

APES Unit 4 Study Guide

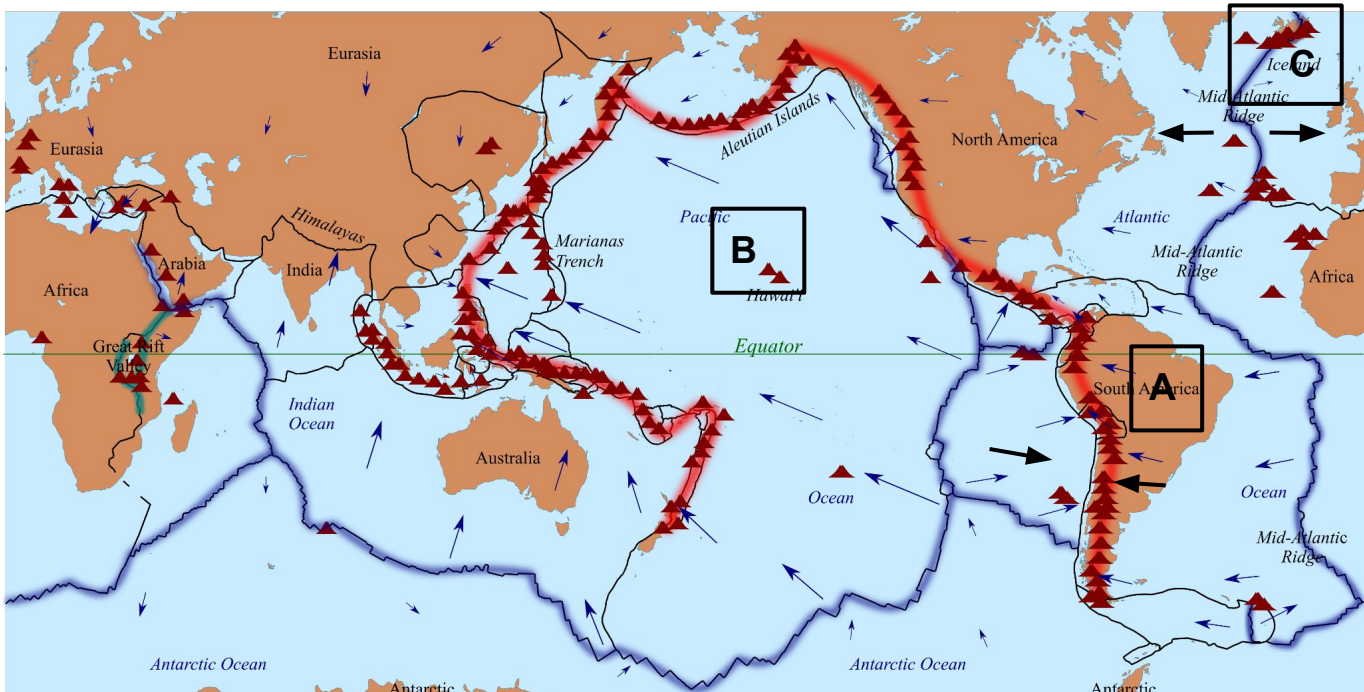
Ultimate Review Packet (4.1)

4.1 - Plate Tectonics

a. **Describe** the makeup and movement of tectonic plates

b. Complete the table below to review the three types of plate boundaries

Boundary	Drawing	Description	Location & Landforms
Divergent			
Convergent			
Transform			



c. **Describe** how the Andes Mountain Range (A) was formed, using evidence from the map above.

d. **Explain** the difference between the formation of the volcanic Islands at locations (B) and (C).

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Ultimate Review Packet (4.2 - 4.3)

4.2 - Soil Formation

- a. **Identify** THREE abiotic components of soil
- b. **Identify** TWO biotic components of soil
- c. **Describe** how weathering of parent material impacts soil formation
- d. **Describe** the process of soil erosion
- e. **Describe** the composition of the A horizon of soil
- f. **Explain** a non-agricultural benefit that soil provides to humans

