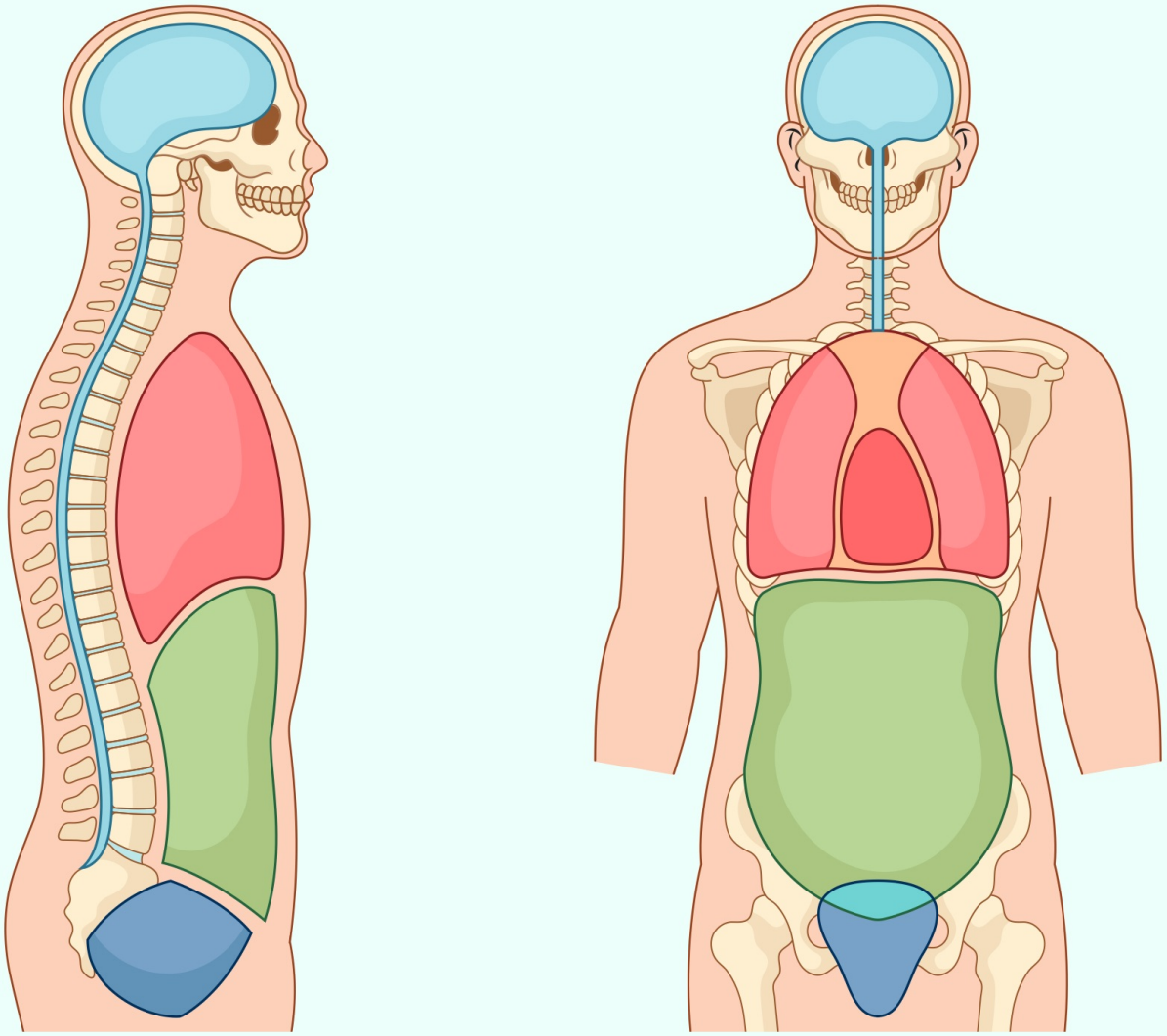
INTRODUCTION TO ANATOMY



9 day unit

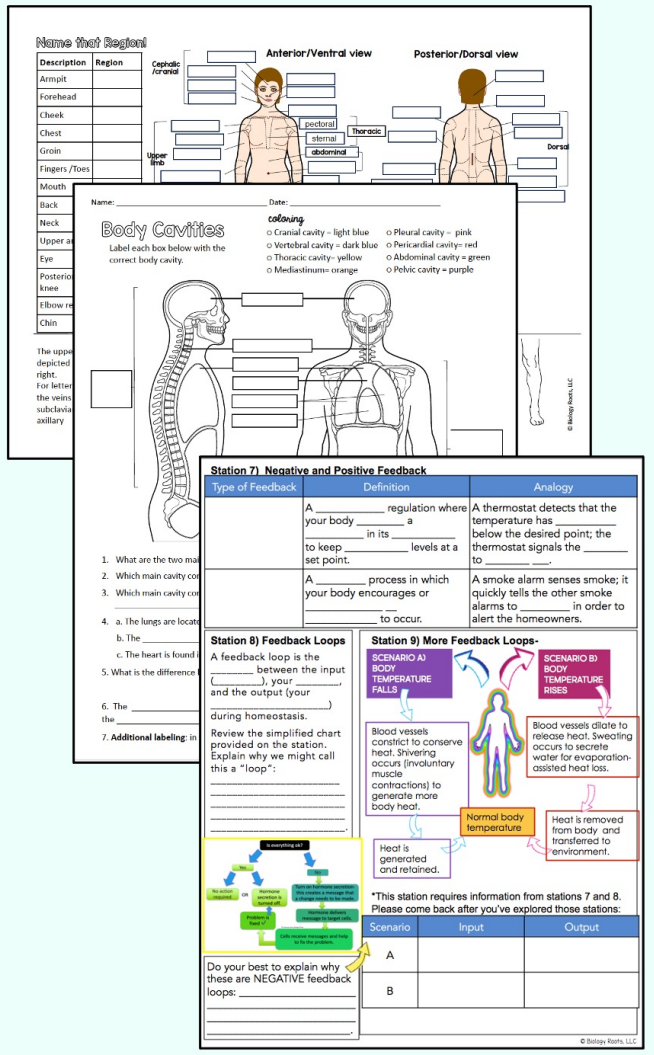
Includes print and digital

biology roots

INTRODUCTION TO ANATOMY

Topics include:

- ✅ Properties of Life
- ✅ Organization
- ✅ Intro to Body Systems
- ✅ Homeostasis
- ✅ Anatomical Terms
- ✅ Anatomical Regions
- ✅ Planes and Directions
- ✅ Body cavities and membranes



biology roots

Scope and Sequence Sneak Peak (for first two Units)
Unit 2 will be released by the mid/end of June ☺

