

## 2. Language of Health Science

Learning Health Science requires learning a new language. Scientists often use scientific words for common words that most of us already know. For example, a scientist will say "neo" instead of "new" or "pseudo" instead of "fake". To learn science, you need to also learn this new language. Don't worry, though. This list will help you. Just remember that most words can be broken up into a **PREFIX** (the beginning of the word) and a **SUFFIX** (the end of the word). Look at the example on the next page for help on how to use this list.

**PREFIX LIST** = beginning

- gives you a clue into what to expect in a word's meaning

PREFIX	MEANING	PREFIX	MEANING	PREFIX	MEANING
a-	without, lacking	e-/ef-/ex-	out, out of, from	oculo-	eye
ab-	away from	echin-	spiny	odont-	tooth
adipo-	fat	ect-	outside	olf-	smell
alb-	white	en-	in	omni-	all
amphi-/amp-	of both kinds	encephal-	brain	opthal-	eye
andr-	male	epi-	on, above	oss-/ost-	bone
angio-	vessel (blood)	extra-	outside, beyond	phag-	eat
ante-	before	gastro-	stomach	photo-	light
anthropo-	humans	gene-	origin, birth	plasm-	form
anti-	against	geo-	earth	pneumo-	lungs
aqua-	water	glottis-	mouth of windpipe	pre-	before
arbor-	tree	gymno-	uncovered	prot-/proto-	first
arthro-	jointed	hepato-	liver	pseudo-	fake, false
aster-	star	hetero-	different	retro-	backward, back
audi-	hear, sound	hiber-	winter	rota-	turn, wheel
auto-	self	homo-	same, alike	rupt-	break, burst
bi-	two, twice	hydro-	water	sub-	under, beneath
bio-	life, living	hyper-	over, above	super-/sur-	above, upon
bronch-	windpipe (lungs)	hypo-	below, under, less	tele-	at a distance
card-	heart	inter-	between	therm-	temperature
carn-	meat	intra-	within, during, inside	trans-	across, beyond
cell-	storeroom	ichty-	fish	tri-	three
cephalo-	head	immunis-	free	trop-	turning
chlor-	green	leuc-	white	ventr-	belly
chrom-	color	lith-	stone	uni-	one
chron-	time	luna-	moon	zo-	animal
coel-	hollow	macro-	large		
com-/con-/co-	with, together	meta-	change		
contra-	against	micro-	small		
cran-	head	mono-	single		
cyt-	cell	multi-	many		
de-	from, away	morph-	form		
deca-	ten	neo-	new		
derma-	skin	non-	not		
den-	tooth	neur-	nerve		
di-	two, double				
dia-	through, across				
dis-/dif-	apart from, deprive				

## SUFFIX LIST = endings

- usually indicates a procedure, a condition, or a disease

SUFFIX	MEANING
-able/ -ible	able to, capable of
-algia	pain
-ectomy	cut out
-ent, -er, -ist	person, agent
-graph	instrument for making records
-ic	having characteristics of
-ism	act of, condition
-itis	inflammation (swelling) or disease
-ist	person
-meter	measure
-ology/ -logy	study of, science of
-phyll	leaf
-pod/ -ped	foot, feet
-scope	look, observe
-sect	cut
-sperm	seed

### Example of how to use these lists

Word: **DERMATOLOGIST**

**Step 1.** Look up the first part of the word under the PREFIX LIST

→ **derma** = skin

**Step 2.** Look for the rest of the word under the SUFFIX LIST

→ **ology** = study/science of

→ **ist** = person

So, the whole word means "skin - science of - person" or person whose science is skin.

### Note

- The order of the words may not always seem right; don't worry about that.
- Sometimes you can only find one part of a word but that can be a good clue about the meaning
- You may have extra letters like **o** or **a** or **i** between two parts of a word – they don't mean anything
- If you don't see a word in the suffix list, check the prefix list. Sometimes, words can contain more than 1 prefix and suffix.

