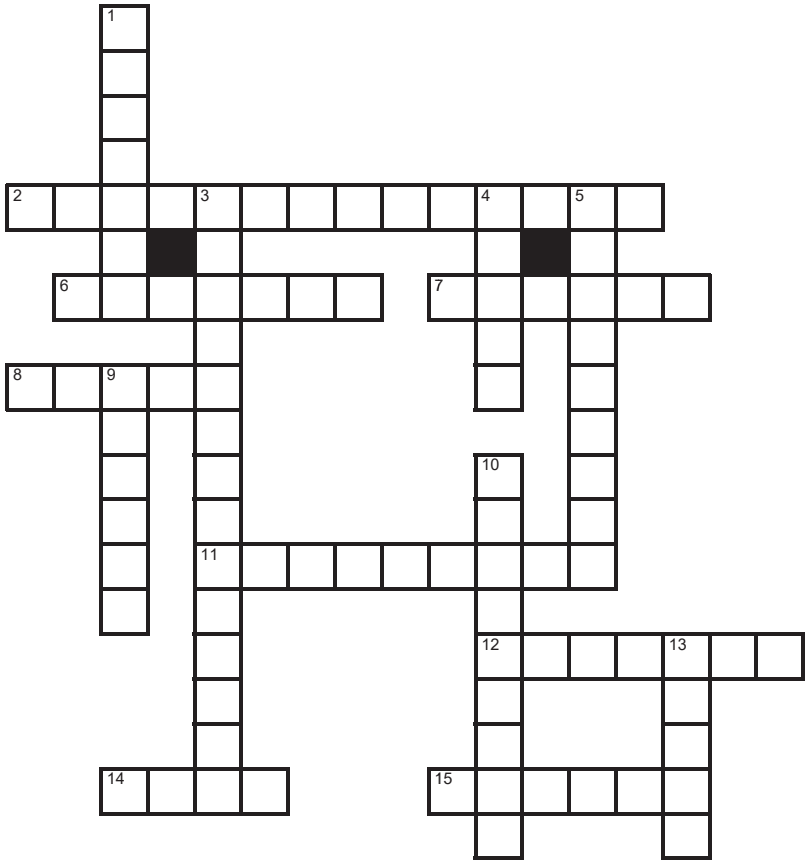
b) In pairs, take turns to name a noun in singular and ask your partner to provide its plural form and spell it.

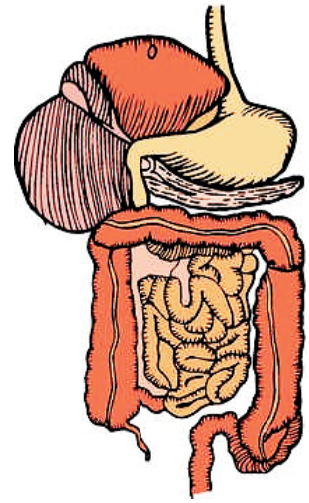
c) In pairs, take turns to name a noun either in singular or plural forms and ask your partner to provide the adjective for it, or give an adjective and ask for the singular and plural forms of the noun.

6. Describe each stage of the digestion process in a chain. Use Active Vocabulary.

7. Complete "The Human Digestive System" crossword.

The Human Digestive System





Across

2. A long folded tube inside the body attached to the stomach where nutrients in the food are absorbed.

6. A part of your throat that acts like a gateway sending air into the lungs and food down into the stomach.

7. The place where waste is stored before it leaves the body.

8. The part of the food that is not digested.

11. The tube that connects the stomach to the mouth.

12. A verb that means to push food through your pharynx.

14. Crush food with your teeth.

15. Muscle in your mouth that is used for pushing food around.

Down

1. After being swallowed, food goes to this place where it is mixed with acid.

3. The tube after the small intestine where liquid is absorbed.

4. These are used to chew food.

5. The good things in food.

9. A slippery liquid that makes food easy to swallow and helps to break the food down.

10. The process of breaking down food for use as energy and building materials for your body.

13. This produces juices (called bile) that go into the small intestine and help digest the food.

8. a) Listen to the "Digestion" Song and fill in the gaps. (Follow the link: https://www.youtube.com/watch?v=8sDMVgw9d-c).

"DIGESTION" SONG

Your mouth controls
_____ food with _____
Moisten food changing
Starch to a sugar, now
Your _____ makes food go down
Pharynx, gullet
Esophagus

Food travels down _____
To the_____
Now it's speeding away
Digestive tract
Yeah, _____
Will crush and swish
The _____and _____
In folds, rugae

Pass the lips, _____
Through _____
Peristalsis
In the stomach churned with digestive juices
Into the _____ _____
Digestion
Water, fiber
Into _____ _____
Colon
Water is _____ into your bloodstream
The semi-solid feces
Out rectum, now

Oh, oh
Oh, oh

The food will move to a tube
_____ _____
Duodenum, _____
And ileum

Now, the juice
Is there is here
From the _____
And _____

It will break down the _____
Starch and the fats

Digestive _____ help to make juic-
es-_____
Yeah, the liver
Makes _____, breaks_____
_____ work out
Breaking them down

Pass the lips, _____
Through _____
Peristalsis
In the stomach churned with digestive juices
Into the _____ _____
Digestion
Water, fiber
Into _____ _____
Colon
Water is _____ into your bloodstream
The semi-solid feces
Out rectum, now

Oh, oh Oh, oh Oh, oh Oh, oh

Water, fiber
_____, it not
Large intestine
Is called _____
Water _____
Into _____
Feces is _____
Out the rectum

Pass the lips, _____
Through _____
Peristalsis
In the stomach churned with digestive juices
Into the _____ _____
Digestion
Water, fiber
Into _____ _____
Colon
Water is _____ into your bloodstream
The semi-solid feces
Out rectum, now

Oh, oh

b) Look through the song again and find organs of the alimentary canal, accessory organs and juices mentioned in it. Then fill in the table.

Organs of the Alimentary Canal		
Name of the Organ	**Function**	**Derivative Adjective**
Accessory Organs		
Name of the Organ	**Function**	**Derivative Adjective**
Juices		
Name of the Juice	**Function**	**Derivative Adjective**

CARDIOVASCULAR SYSTEM

Active Vocabulary:

1.	**circulation (n.)** **circulate (v.)** **circulatory (adj.)**	/ˌsɜːkjəˈleɪʃn/ /ˈsəːkjʊleɪt/ BrE /ˈsəːkjʊlət(ə)ri/ AmE /ˈsɜːrkjələtɔːri/	циркуляція, кровообіг циркулювати кровоносний	the movement of blood around the body
2.	**blood (n.)**	/blʌd/	кров	the fluid that circulates in the heart, arteries, capillaries, and veins of a vertebrate animal carrying nourishment and oxygen to and bringing away waste products from all parts of the body
3.	**artery (n.)** **arterial (adj.)**	/ˈɑː(r)təri/ /ɑː (r)ˈtɪərɪəl/	артерія артеріальний	any of the muscular-walled tubes forming part of the circulation system by which blood (mainly that which has been oxygenated) is conveyed from the heart to all parts of the body
4.	**vein (n.)** **venous (adj.)**	/vein/ /ˈviːnəs/	вена венозний	any of the tubes forming part of the blood circulation system of the body, carrying in most cases oxygen-depleted blood towards the heart
5.	**capillary (n., adj.)**	kəˈpɪləri	капіляр, капілярний	any of the fine branching blood vessels that form a network between the arterioles and venules
6.	**venule (n.)**	/ˈvenjul/	венула	a very small blood vessel in the microcirculation that allows blood to return from the capillary beds to drain into the larger blood vessels, the veins
7.	**chamber (n.)**	/ˈtʃeɪmbə(r)/	камера	a space in the body which is separated from the rest
8.	**ventricle (n.)** **ventricular (adj.)**	/ˈventrɪkl/ /venˈtrɪkjələr/	шлуночок шлуночковий	either of the two lower spaces in the heart that pump blood to the lungs or around the body

9.	**atrium (sing.)** **atria (pl.)** **atrial (adj.)**	/ˈeɪtriəm/ /ˈeɪtriə/ /ˈeɪtriəl/	передсердя передсердний	either of the two upper spaces in the heart that are used in the first stage of sending the blood around the body
10.	**valve (n.)** **valvular (adj.)**	/vælv/ /ˈvalvjʊlə(r)/	клапан вальвулярний, клапанний	a structure in the heart or in a vein that lets blood flow in one direction only
11.	**tricuspid valve**	/trʌɪˈkʌspɪd vælv/	тристулковий клапан	the valve that separates the right atrium from the right ventricle and prevents blood from flowing back into the right atrium during contraction of the ventricle
12.	**mitral (or bicuspid) valve**	/ˈmʌɪtr(ə)l/ /bʌɪˈkʌspɪd vælv/	мітральний (або двостулковий) клапан	the valve that permits blood to flow one way only, from the left atrium into the left ventricle
13.	**septum (sing.)** **septa (pl.)** **septal (adj.)**	/ˈseptəm/ /ˈseptə/ /ˈsɛpt(ə)l/	перегородка септальний, перегородковий	a thin part that separates two hollow areas
14.	**superior vena cava**	/suːˈpɪərɪə viːnə keivə/	верхня порожниста вена	a large vein that receives blood from the head, neck, upper extremities, and thorax and delivers it to the right atrium of the heart
15.	**inferior vena cava**	/ɪnˈfɪərɪə viːnə keivə/	нижня порожниста вена	a large vein that receives blood from the lower extremities, pelvis and abdomen and delivers it to the right atrium of the heart
16.	**atrioventricular**	/ætrɪəˈventrɪkjʊlər/	передсердно-шлуночковий, атріовентрикулярний	of, relating to, or located between an atrium and ventricle of the heart
17.	**interventricular**	/ˌɪntəvenˈtrɪkjələr/	міжшлуночковий	situated or occurring between ventricles

18.	**aorta (sing.)** **aortas, aortae (pl.)** **aortic (adj.)** **aortal (adj.)**	/eɪˈɔːtə/ /eɪˈɔːtɪk/ /eɪˈɔːtəl/	аорта аортний аортальний	the main artery that carries blood from the heart to the rest of the body once it has passed through the lungs pertaining to the aorta relating to the aorta
19.	**squamous (adj.)**	/ˈskwəməs/	сквамозний, вкритий лускою	of, relating to, or being a stratified epithelium that consists at least in its outer layers of small scalelike cells

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Discuss the following statements with your partner or in the group.

Check out these fascinating facts about the cardiovascular system…

- During the average lifetime, a heart pumps 1 million barrels of blood, enough to fill more than 3 super tankers.
- The heart pumps about 100 gallons of blood through the body each hour – enough to fill 1,600 drinking glasses.
- The heart pumps blood to almost all of the body's 75 trillion cells. Only the corneas receive no blood supply.
- A newborn baby has about one cup of blood in circulation. An adult human has about four to five quarts.
- Your heart does not stop when you sneeze, but a sneeze can briefly change its rhythm.

- ❖ Blood takes about 20 seconds to circulate through the entire vascular system.
- ❖ Three years after a person stops smoking, their chance of having a heart attack is the same as a lifelong non-smoker.
- ❖ The first heart pacemakers plugged into wall sockets.
- ❖ Blood makes up 7 % of your body weight.
- ❖ Every year, your heart beats approximately 35 million times. That is 100,000 beats per day and 70 beats per minute.
- ❖ In just one day, the heart creates enough energy to drive a truck 20 miles. During an average lifetime, that is equivalent to driving to the moon and back.
- ❖ Red blood cells live for approximately 120 days. They are constantly being replaced by the bone marrow.

Text 1

1. Read the text given below.

THE HEART

The heart is a hollow muscle located in the thoracic cavity between the lungs. The heart is responsible for the circulation of the blood. It is known that the heart is a pump. But it is an extraordinary pump. It weighs only about a pound but the heart of a healthy 70-kg person pumps about 7200 L of blood each day at rate of 5 L per minute. If the heart loses its ability to pump blood for even a few minutes, the life of the individual is in danger.

The heart actually has two pumps. Each pump consists of a pair of chambers formed by muscles. The contraction of these muscles causes the blood to be pumped. The lower chamber is called a ventricle and the upper chamber is called an atrium. The four chambers of the heart are separated by valves. Between the right atrium and the right ventricle there is a one-way valve, called the tricuspid valve. The valve that separates the left atrium from the left ventricle is called the mitral (or bicuspid) valve. The left ventricle is separated from the right ventricle by the interventricular septum.

Venous blood from body flows through the superior vena cava and inferior one into the right atrium, then through the tricuspid valve into the right ventricle. The right ventricle pumps blood through the pulmonary valve, via the pulmonary arteries, into the lungs. From the lungs, blood enters the left atrium via the pulmonary veins and flows through the mitral valve into the left ventricle. The left ventricle pumps oxygen-enriched blood through the aortic valve into the aorta for delivery to the body's tissues.

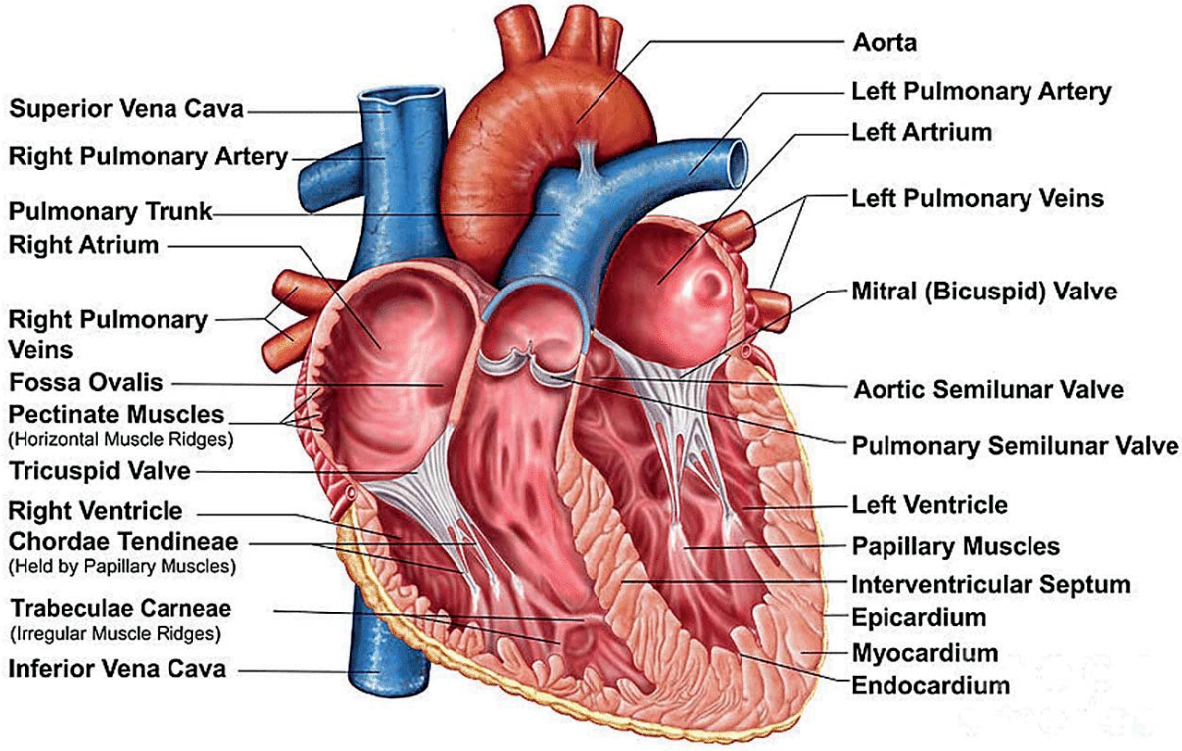
The tissue of the heart consists of three layers. The exterior layer is the thin epicardium. The middle layer is the myocardium, the heart muscle itself (from the Greek *myo* for "muscle" and *kardia* for "heart"). The inner lining of the heart is the endocardium, a thin, smooth structure. The pericardium is a fibrous sac that surrounds the heart. In the space between the pericardium and the epicardium there is a small amount of fluid.

The heart rate varies depending on activity at any given moment. The control mechanism for the heart rate involves electrical impulses. One of the four chambers of the heart, the right atrium, contains a group of cells called the sinus node. The sinus node produces electrical

impulses that signal the muscle of the heart to contract in the pumping cycle. When a person is at rest, the heart pumps more slowly and at a regular rate, about 60 to 80 beats per minute. When a person runs, climbs stairs, or otherwise exert yourself, the sinus node issues electrical "instructions" to increase the pace of the heart in order to provide the muscles and other tissues with the necessary additional blood and its supply of oxygen. The heart rate may increase up to 200 beats per minute if you exert yourself strenuously. The heart rate may be affected by various factors including tobacco use, caffeine-containing foods, alcohol, and a number of drugs.

In addition, the cardiac disorders may produce heart rate problems.

Heart Anatomy



2. Answer the following questions.

1) What is the heart?
2) Where is the heart located?
3) What is the weight of the heart?
4) What functions does the heart perform?
5) What is the structure of the heart?
6) What are the layers of the heart?
7) What are the main stages of the process of blood circulation?
8) What is the heart rate? What does it depend on?

3. In pairs, practice explaining how the heart functions. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again.

Text 2

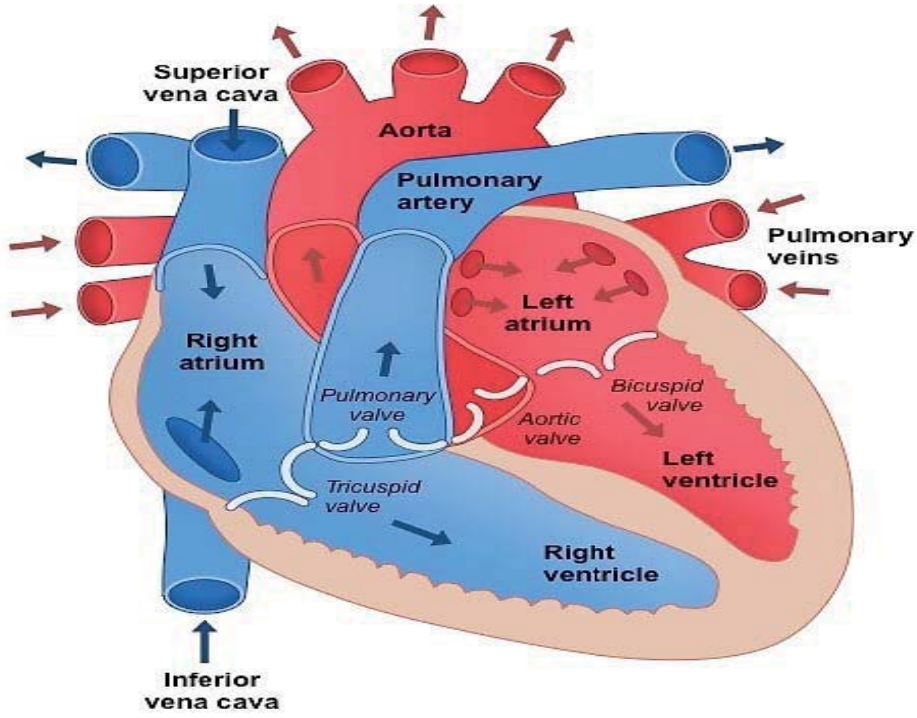
1. Read the text given below.

HEART CHAMBERS

The right atrium has three major openings through which veins enter the heart from various parts of the body: the superior vena cava, the inferior vena cava, and the coronary sinus. The left atrium has 4 relatively uniform openings that receive the 4 pulmonary veins.

The two atria are separated from each other by the interatrial septum. A slight oval depression on the right side of the septum marks the former location of the opening between the right and left atria in the embryo and the fetus.

The atria open into the ventricles through atrioventricular canals. Each ventricle has one large, superiorly placed outflow route near the midline of the heart. The right ventricle opens into the pulmonary trunk, and the left ventricle opens into the aorta. The two ventricles are separated from each other by the interventricular septum, which is thick toward the apex and very thin toward the atria.