Anatomy and Physiology Scope and Sequence

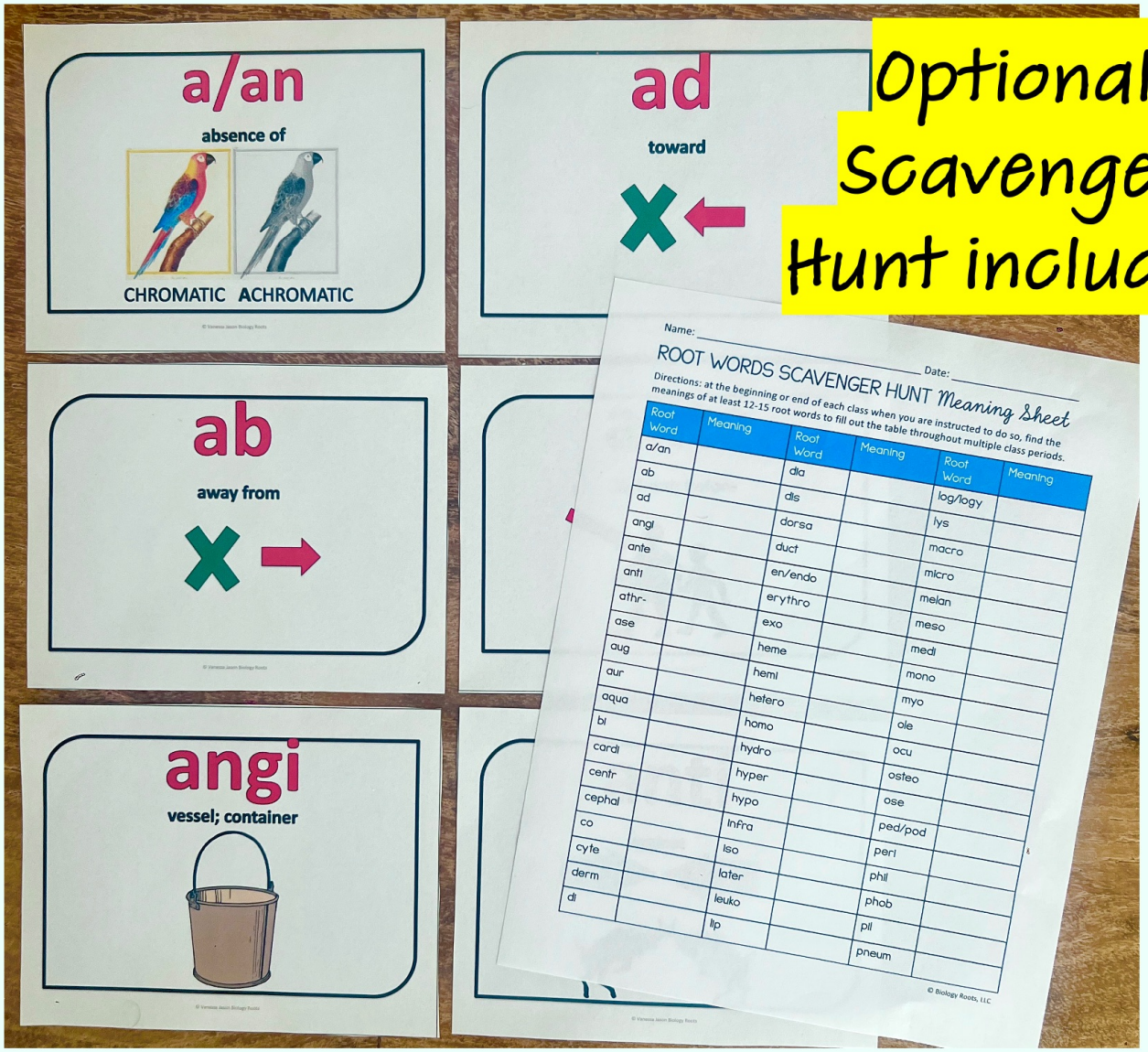
biology roots

Unit and Subtopics	Objectives	Suggested Pacing	Notable Assignments	Materials
Unit 1: Basics • Levels of Organization • Introduce the body systems, organs and functions • Review characteristics of life including homeostasis • Anatomical Planes, Positions, and Regions	To review levels of organizations and characteristics of life including homeostasis; To introduce anatomical terms including positions, regions and planes that students will apply throughout the course; to learn body cavities and basic membranes	9 days	Body Regions Puzzle Banana Dissection Autopsy Homeostasis Stations	Colored pencils Banana Scalpel Tray Mini flashlights Pennies or Paperclips Containers Timers
Unit 2: Cells and Tissues • Review Cell Structures • Review Cell Division (why cells divide) • Review Cell Transport Osmosis and Diffusion • Types of Tissue I Histology -Epithelial -Connective -Muscle -Nerve • Fibers – Collagen, Elastin	To review basic cell structures (cilia; cell membrane, etc.) and organelles; To review basic cell processes such as transport in order to prepare students for a year of anatomy and physiology; To learn the different types of tissues and their functions within the body	12 days	MELAS Case Study Mr. Hindcyte's Cellular Adventure Build an Organ Review: HeLa and Newt Development Tissues Graphic Organizer Ehlers-Danlos Case Study Modeling Tissues Histology Web Quest	Colored pencils Pipe cleaners or twizzlers Electrical cord Rope or twine Puffy paint Wooden popsicle stick Cotton balls or pom poms Bubble wrap or foam Play-dough or modeling clay

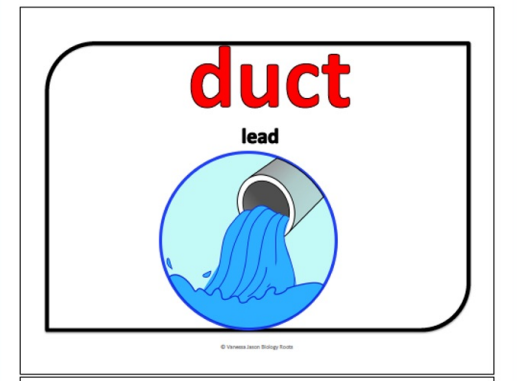
Adding this here so you can see how this Intro to Anatomy Unit compares to the next unit :)

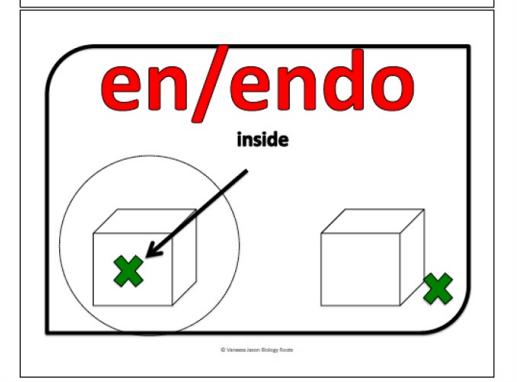
Unit 3: Integumentary System will be released in July 2026

ROOT WORDS









Includes 70 root words for anatomy (can be used as a word wall). An optional scavenger hunt sheet is included for students to gather root word meanings on their own.

INTRO TO ANATOMY 50 MINUTES

DAY/DATE	STUDENT ACTIVITY	LEARNING TARGET
1 _____	Intro to Anatomy Notes up to root words/after body systems Characteristics of Life Levels of Organization and Body Systems; Body Systems Overview (homework if not finished) *Heads up: Print Homeostasis Stations for next class; laptops or devices also needed for digital activity*	To review characteristics of life and homeostasis to connect the relationships between cells and organisms, including body systems
2 _____	Digital Activity: Levels of Organization and Homeostasis (give 20–25 minutes so they don't dilly-dally!) Homeostasis Stations (stations must be printed separately– time will be given next class to finish if needed) Heads up: lab materials required next class: pennies or paper clips, bowl or containers with cold water, small flashlights	To further explore examples of homeostasis in human body systems;
3 _____	Finish homeostasis stations (should only need 10 or 15 minutes to finish) Modeling Homeostasis Quick Labs	To demonstrate how reflexes and temperature support homeostasis; to model homeostasis via heart rate
4 _____	Finish Intro to Anatomy notes Open Note Quiz	To introduce anatomical terms
5 _____	Anatomical Terms Bellringer (give 10 minutes then review as class) Anatomical Terms: Planes, Directions, Regions *Heads up: Lab next class*	To practice identifying anatomical planes; directions; & regions; and apply them to medical images
6 _____	Review as class: Anatomical Terms: Planes, Directions, Regions Banana Dissection Lab *Heads up: test coming up!* *Heads up: need laptops or devices next class*	To model anatomical planes and offer dissection practice using bananas
7 _____	Body Cavities Digital Activity: Body Region Puzzle	To outline body cavities– subdivisions & membranes
8 _____	Review Body Cavities Study Guide	Review
_____	w	

50 minute pacing guide

INTRO TO ANATOMY 50 MINUTES

DAY/DATE	STUDENT ACTIVITY	LEARNING TARGET
1 _____	Intro to Anatomy Notes up to root words/after body systems Characteristics of Life Levels of Organization and Body Systems; Body Systems Overview (homework if not finished) *Heads up: Print Homeostasis Stations for next class; laptops or devices also needed for digital activity*	To review characteristics of life and homeostasis to connect the relationships between cells and organisms, including body systems
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3 _____	Finish homeostasis stations (should only need 10 or 15 minutes to finish) Modeling Homeostasis Quick Labs	To demonstrate how reflexes and temperature support homeostasis; to model homeostasis via heart rate
4 _____	Finish Intro to Anatomy notes Open Note Quiz	To introduce anatomical terms
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6 _____	Review as class: Anatomical Terms: Planes, Directions, Regions Banana Dissection Lab *Heads up: test coming up!* *Heads up: need laptops or devices next class*	To model anatomical planes and offer dissection practice using bananas
7 _____	Body Cavities Digital Activity: Body Region Puzzle	To outline body cavities– subdivisions & membranes
8 _____	Review Body Cavities Study Guide	Review
_____	w	

90 minute pacing guide

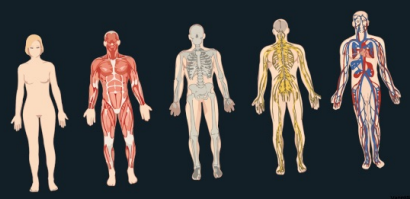
A pacing guide with learning targets is provided to guide you with lesson planning throughout the entire unit.