Using the Language of Science prefix and suffix lists, figure out the meanings of the follow

Notice that several prefixes can mean the same thing:

1. What are **two** prefixes that mean ONE or SINGLE? \_\_\_\_\_
2. What are **two** suffixes that mean CUT or CUT OUT? \_\_\_\_\_
3. What are **two** prefixes that mean ABOVE or ON? \_\_\_\_\_
4. What are **two** prefixes that mean TWO? \_\_\_\_\_

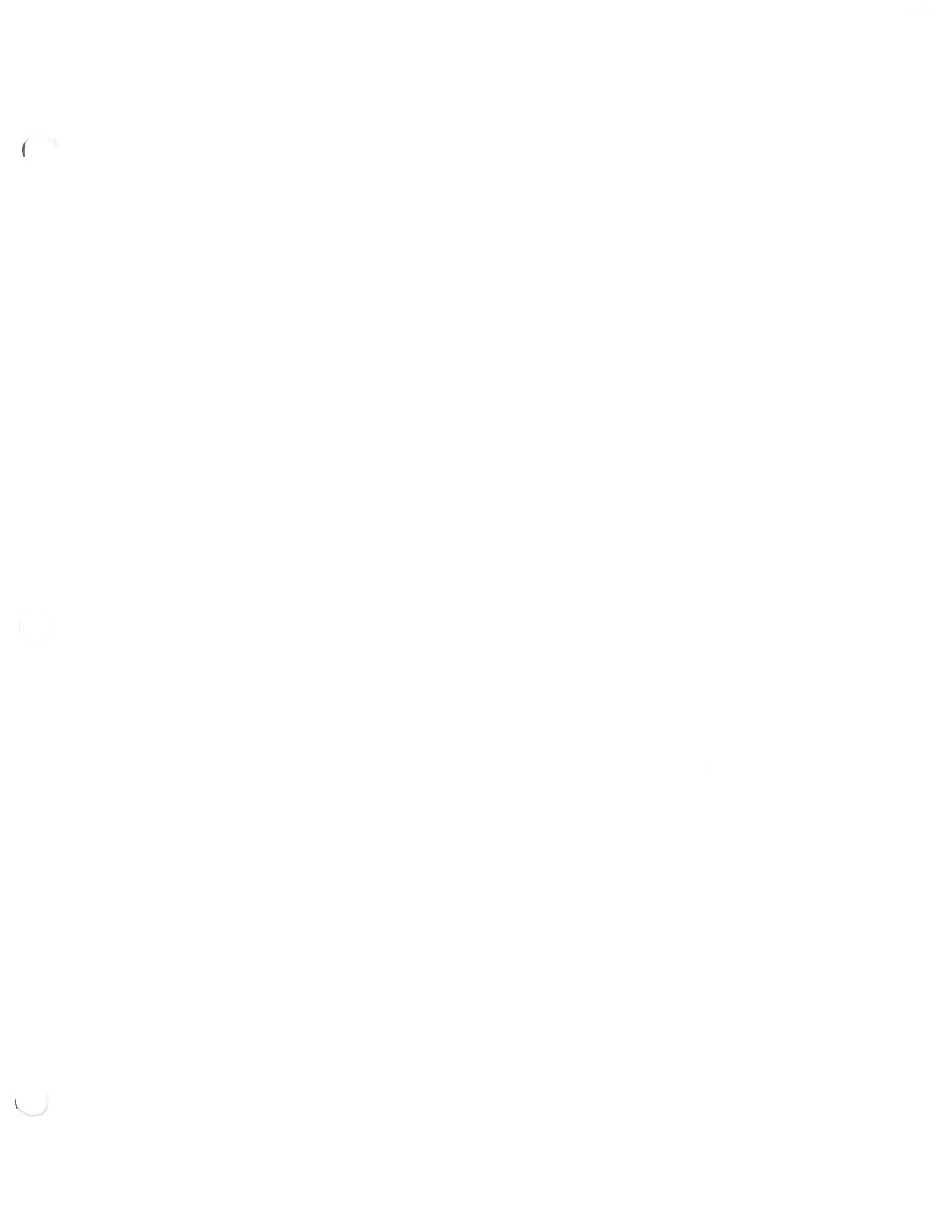
Just knowing one part of a word gives you a clue to the whole word:

5. Would you want to be careful when touching an animal called an ECHINDNA?    Yes    No
6. What does a CARNIVORE eat? \_\_\_\_\_
7. Is a NEONATE a tiny baby or an old person? \_\_\_\_\_
8. Is a CRANIOTOMY a serious surgery?    Yes    No
9. An ALBINO rabbit is what color? \_\_\_\_\_
10. Does an AMPHIBIAN live on land or water? \_\_\_\_\_
11. If a medicine is CONTRAINDICATED for you, should you take it?    Yes    No
12. A DERMATOLOGIST works with what part of the body? \_\_\_\_\_
13. How does a tiny animal called a ROTIFER travel through the water? \_\_\_\_\_  
(hint: look up rota)
14. If you visited the Elysian Park ARBORETUM, what would you expect to see? \_\_\_\_\_
15. In 1969, where did the LUNAR mission land? \_\_\_\_\_
16. What is another name for a CHRONOMETER? \_\_\_\_\_
17. Why do they call this symbol (\*) an ASTERISK? \_\_\_\_\_

Using the Language of Science prefix and suffix lists, figure out the meanings of the following words:

Example: cardiology - heart study or science (study of the heart)

18. epiglottis - \_\_\_\_\_
19. hypodermic - \_\_\_\_\_
20. hypothermic - \_\_\_\_\_
21. neuralgia - \_\_\_\_\_
22. hepatitis - \_\_\_\_\_
23. leukocyte - \_\_\_\_\_
24. anthropology - \_\_\_\_\_



# Anatomical Directional Terms

**Anatomy** refers to all the structures that make up an organism. **Physiology** refers to the functions performed by these structures. Zoologists, anatomists and various health care professionals use anatomical and directional terms every day. Humans vary only slightly in both external and internal anatomy. Over 90% of all anatomical structures match textbook descriptions. This makes determining the location of body structures possible.

Anatomical directional terms are like directions on a map. They can be used to describe the locations of structures in **relation to** other structures or locations in the body.

Access and watch the You tube video “Directional Terms – Anatomy Basics” on the Class Weebly before continuing on.

## Anatomical Directional Terms:

**:External** - on the outside

*The **external** surface was covered with hair.*

**:Internal** - on the inside

*He received internal **injuries** from the accident.*

**:Superficial** - at the body surface

*The cut was only **superficial**.*

**:Deep** - under the body surface

*The patient had **deep** wounds from a chain saw.*

**:Central** - locations around the center of the body

*The patient had **central** chest pains.*

**:Peripheral** - surrounding or outer regions

*The patient had **peripheral** swelling in the feet*

**:Anterior / Ventral** -towards the front

*The belly button is on the **anterior** surface of the body.*

**:Posterior / Dorsal** - towards the back

*The patient had a bump on the **posterior** part of the head.*

**:Superior** -toward the top

*The nose is **superior** to the mouth.*

**:Inferior**- towards the bottom

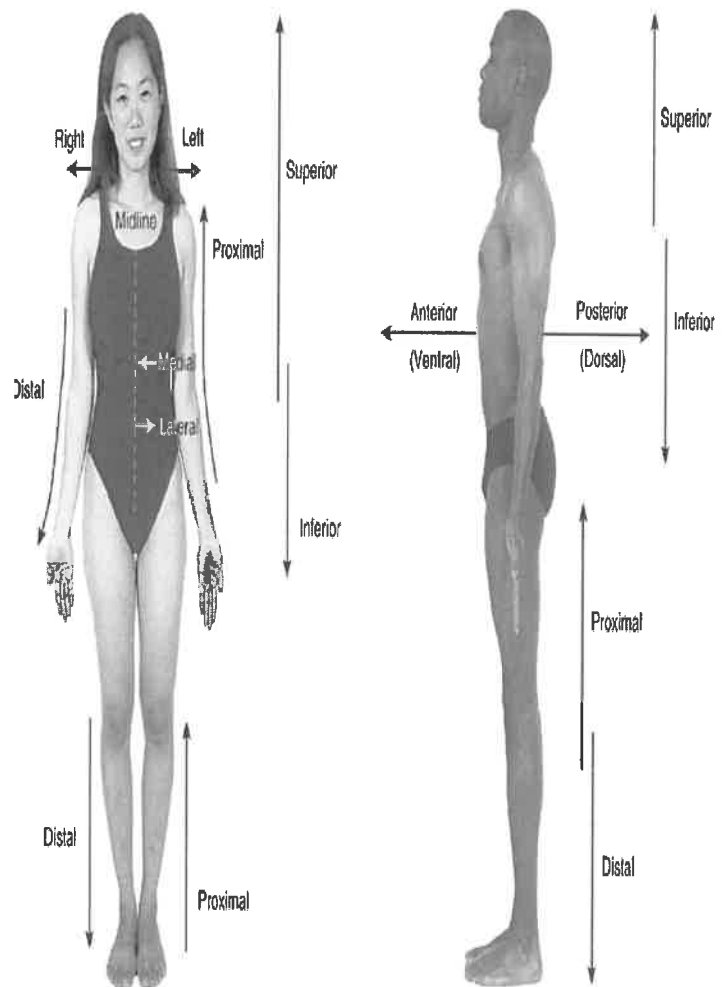
*The mouth is **inferior** to the nose.*