2. Answer the following questions.

1) What is an atrium?
2) How many openings does the right atrium have? What function do they perform?
3) Name openings of the right atrium.
4) How many openings does the left atrium have? What function do they perform?
5) How are the atria separated for each other?
6) What is a ventricle?
7) What is the structure of ventricles?

Text 3

1. Read the text given below.

BLOOD VESSELS

The vascular system consists of blood vessels. They carry blood from the heart to all parts of the body. Blood vessels can be classified as capillaries, arteries and veins. Arteries normally are classified as elastic arteries, muscular arteries, and arterioles. The veins are classified as venules, small veins, and medium-sized and large veins.

The vessels become smaller as they extend farther from the heart. The aorta (large elastic artery) delivers blood to the large arteries. They, in turn, branch off several times and eventually blood flows into smaller vessels called arterioles. The arterioles supply the tiny capillaries (minute blood vessels) that nourish tissue. Oxygen is given up from capillaries to the tissues, and carbon dioxide from the tissue is taken up into the capillaries. The arteries have to be strong as well as flexible.

From the capillaries, the blood begins its trip back to the heart by way of the venous system. The veins increase in size closer to the heart. As part of circulation, the blood travels through the liver and kidneys, which remove waste products. The veins, under less pressure, are less muscular and less elastic than arteries.

The entire circulatory system is lined with simple squamous epithelium called endothelium. Capillaries consist only of endothelium. The capillary walls consist of endothelial cells, which rest on a basement. Venules are tubes composed of endothelium resting on a delicate basement membrane. Their structure is very similar to that of capillaries. The venules collect blood from the capillaries and transport it to the small veins, which in turn transport it to the medium-sized veins. Except for capillaries and venules, blood vessels have three layers: the inner tunica intima (consisting of endothelium, basement membrane, and internal elastic lamina), the tunica media (containing circular smooth muscle and elastic fibers), and the outer tunica adventitia (which is connective tissue). The relative thickness and composition of each layer varies with the diameter of the blood vessel and its type. The transition from one artery type or from one vein type to another is gradual, as are structural changes.

Vessels transporting blood through essentially all parts of the body from the left ventricle and back to the right atrium are called the systemic vessels. The pulmonary vessels transport blood from the right ventricle through the lungs and back to the left atrium.

2. Answer the following questions.

1) What types of blood vessels does the vascular system consist of?
2) How are the arteries classified?
3) How are the veins classified?
4) What is the largest artery in the human body?
5) What are the functions of vessels?
6) What is the structure of the circulatory system?
7) What are venules?
8) What are the layers of the vessels?

Text 4

1. Read the text given below.

THE CARDIAC CYCLE

The blood entering the right side of the heart returns from the tissues and has been delivered by the veins. The receiving chamber is the right atrium. This atrium also is a low-pressure pump, and it moves the blood into the right ventricle through the tricuspid valve.

The right ventricle has thicker, stronger walls than the right atrium. The right ventricle pumps the oxygen-poor blood through the pulmonic valve into the lungs, where the blood gives up the carbon dioxide, which it has carried from the tissues. At the same time, the blood is absorbing oxygen. The pumping action moves the blood from the lungs to the receiving chamber on the other side of the heart, the left atrium, which pumps the blood into the left ventricle through the mitral valve. The left ventricle sends the oxygen-enriched blood into the aorta, the principal artery that subdivides and delivers the blood to the body's tissues, including the brain, internal organs, and extremities.

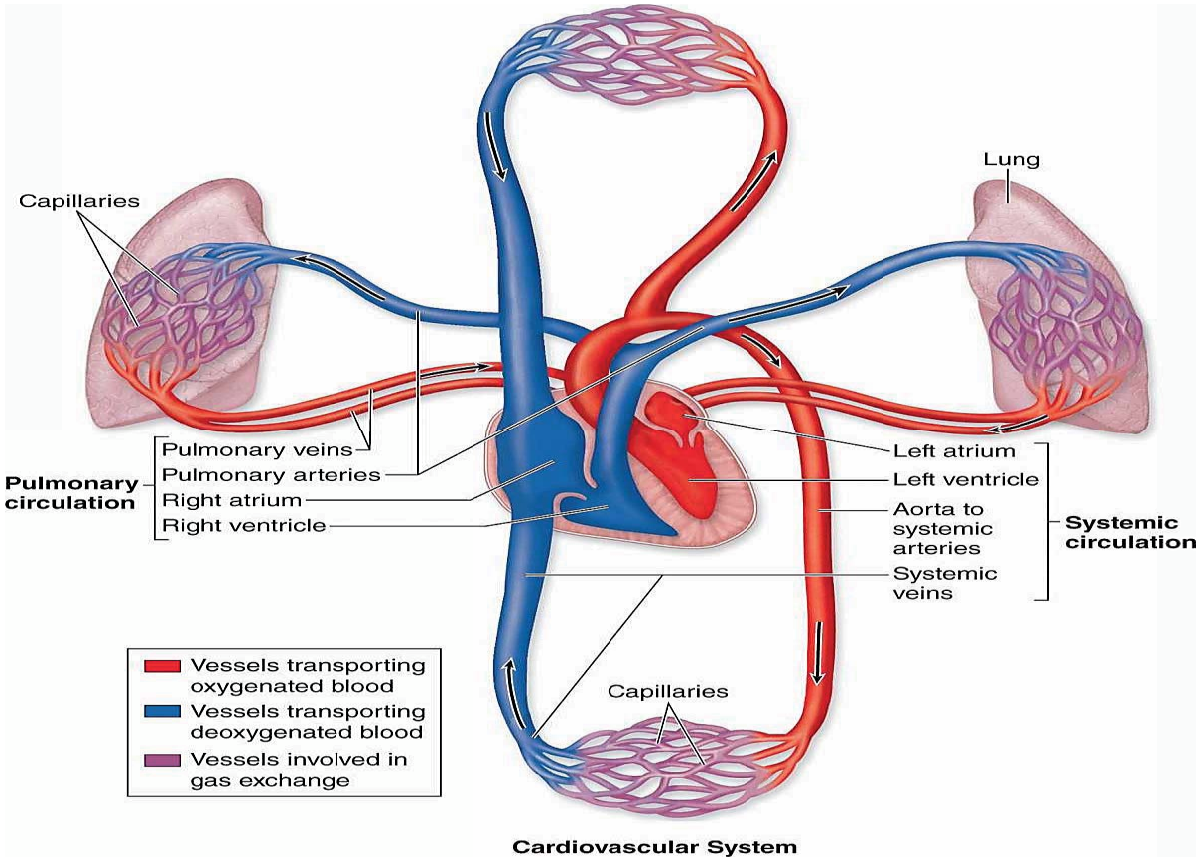
The cardiac cycle is repetitive contraction and relaxation of the heart chambers. Contraction of the atrial myocardium is called atrial systole, and relaxation of the atrial myocardium is called atrial diastole. Similarly, ventricular systole is contraction of the ventricular myocardium, and ventricular diastole is relaxation of the ventricular myocardium. Thus, the term systole means "to contract", and diastole means "to dilate". The right and left chambers contract and relax simultaneously.

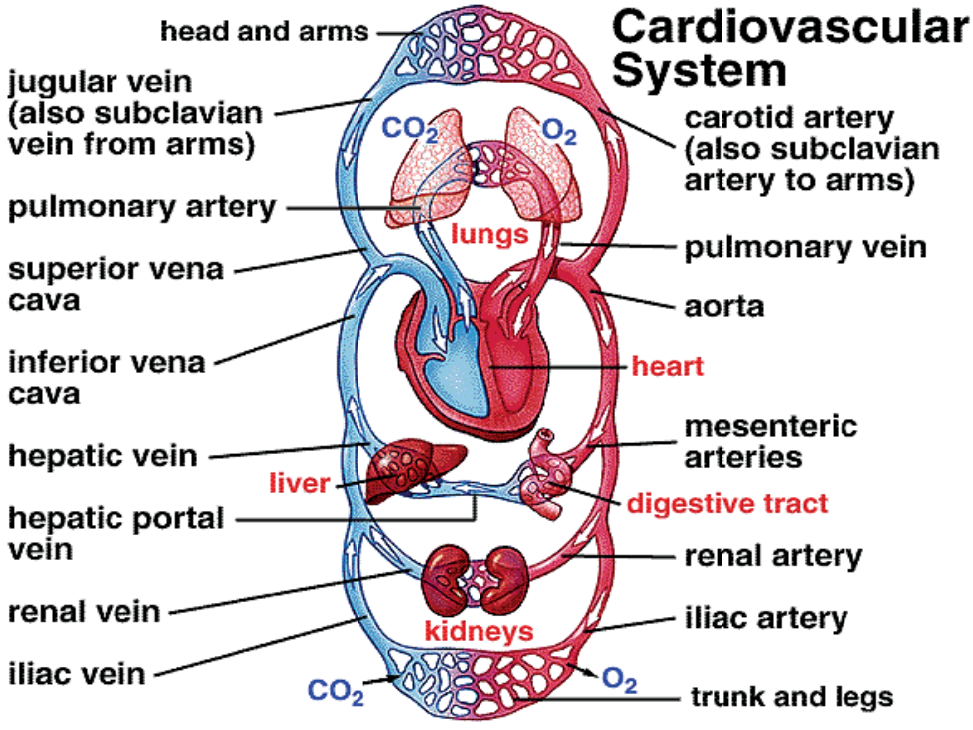
The duration of the cardiac cycle varies among humans and also varies during an individual's lifetime. It may be as short as 0.25 to 0.3 second in a newborn infant or as long as 1 or more seconds in a well-trained athlete. The normal cardiac cycle (0.7 to 0.8 second) depends on the capability of cardiac muscle to contract and on the functional integrity of the conducting system. Abnormalities of cardiac muscle, the valves, or conducting system of the heart may alter the cardiac cycle and thus compromise the pumping effectiveness of the heart.

2. Answer the following questions.

1) Where does the blood entering the right side of the heart return from?
2) What is the right atrium?
3) What walls does the right ventricle have?
4) What does the blood give up in lungs?
5) Where does the pumping action of the heart move the blood from the lungs?
6) Where does the left ventricle send the oxygen-enriched blood?
7) What is the cardiac cycle?
8) What is the atrial systole?
9) What is the atrial diastole?
10) What is the ventricular systole?
11) What is the ventricular diastole?
12) What do the terms "systole" and "diastole" mean?
13) What is the duration of the cardiac cycle?
14) What does the normal cardiac cycle depend on?

3. Study the schemes of the cardiac cycle and the cardiovascular system given below. Then describe it in a chain. Use Active Vocabulary.





4. a) Match the words with their definitions.

1.	aorta	**a.**	lower and larger chamber of the heart
2.	artery	**b.**	relaxation phase of the heartbeat
3.	atria	**c.**	the smallest blood vessel
4.	capillary	**d.**	thin-walled vessel
5.	diastole	**e.**	two upper chambers of the heart
6.	carbon dioxide	**f.**	the largest type of blood vessel
7.	systole	**g.**	contractive phase of heartbeat
8.	vein	**h.**	waste product of catabolism in the cells
9.	ventricle	**i.**	the largest artery in the body

b) In pairs, take turns to say a term and ask your partner to define it, or give a definition and ask for the term.

5. a) Complete the table given below.

	Noun in Singular	**Noun in Plural**	**Derivative Adjective**
1.	aorta		
2.	artery		
3.	atrium		
4.	capillary		
5.	valve		
6.	ventricle		
7.	vein		
8.	septum		

b) In pairs, take turns to name a noun in singular and ask your partner to provide its plural form and spell it.

c) In pairs, take turns to name a noun either in singular or in plural form and ask your partner to provide the adjective for it, or give an adjective and ask for the singular and plural forms of the noun.

6. Fill in the gaps with the words from the box.

Valves deliver plasma atria carbon dioxide contraction ventricles blood vessels

1) The …… are the upper chambers of the heart.
2) During the …… phase, called systole, blood is pumped out of the left ventricle into the aorta.
3) The blood is made up of two parts: …… and blood cells.
4) The function of the circulatory system is to …… energy and food substances to each cell.
5) The circulatory system consists of the blood, the heart and …… .
6) The two lower chambers of the heart are …… .
7) Used blood carrying …… returns to the heart.
8) …… control the flow of blood from one part of the heart to another.

7. Match the nouns with the appropriate verbs.

the heart	the blood	the artery

contract, pass, dilate, bring, regulate, pump, vary, beat, compose, work, consist of, discharge, receive, enter, act, serve, send, oxygenate, carry

8. Say whether the following statements are true or false.

1) The role of the circulatory system in transport of many substances is, in fact, insignificant.
2) The heart is frequently referred to as a pump.
3) Blood vessels transport blood with nutrients in one direction only, i.e. to cells.
4) Arterioles are strong muscular tubes whereas arteries are fine thin-walled ramifications of vessels.
5) Veins carry oxygen from the tissue cells back to the heart.
6) Carbon dioxide is produced in cells.
7) Waste products must be excreted from the organism.
8) From the lungs deoxygenated blood returns to the left heart.

9. Do you agree, disagree or partially agree with the statements below? Prove your opinion.

1) The heart is a hollow vertebra.
2) The heart is located in the upper extremity between the lungs.

3) The heart is responsible for the circulation of the blood.
4) The heart rate is 506 beats per minute.
5) Each chamber is formed by ribs.
6) The lower chamber is called a ventricle.
7) The upper chamber is called a trunk.
8) The four chambers of the heart are separated by valves.
9) The tissue of the heart consists of ten layers.
10) The inner linings of the heart are the endocardium and pericardium.

Suggestions for useful phrases:

When you agree	When you disagree	When you only partially agree
I totally agree I quite agree I suppose so Quite so There's no denying it That's true No doubt	Of course, not On the contrary I don't really think so Nothing of the kind Nonsense Far from it It is out the question I hardly think so	To a certain extent I am not certain Yes, in a way I agree to some extent

10. Insert the missing prepositions (from; per; of; in; to).

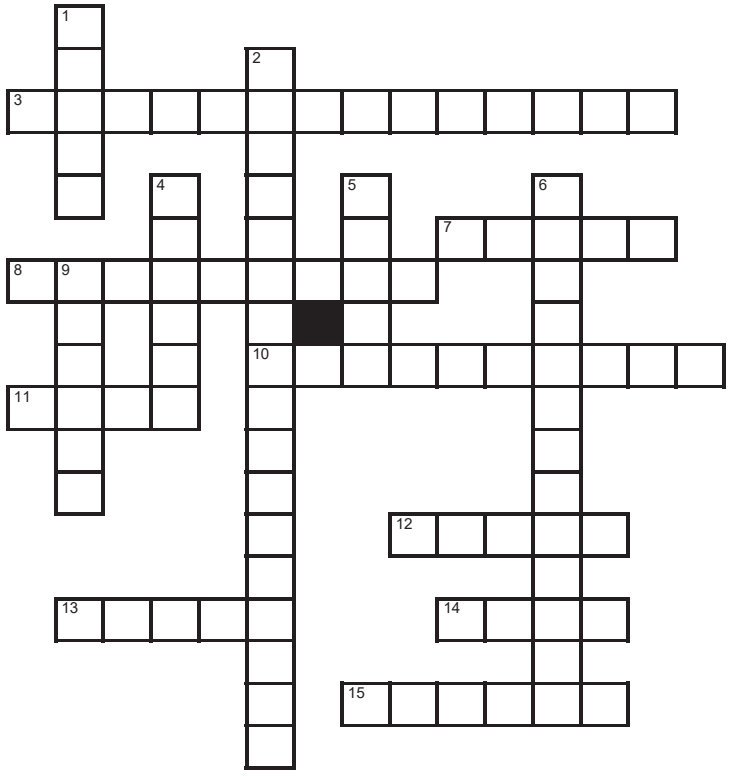
1) During physical exercises the amount ….. blood pumped per minute increases several times.
2) The superior vena cava and inferior vena cava carry blood ….. the body to the right atrium.
3) The pericardium consists ….. fibrous connective tissue.
4) Seven large veins carry blood ….. the heart.
5) The heart makes from 60 to 72 beats ….. minute.
6) …… some months the rate of your heartbeat will average about 83 beats per minute.

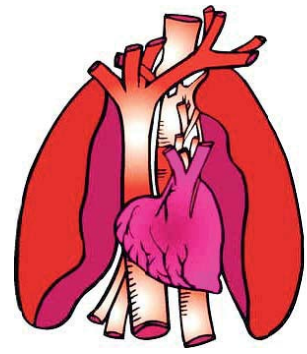
11. Fill in the blanks with the prepositions where necessary.

1. The blood vessels are organs ….. the cardio-vascular system, and they form a close circuit ….. tubes that carries blood ….. the heart …… the body cells and back again. 2. The vessels become smaller as they extend farther ….. the heart. 3. Arterioles are branches ….. arteries. 5. Veins carry blood ….. the cells. 6. The veins increase ….. size closer ….. the heart. 7. Venous walls are similar ….. arterial walls, but are thinner and contain less muscle and elastic tissues. 8. Capillaries form connections ….. arterioles and venules. 9. Oxygen is given up …..capillaries ….. the tissues, and carbon dioxide ….. the tissue is taken up ….. the capillaries. 10. The entire circulatory system is lined ….. simple squamous epithelium. 11. The various tissue circulations are arranged ….. parallel circuits with certain morphological and functional differentiations.

12. Complete the crossword puzzle to find out principal parts and main functions of the cardiovascular system.

The Circulatory System





Across

3. The place where nutrients enter the blood.
7. The pump in the circulatory system.
8. A small vessel that connects veins and arteries.
10. The circulatory system _____ nutrients, gases, liquids, and heat around the body.
11. The circulatory system transports this, which helps regulate temperature.
12. The liquid in the circulatory system.
13. The place where oxygen enters the blood and carbon dioxide leaves the blood.
14. A vessel that moves blood to the heart.
15. A gas that is transported in arteries from the lungs to the rest of the body via the heart.

Down

1. The heart _____ blood.
2. The heart, blood, and vessels.
4. Blood in arteries is _____ red because it is rich in oxygen.
5. The largest artery in the body.
6. A waste gas that is transported in veins from the body to the lungs via the heart.
9. A vessel that moves blood away from the heart.

13. a) Listen to the "Circulatory System" Song and fill in the gaps.

"CIRCULATORY SYSTEM" SONG

It transfers oxygen, food
Collects waste, travels it moves
The _____ it's moving in tubes
And now it circulates

The _____ is an organ which
Never gets tired or quits
Into four parts it is split
_____ it will circulate

The _____ is moving
In, out, _____ flowing
Top two same for lower
Where you think it's going, baby

_____, upper part-two
And they're called _____
_____ lower
Circulatory

Blood's made of red 'n white
Cells and platelets
Floating in _____
Circulatory

In _____, blood moves
Away _____
Capillaries smaller
Circulatory

_____ divides into four
_____ A, O, B
AB together
Circulatory

Your blood is made up of cells
_____ then platelets so small
_____ wounds, _____ germs,
that's not all
_____ your temperature

Blood flows from the _____
To smaller _____
Their walls they are one cell thick
Pass fluid tissue

Your body is _____
Ripped jeans, skin is _____
Clot right threads of fibrin
Where it prevents _____ entering

_____, upper part-two
And they're called _____
_____ lower
Circulatory

Blood's made of red 'n white
Cells and platelets
Floating in _____
Circulatory

In _____, blood moves
Away _____
Capillaries smaller
Circulatory

_____ divides into four
_____ A, O, B
AB together
Circulatory

Blood passes through the heart _____
Pumped from right side
Heart to the lungs sacs
Picks up fresh _____

Blood returns to the _____ side
Pumped to body
And you should know that
It gives it _____

Blood's made of red 'n white
Cells and platelets
Floating in _____
Circulatory

In _____, blood moves
Away _____
Capillaries smaller
Circulatory

_____ divides into four
_____ A, O, B
AB together
Circulatory

Blood passes through the heart _____
Pumped from right side
Heart to the lungs sacs
Picks up fresh _____

Blood returns to the _____ side
Pumped to body
And you should know that

b) Look through the song again and complete the table given below.