Includes both 50 and 90 minute blocks.

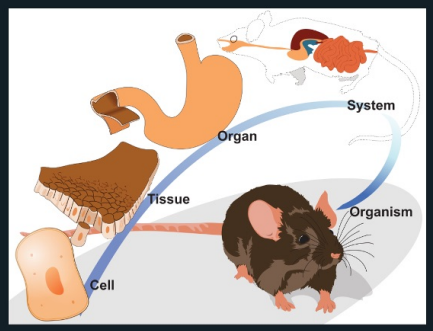
Anatomy and Physiology

Anatomy = The study of the **structure and physical parts** of the body and how they are organized.

Physiology = The study of **how the body and its parts function and work together** to carry out life processes.



Levels of Organization



tissues → organ → organ system → organism

mucosa stomach cells → stomach → digesti

multiple types of cells that build the stomac

y Systems: Summary

s filter

ort:
d fluid balance

Circulatory System
Hearts and blood vessels transport oxygens, nutrients, hormones, and waste
Homeostasis support: transports substances to parts of the body

ht

ort:
ns

Respiratory System
Brings in oxygen, releases carbon dioxide
Homeostasis support: provides oxygen needed for cellular energy

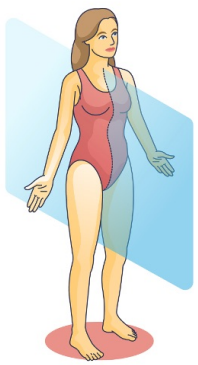
tem
produce sperm;
es produce eggs (and provide a womb)
ort:

Anatomical Directions

Anatomical Positions

Editable PowerPoint Presentation

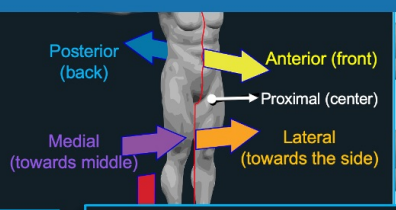
Anatomical Planes

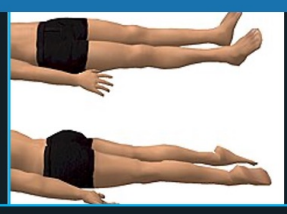


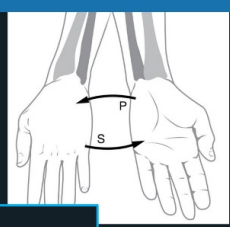
SAGITTAL
(divides the body left and right

- Proximal/Distal
- Posterior/Anterior
  - Dorsal/ventral
- Superficial/Deep

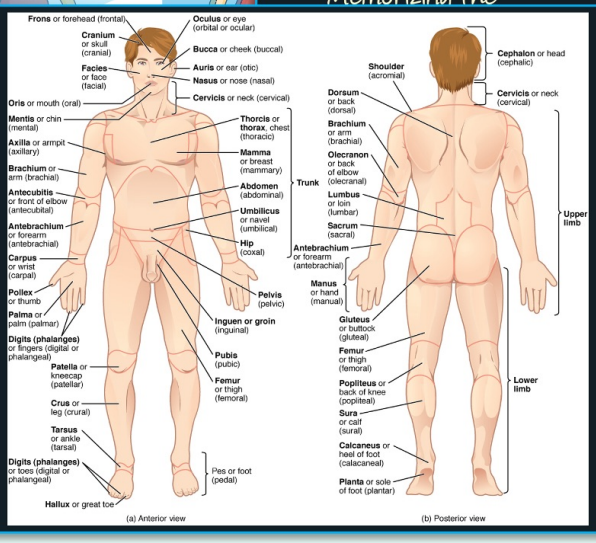
Memorizing the





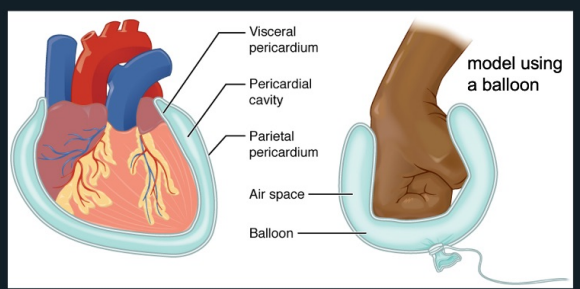


Regional Terms



Ventral Cavity Membranes

Serous membranes protect organs in two layers: parietal (outer layer- lines the cavity) and visceral (inner layer- lines the surface of an organ)



Serous fluid between the layer helps cushion and protect organs

25 slides: covers levels of organization, properties of life, homeostasis, introductory body system, + anatomical positions, directions, planes, regions; body cavities and membranes

The PowerPoint comes with 2 types of student notes to choose from: 2-column or fill in the blank

NOTES: INTRO TO ANATOMY Name: _____

Main Ideas	Details
Anatomy and Physiology	Anatomy= the study of
Levels of Organization	

2-column

Main Ideas	Details
Development *changes as an organism becomes more mature/complex*	Differentiation
Reproduction	
Homeostasis =*Balance; actively maintaining a steady internal environment*	ALL body systems
	Example- if the blood pH increases to become slightly acidic, the kidneys will
-Feedback Loops *Negative and positive homeostasis feedback loops*	Positive feedback loop-
	Example) prolactin is a hormone that produces milk in mammals after birth; when a calf suckles its mother's udder
	Negative feedback loop-
	Example)

Stimulus → Sensor → Control → Effector

Body temperature exceeds 37°C → Nerve cells in skin and brain → Temperature regulatory center in brain → Sweat glands throughout body

(a) Negative feedback loop (b) Body temperature regulation

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2

Fill in the blank

Anatomy = The study of the _____

Physiology = The study of **how** _____

Levels of Organization

System, Organ, Tissue, Organism, Cell

_____ → _____ → _____ → _____ _____ → _____

Example)

1. Org
2. Met
3. Res (can be
4. Gro
5. Dev chang
6. Rep
7. Ada

Anatomical Positions

_____- lying face down

_____- lying face up

Supine

Prone

Pronation Supination

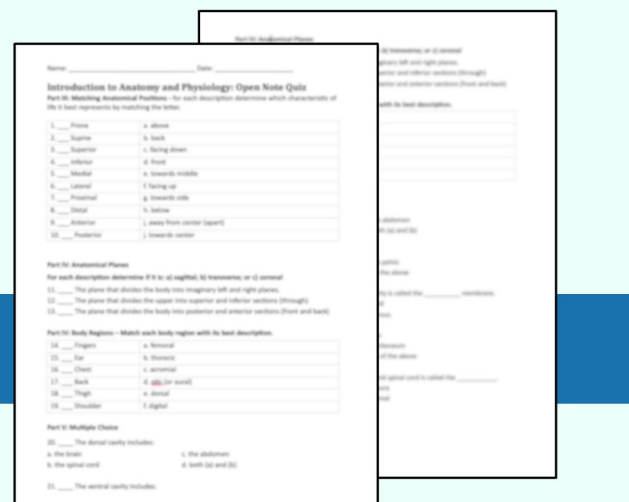
Anatomical Directions

- Superior/Inferior
- Medial/Lateral
- Proximal/Distal
- Posterior/Anterior
  - Dorsal/ventral
- Superficial/Deep