**Proximal** - near point of reference

*The gym **proximal** to the cafeteria*

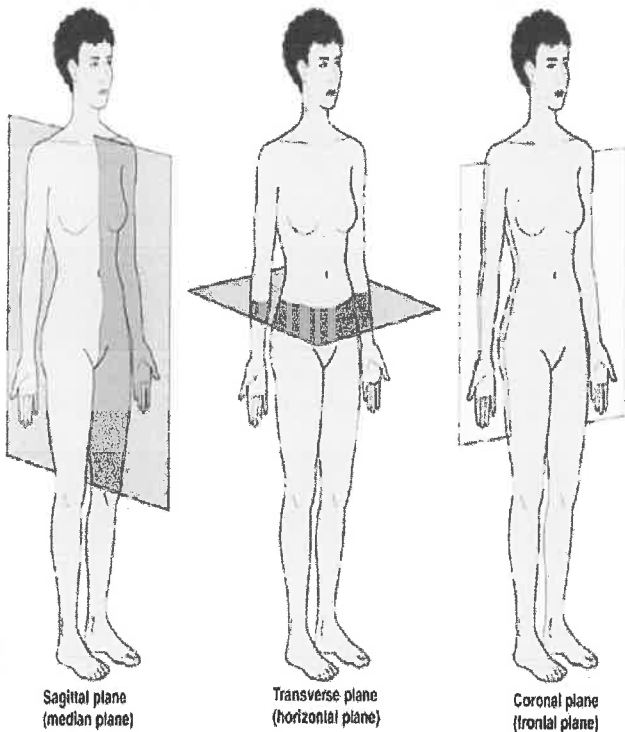
**Distal** - away from point of reference

*The fingers are **distal** to the toes*



## Anatomical Body Planes:

Imagine a person standing in an upright position (feet forward, thumbs out). This is referred to as the **anatomical position**. Sometimes it is necessary to divide the body or even an organ or tissue sample into specific sections to further examine it. A **plane** is an imaginary line drawn through the body or organ to separate it into **specific sections**. Anatomical planes can be used to describe any body part or an entire body.



**Lateral Plane or Median Plane:** Imagine a vertical plane that runs through your body from front to back or back to front. This plane **divides the body into right and left regions**.

**Transverse Plane:** Imagine a horizontal plane that runs through the midsection of your body. This plane **divides the body into upper (superior) and lower (inferior) regions**.

**Frontal Plane or Coronal Plane:** Imagine a vertical plane that runs through the center of your body from side to side. This plane **divides the body into front (anterior) and back (posterior) regions**.

## Body cavities:

Body cavities are the spaces inside the body containing the organs. There are two large cavities divided which are divided into smaller Cavities

### 1. Dorsal (anterior) Body Cavity

- encloses the brain & spinal cord.

a) Cranial cavity- cushions and protects the **brain** within a rigid skull.

b) Spinal cavity - protects the **spine** with the vertebrae.

