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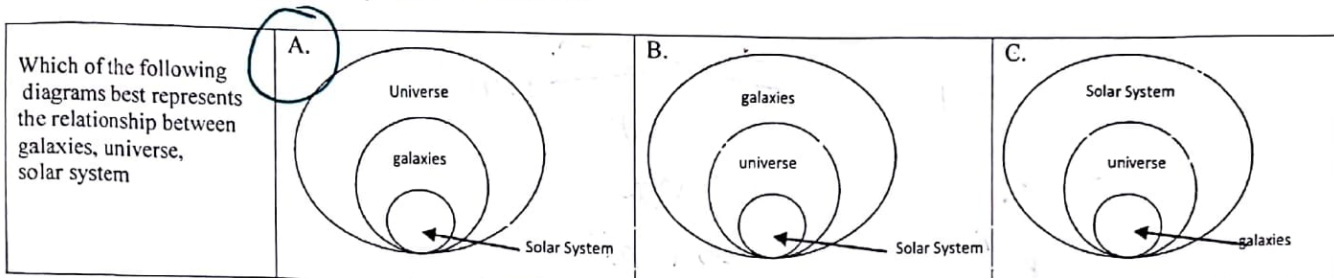
**SIXTH GRADE SCIENCE CRCT STUDY GUIDE**

S6E1. Students will explore current scientific views of the universe and how those views evolved.

a. relate the Nature of science to the progression of basic historical scientific models.

1. According to the big bang theory, the universe formed about 13.7 billion years ago.

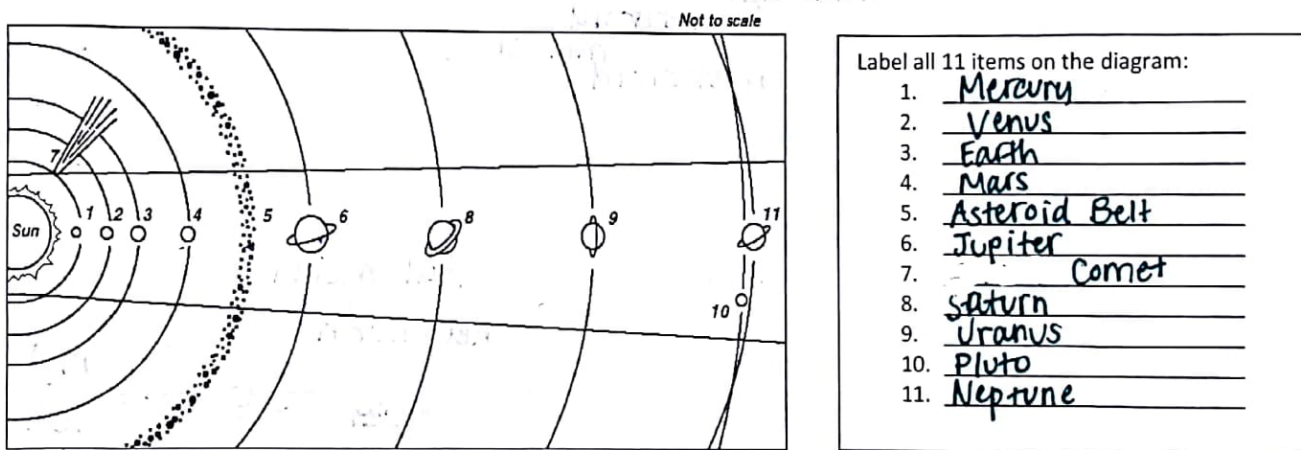
b. Describe position of the solar system in the universe.



2. The galaxy we live in, Milky Way galaxy is an example of a (an) spiral galaxy.

c. planets in terms of Size relative to the earth; Surface and atmospheric features; Relative distance from the sun; Ability to support life

The Solar System



3. Name the planets that are gas planets? Jupiter, Saturn, Uranus, Neptune <sup>outer planets</sup>
4. What do all gas planets have in common? Rings, Gas, Large
5. Name the planets that are terrestrial planets. Mercury, Venus, Earth, Mars <sup>inner</sup>
6. What do the terrestrial planets have in common? Smaller, Rocky, Close to Sun, Close to each other
7. Which planet is closest to sun? Mercury
8. Sister planets Venus and Earth are much alike in terms of their size and density and existence of atmospheres.
9. Earth is the only planet that can sustain life
10. Saturn's rings are made up of mostly ice & rocks
11. Aside from Earth, which planet once had liquid water on its surface? Mars
12. How do we know? can see river beds

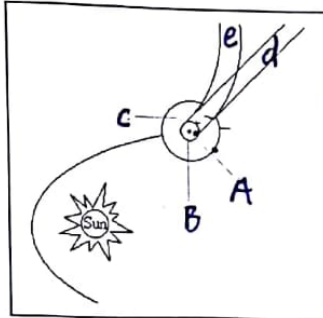
e. gravity is the force that governs the motion in the solar system.