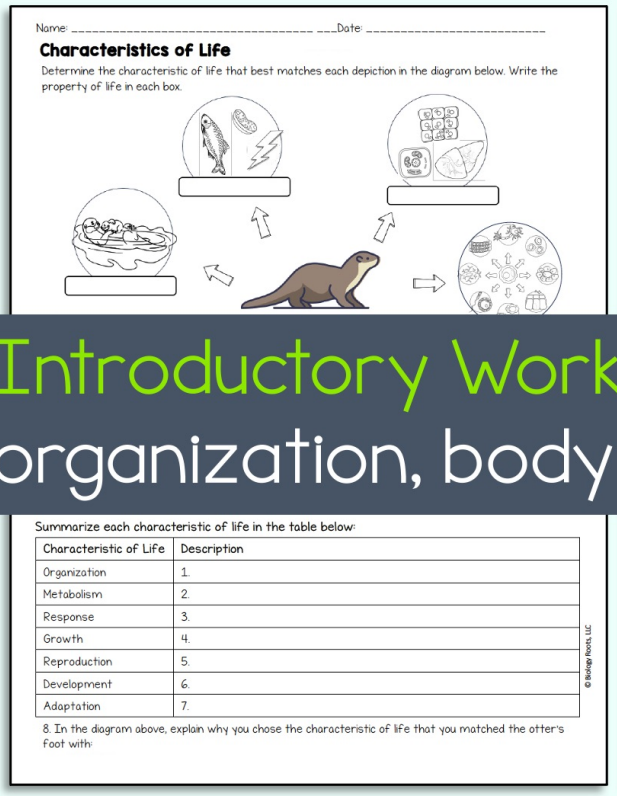
Anatomical Planes

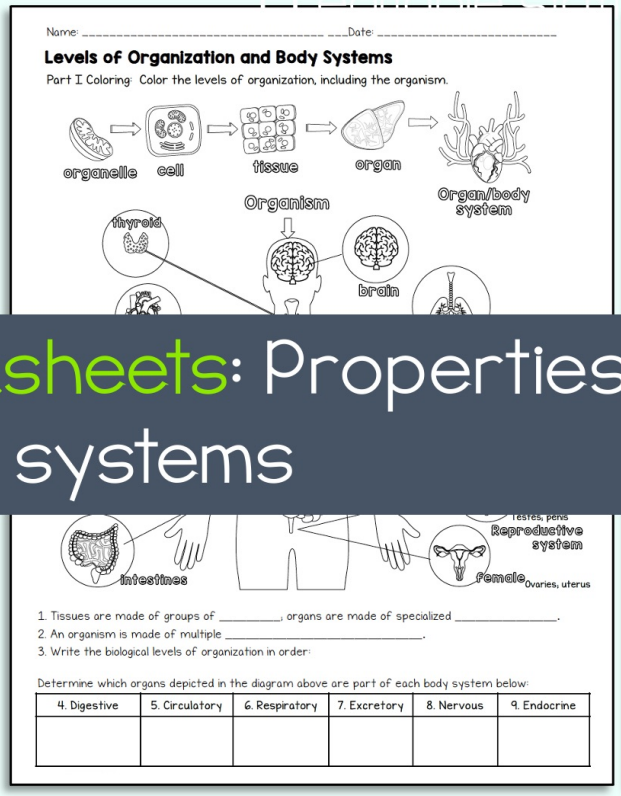
(left and right) (through) (front and back)

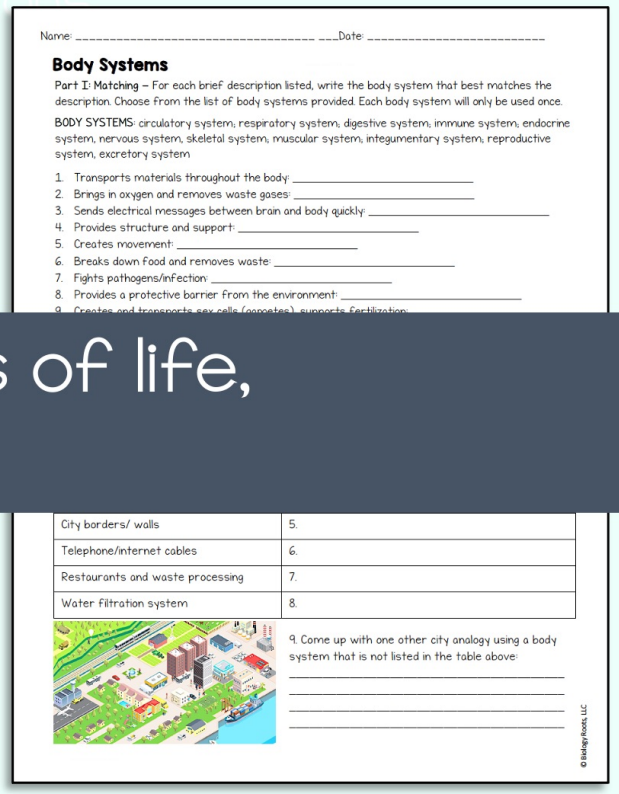
Regional Terms



Open note quiz also included!

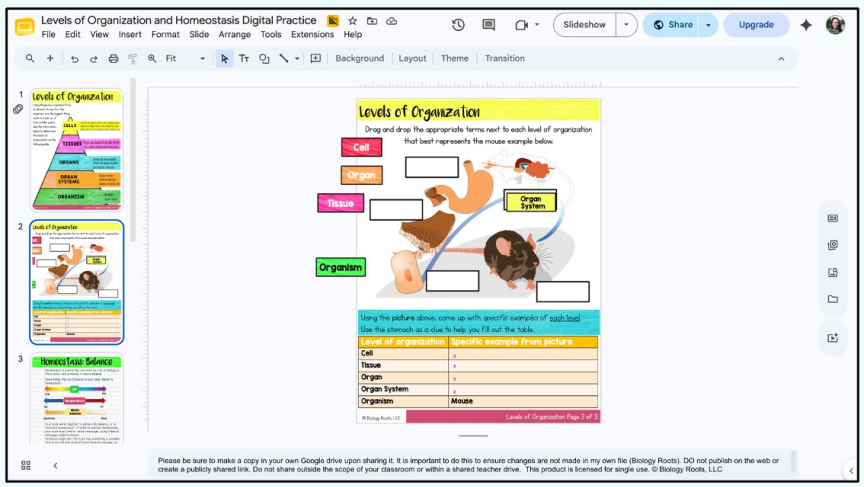


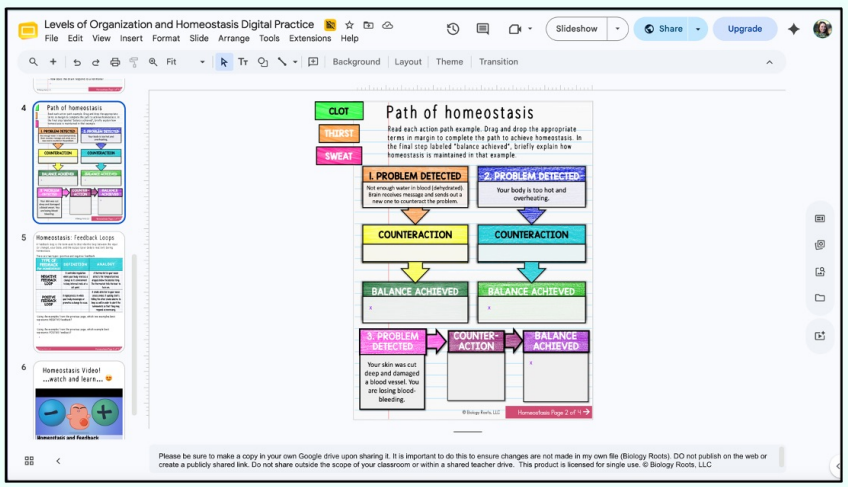




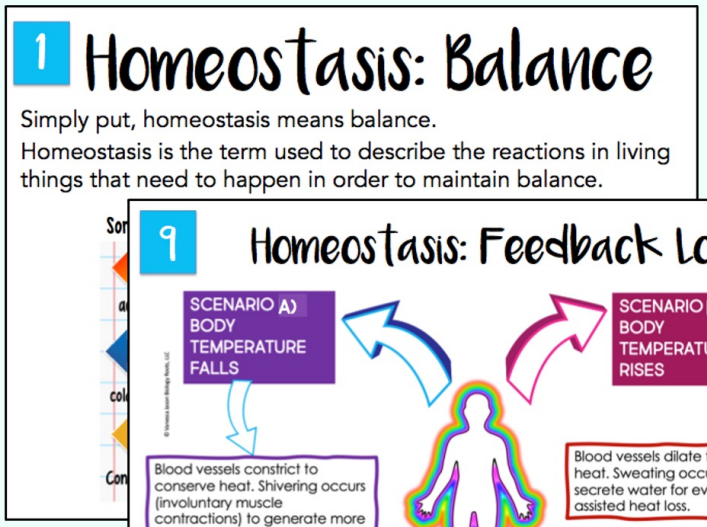
Introductory Worksheets: Properties of life, organization, body systems