	Names	**Function(s)**
Heart parts		
Vessels		
Fluids		
Blood elements		

NERVOUS SYSTEM

Active Vocabulary:

1.	**nerve (n.)** **nervous (adj.)**	/nɜ:(r)v/ /ˈnɜ:(r)vəs/	нерв нервовий	a whitish fibre or bundle of fibres in the body that transmits impulses of sensation to the brain or spinal cord, and impulses from these to the muscles and organs
2.	**cell (n.)** **cellular (adj.)**	/sɛl/ BrE/ˈsɛljʊlə/ AmE /ˈseljələr/	клітина клітинний	the smallest structural and functional unit of an organism, which is typically microscopic and consists of cytoplasm and a nucleus enclosed in a membrane
3.	**neuron (n.)**	/ˈnjʊərɒn/	нейрон	a specialized cell transmitting nerve impulses; a nerve cell
4.	**axon (n.)**	BrE /ˈaksɒn/ AmE /ˈæksɑ:n/	аксон	the long threadlike part of a nerve cell along which impulses are conducted from the cell body to other cells
5.	**dendrite (n.)**	/ˈdɛndrʌɪt/	дендрит	a short-branched extension of a nerve cell, along which impulses received from other cells at synapses are transmitted to the cell bod
6.	**synapse (n.)**	/ˈsʌɪnaps/, /ˈsɪnaps/	синапс	a junction between two nerve cells, consisting of a minute gap across which impulses pass by diffusion of a neurotransmitter
7.	**central nervous system (CNS)**	/ˈsɛntr(ə) ˈnɜ:(r)vəs ˈsɪstəm/	центральна нервова система (ЦНС)	the complex of nerve tissues that controls the activities of the body. In vertebrates it comprises the brain and spinal cord
8.	**peripheral nervous system (PNS)**	/pəˈrɪf(ə)r(ə)l ˈnɜ:(r)vəs ˈsɪstəm/	периферична нервова система (ПНС)	the nervous system outside the brain and spinal cord
9.	**brain (n.)**	/breɪn/	мозок	an organ of soft nervous tissue contained in the skull of vertebrates, functioning as the coordinating centre of sensation and intellectual and nervous activity
10.	**spinal cord**	/ˈspʌɪn(ə)l kɔ:(r)d/	спинний мозок	the cylindrical bundle of nerve fibres and associated tissue which is enclosed in the spine and connects nearly all parts of the body to the brain, with which it forms the central nervous system

11.	**meninges (n.)**	/mɪˈnɪndʒiːz/	мозкові оболонки	the three membranes (the dura mater, arachnoid, and pia mater) that line the skull and vertebral canal and enclose the brain and spinal cord
12.	**dura mater (n.)**	/ˌdjʊərə ˈmeɪtə(r)/	тверда мозкова оболонка	the tough outermost membrane enveloping the brain and spinal cord
13.	**arachnoid (n.)**	/əˈraknɔɪd/	павутинна оболонка мозку	a fine, delicate membrane, the middle one of the three membranes or meninges that surround the brain and spinal cord, situated between the dura mater and the pia mater
14.	**pia mater (n.)**	/ˈpiːə ˈmeɪtə(r)/	м'яка оболонка мозку	the delicate innermost membrane enveloping the brain and spinal cord
15.	**afferent (adj.)**	/ˈaf(ə)r(ə)nt/	аферентний	conducting or conducted inwards or towards something (for nerves, the central nervous system; for blood vessels, the organ supplied)
16.	**efferent (adj.)**	/ˈɛf(ə)r(ə)nt/	еферентний	conducted or conducting outwards or away from something (for nerves, the central nervous system; for blood vessels, the organ supplied)

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
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- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Say whether the following statements are true (T) or false (F). Use your background knowledge of Anatomy and History of Medicine to justify your answers.

- ❖ The nervous system is tissue made up of five classes of cells.
- ❖ Neuroglia is tissue that surrounds and supports neurons in the nervous system.
- ❖ Aristotle thought that the nervous system was controlled by the brain.
- ❖ Galen said that the nervous system was controlled by the heart.
- ❖ A neuron is any of the impulse-conducting cells that constitute the brain, spinal column, and nerves.
- ❖ Your spinal cord starts at the base of your skull, and runs down through your back.
- ❖ Some nerves are so long that they connect your spinal cord to your feet.
- ❖ Sometimes our bodies can react faster than our brains.

1. Read the text given below.

NERVOUS SYSTEM

The nervous system is the human's information centre and control system. The basic unit in the system is the nerve cell, called neuron. A neuron consists of a cell body, one major branching fiber (axon), and numerous smaller branching fibers (dendrites). Each neuron is connected to other neurons by synapses on the axons and dendrites. A neuron receives chemical signals from other neurons through the synapses. All of these incoming signals are combined as an electrical signal within the neuron, and it may or may not send an outgoing chemical signal down its axon to another set of synapses. The nervous system can be divided into central nervous system (CNS) and peripheral nervous system (PNS).

The CNS processes information, initiates responses, and integrates mental processes. The central nervous system consists of the brain and the spinal cord. The brain is protected by the skull, and the spinal cord is protected by the vertebrae. Three connective tissue layers (the meninges) surround and protect the brain and spinal cord. They are dura mater (outermost), arachnoid (middle), and pia mater (innermost). In addition, a liquid called cerebrospinal fluid, between the arachnoid and pia mater, protects the brain and spinal cord from injury.

The peripheral nervous system (PNS) consists of cranial part, consisting of 12 pairs of nerves, and spinal part, consisting of 31 pairs of nerves. The PNS collects information from numerous sources both inside and on the surface of the individual and relays it by way of afferent fibers to the central nervous system. Efferent fibers in the PNS relay information from the CNS to various parts of the body, primarily to muscles and glands. Peripheral nerves run from the spinal cord to all parts of the body. The parts of this system are named for the four spinal regions from which they branch: neck (cervical), chest (thoracic), lower back (lumbar), and pelvis (sacral). The spinal cord acts as a central communication network to transmit signals back and forth be-

tween the brain and peripheral nervous system. Two subdivisions comprise the PNS: the afferent, or sensory, division and the efferent, or motor, division. Afferent neurons carry action potentials from the periphery to the CNS, and efferent neurons carry action potentials from the CNS to the periphery. The efferent neurons belong to either the somatomotor (somatic) nervous system, which supplies skeletal muscles, or to the autonomic nervous system (ANS), which supplies smooth muscles, cardiac muscle, and glands. The ANS regulates the activities of viscera such as the heart, blood vessels, digestive organs and reproductive organs. This system controls distribution of blood flow, regulation of blood pressure, heartbeat, sweating, and body temperature.

2. Answer the following questions.

1) What is the nervous system of the human?
2) What is the major unit of this system?
3) What does a neuron consist of?
4) How is a neuron connected to other neurons?
5) What is the function of a neuron?
6) What parts is the nervous system divided into?
7) What does the CNS consist of?
8) Where are the brain and spinal cord located?
9) What meninges do you know?
10) What is cerebrospinal fluid?
11) What parts is the PNS composed of?
12) What neurons does the PNS consist of?
13) What is the function of the PNS?
14) What is the function of the spinal cord?
15) What is the major function of the ANS?

3. Insert the missing words.

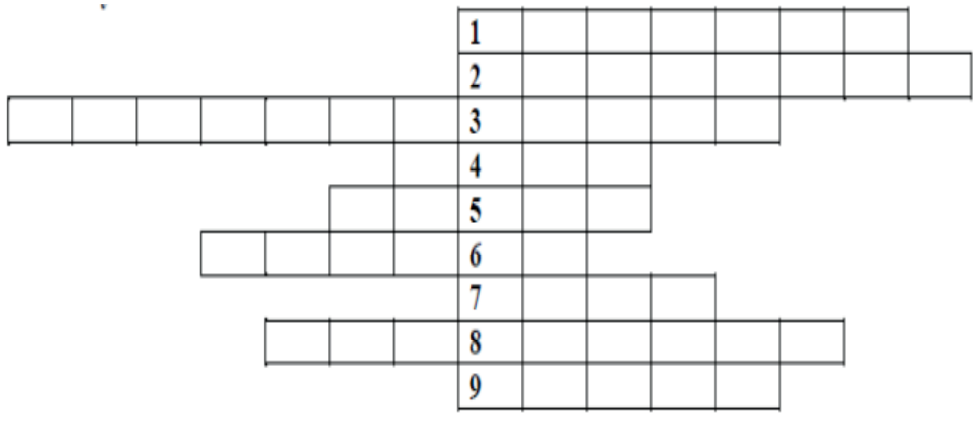
1. The nervous system is the information centre and …….. system.
2. The basic …….. is the neuron.
3. A neuron …….. a cell body, axon, and dendrites.
4. A neuron …….. chemical signals from other neurons through the ……... .
5. Neuron sends an outgoing …….. signal to another synapses.
6. The nervous system is divided into …….. nervous system and …….. nervous system.
7. The central nervous system consists of the brain and the …….. .
8. The meninges surround and …….. the brain and spinal cord.
9. They are dura mater, …….. and pia mater.
10. The peripheral nervous system …….. cranial part and spinal part.
11. It is composed of afferent and …….. neurons.
12. The peripheral nervous system collects information from numerous sources and …….. it to the central nervous system.

13. The autonomic nervous system …….. smooth muscle, cardiac muscle, and glands.
14. It regulates the …….. of the heart, blood vessels, digestive organs and reproductive organs.
15. The somatic nervous system transmits action potentials from …….. to skeletal muscles.

4. In pairs, organize the information presented in the text into the table given below. Use Appendix VIII.

Parts of the Nervous System	Structure	Function(s)
CNS		
PNS		

5. Complete the crossword puzzle and find out the key word.



1. Functional membrane-to-membrane contact of a nerve cell with another nerve cell, muscle cell, gland cell, or sensory receptor; functions in the transmission of action potentials from cell to another.

2. Portion of the brain derived from the telencephalon: the cerebral hemispheres, including cerebral cortex, cerebral medulla, and basal ganglia.

3. Important autonomic and neuroendocrine control centre beneath the thalamus.

4. Basic living subunit of humans, plants, and animals.

5. Bundle of nerve fibers and accompanying connective tissue located outside of the central nervous system.

6. Morphological and functional unit of the nervous system, consisting of the nerve cell body, the dendrites, and the axon.

7. Neuron cell body or the enlarged portion of the neuron containing the nucleus and other organelles.

8. Portion of the brain consisting of the midbrain, pons, and medulla oblongata.

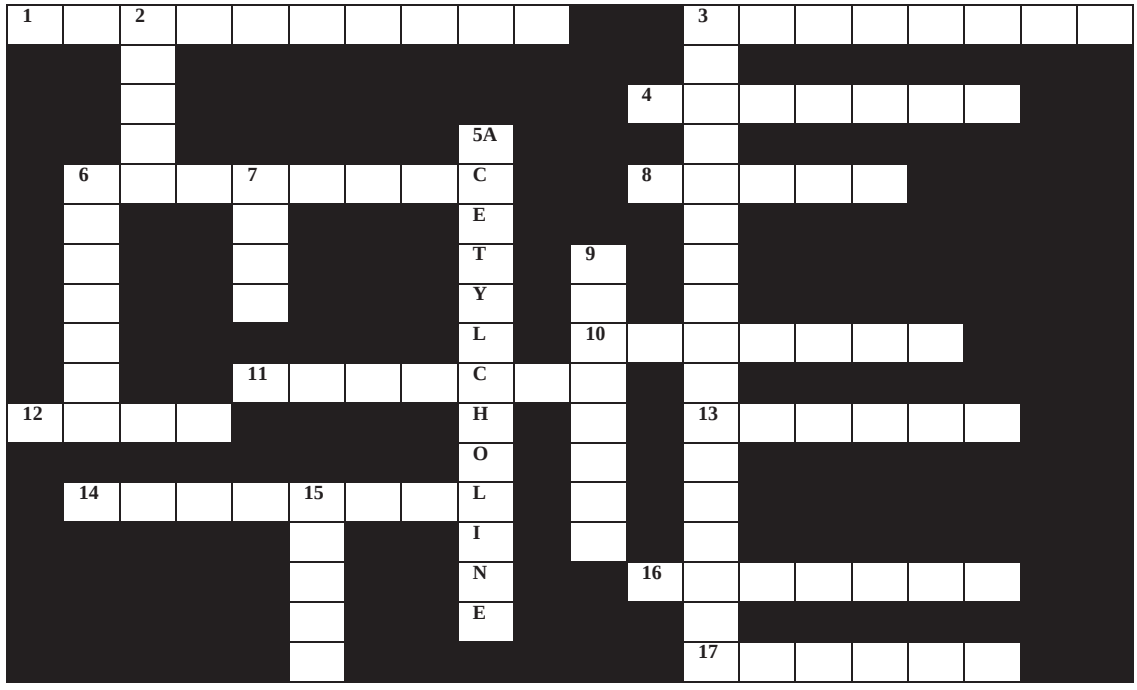
9. Perspiration; secretions produced by the sweat glands of the skin.

6. Insert the prepositions (to; at; by; for; of; from, about).

1. Connections between autonomic and other brain functions occur ___ the brainstem and hypothalamus. 2. The arterial blood supply, carrying oxygen and nutrients, is critical ___ the functioning of the brain. 3. Despite its small size and weight, the brain uses 20 percent of the heart's output of blood and 20 percent of the oxygen consumed ___ the body at rest. 4. The major function of nervous system is to collect information ___ the external conditions in relation to the body's external state, and to analyse this information. 5. The peripheral nervous system is responsible ___ the body functions, which are not under conscious control like the heartbeat or the digestive system. 6. The nervous system uses electrical impulses, which travel along the length ___ the cells. 7. The cell processes information ___ the sensory nerves and initiates an action within milliseconds.

7. Complete "The Nervous System" crossword.

THE NERVOUS SYSTEM



Across:

1. The _____nervous system connects everything to the brain and spinal cord.
3. The cells of the nervous system are called _____ _____.
4. What is the name of the membrane bound structure found in the body of the cell?
6. The small space between two nerve cells is called the _____cleft.
8. The _____neurone sends signals to your muscles to make them move.
10. The _____nervous system consists of the brain and spinal cord.
11. Neurotransmitters are stored and packaged into a_____before being released into the synaptic cleft.
12. A neurone is a type of nerve _____ .
13. The_____sheath is an insulating layer, surrounding peripheral nerve cells.
14. The part of the brain that deals with planning, language, recognising images and memory is called the __ cortex.

Hints for difficult questions:

→ Synapses are also called **synaptic clefts**
→ Within neurons, neurotransmitters are packaged into **vesicles**
→ A synapse can also be called a **synaptic cleft**.
→ **Acetylecholine** is a neurotransmitter.

Down:

2. The _____neurone connects neurones to other neurones.
3. The chemicals in the brain that facilitate communication across the nervous system are called_____.
5. The synapses at the neuromuscular junction use a neurotransmitter called_____ _____.
7. An_____is a long, slender projection of a nerve cell that conducts electrical impulses away from the cell body.
9. The sensory nerve terminal that responds to stimuli at the synapse is called a _____.
15. The Central nervous system is made up of the spinal cord and the _____.
16. The_____neurone communicates with the sense organs.
17. A nerve impulse is an electrical _____.

HUMAN BRAIN

Active Vocabulary:

1.	**cerebrum (sing.)** **cerebra (pl.)**	/ˈsɛrɪbrəm/ /ˈsɛrɪbrə/	головний мозок	the front part of the brain, responsible for thoughts, emotions and personality
2.	**hemisphere (n.)**	/ˈhɛmɪsfɪə/	півкуля	either half of the brain
3.	**cortex (sing.)** **cortices (pl.)**	/ˈkɔːtɛks/ /ˈkɔːtɪsiːz/	кора головного мозку	the outer layer of an organ the brain
4.	**wiggly (adj.)** **(syn.:** wavy)	/ˈwɪgli/	хвилястий, із звивинами	(of a line) having many curves in it
5.	**sulcus (sing.)** **sulci (pl.)**	/'səlkəs/ /ˈsəlkʌi/	борозна	a shallow furrow on the surface of the brain separating adjacent convolutions
6.	**gyrus (sing.)** **gyri (pl.)**	/ˈdʒʌɪrəs/ /ˈdʒʌɪri/	звивина	a convoluted ridge between anatomical grooves
7.	**fissure (n.)**	/ˈfɪʃə/	тріщина	a natural cleft between body parts or in the substance of an organ
8.	**lobe (n.)**	/ləʊb/	доля (мозку)	a part of an organ in the body, especially the lungs or brain
9.	**frontal (adj.)**	/ˈfrʌntl/	лобова	connected with the front part of the head
10.	**temporal (adj.)**	/ˈtɛmpərəl/	скронева	near the temple(s) at the side of the head
11.	**parietal (adj.)**	/pəˈraɪɪtl/	тім'яна	relating to, or located near or within the parietal bone or parietal lobe of the head
12.	**occipital (adj.)**	/ɒkˈsɪpɪtl/	потилична	relating to, or located at the back and base of the skull
13.	**thalamus (sing.)** **thalami (pl.)**	/ˈθæləməs/	таламус	the largest subdivision of the diencephalon that consists chiefly of an ovoid mass of nuclei in each lateral wall of the third ventricle and serves chiefly to relay impulses and especially sensory impulses to and from the cerebral cortex

14.	**cerebellum (sing.)** **cerebellums, cerebella (pl.)**	/ˌsɛrɪˈbɛləm/	мозочок	the part of the brain at the back of the head that controls the activity of the muscles
15.	**brain stem**	/breɪn stɛm/	мозковий стовбур	the central part of the brain, which continues downwards to form the spinal cord
16.	**pons (sing.)** **pontes (pl.)**	/pɒnz/ /pɒntiz/	міст	a broad mass of chiefly transverse nerve fibers in the mammalian brain stem lying ventral to the cerebellum at the anterior end of the medulla oblongata
17.	**medulla oblongata (sing.)** **medulla oblongatas, medullae oblongatae (pl.)**	/mɛˈdʌlə oblongata/ /mɛˈdʌli oblongati/	довгастий мозок	the part of the vertebrate brain that is continuous posteriorly with the spinal cord and that contains the centres controlling involuntary vital functions
18.	**midbrain (n.)**	/midbrain/	середній мозок	a small central part of the brain
19.	**diencephalon (sing.)** **diencephalon, diencephala (pl.)**	/ˌdʌɪɛnˈsɛf(ə)lɒn/	проміжковий мозок	the posterior subdivision of the forebrain
20.	**limbic system**	/limbic ˈsɪstɪm/	лімбічна система	a group of subcortical structures (such as the hypothalamus, the hippocampus, and the amygdala) of the brain that are concerned especially with emotion and motivation
21.	**reward circuit**	/rɪˈwɔːd ˈsɜːkɪt/	схема винагороди	a collection of brain structures and neural pathways that are responsible for reward-related cognition, including associative learning, incentive salience (i.e., motivation and "wanting", desire, or craving for a reward), and emotions that involve pleasure

22.	**anticipation (n.)**	/ænˌtɪsɪˈpeɪʃ(ə)n/	очікування, передчуття	a feeling of excitement about something (usually something good) that is going to happen
23.	**amygdala (sing.)** **amygdalae (pl.)**	/əˈmɪgdələ/ /əˈmɪgdəli/	мигдалина	either of two areas in the brain that are linked to memory, the emotions and the sense of smell
24.	**hippocampus (sing.)** **hippocampi (pl.)**	/ˌhɪpəʊˈkæmpəs/ /ˌhɪpəʊˈkæmpai/, /ˌhɪpəʊˈkæmpi/	гіпокамп	either of the two areas of the brain thought to be the centre of emotion and memory
25.	**retrieve (v.)**	/rɪˈtriːv/	витягувати, відновлювати	to get and bring back
26.	**hypothalamus (n.)**	/ˌhaɪpəˈθæləməs/	гіпоталамус	an area in the central lower part of the brain that controls body temperature, hunger and the release of hormones
27.	**pituitary gland**	/pɪˈtju(ː)ɪtəri glænd/	гіпофіз	a small organ at the base of the brain that produces hormones that influence growth and sexual development
28.	**pineal gland**	/ˈpɪnɪəl glænd/	епіфіз	a small organ in the brain that releases a hormone
29.	**circadian rhythm**	/səːˈkeɪdɪən ˈrɪðəm/	циркадний (циркадіанний) ритм	a daily rhythmic activity cycle, based on 24-hour intervals

Individual work.