13. Two factors that combine to keep Earth and the moon in orbit is gravity and inertia
14. All objects are attracted to each other by the force of gravity

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15. As distance increases, gravity's pull decreases. As distance decreases gravity increases.

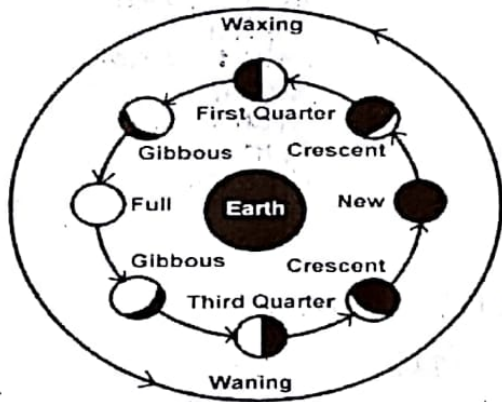
f. Describe comets, asteroids, meteors.  
Label the parts of the comet.



- A. Head
- B. Nucleus
- C. Coma
- D. Ion tail
- E. Dust tail

16. A comet has an extremely elliptical orbit.
17. When it flies close to the sun its tail will point away from sun
18. Most asteroids revolve around the sun between the orbits of Mars and Jupiter.
19. Scientists hypothesize that a meteorite/asteroid hit the earth causing extinction of dinosaurs.
20. An object outside of the asteroid belt is called a meteoroid and is still in space.  
Once the object enters Earth's atmosphere it is called a(n) meteor.  
When it hits the Earth it is called a(n) meteorite.

S6E2. Students will understand the effects of the relative positions of the earth, moon and sun.  
a. phases of the moon by showing the alignment of the earth, moon, and sun.



21. The entire sunlit side faces earth during a full moon.
22. The sunlit side faces away from Earth during a new moon.
23. During waxing phases the light is on the right and the reflected light is growing.
24. During waning phases the light is on the left and the reflected light is shrinking.
25. What is the next phase after a first quarter moon?  
waxing Gibbous
26. What is the next phase after a waning gibbous?  
3rd quarter

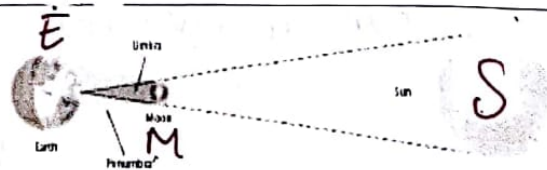


f. alignment of the earth, moon, and sun during solar and lunar eclipses.

26. During a lunar eclipse, Earth is directly between the sun and the moon, causing the moon to pass through Earth's shadow.
27. During a solar eclipse, the moon is directly between the sun and Earth, casting a shadow upon Earth.
28. For a solar eclipse to occur, the moon must be directly between the sun and the Earth.
29. During what phase of the moon can a lunar eclipse occur? Full moon

What type of eclipse is shown?

Solar



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30. The moon takes about 28 days to go around Earth. Can you think of a reason why there is not an eclipse every month? moon tilted orbit
- c. tilt of the earth to the distribution of sunlight throughout the year and its effect on climate.
31. Earth has seasons because of the tilt of the axis of the Earth.
32. An equinox occurs when Earth's tilt is even so there are equal amounts of day/night
33. Earth rotates on its axis about once every 24 hours thus causing day and night
34. Earth revolves once around the sun about every 364.25 days
35. When the Northern Hemisphere is tilted towards the sun they are experiencing what season? summer
36. At the same time the Southern Hemisphere is experiencing? winter