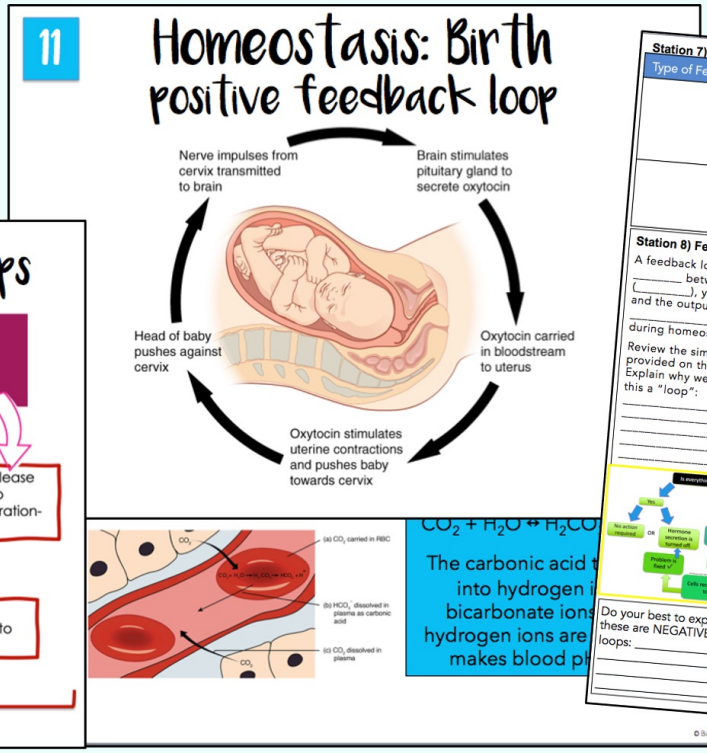
Digital Flipbook: Levels of organization and homeostasis (hosted on Google Slides)

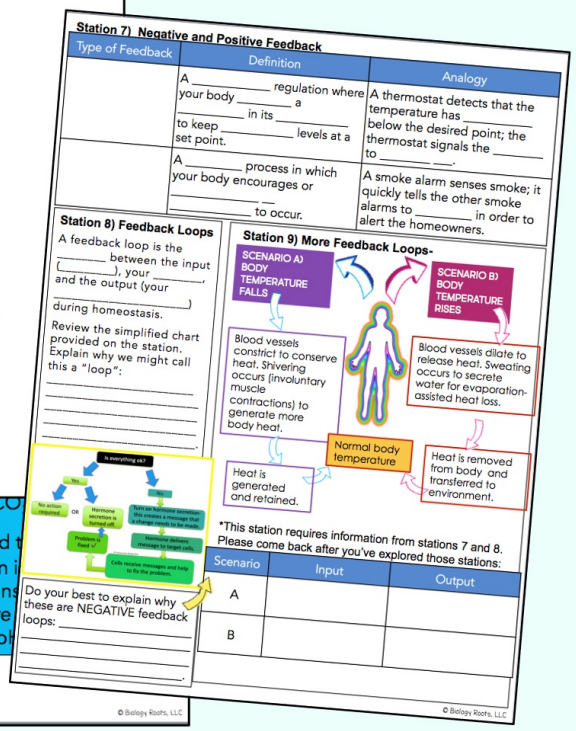


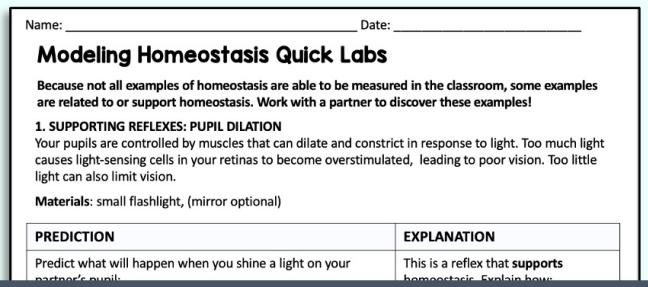


Homeostasis Stations 14 editable stations








Name: _____ Date: _____

Modeling Homeostasis Quick Labs

Because not all examples of homeostasis are able to be measured in the classroom, some examples are related to or support homeostasis. Work with a partner to discover these examples!

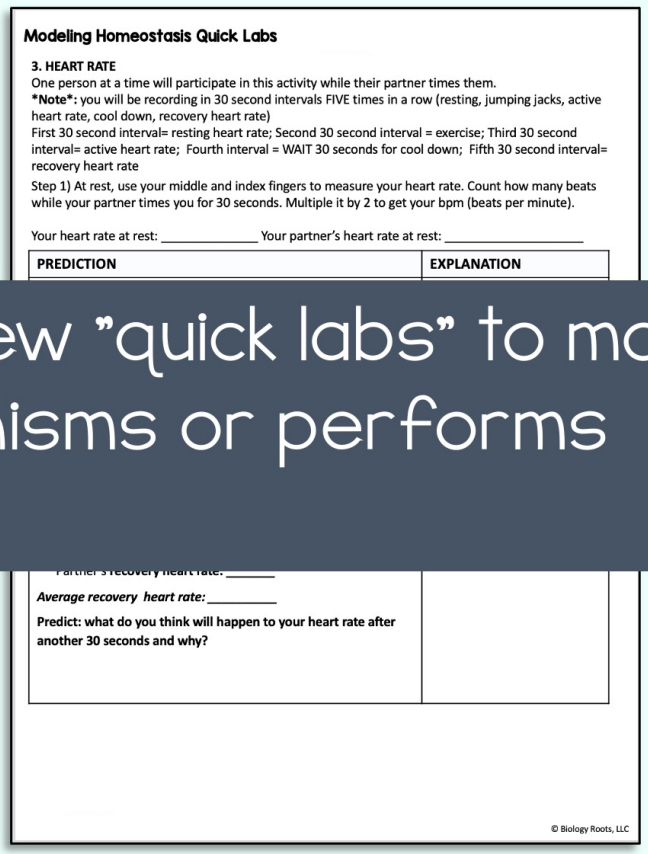
1. SUPPORTING REFLEXES: PUPIL DILATION

Your pupils are controlled by muscles that can dilate and constrict in response to light. Too much light causes light-sensing cells in your retinas to become overstimulated, leading to poor vision. Too little light can also limit vision.

Materials: small flashlight, (mirror optional)

PREDICTION	EXPLANATION
Predict what will happen when you shine a light on your partner's pupil:	This is a reflex that **supports** homeostasis. Explain how:
Predict what will happen when you submerge your hand in cold water for one minute then try to move the paper clips?	What happened to the function of your hand when it was outside of normal parameters?
DATA/OBSERVATION Step 2) Submerge the same hand you used in step 1 in the container of cold water for 60 seconds. Dry it off with a paper towel and attempt to move the items again within a 30 second period (be sure the cups are the same distance apart for each trial). Cold hand # of items of moved: _____ Your partner's # with cold hand: _____	**Name some "unseen" things your body was doing (homeostasis) in order to get your hand back up to normal temperature:**

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Modeling Homeostasis Quick Labs

3. HEART RATE

One person at a time will participate in this activity while their partner times them.

***Note*:** you will be recording in 30 second intervals FIVE times in a row (resting, jumping jacks, active heart rate, cool down, recovery heart rate)

First 30 second interval= resting heart rate; Second 30 second interval = exercise; Third 30 second interval= active heart rate; Fourth interval = WAIT 30 seconds for cool down; Fifth 30 second interval= recovery heart rate

Step 1) At rest, use your middle and index fingers to measure your heart rate. Count how many beats while your partner times you for 30 seconds. Multiple it by 2 to get your bpm (beats per minute).

Your heart rate at rest: _____ Your partner's heart rate at rest: _____

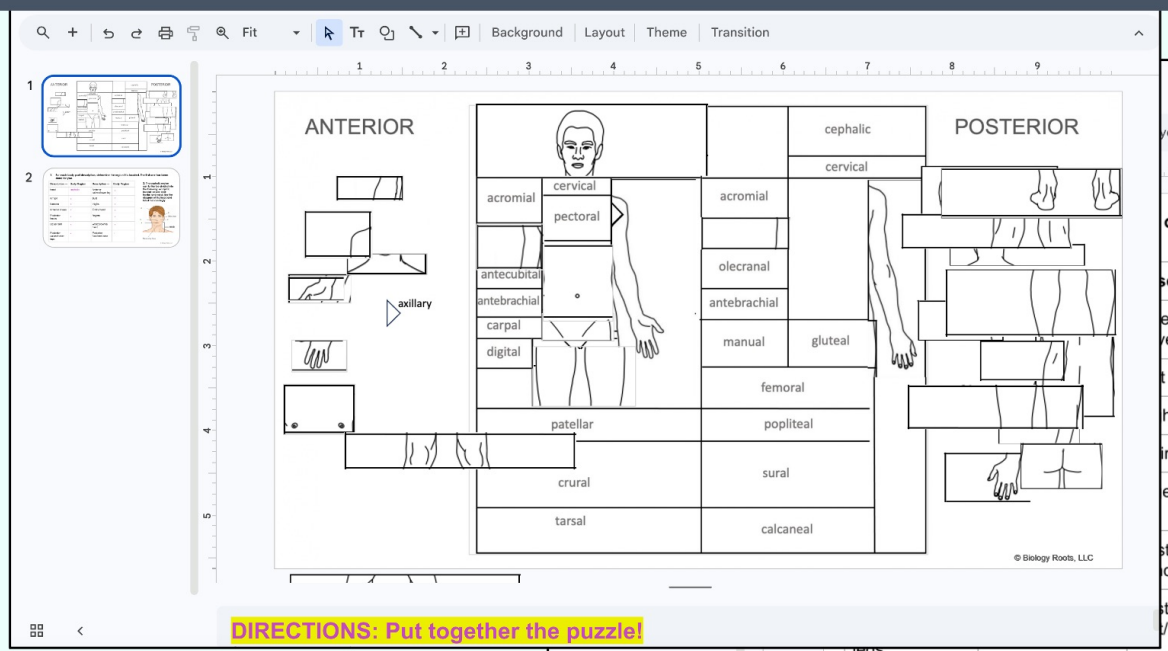
PREDICTION	EXPLANATION
Partner's recovery heart rate: _____ ***Average recovery heart rate:*** _____ **Predict: what do you think will happen to your heart rate after another 30 seconds and why?**	