Use the following sources to listen to the variants of pronunciation of the medical terms in Active Vocabulary section. Practice pronouncing them.

- Dictionary.com: https://www.dictionary.com/
- Google Translate: https://translate.google.com/
- Merriam-Webster Medical Dictionary: https://www.merriam-webster.com/medical.
- Oxford Advanced Learner's Dictionary: https://www.oxfordlearnersdictionaries.com/us/definition/english/
- The Free Dictionary by Farlex. Medical Dictionary: https://medical-dictionary.thefreedictionary.com/
- Wiktionary, the free dictionary: https://en.wiktionary.org/wiki/Wiktionary:Main_Page.
- WooordHunt: https://wooordhunt.ru/

Warm-up Activity

Discuss the following statements with your partner or in the group.

Check out these fascinating facts about the human brain…

- ❖ The human brain will grow three times its size in the first year of life. It continues to grow until you are about 18 years old.
- ❖ Brain surgery can be performed while the patient is awake with no pain or discomfort. The brain has no pain receptors and feels no pain.
- ❖ Frequent jet lag can damage memory. Stress hormones released during jet lag can damage the temporal lobe and memory.
- ❖ Alcohol does not make you forget anything. When you get blackout drunk, the brain temporarily loses the ability to create memories.
- ❖ There are 2,500,000 gigabytes of storage space in your brain. The iPhone 7 has 256.
- ❖ The brain of an adult human weighs around 3 pounds (1.5 kg). Although it makes up just 2% of the body's weight, it uses around 20% of its energy.
- ❖ If you laid out all of the blood vessels in your brain end-to-end, they would stretch halfway to the moon (about 120,000 miles).
- ❖ Reading aloud promotes brain development.
- ❖ The attention spans of human brains are getting shorter. We have lost almost four seconds of our attention span in the past 15 years. This means we cannot concentrate on one thing for more than eight seconds on an average.
- ❖ Dreams are believed to be a combination of imagination, phycological factors, and neurological factors. They prove that your brain is working even when you are sleeping.
- ❖ The human brain begins to lose some memory abilities as well as some cognitive skills by your late 20s.
- ❖ The human brain gets smaller as we get older. This usually happens sometime after middle age.
- ❖ During the mummification process, Egyptians would usually remove the brains through the nose.

1. Read the text, then match the headings with the corresponding paragraphs.

a) connecting the brain and the spinal cord
b) processing emotions and drives
c) secreting hormones
d) the commander of our body and thoughts
e) the largest part of the brain
f) the importance of brain
g) a key role in coordination

HUMAN BRAIN: MAJOR STRUCTURES AND THEIR FUNCTIONS

The brain is the command centre for the entire body; it makes us who we are. It receives information from our senses and controls our thoughts and movement. To better explore this incredibly complex organ, scientists have divided it into parts and regions.

The largest part is ***the cerebrum***, which is divided into two sides, called hemispheres, just like the earth. The outer layer is known as ***the cortex***, which is Latin for "bark". Like a tree's bark, the surface is only 1/8-inch-thick, but it also contains millions of cells with fibers that send messages to other brain areas. More than 2/3 of the surface of the cortex hides in hundreds of little folds that make the wiggly, visible lines on the brain. Animals that are less intelligent have a smoother brain surface. The cortex is divided into four regions: *the frontal lobe* is for personality and emotions, higher thinking skills, like problem solving; and controlling movement. It continues to develop until you are in your mid 20s; *the temporal lobe* helps process your hearing and other senses, and helps with language and reading; *the parietal lobe* is involved with your senses, attention, and language; *the occipital lobe* helps your eyes see, including recognition of shapes and colours. ***The thalamus,*** in the centre of the brain, relays sensory and motor information to the cortex and helps with consciousness, sleep and alertness. Twelve pairs of cranial nerves carry information from your senses to and from the brain and body.

Lower in the brain we find ***the cerebellum,*** which plays a key role in motor control, coordination, and spatial navigation, so we can find our way out of a maze, for example.

Underneath is *the brain stem,* which connects the brain to the spinal cord, a nerve pathway that runs all the way down your back sending and receiving information from your senses. The brain stem includes *the pons*, which helps control our breathing, and *the medulla oblongata,* which regulates our heart, and other body reflexes like vomiting, coughing, sneezing, and swallowing.

The limbic system, a region under the cortex, processes our emotions and drives. It contains the brain's reward circuit which releases the chemical dopamine, making us feel pleasure. The anticipation of pleasure motivates us to repeat important human behaviours like eating, having fun with friends or falling in love. But it also encourages us to repeat risky behaviours, like taking drugs. Drugs signal the brain to release unusually strong amounts of dopamine. This flood of dopamine causes the "high" that drug users seek, and makes it difficult to enjoy more normal, simple pleasures. Repeated activation of this reward pathway can lead to addiction. The limbic system includes **the amygdala,** which processes emotions, and *the hippocampus* in the temporal lobe - which is like a "memory indexer" that sends memories to certain parts of the brain for storage, and retrieves them when you need them.

The brain controls many actions through rapid nerve impulses, but there are some body functions that the brain modulates over many hours or days, by secreting hormones via special glands, like *the hypothalamus,* which wakes you up in the morning, and gets the adrenaline flowing, like during a test or athletic event. *The pituitary gland* (often called the "master gland") which helps control growth, body temperature, pregnancy and child birth and the tiny *pineal gland* which helps to control sleep and circadian rhythms.

These are just a few of the parts and functions of the beautiful, amazing, and complex human brain. It is the centre of our world and seat of our intelligence. We must exercise it. protect it, and understand how important it is to every thought and action in our daily lives.

2. Answer the following questions.

1) What is the brain?
2) Where is the brain located? What is it surrounded by?
3) What are the main functions of the brain?
4) What is a hemisphere? How many hemispheres are there in the human brain? What do they constitute?
5) What is the cortex? Explain its structure.
6) What is a lobe? How many lobes are there in the human brain? Name them.
7) What are the functions of the frontal lobe? Where is it located?
8) What are the functions of the temporal lobe? Where is it located?
9) What are the functions of the parietal lobe? Where is it located?
10) What are the functions of the occipital lobe? Where is it located?
11) What is the thalamus? Where is it located? What functions does it perform?
12) What is the cerebellum? Where is it located? What functions does it perform?
13) What is the location and function of the brain stem?
14) What are the pons? What function do they perform?
15) What is the medulla oblongata? Where is it located? What function does it perform?
16) What are the functions, structure and location of the limbic system?
17) What glands can be found in the human brain? What are their locations?
18) What are the functions of the amygdala?
19) What are the functions of the hippocampus?
20) What are the functions of the hypothalamus?
21) What are the functions of the pituitary gland?
22) What are the functions of the pineal gland?

3. Complete the sentences with the missing words or phrases from the box to make them correct, complete and true.

damage	***limbic system***	***component***	***hypothalamus***	***moral centre***
blood vessels	***visual***	***central***	***ability***	***exercise***

1. Traumatic events can affect the brain's _____ to remember details.
2. Just like the rest of your body, the brain needs a healthy diet, _____, and the right amount of sleep to perform its best.
3. The brain is protected from _____by several layers of defences.
4. The problems of the brain include cancer, physical injuries such as skull fractures, and ruptures of _____ _____ that supply the brain.
5. The _____ _____ is the reason that some physical things such as eating seem so pleasurable to us.
6. The frontal lobe is considered to be the _____ _____ of the brain because it is responsible for advanced decision-making processes.
7. Different areas of the occipital lobe are specialized for different _____tasks.

8. The brain and the spinal cord make up the _____ nervous system.
9. The _____ is neurally and chemically connected to the pituitary gland.
10. Every _____ of the brain must work together in order to keep its body functioning.

4. a) Provide plural forms of the terms given below.

	Singular Form	Plural Form(s)
1.	amygdala	
2.	cerebrum	
3.	cerebellum	
4.	cortex	
5.	diencephalon	
6.	hippocampus	
7.	hypothalamus	
8.	gyrus	
9.	medulla oblongata	
10.	pons	
11.	sulcus	
12.	thalamus	

b) In pairs, take turns to name a noun in singular and ask your partner to provide its plural form and spell it.

5. Insert the prepositions.

Thalamus and hypothalamus are two important parts ___ the brain. Thalamus is a mass of grey matter forming the lateral walls of the diencephalon (the part of the brain between the brainstem and the cerebrum), which is involved ___ the transmission of some sensations. It monitors the stimuli we receive ___ suppressing some and increasing others. Hypothalamus is the part of the brain that forms the bottom ___ the third ventricle and regulates many basic body functions, such as sleep, appetite, temperature, and some emotions. The received stimuli impulses are recognized, summarized and analysed ___ the central part of the nervous system (brain). Then they sent out ___ a form of specific orders ___ different parts and organs of the human body. The investigations determined some areas ___ the brain, which control vision, hearing, movements, and emotions.

6. Match the following words with their definitions.

1.	Dura mater	**a.**	The outer layer over most of the cerebrum, the so-called "grey matter" of the brain.
2.	Cerebrum	**b.**	The upper, main and the largest part of the brain consisting of two equal hemispheres and controlling conscious and voluntary processes.
3.	Cerebral cortex	**c.**	The upper layer, the outmost of the three membranes, which surrounds the brain and spinal cord.
4.	Cerebellum	**d.**	A piece of connecting tissue, the bridge of white matter at the base of the brain, containing neural connections between the cerebrum and cerebellum.
5.	Pons	**e.**	Top of the section of the brain behind and below the cerebrum; it consists of two lateral lobes and a middle lobe and functions as the coordinating centre for muscular movements and maintains balance.

7. Compose short dialogues using the following model.

MODEL:

Student A: What regions **does** the brain **consist** of?

Student B: The brain **consists** of the cerebrum, the thalamus and hypothalamus, midbrain, pons, medulla oblongata, and cerebellum.

Student A: What **did** I **ask** the student B?

Student C: You **asked** him/her what regions the brain **consisted** of.

Student A: What **did** the student B **answer**?

Student D: He/She **answered** the brain **consisted** of the cerebrum, the thalamus and hypothalamus, midbrain, pons, medulla oblongata, and cerebellum.

- ✓ What does the brain stem control?
- ✓ What do the cranial nerves convey?
- ✓ What is a lobe? How many lobes are there in the human brain?
- ✓ What are the functions of the frontal lobe? Where is it located?
- ✓ What are the functions of the temporal lobe? Where is it located?
- ✓ What are the functions of the parietal lobe? Where is it located?
- ✓ What are the functions of the frontal lobe? Where is it located?
- ✓ What are the functions of the occipital lobe? Where is it located?
- ✓ What is the medulla oblongata? Where is it located? What function does it perform?
- ✓ What glands can be found in the human brain?

8. Read the texts in groups and complete the table given below. Then share the information from the texts with other groups of students. Discuss the texts.

Name of the Bain Part	Location	Structure	Function(s)

Text 1

The **cerebrum** is the largest part of the brain comprising the cerebral cortex and several subcortical structures. **The cerebral cortex** is the wrinkly gray outer layer of the cerebrum, responsible for higher brain processes such as sensation, voluntary muscle movement, thought, reasoning, and memory. The cortex is wrinkly in appearance. Evolutionary constraints on skull size brought about this development; it allowed for the cortex to become larger without our brains (and therefore craniums) becoming disadvantageously large, partially true, but the degree to which they correlate is not clear. The "valleys" of the wrinkles are called sulci; the "peaks" between wrinkles are called gyri. One notable sulcus is the central sulcus, or the wrinkle dividing the parietal lobe from the frontal lobe.

Beneath the cerebral cortex is **the cerebrum,** which serves as the main thought and control center of the brain. It is the seat of higher-level thought like emotions and decision making (as opposed to lower-level thought like balance, movement, and reflexes). The cerebrum is composed of gray and white matter.

The cerebrum is divided into two hemispheres and four lobes, each of which specializes in a different function. The left hemisphere is dominant with regard to language and logical processing, while the right hemisphere handles spatial perception.

Text 2

The **cerebellum** is below and behind the cerebrum and is attached to the brain stem. It controls motor function, the body's ability to balance, and its ability to interpret information sent to the brain by the eyes, ears, and other sensory organs.

The cerebellum is a separate region of the brain located behind the medulla oblongata

and pons. It is attached to the rest of the brain by three stalks, and coordinates skeletal muscles to produce smooth, graceful motions. The cerebellum receives information from our eyes, ears, muscles, and joints about the body's current positioning. It also receives output from the cerebral cortex about where these body parts should be. After processing this information, the cerebellum sends motor impulses from the brain stem to the skeletal muscles so that they can move. The main function of the cerebellum is this muscle coordination. However, it is also responsible for balance and posture, and it assists us when we are learning a new motor skill, such as playing a sport or musical instrument.

Text 3

The functions **the brain stem** governs include respiration, blood pressure, some reflexes, and the changes that happen in the body during what is called the "fight or flight" response. The brain stem is also divided into several distinct sections: the **midbrain, pons, and medulla oblongata.**

The midbrain controls motor function and convey motor information from the cerebral cortex, it is also involved in sensory information circuits.

The medulla oblongata is a major structure located in the lower half of the brainstem. It is responsible for the regulation of your heart rate, breathing, and blood pressure as well as many reflexes in our body, or things we usually do not voluntarily control, such as vomiting, sneezing, and coughing.

The pons is a major structure in the upper part of the brain stem. The pons has two important roles. The first is the regulation of breathing. In the pons, there is a structure called the pneumotaxic center that control the amount of air you breathe and how many times a minute you take a breath, which is known as the breathing rat. The pons is also involved in sensations such as hearing, taste, and balance. Finally, the pons is also involved in the regulation of deep sleep.

Text 4

The diencephalon ('interbrain') appears at the upper end of the brain stem, situated between the cerebrum and the brain stem. Its tasks include sensory function, food intake control, and the body's sleep cycle. It is home to the limbic system, which is considered the seat of emotion in the human brain. The diencephalon is made up of four distinct components: **the thalamus, the subthalamus, the hypothalamus, and the epithalamus.**

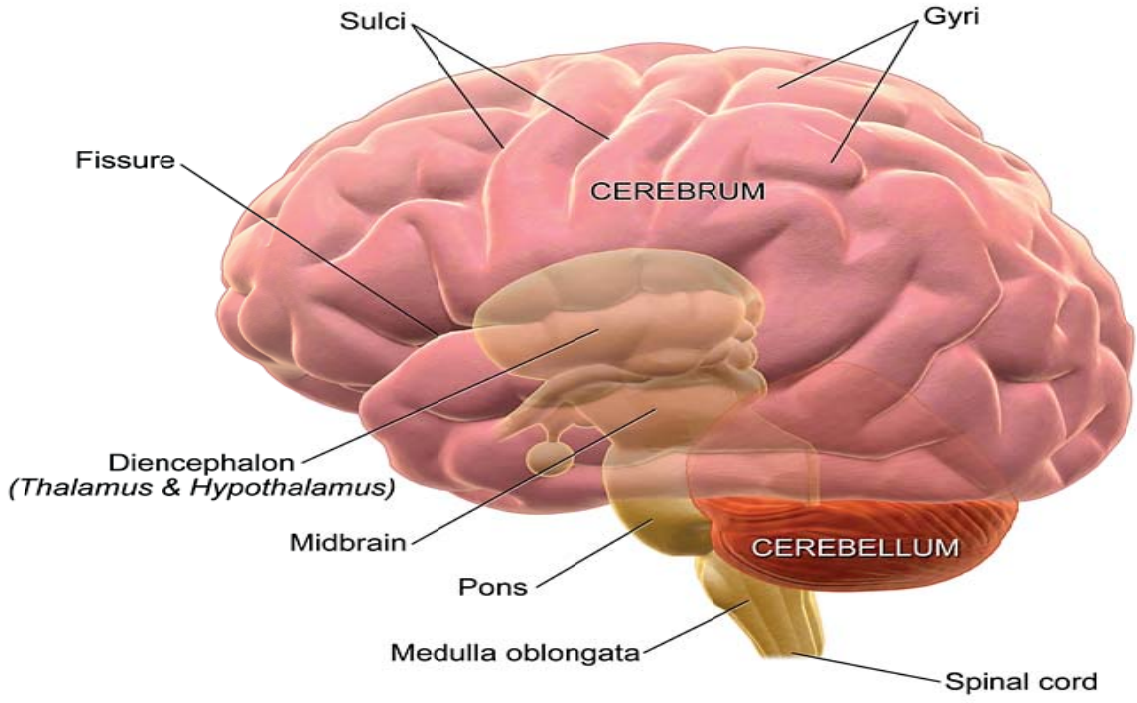
The junctions of **the thalamus** include relaying sensory and motor signals to the cerebral cortex and regulating consciousness, sleep, and alertness.

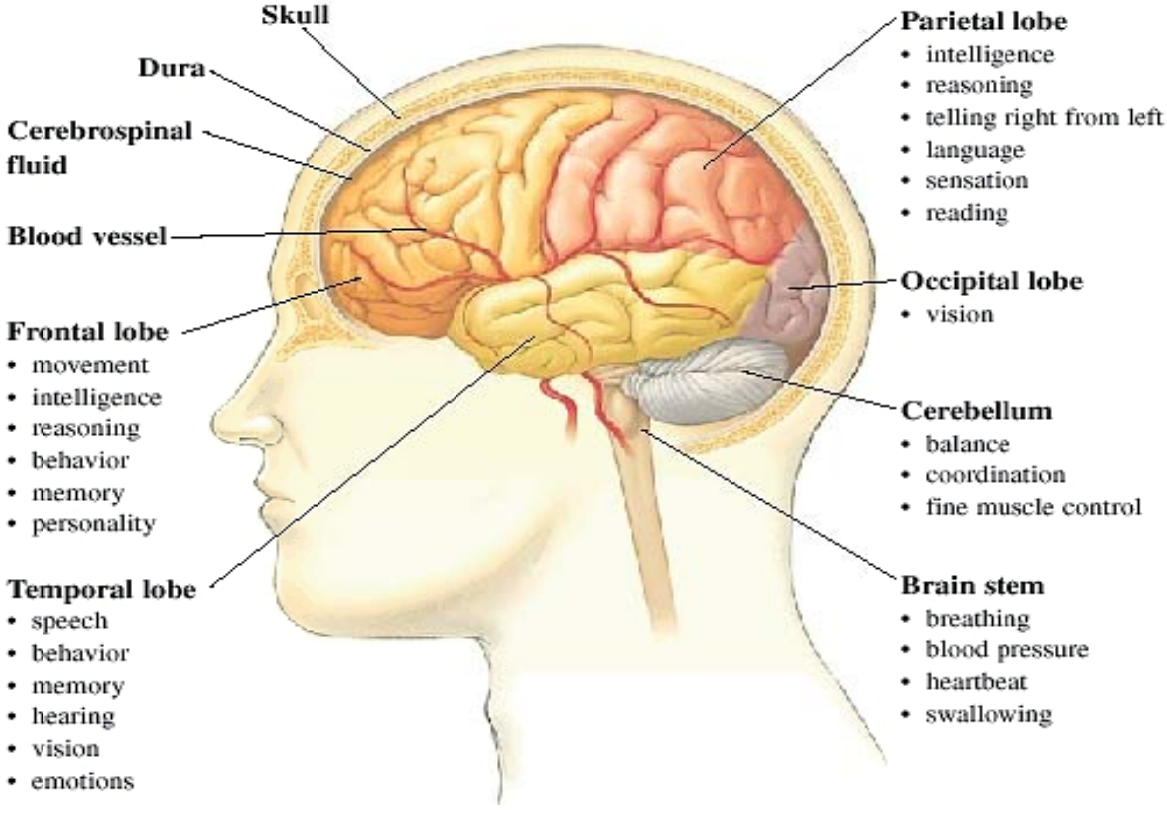
The hypothalamus is a small part of the brain located just below the thalamus. One of the most important functions of the hypothalamus is linking the nervous system to the endocrine system via the pituitary gland [pi'tju:it(d)ri] (hypophysis). The hypothalamus is responsible for regulating your hunger, thirst, response to pain, levels of pleasure, sexual satisfaction, anger and aggressive behavior, and more. It also regulates the functioning of the autonomic nervous system, which in turn means it regulates things like pulse, blood pressure, breathing, and arousal in response to emotional circumstances.