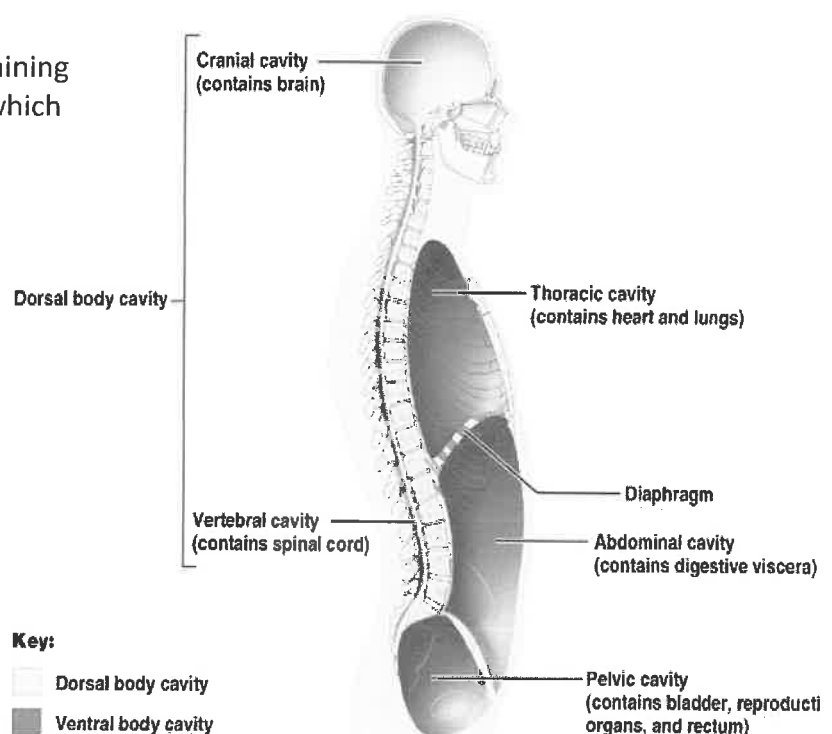
### 2. Ventral Body Cavity (posterior cavity)

- houses vital organs

a) Thoracic cavity - encloses the **heart and lungs**; protected by the ribs.

b) Abdominal cavity - encloses most of the **digestive organs and kidneys**.

c) Pelvic cavity - encloses the **bladder and reproductive organs**.