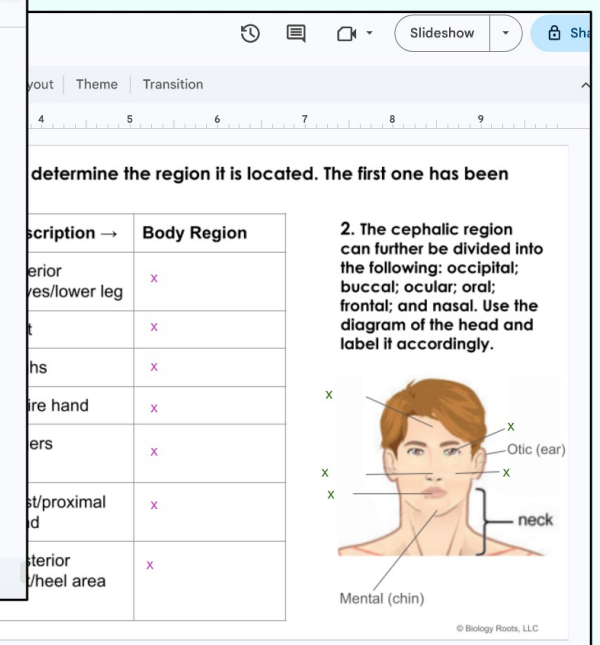
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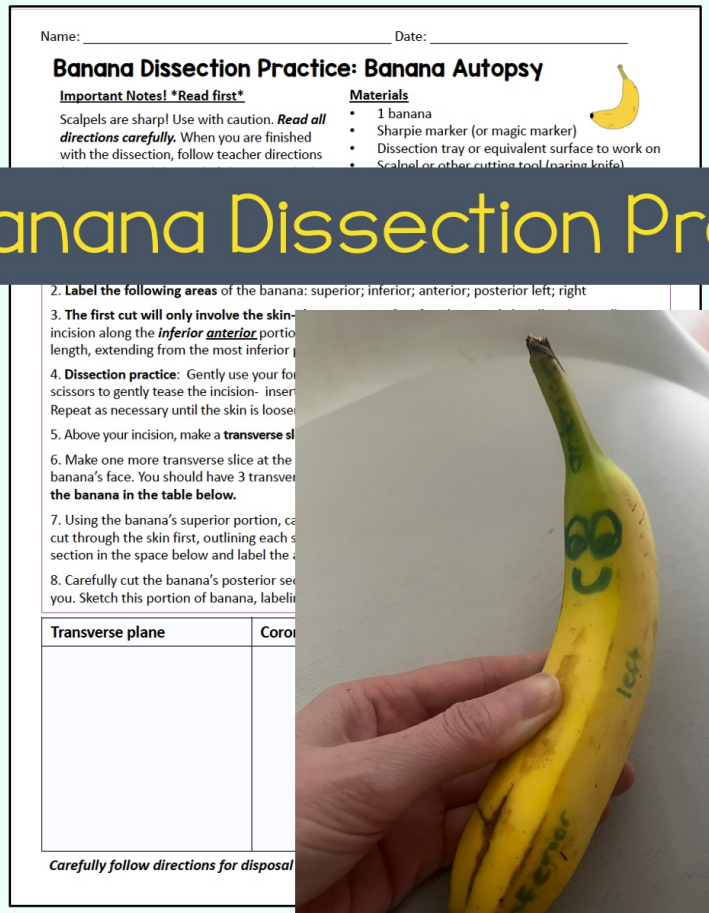
Modeling Homeostasis: A few "quick labs" to model how the body supports mechanisms or performs homeostasis

Anatomical Directions, Planes, and Regions

Digital Puzzle: Body Regions Drag and Drop & Added Practice






Name: _____ Date: _____

Banana Dissection Practice: Banana Autopsy

Important Notes! *Read first*

Scalpels are sharp! Use with caution. ***Read all directions carefully.*** When you are finished with the dissection, follow teacher directions

Materials

- 1 banana
- Sharpie marker (or magic marker)
- Dissection tray or equivalent surface to work on
- Scalpel or other cutting tool (paring knife)

2. **Label the following areas** of the banana: superior; inferior; anterior; posterior left; right

3. **The first cut will only involve the skin-** incision along the ***inferior anterior*** portio length, extending from the most inferior

4. **Dissection practice**: Gently use your fo scissors to gently tease the incision- inser Repeat as necessary until the skin is loose

5. Above your incision, make a **transverse sl**

6. Make one more transverse slice at the banana's face. You should have 3 transver **the banana in the table below.**

7. Using the banana's superior portion, ca cut through the skin first, outlining each s section in the space below and label the

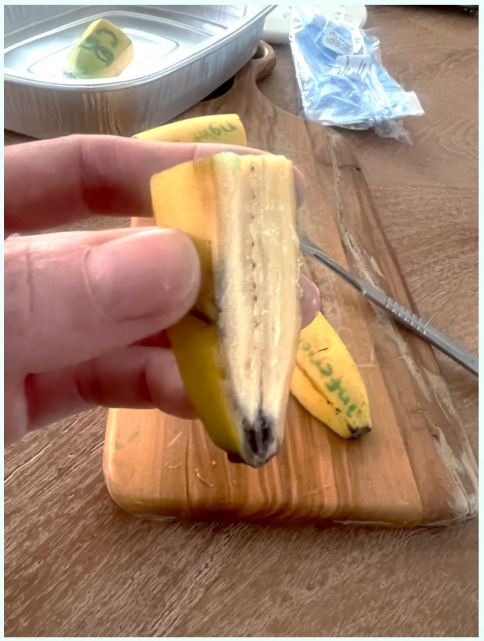
8. Carefully cut the banana's posterior se you. Sketch this portion of banana, labeli

Transverse plane	Coro

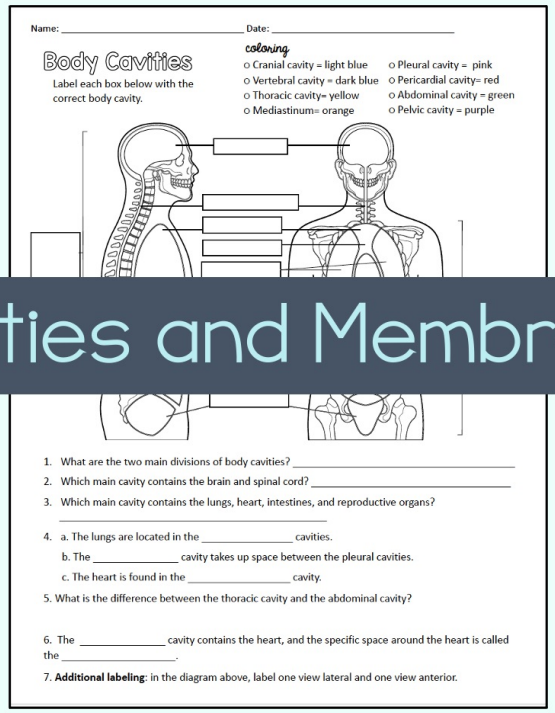
Carefully follow directions for disposal

Banana Dissection Practice





Perfect way to introduce anatomical planes into a hands-on, three dimensional model. Students visualize planes, practice body regions and anatomical terms. This also gives them some added practice with dissection tools.