The epithalamus connects the limbic system to other parts of the brain. The main function of the epithalamus is the secretion of melatonin by the pineal gland.

9. Look at the pictures. Analyze and discuss the structure and functions of the brain.

An Introduction to Brain Structures

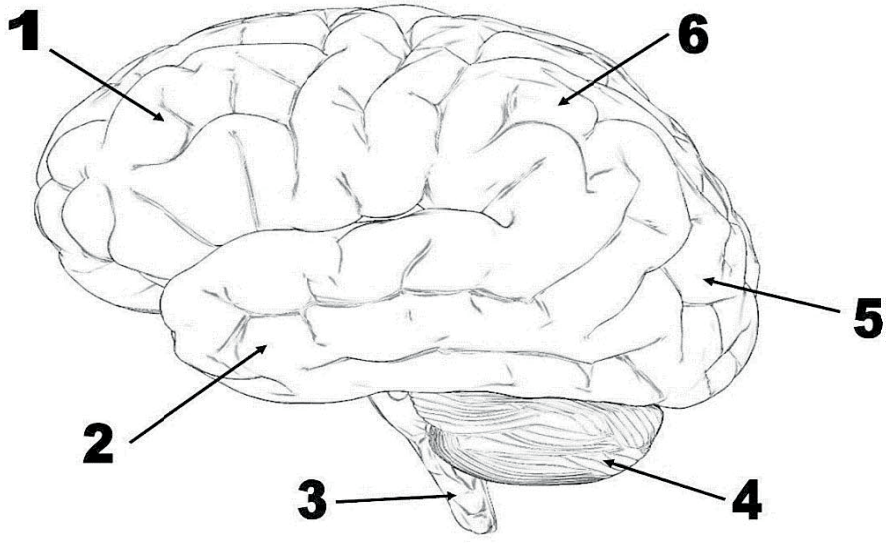




10. Match the injury problems with the part of the brain damaged. Students work in pairs.

Brain Region (functions)		Injury Problems	
1.	Brainstem (respiration, pulse, consciousness, sleep/ wake cycle, concentration and attention)	**a.**	Loss of visual capability; inability to identify colours; hallucinations
2.	Cerebellum (mobility, balance, posture)	**b.**	Short-term memory loss; inability to recognize faces; communication and comprehension problems
3.	Frontal Lobe (movement of the body, personality, concentration, planning, problem solving, meaning of words, emotional reactions, speech, smell	**c.**	Problems with breathing; inability to swallow food and water; dizziness and nausea; insomnia; sleep apnoea; irregular heartbeat (arrhythmia)
4.	Occipital Lobe (vision, colour identification)	**d.**	Inability to coordinate movement; inability to walk; tremors; paralysis
5.	Parietal Lobe (touch and pressure, size, shape, spatial perception, taste)	**e.**	Personality change; lack of attention; loss of executive function (planning, organizing, and reasoning); loss of judgment; loss of motivation; dramatic change in behaviour
6.	Temporal Lobe (hearing, recognizing faces, emotion, long-term memory)	**f.**	Inability to identify objects; inability to distinguish left from right; loss of spatial perception

11. a) Label brain lobes and explain their functions.



№	Name of the Lobe	Function(s) of the Lobe
1.		
2.		
3.		
4.		
5.		
6.		

b) In pairs, practice explaining locations and functions of the brain lobes. Student A, you are a consulting physician; Student B, you are a patient. Swap roles and practice again.

12. a) Listen to the "Brain" Song and fill in the gaps. (Follow the link: https://www.youtube.com/watch?v=CDYe7oe3iLM**).**

"BRAIN" SONG

Your brain is in control Information, nerve _____ Through _____ they're traveling Remembering from memory You've made past mistakes Helps _____ you make You use your history Remembering from memory Remembering from memory _____ most activities Mental thinking, and learning And _____ Has muscle balance _____ _____ controls the heart	Your brain is in control Information, nerve _____ Through _____ they're traveling Remembering from memory You've made past mistakes Helps _____ you make You use your history Remembering from memory Remembering from memory Brain it is divided Two halves, _____ _____ Joined by corpus callosum Each side deals with different skills

_____ has two parts in The _____ sorts impulses, enter brain And hypothalamus For _____ Controlling hunger, thirst, body temperature Your brain is in control Information, nerve _____ Through _____ they're traveling Remembering from memory You've made past mistakes Helps _____ you make You use your history Remembering from memory Remembering from memory Outer layer of the cerebrum _____ _____ Sensory, association, motor areas Let's start with _____, get info from your eyes, and sounds surrounding you And then there is the association areas Analyze for decisions In _____ areas Send orders, actions to muscles and the glands	Your brain is in control Information, nerve _____ Through _____ they're traveling Remembering from memory You've made past mistakes Helps _____ you make You use your history Remembering from memory Remembering from memory You use your history Remembering from memory

b) Look through the song again and find parts of the brain mentioned in it. Then fill in the table.

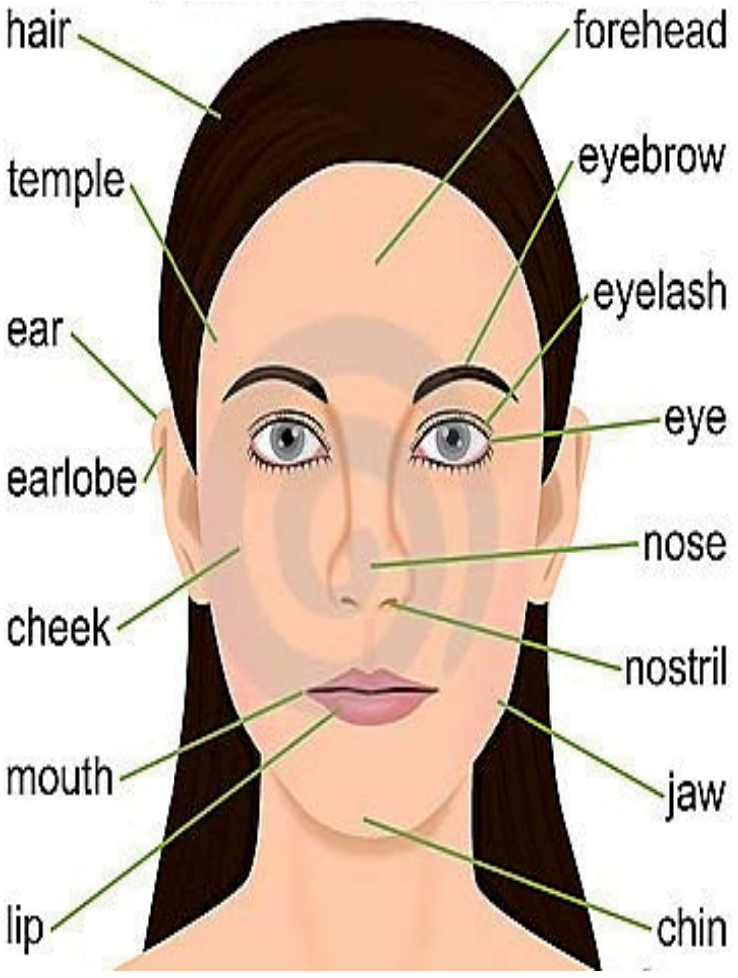
Part of the Brain	Function(s)	Derivative Adjective

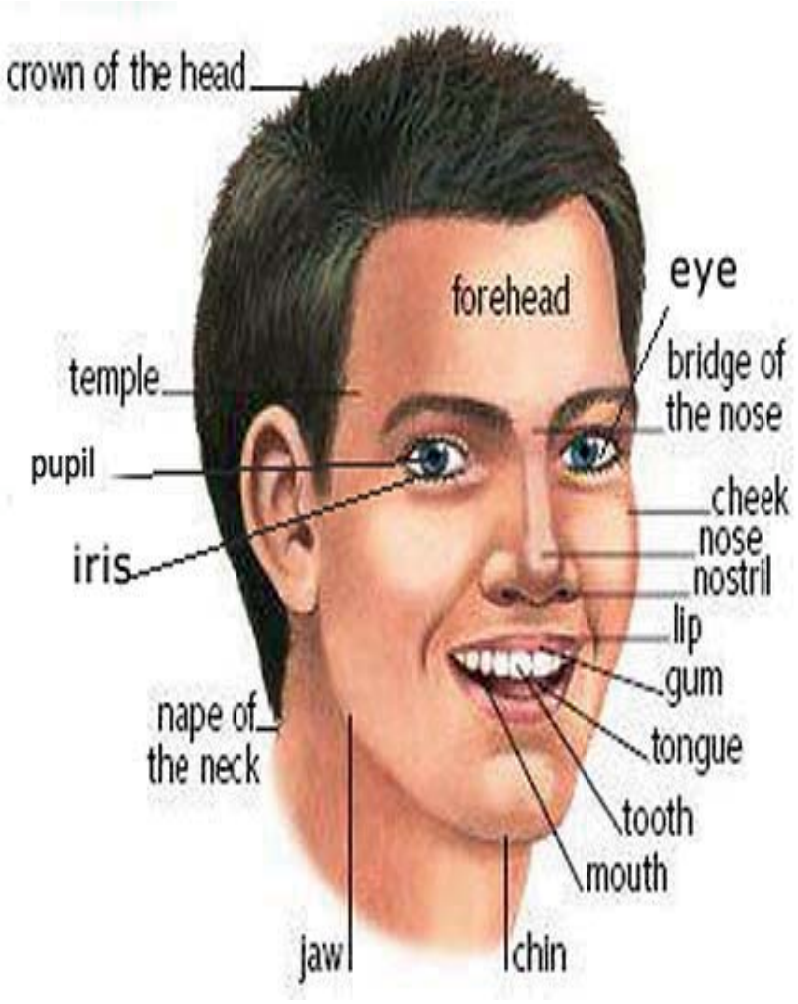
APPENDIX I

HUMAN BODY AND ITS STRUCTURE

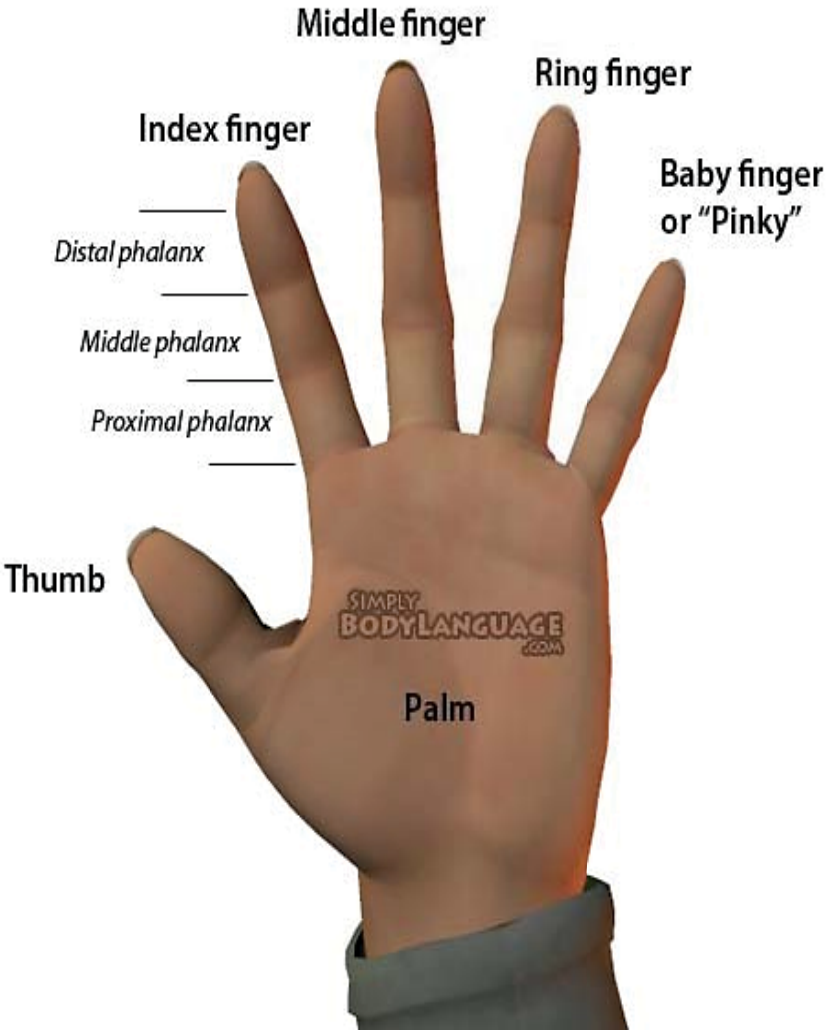
PARTS OF THE BODY

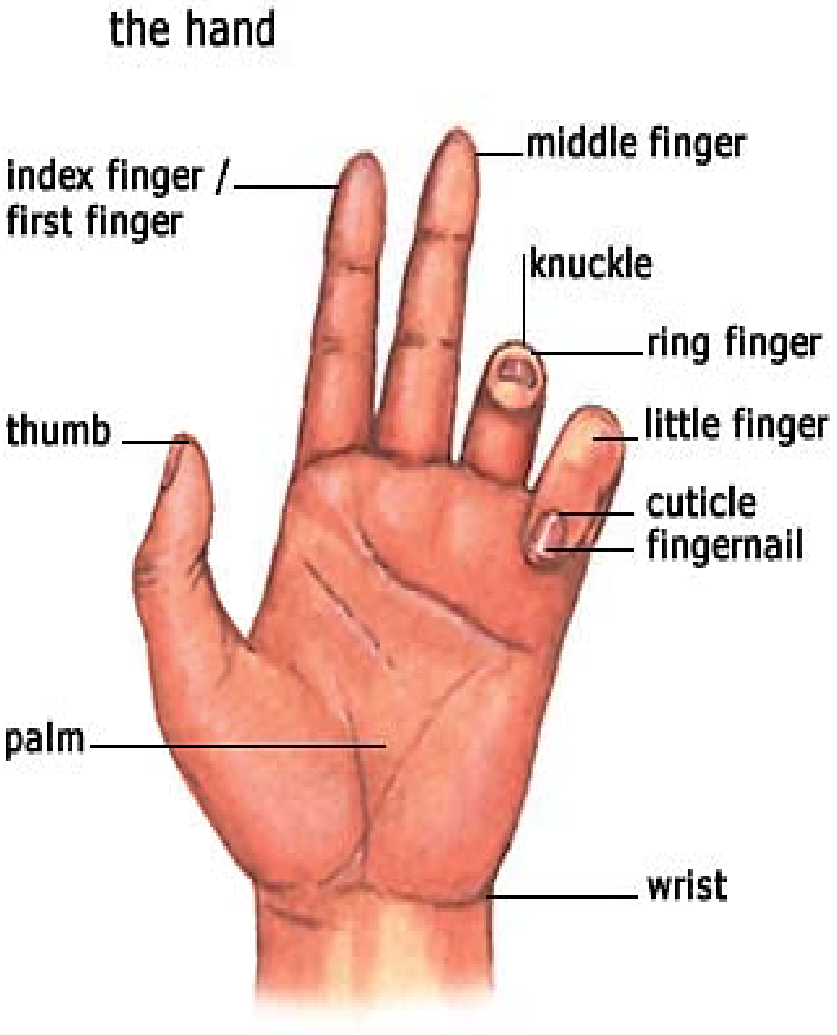
PARTS OF THE HEAD



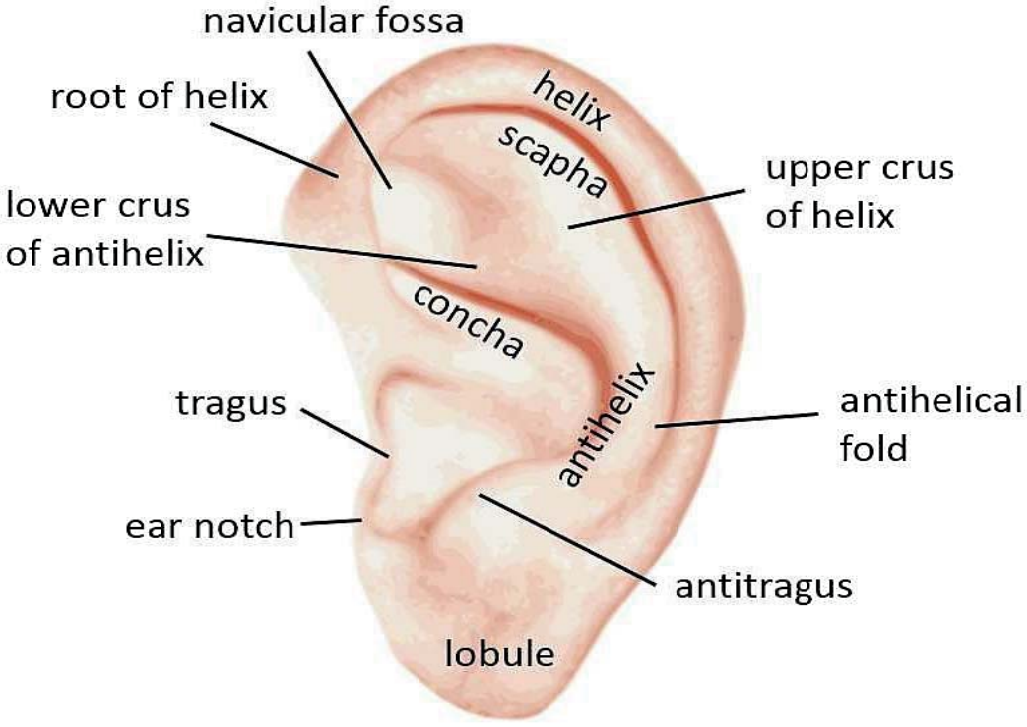


PARTS OF THE HAND

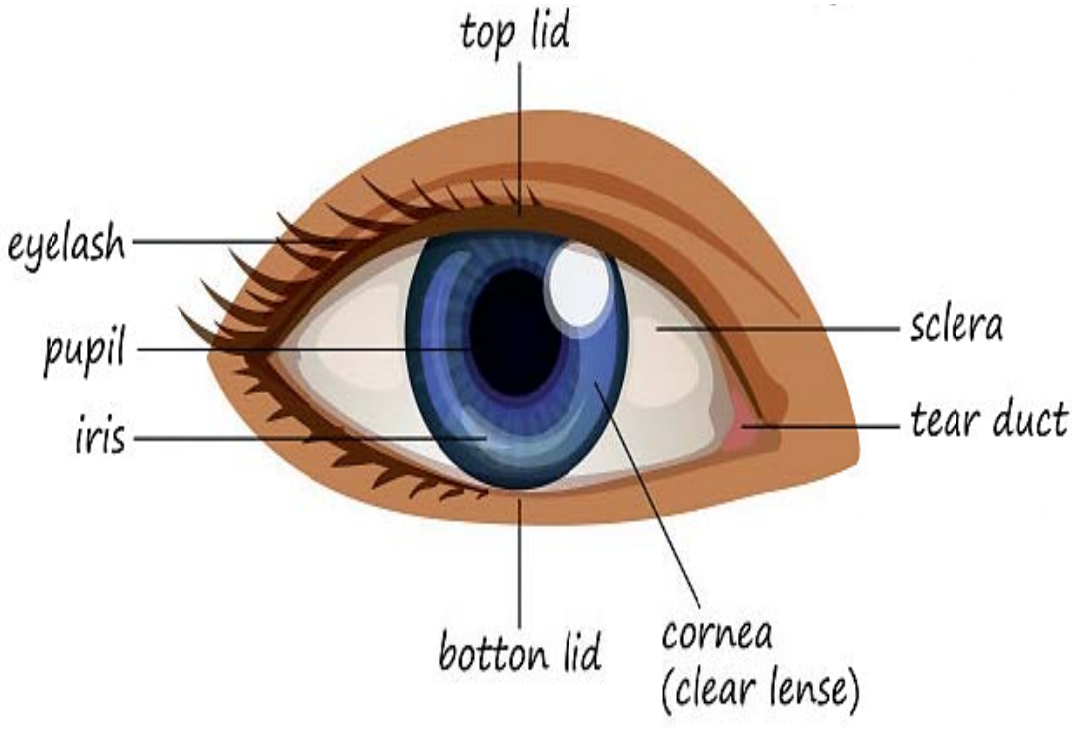




PARTS OF THE EAR

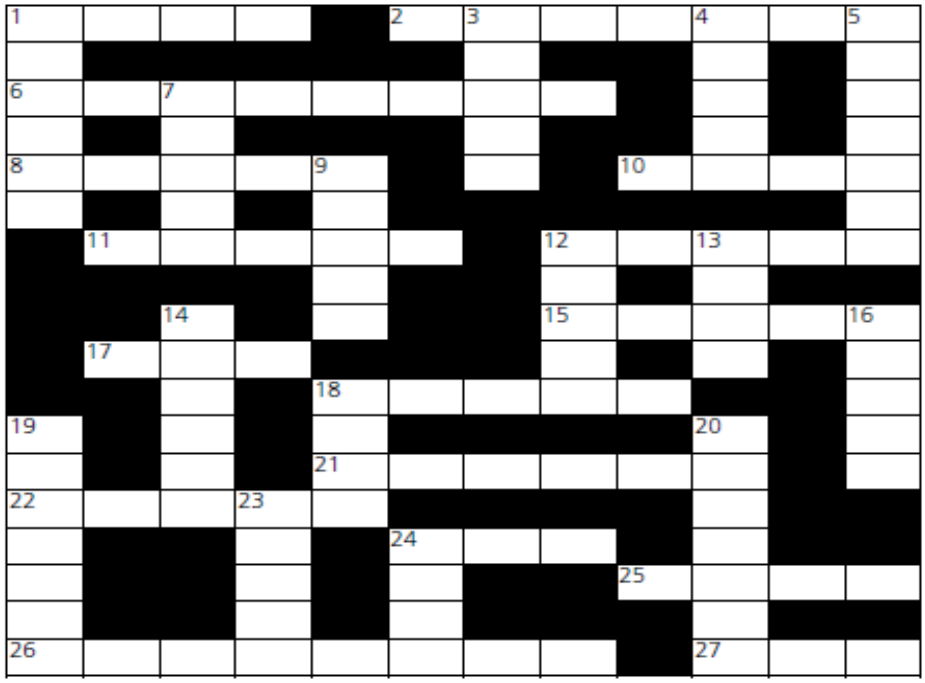


PARTS OF THE EYE



Parts of the body crossword 1

All the answers in this crossword are parts of the body.