4.3 - Soil Properties

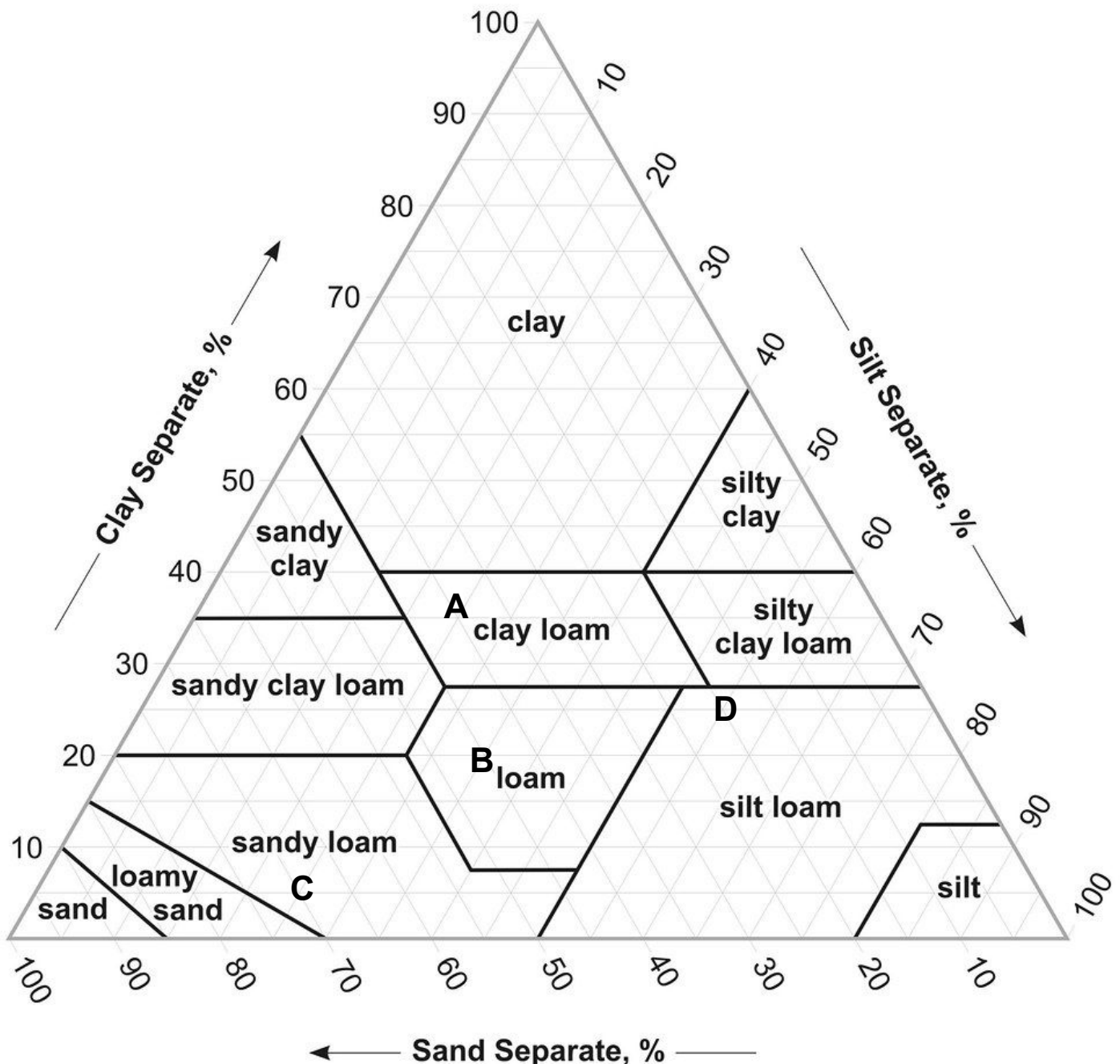
- a. Define soil texture
- b. **Describe** a method to measure soil texture
- c. **Explain** the relationship between soil texture and water holding capacity:
- d. Identify a chemical characteristic of soil quality and **explain** how this characteristic relates to soil fertility.
- e. Students conduct an experiment to measure the fertility of different soil samples. For each soil sample, they measure the depth of the O horizon and collect 500 grams of the soil in identical pots. The students then plant 10 mung bean seeds in each soil sample and water the soil with 80 mL of water each day for two weeks. At the end of the study, the students record the average height of each mung bean sprout in each pot to calculate an average.
 - i. **Identify** a possible hypothesis for this experiment
 - ii. **Explain** how the results of the study might change if one soil sample was heated to 100° F for a week prior to planting mung bean seeds in it.

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Ultimate Review Packet (4.3 continued)

4.3 - Soil Properties

- Make a claim** about which soil sample below would have the highest nutrient levels. **Justify** your claim and **identify** the texture of that soil.
- If each soil sample below were placed in a plastic column and 10 mL of water poured through each column, **make a claim** about which sample would allow the water to drain through the column the fastest. **Justify** your claim and **identify** the texture of that soil.



APES Unit 4 Ultimate Review Packet (4.4 - 4.6)

4.4 - Earth's Atmosphere

- a. **List** the four most abundant gasses of Earth's atmosphere, from most to least abundant.
- b. **Describe** the importance of the stratosphere to life on earth
- c. **Identify** the relationship between temperature and altitude in the troposphere
- d. **Identify** the layer of Earth's atmosphere in which charged gas molecules are heated by intense solar radiation

4.5 - Global Wind Patterns

- a. **Explain** how the distribution of solar radiation across earth's surface is responsible for the pattern of air circulation known as a Hadley Cell.
- b. **Explain** how the coriolis effect is responsible for the Eastern Trade winds in the northern and southern hemispheres
- c. **Explain** why 30° N and S experience drier, higher pressure conditions than the equator