Name: _____ Date: _____

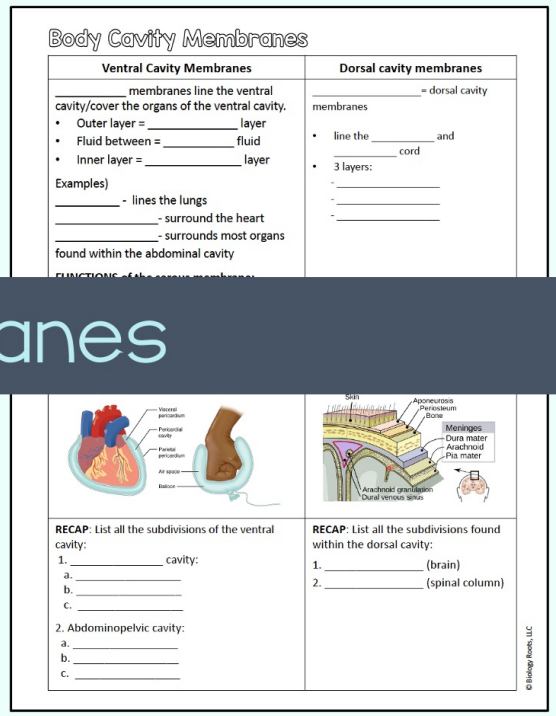
Body Cavities

Label each box below with the correct body cavity.

coloring

- Cranial cavity = light blue
- Vertebral cavity = dark blue
- Thoracic cavity= yellow
- Mediastinum= orange
- Pleural cavity = pink
- Pericardial cavity= red
- Abdominal cavity = green
- Pelvic cavity = purple

1. What are the two main divisions of body cavities? _____
2. Which main cavity contains the brain and spinal cord? _____
3. Which main cavity contains the lungs, heart, intestines, and reproductive organs? _____
4. a. The lungs are located in the _____ cavities.
   b. The _____ cavity takes up space between the pleural cavities.
   c. The heart is found in the _____ cavity.
5. What is the difference between the thoracic cavity and the abdominal cavity?
6. The _____ cavity contains the heart, and the specific space around the heart is called the _____.
7. **Additional labeling**: in the diagram above, label one view lateral and one view anterior.

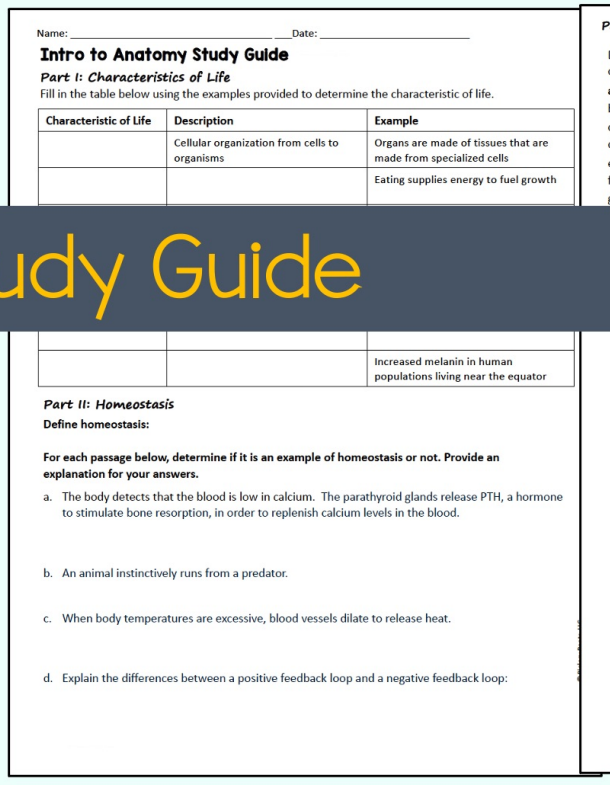


Body Cavity Membranes

Ventral Cavity Membranes	Dorsal cavity membranes
_____ membranes line the ventral cavity/cover the organs of the ventral cavity. • Outer layer = _____ layer • Fluid between = _____ fluid • Inner layer = _____ layer Examples) _____ - lines the lungs _____ - surround the heart _____ - surrounds most organs found within the abdominal cavity	_____ = dorsal cavity membranes • line the _____ and _____ cord • 3 layers: - _____ - _____ - _____
RECAP: List all the subdivisions of the ventral cavity: 1. _____ cavity: a. _____ b. _____ c. _____ 2. Abdominopelvic cavity: a. _____ b. _____ c. _____	**RECAP**: List all the subdivisions found within the dorsal cavity: 1. _____ (brain) 2. _____ (spinal column)

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Body Cavities and Membranes



Name: _____ Date: _____

Intro to Anatomy Study Guide

Part I: Characteristics of Life

Fill in the table below using the examples provided to determine the characteristic of life.

Characteristic of Life	Description	Example
	Cellular organization from cells to organisms	Organs are made of tissues that are made from specialized cells
		Eating supplies energy to fuel growth
		Increased melanin in human populations living near the equator

Part II: Homeostasis

Define homeostasis:

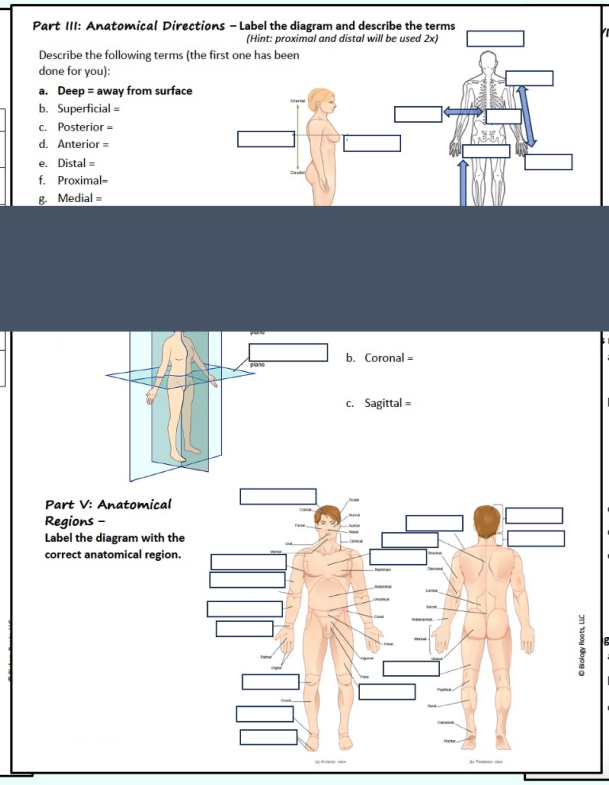
For each passage below, determine if it is an example of homeostasis or not. Provide an explanation for your answers.

a. The body detects that the blood is low in calcium. The parathyroid glands release PTH, a hormone to stimulate bone resorption, in order to replenish calcium levels in the blood.

b. An animal instinctively runs from a predator.

c. When body temperatures are excessive, blood vessels dilate to release heat.

d. Explain the differences between a positive feedback loop and a negative feedback loop:



Part III: Anatomical Directions – Label the diagram and describe the terms

(Hint: proximal and distal will be used 2x)

Describe the following terms (the first one has been done for you):

a. **Deep = away from surface**
b. Superficial =
c. Posterior =
d. Anterior =
e. Distal =
f. Proximal=
g. Medial =

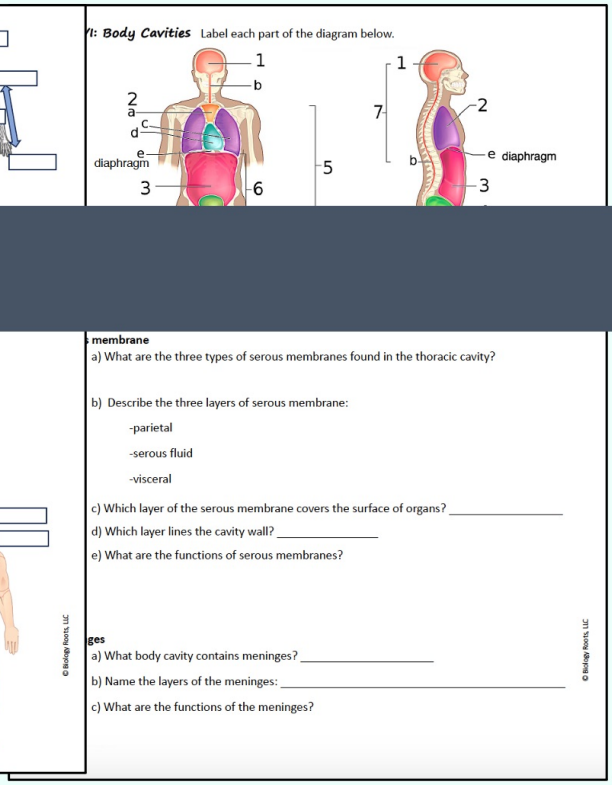
b. Coronal =

c. Sagittal =

Part V: Anatomical Regions –

Label the diagram with the correct anatomical region.