ACROSS

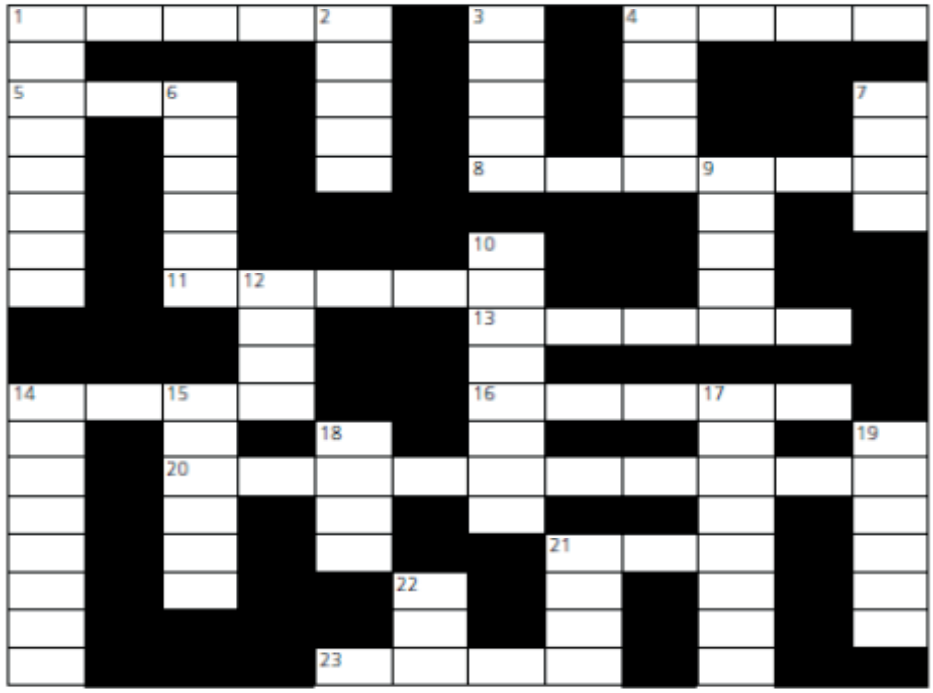
1. Joins the femur and the tibia (4)
2. The organ into which food passes after being swallowed and where the process of digestion continues (7)
6. The first part of the small intestine (8)
8. Hinged joint in the arm (5)
10. It grows on your head (4)
11. The upper chambers of 18 across (5)
12. Breathing organs (5)
15. They carry blood to 11 across (5)
17. Part of the body with which a person sees (3)
18. The organ which moves blood around your body (5)
21. Cell in the nervous system which transmits impulses (6)
22. An organ which secretes substances which act elsewhere in the body (5)
24. A white oily substance in the body, which stores energy and protects the body against cold (3)
25. Tissue which forms the outside surface of the body (4)
26. Type of nerve ending or cell (8)
27. For hearing with (3)

DOWN

1. It cleans your blood (6)
3. Main part of the body, without the arms, legs and head (5)
4. A major artery (5)
5. Connected to 8 across, funnily enough (7)
7. Eye socket (5)
9. Narrow part of the body below the chest and above the buttocks (5)
12. The major detoxicating organ (5)
13. Hard growth which forms on the top surface at the end of each finger and toe (4)
14. Cheekbone (6)
16. Protects the brain (5)
18. At the end of your arm (4)
19. The throat or neck, major artery (7)
20. The back of each joint on a person's hand (7)
23. Bundle of fibres which take impulses from one part of the body to another (5)
24. End part of the leg on which a person stands (4)

Parts of the body crossword 2

All the answers to this crossword are parts of the body.



ACROSS

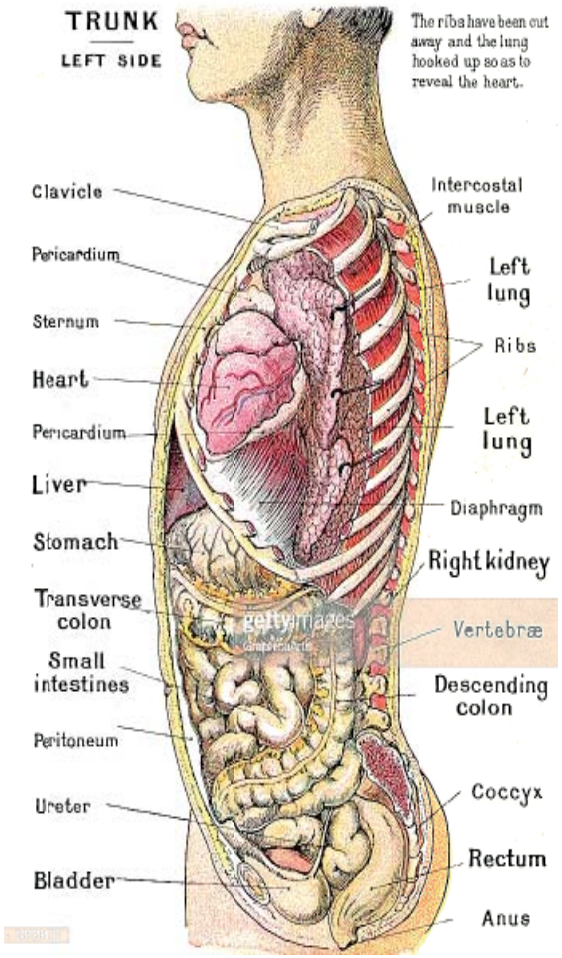
1. Ligament (5)
4. One of the calcified pieces of connective tissue which make 1 down (4)
5. Organ used for hearing (3)
8. Sight, hearing, smell, taste and touch (6)
11. It connects your foot to your leg (5)
13. Thorax (5)
14. Other side to the front (4)
16. Egg-producing organ (5)
20. Clavicle (10)
21. One of twenty-four inside 13 across
23. Plural of foot (4)

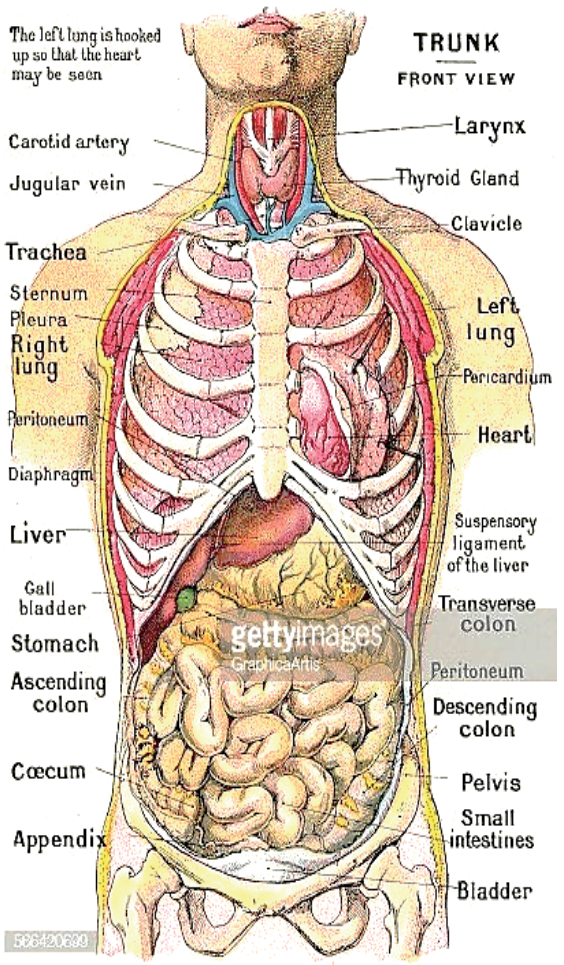
DOWN

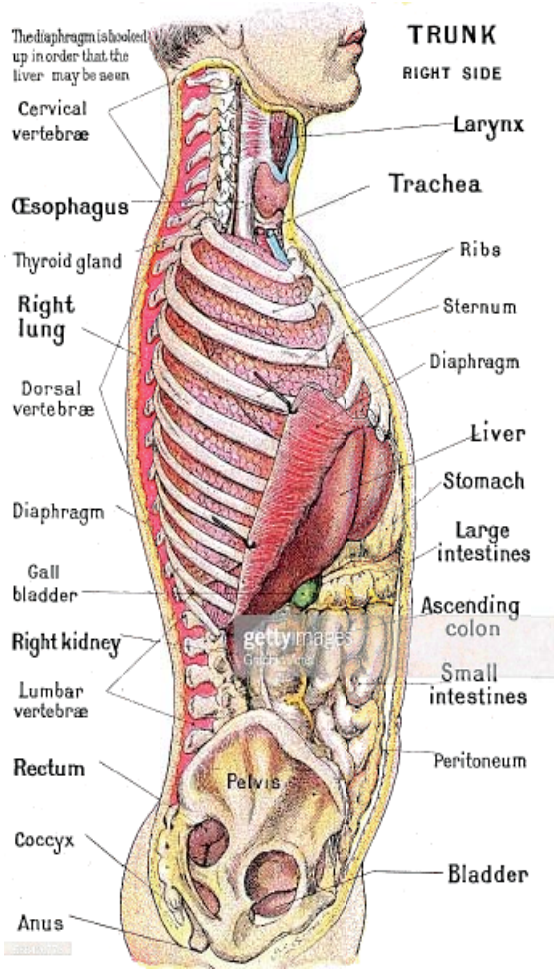
1. All the bones which make up a body (8)
2. Joint between the hand and the forearm (5)
3. Branch of a nerve, artery or vein (5)
4. Encephalon (5)
6. Inside layer of the eye which is sensitive to light (6)
7. In the middle of your face (4)
9. Cavity inside the body, including the cavities inside the head behind the cheekbone, forehead and nose (5)
10. Main muscle in 13 across (8)
12. Part of the body which joins the head to the body (4)
14. Air passage from the trachea to the lungs (8)
15. Human tail, at the end of the backbone (6)
17. One of two muscles in the top part of the back which moves the shoulder blades (8)
18. Soft, fat flesh (4)
19. Wall between two parts of an organ (6)
21. Radix, point from which a limb grows (4)
22. One of ten found on 23 across (3)

APPENDIX II

ORGANS OF THE TRUNK

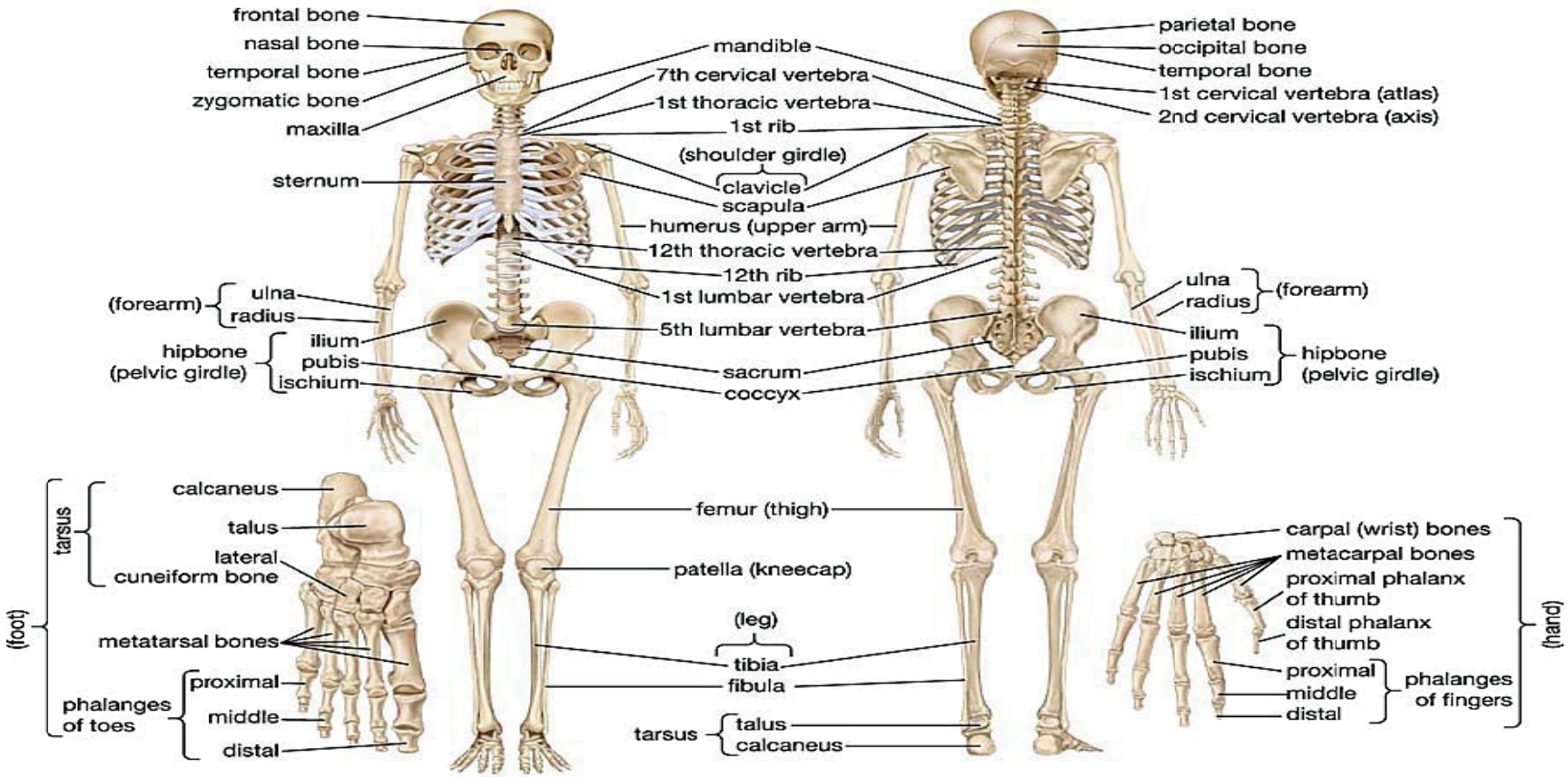




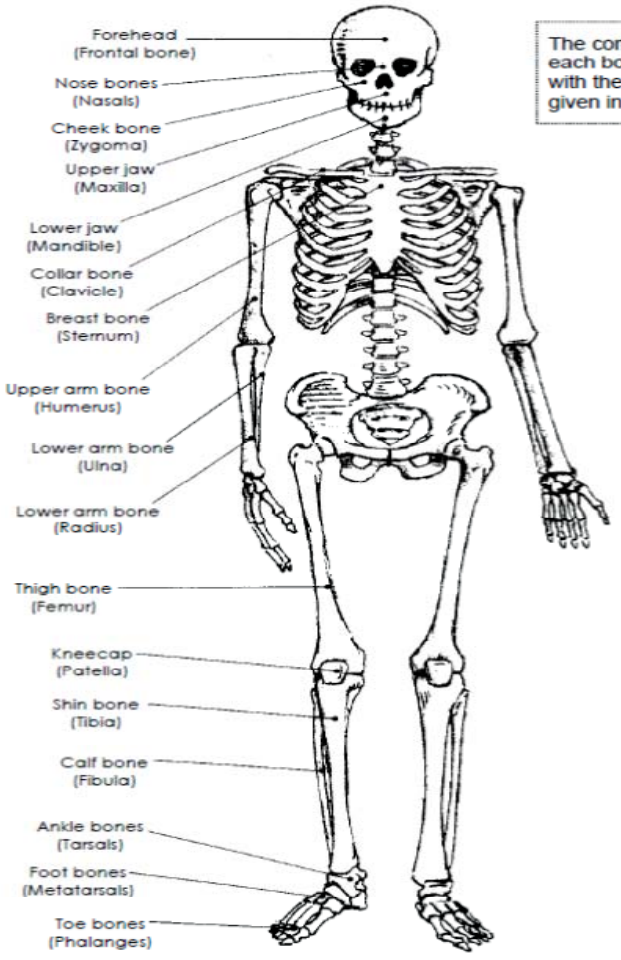


APPENDIX III

SKELETAL SYSTEM

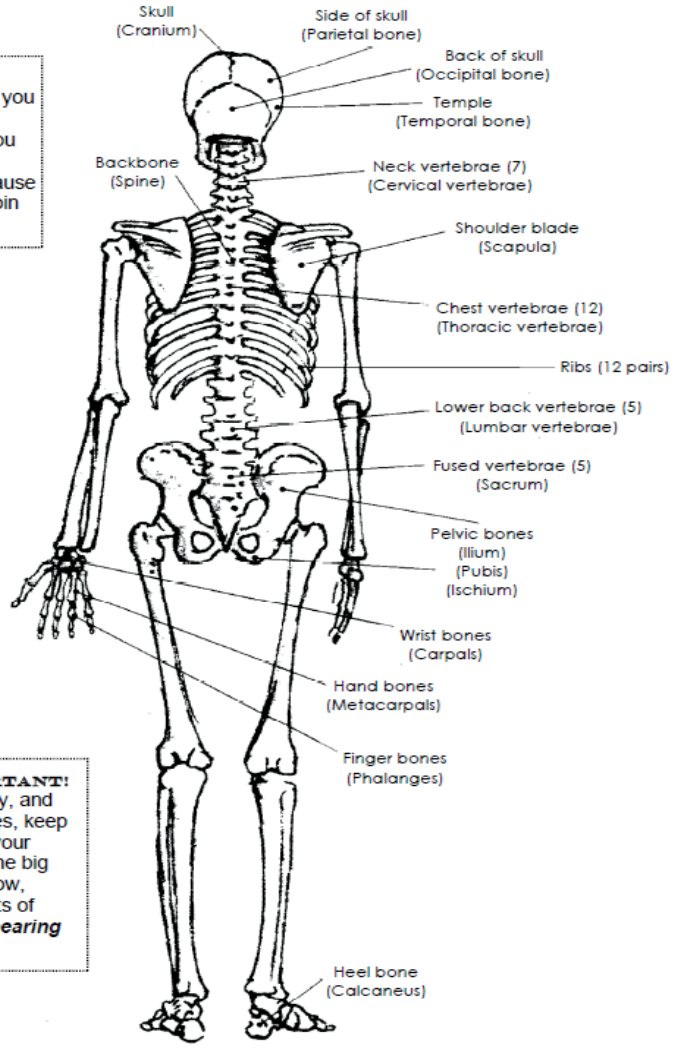


BONE DIAGRAM



The common name of each bone is listed first, with the scientific name given in parenthesis.