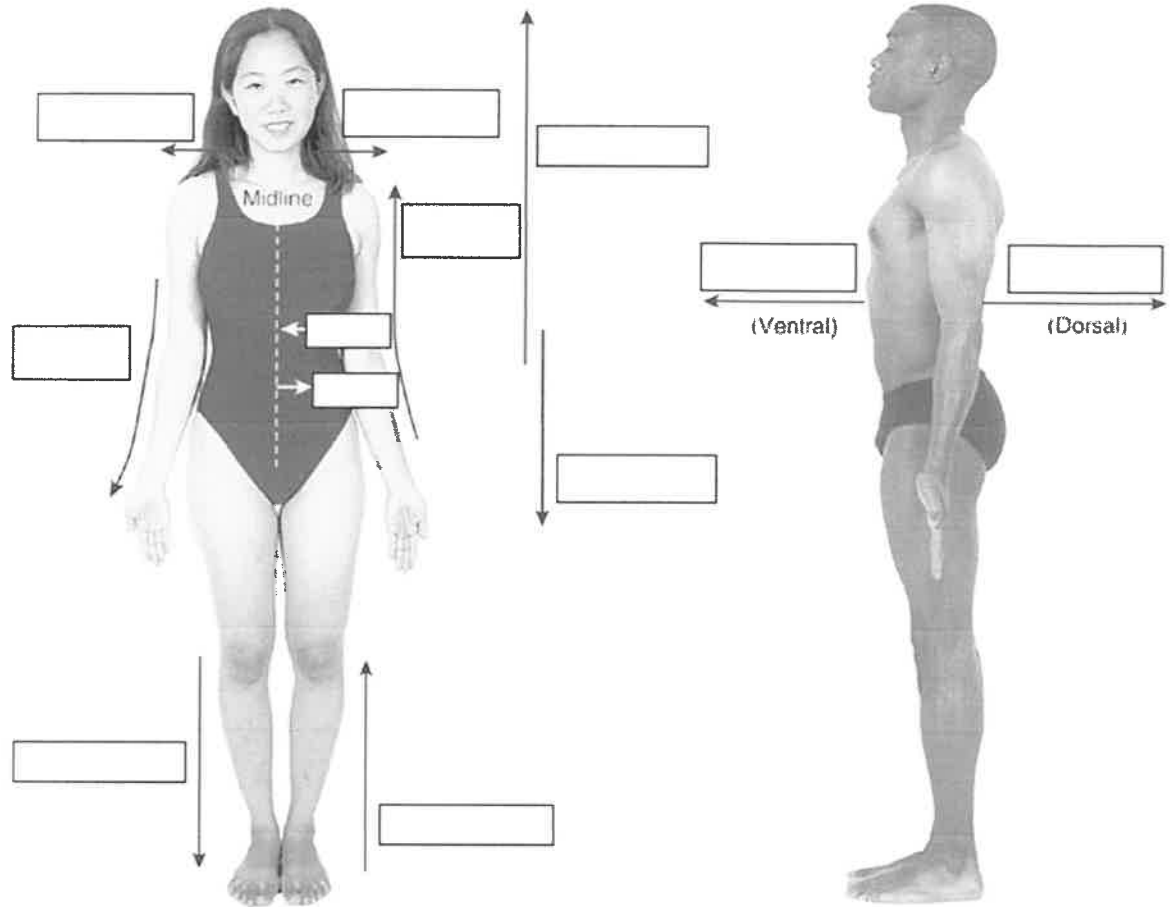
(a) Lateral view

# BODY PLANES, DIRECTIONS AND CAVITIES

1. Use the word bank to fill in the diagram below. If a word is listed twice in the word list that means it needs to be used twice.

**Word List**

- superior
- inferior
- anterior
- posterior
- distal
- distal
- proximal
- proximal
- left
- right
- medial
- lateral



2. Using the terms listed below, fill in the blanks with the proper term:

anterior  
medial

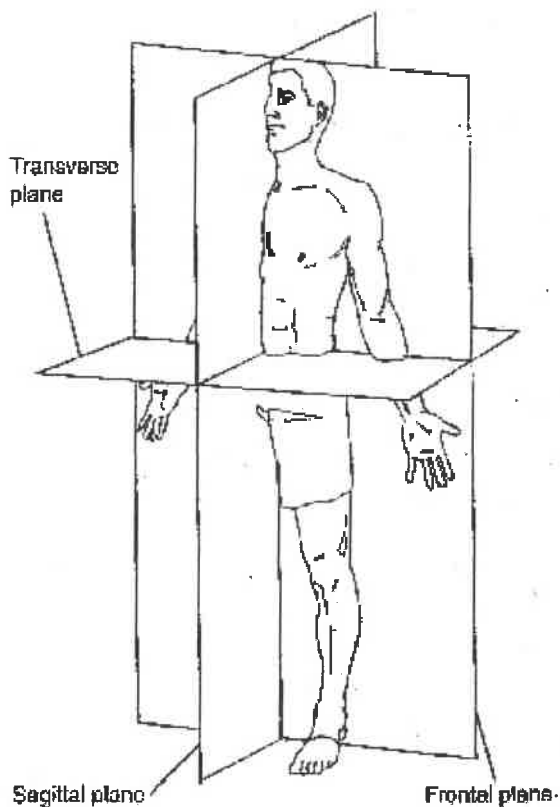
superior  
lateral

posterior  
inferior

proximal  
distal

- a. The heart is located \_\_\_\_\_ to the stomach
- b. The shoulder is \_\_\_\_\_ to the elbow
- c. The face is on the \_\_\_\_\_ side of the body
- d. In anatomical position, the thumb is \_\_\_\_\_ to the index finger
- e. The wrist is \_\_\_\_\_ to the funny bone
- f. The heart is located \_\_\_\_\_ to the shoulder
- g. The buttocks is \_\_\_\_\_ to the head
- h. The back is on the \_\_\_\_\_ side of the body

3. Choose which of the following is the superior: lungs OR intestines
4. Choose which of the following is more distal: wrist OR shoulder
5. Choose which of the following is the posterior: stomach OR back
6. On the diagram below, color the Frontal plane **blue**, the Sagittal plane **red** and the Horizontal plane **yellow**. Label each of these planes



With your palm open and your thumb pointing up, use your right index finger to follow a sagittal plane on your body. As you do this, which direction (right or left) does your palm face? \_\_\_\_\_

With your palm open and your thumb pointing up, use your right index finger to follow a frontal plane on your body. As you do this, which direction (front or back) does your palm face? \_\_\_\_\_

With your palm open and your thumb pointing away from your body, use your right little finger to follow a transverse plane on your body. As you do this, which direction (up or down) does your palm face? \_\_\_\_\_