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VI: Body Cavities Label each part of the diagram below.

membrane

a) What are the three types of serous membranes found in the thoracic cavity?

b) Describe the three layers of serous membrane:

-parietal

-serous fluid

-visceral

c) Which layer of the serous membrane covers the surface of organs? _____

d) Which layer lines the cavity wall? _____

e) What are the functions of serous membranes?

ges

a) What body cavity contains meninges? _____

b) Name the layers of the meninges: _____

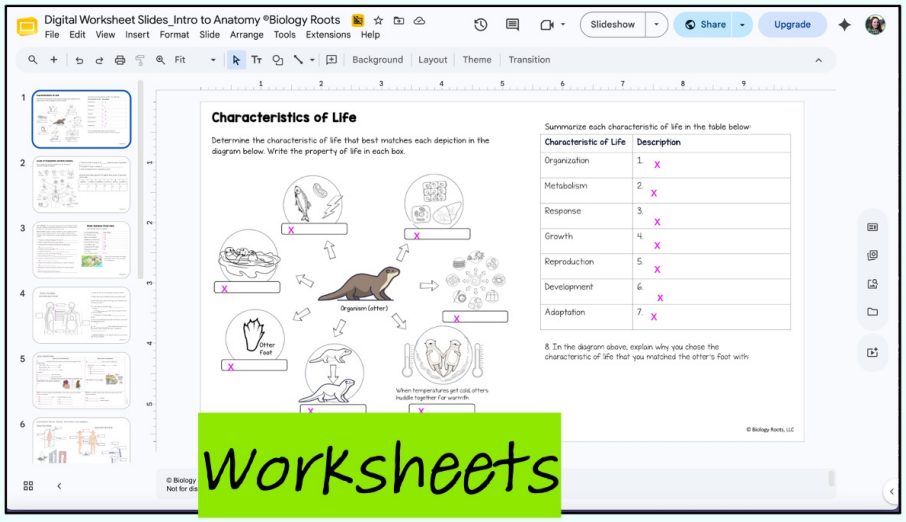
c) What are the functions of the meninges?

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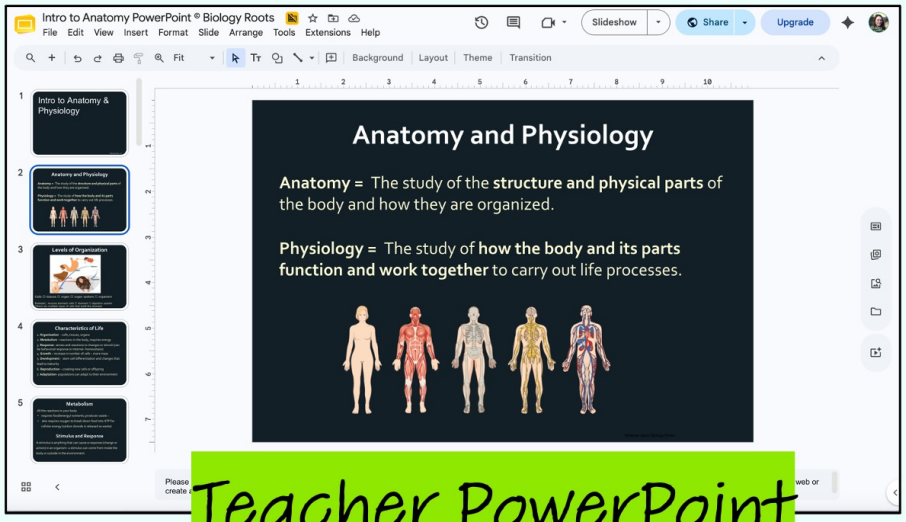
Study Guide

Not pictured: TEST (Includes both an honors version and a college prep version)

Digital options available

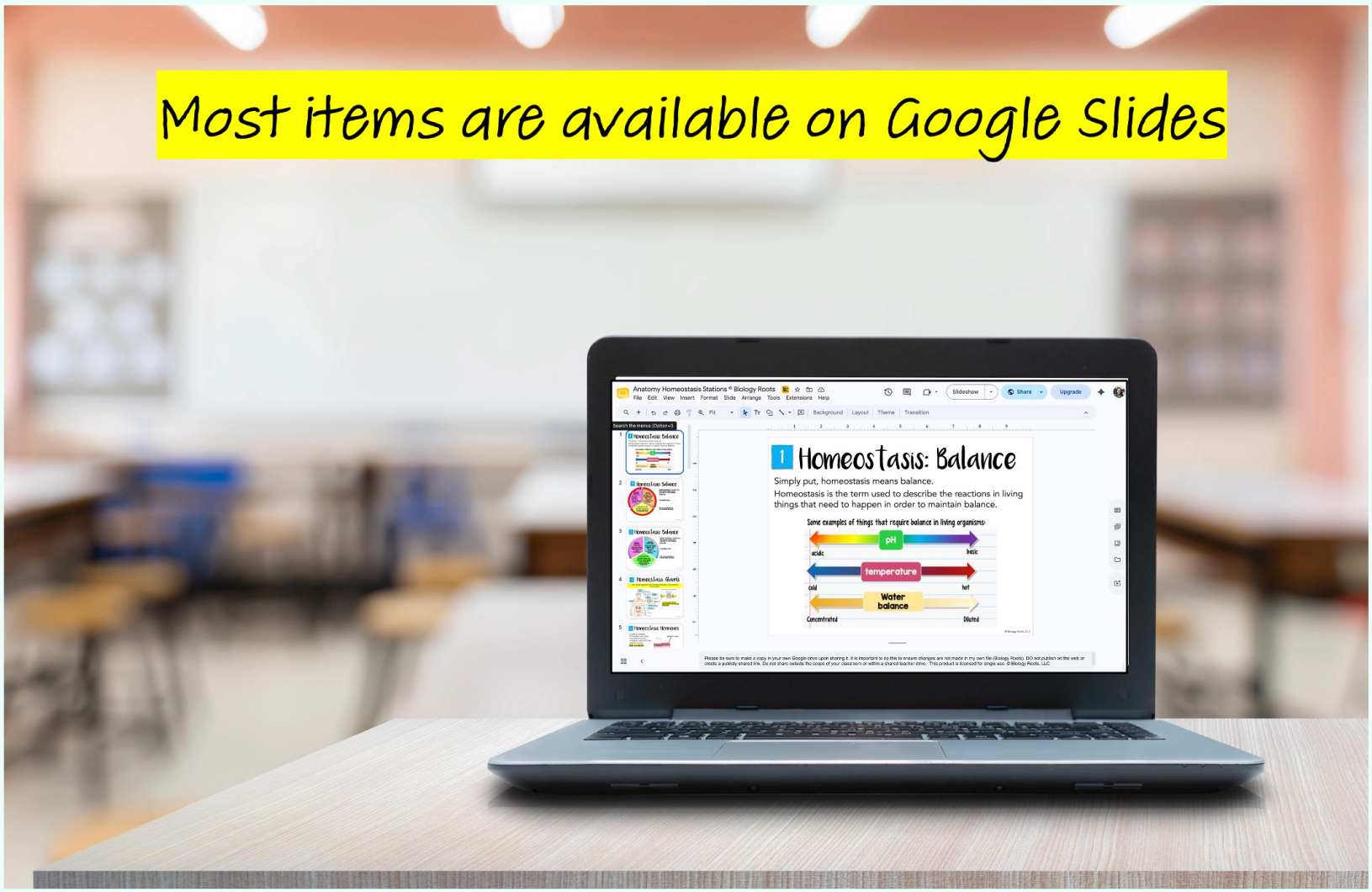


Worksheets



Teacher PowerPoint

Most items are available on Google Slides



Features in a Nutshell:

Digital versions are hosted on Google Slides.

Most items are editable

Differentiated Tests

Pacing Guides outline your daily agenda!

Still not sure if you need this resource?

This unit is for any teacher who is looking for a fully prepared anatomy unit from start to finish, with fun, fresh activities to keep your students engaged!
Every piece has been thoughtfully curated and mapped out for your anatomy classroom to give you the most successful (and fun) year of anatomy yet!
Questions? Reach out to me at vanessa@biology-roots.com

-Vanessa