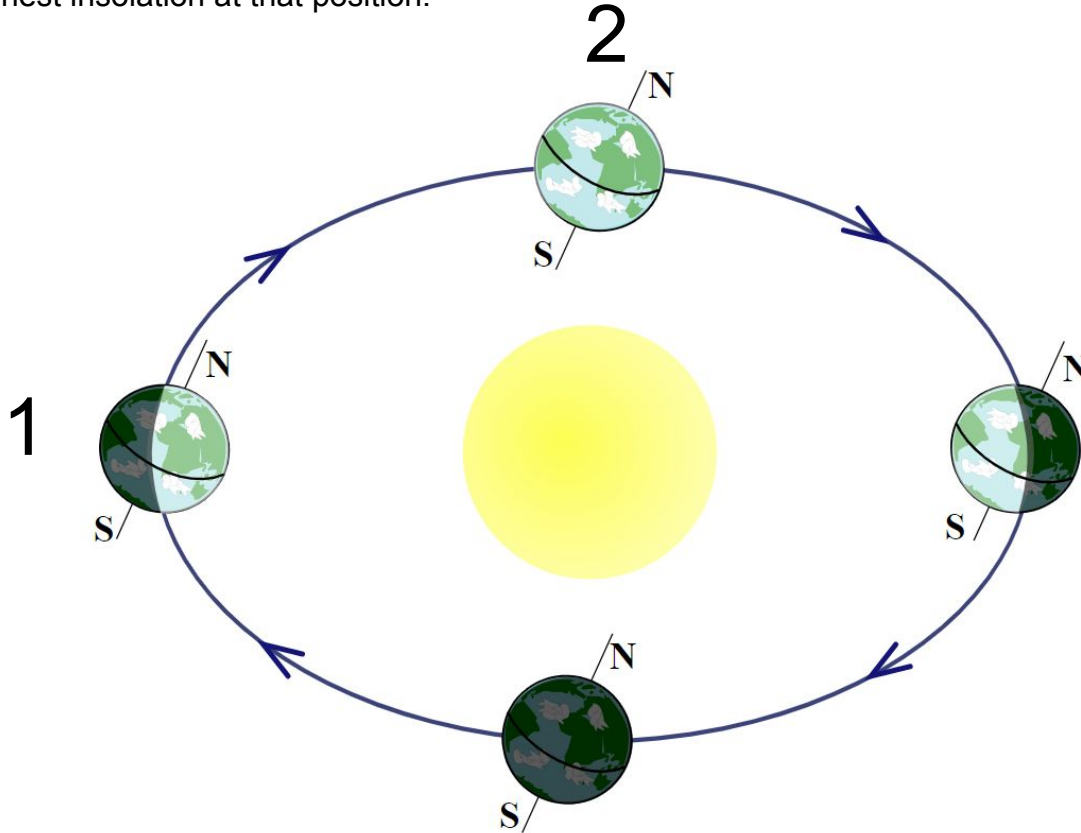
4.6 - Watersheds

- a. **Describe** the relationship between vegetation density and groundwater recharge rate in a watershed.
- b. **Describe** TWO changes in water quality that would be likely to occur in a watershed that has been clearcut.
- c. **Describe** how the slope of a watershed could impact the turbidity of its surface waters.
- d. **Identify** a pollutant and **describe** how that pollutant could be carried from its source into the central body of water in a watershed.

APES Unit 4 Ultimate Review Packet (4.7)

4.7 - Solar Radiation and Seasons

- a. **Define** insolation:
- b. **Describe** the two factors that determine why the equator receives more insolation than higher latitudes
- c. **Explain** how the angle of Earth's axis is responsible for seasonal changes
- d. Label the June Solstice, December Solstice, March Equinox, and September Equinox on the diagram below.
- e. Draw a line from the sun to each of the 4 positions of Earth to indicated the latitude that receives the highest insolation at that position.



- f. **Make a claim** about the whether the length of day at 60° N latitude is longer in position 1 or position 2 in the diagram above. **Justify** your claim.

APES Unit 4 Ultimate Review Packet (4.8 - 4.9)

4.8 - Earth's Climate and Geography

- a. **Describe** the difference between the windward and leeward side of a mountain:
- b. **Explain** the rainshadow effect

4.9 - El Nino and La Nina

- a. **Identify** the region of Earth where ENSO or the El Nino Southern Oscillation occurs
- b. Fill out the chart below to review the normal conditions in the region where ENSO occurs

Normal Conditions	Trade Wind Direction:	Pressure & Weather Conditions of Americas:	Pressure & Weather Conditions of Australia & SE Asia:
		Surface sea temp:	Surface sea temp:

- c. Fill out the chart below to review the El Nino conditions in the region where ENSO occurs.

El Nino Conditions	Trade Wind Direction:	Pressure & Weather Conditions of Americas:	Pressure & Weather Conditions of Australia & SE Asia:
		Surface sea temp:	Surface sea temp:

- d. **Describe** the process of upwelling and **explain** why El Nino conditions suppress upwelling off the West coast of South America.
- e. Pick **TWO** of the conditions from the charts above and **describe** how a La Nina event impacts those conditions.