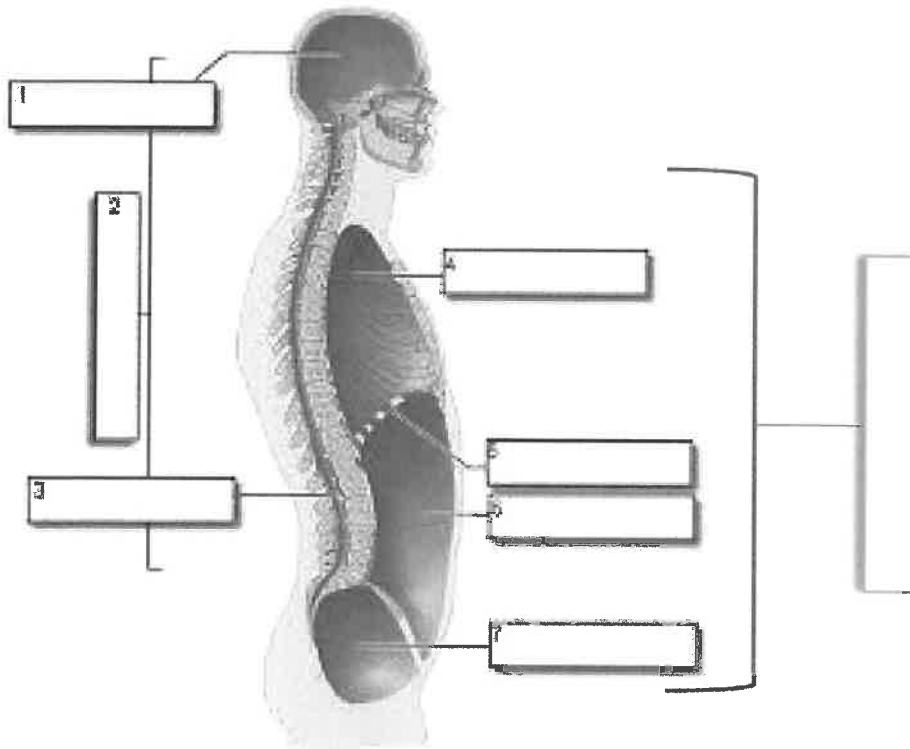
### Directional Terms

1. Place your left index finger on the tip of your nose.
  - A. List a body part that is superior to your nose. \_\_\_\_\_
  - B. List a body part that is inferior to your nose. \_\_\_\_\_
  - C. List a body part that is lateral to your nose. \_\_\_\_\_
  - D. List a body part that is posterior to the tip of your nose. \_\_\_\_\_
  - E. Is there a body part medial to the tip of your nose? \_\_\_\_\_
  - F. Is there any body part that is anterior to the tip of your nose? \_\_\_\_\_



7. Identify the body cavities using the words below:

Ventral      Abdominal      Cranial      Thoracic  
 Pelvic      Dorsal      Diaphragm      Spinal

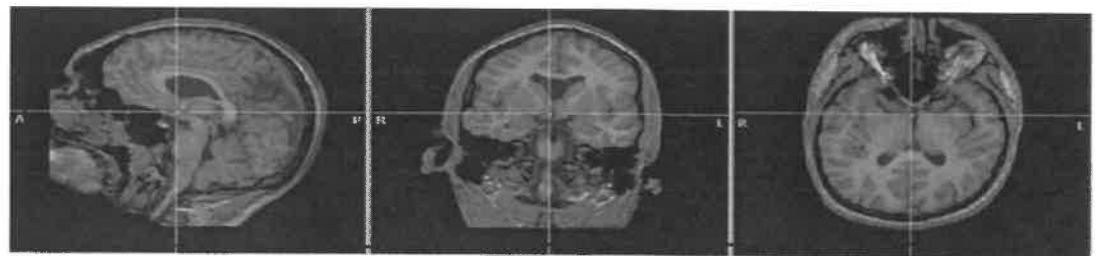
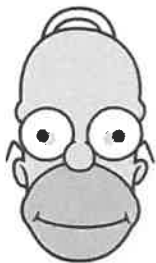


8. Why is the abdominal cavity more prone to injuries than other cavities?

9. What separates the dorsal cavity into 2 subdivisions?

10. What separates the ventral cavity into 2 subdivisions?

11. **Challenge:** Identify the **directional plane** represented in Homer's imaging tests seen below.



A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

**\*\*ON THE BACK SIDE OF THIS PAPER\*\***

Make 3 statements about your anatomy using directional terms and give ALL correct answers (make-up 3 of your own statements like the ones above – give all correct answers)

**SHOW WHAT YOU KNOW --- SEE YOUR TEACHER FOR A QUIZ!** *Activity 1.2*