DID YOU KNOW?
When you are a baby you have more than 300 bones. By the time you are an adult you only have 206 bones, because some of your bones join together as you grow!



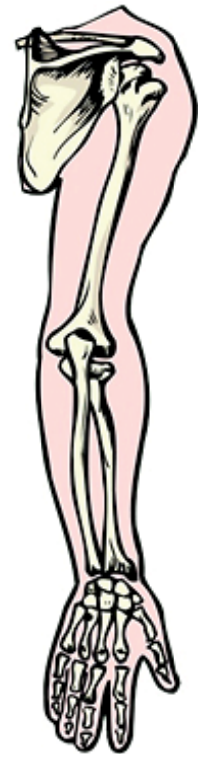
BONES ARE IMPORTANT!
They hold up your body, and along with your muscles, keep you moving. Without your bones, you'd just be one big blob! To be able to grow, strong bones needs lots of ***calcium*** and ***weight-bearing physical activity***.

"THE SKELETAL SYSTEM" WORDSEARCH

The Skeletal System

F	D	H	F	D	S	V	T	P	J	J	H	D	L	L	D
P	K	R	B	A	C	N	E	M	K	E	M	E	J	I	C
J	O	I	N	T	E	L	U	R	N	F	N	L	L	I	C
M	X	F	A	M	U	I	P	O	T	I	H	L	I	E	A
H	X	Q	A	K	C	D	B	C	P	E	U	D	N	R	R
Z	I	G	G	L	N	T	S	S	F	K	B	O	K	H	T
B	I	P	A	Z	S	E	H	K	S	N	B	R	N	Z	I
L	S	C	B	A	W	B	O	O	D	W	I	O	A	E	L
R	W	J	E	O	I	A	U	X	A	S	D	Z	E	E	A
X	A	R	B	K	N	U	L	J	B	N	R	N	R	U	G
F	B	D	L	C	C	E	D	Q	E	X	O	Q	I	L	E
E	H	O	I	S	D	F	E	T	C	B	X	M	B	N	P
M	U	H	A	U	G	R	R	M	R	V	J	A	C	A	X
U	M	U	T	H	S	H	B	A	Z	N	G	R	A	K	Y
R	E	T	I	B	I	A	L	F	P	W	Q	R	G	W	P
E	R	Z	L	K	Y	L	A	P	J	W	B	O	E	R	A
M	U	N	G	H	O	D	D	Q	G	Z	Z	W	W	R	J
Y	S	B	N	C	P	Q	E	V	B	F	I	B	U	L	A

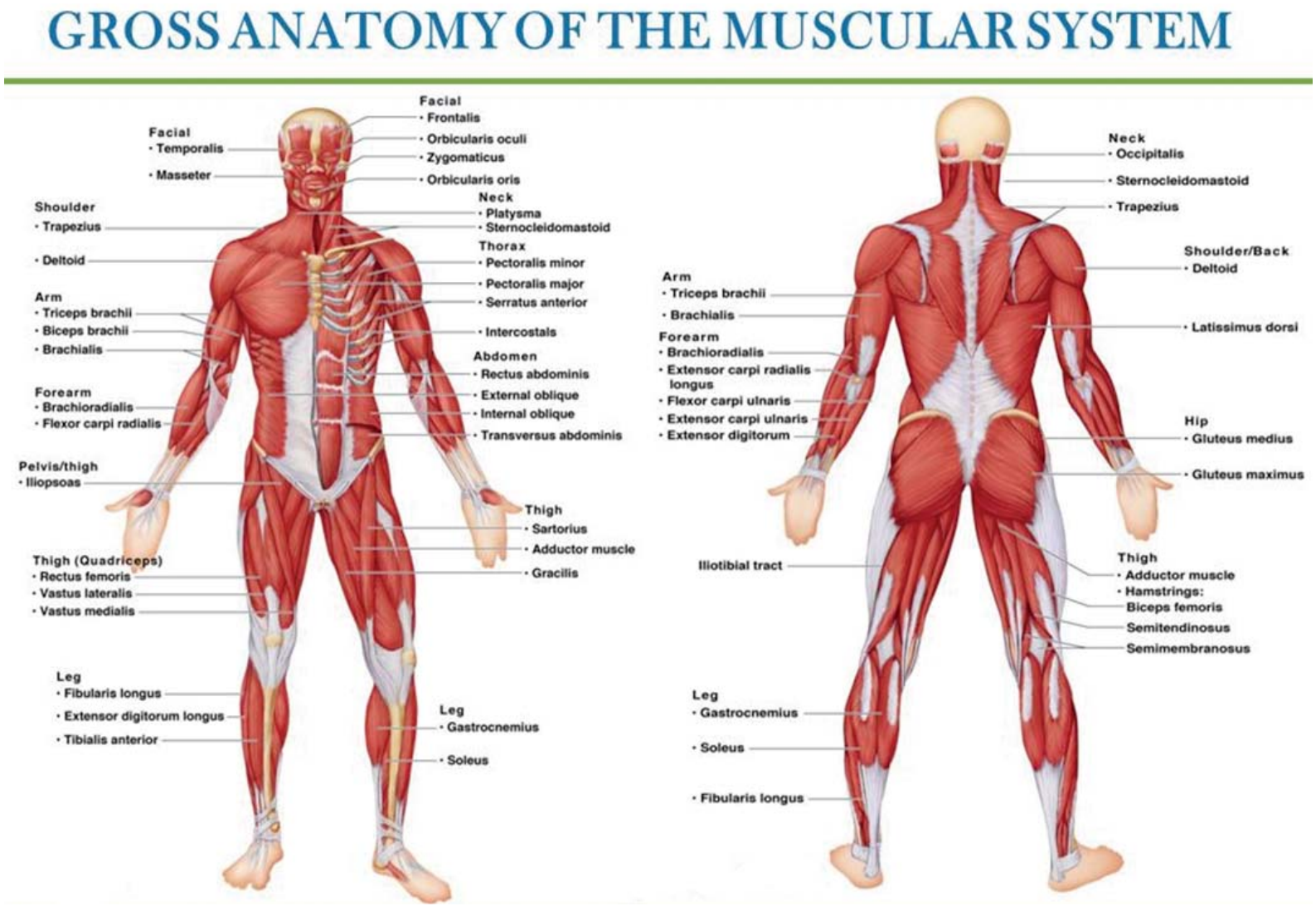
Find the respiratory words below in the grid to the left.



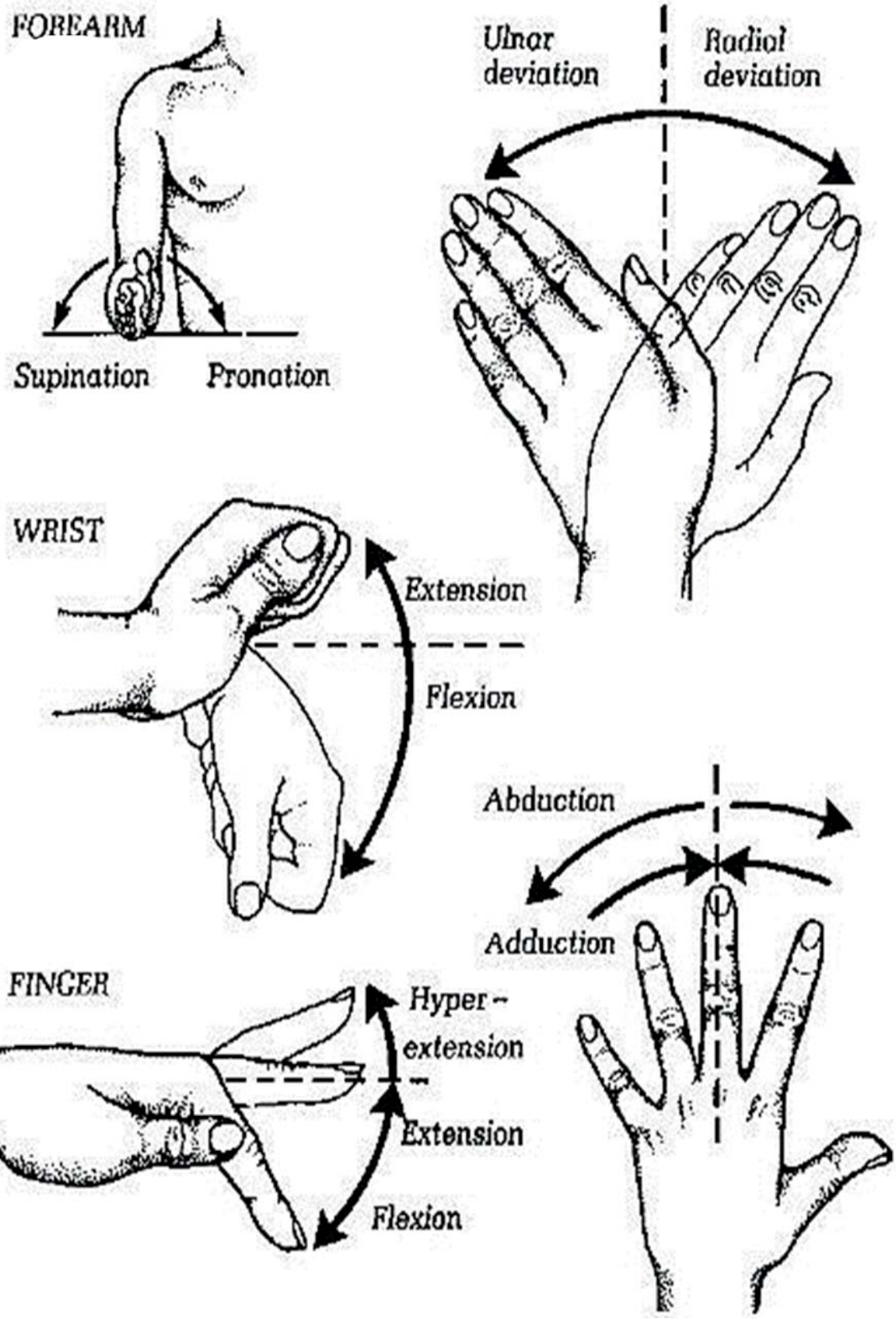
breastbone	hipbone	marrow	spine
calcium	humerus	radius	tendon
cartilage	jawbone	ribcage	tibia
collarbone	joint	shoulder	ulna
femur	ligament	blade	vertebrae
fibula		skull	

APPENDIX IV

MUSCULAR SYSTEM

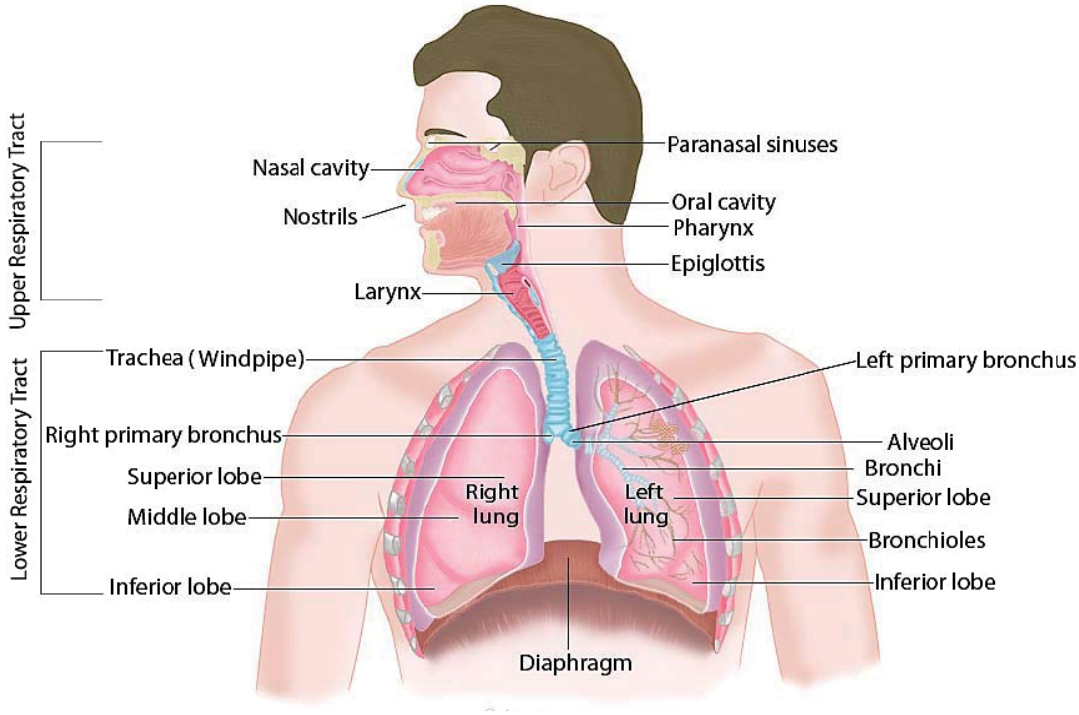


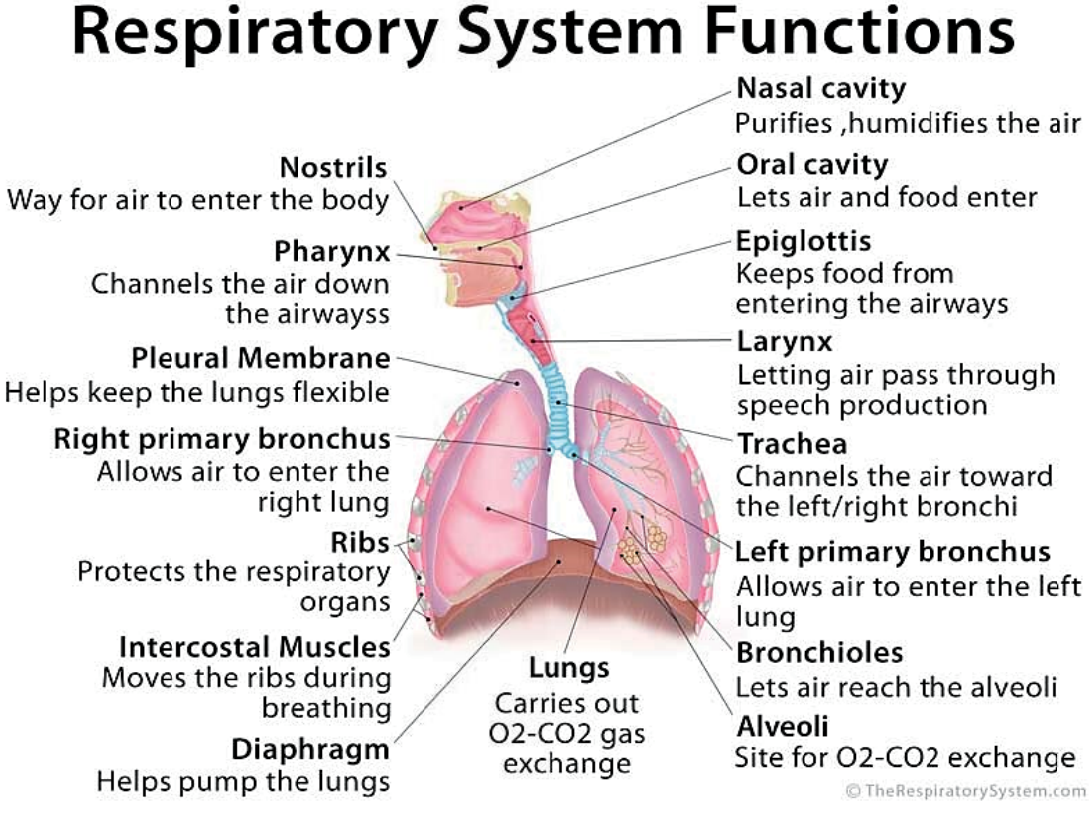
TYPES OF MUSCLE ACTIONS



APPENDIX V

RESPIRATORY SYSTEM



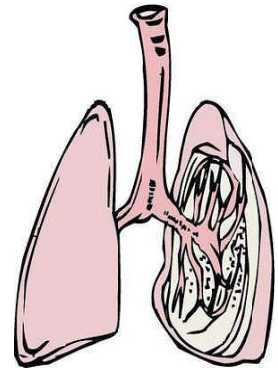


"THE RESPIRATORY SYSTEM" WORDSEARCH

The Respiratory System

A	V	D	D	A	C	T	P	D	R	G	I	K	O	H	Z
O	G	E	B	R	F	N	D	I	Z	V	K	B	C	C	O
R	L	P	K	L	W	P	A	G	A	L	Z	D	V	W	I
C	O	X	W	A	T	E	R	V	A	P	O	R	W	N	N
H	A	X	Y	M	I	I	N	X	M	K	Y	C	E	W	L
W	I	R	T	Y	D	I	A	P	H	R	A	G	M	E	B
I	V	C	B	N	H	N	W	W	Y	L	Y	E	L	G	G
N	H	U	C	O	Y	E	U	G	X	X	Z	A	N	H	X
D	Z	X	C	U	N	D	J	D	O	E	H	B	O	D	O
P	T	I	N	M	P	D	N	S	E	N	H	R	S	L	G
I	P	R	N	C	O	S	I	N	I	A	D	O	E	U	Z
P	H	A	A	I	Y	U	S	O	R	I	A	N	R	N	L
E	A	T	J	C	F	G	T	V	X	S	P	C	H	G	E
F	R	V	T	X	H	J	I	H	Z	I	S	H	X	S	X
G	Y	V	X	V	T	E	E	L	K	Y	D	I	W	E	H
M	N	L	D	D	O	R	A	N	L	O	X	E	Y	H	A
W	X	B	L	E	K	Z	G	S	C	S	G	B	T	J	L
C	C	C	O	U	G	H	Y	R	M	Z	E	Y	N	D	E

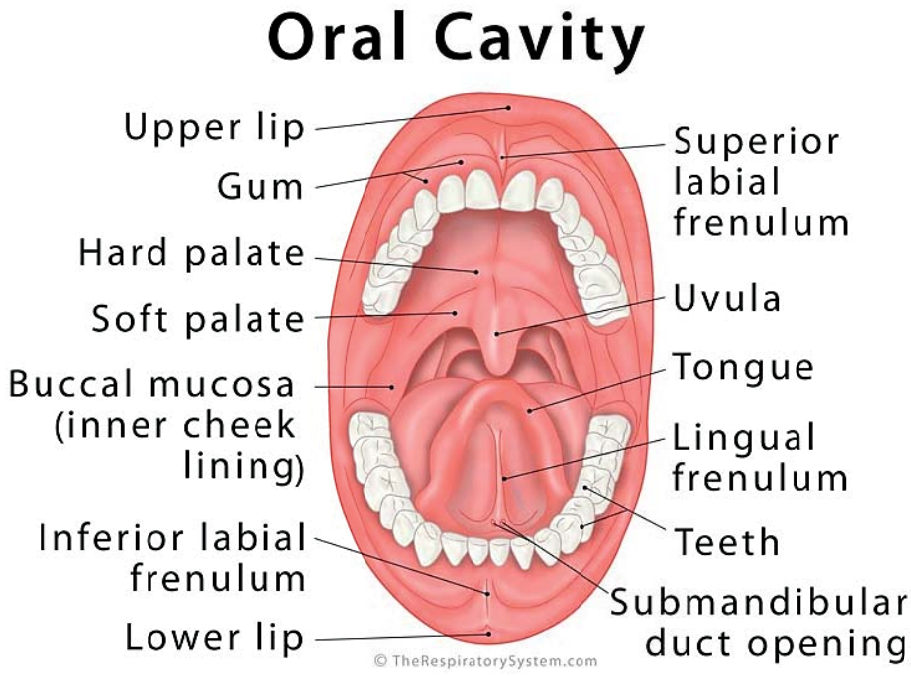
Find the respiratory words below in the grid to the left.

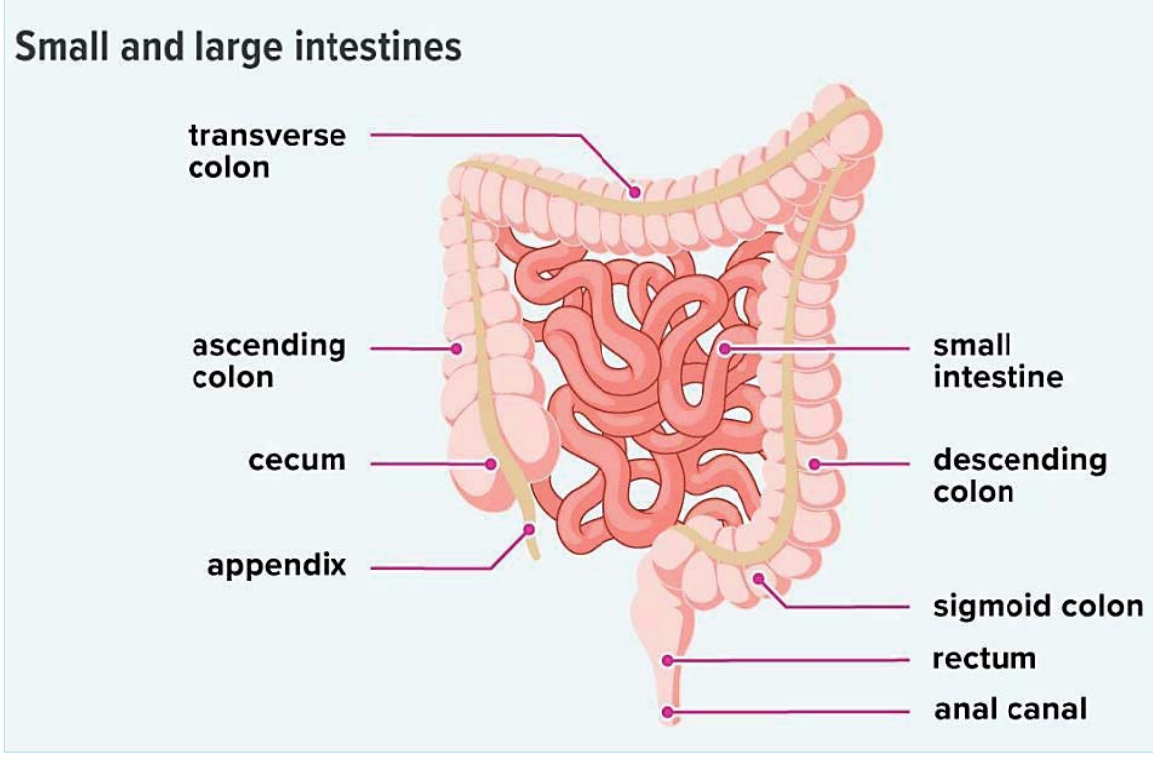


air	exhale	mouth	trachea
bronchi	gills	nose	water vapor
carbon dioxide	hiccups	oxygen	windpipe
cough	inhale	pharynx	yawn
diaphragm	lungs	sneeze	

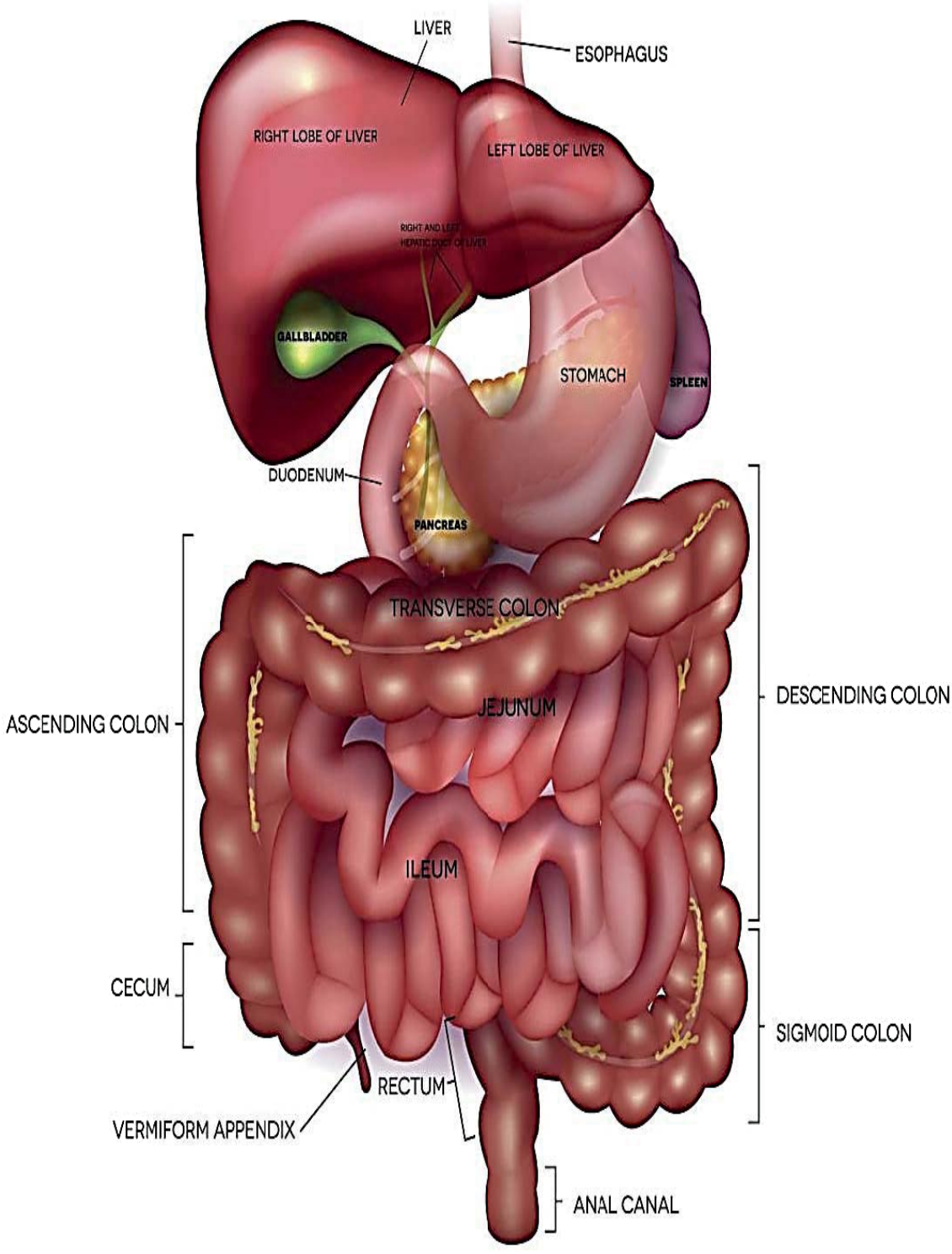
APPENDIX VI

DIGESTIVE SYSTEM





DIGESTIVE ORGANS OF THE ABDOMINAL CAVITY



"THE HUMAN DIGESTIVE SYSTEM" WORDSEARCH

The Human Digestive System

Q	K	Z	Z	U	V	B	Q	U	W	S	Y	S	P	V	D
M	X	L	V	L	R	R	T	C	U	J	Y	W	H	P	I
P	S	B	A	O	L	K	Y	G	M	B	S	B	A	A	I
K	X	S	S	E	W	U	A	V	M	L	S	F	R	N	Z
L	O	B	M	W	A	H	M	U	D	A	W	Q	Y	C	T
I	A	T	Z	A	P	K	T	J	T	R	A	F	N	R	Z
V	N	I	O	O	L	C	X	W	S	G	L	I	X	E	V
E	U	M	S	N	E	L	T	X	T	E	L	L	T	A	K
R	T	E	G	R	G	S	I	X	O	I	O	T	W	S	F
C	R	M	G	P	E	U	P	N	R	N	W	E	R	I	W
S	I	K	S	G	H	E	E	X	T	T	M	R	Z	F	T
T	E	F	I	T	T	L	I	Q	Y	E	N	O	N	J	Q
X	N	D	Z	E	O	D	R	B	U	S	S	I	U	Q	Z
Q	T	U	R	S	N	M	W	C	G	T	B	T	E	T	M
B	S	C	C	E	F	E	A	Y	K	I	Z	F	I	V	H
O	X	V	P	A	H	C	L	C	T	N	Q	W	F	N	N
E	X	P	N	C	Y	R	V	S	H	E	X	D	F	R	E
D	A	S	A	L	I	V	A	H	I	F	T	E	E	T	H

Find the digestive system words below in the grid to the left.

absorb	excrete	nutrients	small intestine
appendix	filter	pancreas	stomach
chew	large intestine	pharynx	swallow
digest	liver	rectum	teeth
esophagus	mouth	saliva	tongue

APPENDIX VII

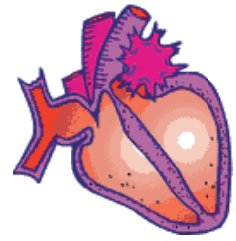
CARDIOVASCULAR SYSTEM

"THE CARDIOVASCULAR SYSTEM" WORDSEARCH

The Circulatory System

H	A	S	D	A	U	N	U	T	R	I	E	N	T	S	Y
O	V	G	C	A	P	I	L	L	A	R	Y	L	R	G	I
Z	A	M	R	N	R	T	R	A	N	S	P	O	R	T	L
S	L	R	C	H	E	K	J	W	N	R	W	V	D	D	P
K	V	R	A	A	V	C	R	A	I	R	H	L	E	M	N
A	E	E	E	B	R	J	I	E	R	C	I	T	U	I	Q
A	D	D	X	R	T	B	F	R	D	T	T	P	H	M	N
Y	O	B	K	I	V	J	O	K	C	U	E	L	K	N	C
F	R	L	J	G	O	H	U	N	L	U	B	R	K	V	F
O	E	O	G	H	X	X	R	O	D	I	L	S	Y	B	J
O	G	O	V	T	Y	F	C	K	L	I	O	A	T	A	H
A	N	D	X	R	G	X	H	N	U	M	O	J	T	T	S
Z	O	C	T	E	E	I	A	V	N	F	D	X	R	E	C
Y	W	E	O	D	N	R	M	D	G	U	C	A	I	D	V
Q	H	L	W	R	E	G	B	O	S	U	E	V	O	D	S
K	E	L	C	T	B	E	E	P	V	H	L	O	M	Q	E
G	X	S	A	F	A	O	R	T	A	E	L	O	D	D	K
Q	S	W	B	F	H	G	S	V	O	B	S	U	U	D	N

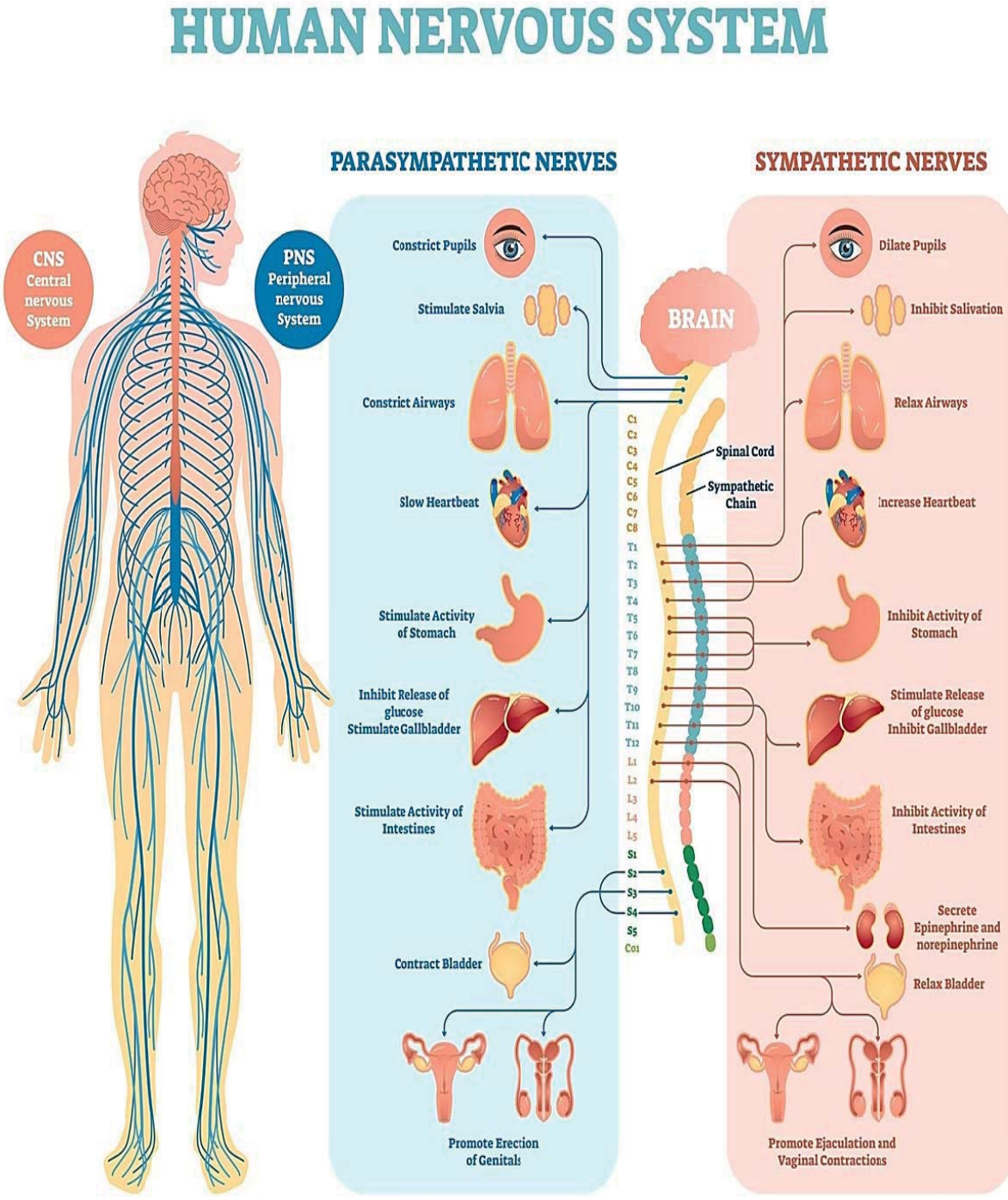
Find the circulatory system words below in the grid to the left.



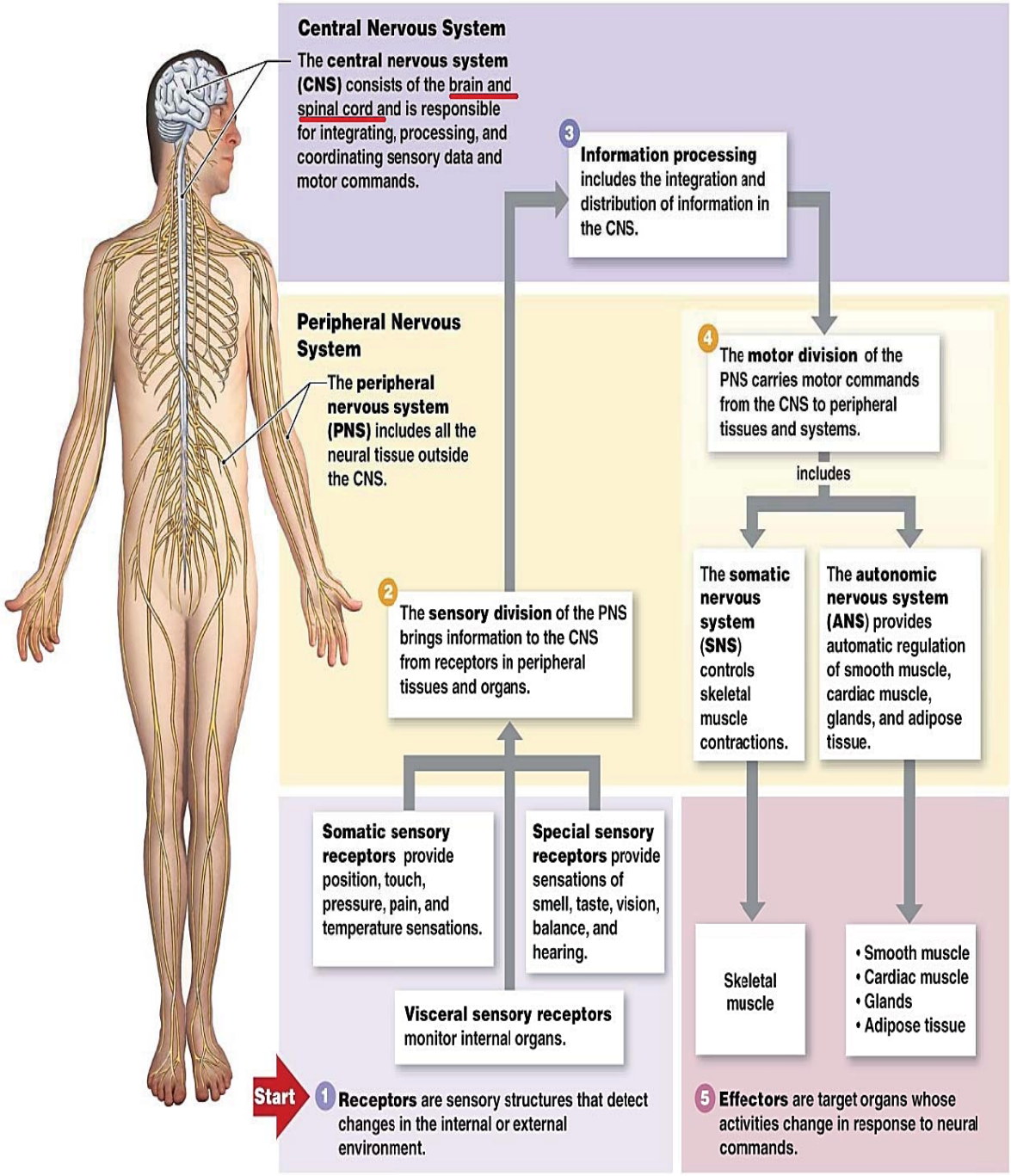
aorta	carbon dioxide	lungs	transport
artery	circulate	nutrients	valve
blood	dark red	oxygen	vein
bright red	four chambers	pump	water
capillary	heart	red blood cells	white blood cells

APPENDIX VIII

NERVOUS SYSTEM



MAJOR COMPONENTS AND FUNCTIONS OF THE NERVOUS SYSTEM



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Навчальне видання

Тетяна ВАЙНАГІЙ

АНГЛІЙСЬКА МОВА ДЛЯ МЕДИЧНИХ ЦІЛЕЙ: БУДОВА ТА ОСНОВНІ СИСТЕМИ ЛЮДСЬКОГО ТІЛА

(навчальні матеріали та активна лексика)

НАВЧАЛЬНИЙ ПОСІБНИК

із дисципліни «ІНОЗЕМНА МОВА
(ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ)»
для англомовних іноземних студентів медичних спеціальностей ЗВО

Літературне редагування і коректура автора
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Вайнагій Тетяна

V 14 Англійська мова для медичних цілей: Будова та основні системи людського тіла (навчальні матеріали та активна лексика) : навчальний посібник з дисципліни «Іноземна мова (за професійним спрямуванням)» для англомовних іноземних студентів медичних спеціальностей ЗВО / Уклад . : Т. М. Вайнагій. – Ужгород : Поліграфцентр “Ліра”, 2020. – 154 с.

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Пропоноване видання рекомендовано для іноземних студентів медичних спеціальностей ЗВО, які здобувають освіту англійською мовою.

Посібник призначений як для аудиторної роботи, так і для самостійного опрацювання та самоконтролю.

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