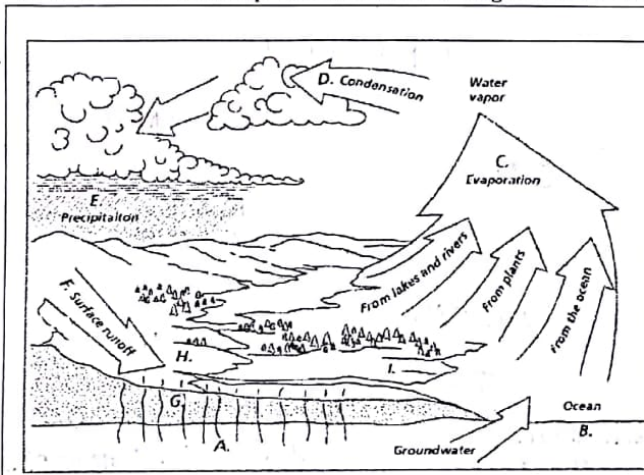
S6E3. Students will recognize the significant role of water in earth processes.

a. what portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.

37-49 Answer True or False and correct if False

37. F Most of Earth's fresh water is in our ~~rivers~~ glaciers
38. T Approximately 3% of Earth's water is fresh water?
39. T Sources of freshwater on Earth include ice, rivers, lakes, and groundwater.
40. F Approximately 50% of our earth is covered with water. (70%)

b. relate various atmospheric conditions to stages of the water cycle.



41. The energy for the water cycle originally comes from the Sun

42. Describe three things that can happen to water when it falls on Earth's surface.

Evaporate, Infiltrate, runoff

43. Identify the step in which water changes from a liquid to a gas.

Evaporate / Evaporation

44. What must happen to water vapor to form a cloud? condense

45. Where does evaporation come from?

lakes, river, plants, ocean

46. What is evaporation that comes from plants called?

Transpiration

47. Plants are part of the water cycle, they take water in through their roots and release water through their leaves which is called transpiration
48. Water that falls onto Earth is the form of rain, sleet, hail or snow is called precipitation
49. Water that fills the cracks and spaces in underground soil and rock layers is called infiltration

c. Describe the composition, location, and subsurface topography of the world's oceans

50. A major advance in ocean floor mapping that uses sound waves is Sonar

60. Which letter identifies the continental shelf?

A

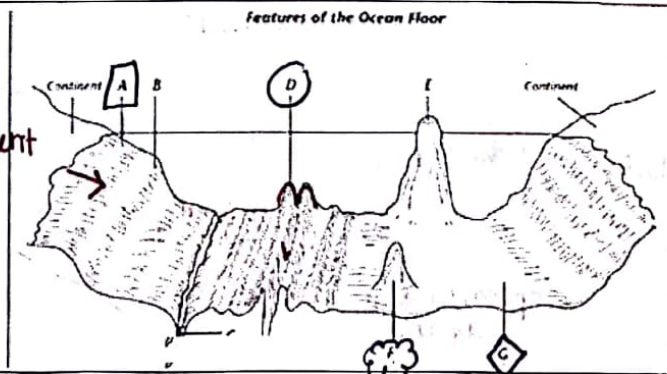
61. Write what ocean floor feature is located at letter (D) and describe what happens here to create new crust?

Mid-ocean ridge - divergent

62. What letter identifies the abyssal plain? G and what is it made up of sediments

63. Name one other feature found on the ocean floor.

F → Seamount, an underwater volcano that never reached the surface



d. Explain the causes of waves, currents, tides

Answer True or False and correct if False, 76-80

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- F 54. A tide is a large stream of water that flows through the ocean. - Current
- T 55. The movement of cold, deep ocean water to replace warm water at the surface is upwelling.
- T 56. Without the motion caused by upwelling, the surface waters of the open ocean would be very scarce in algae.
- T 56. Our Earth's rotation known as "Coriolis effect" helps direct ocean currents.
- 57. Tsunami's are caused by earthquakes on the ocean floor.
- 58. A tide with the least difference between low and high tide is neap tide.
- 59. A spring tide happens at a new and full moon.
- 60. Tides are caused by the force of gravity from the sun and moon acting on Earth.
- 61. The daily rise and fall of water on Earth's coastlines are called tides.

S6E4. Students will understand how the distribution of land and oceans affects climate and weather.  
a. uneven heating of earth causes weather

- 62. The main factors that influence temperature are latitude, altitude, distance from ocean and ocean currents. Explain how altitude affects temperature.
- 63. Explain why it is generally warmer near the equator than it is near the poles.

Answer True or False and correct if False 64-

- F 64. Oceans make the temperatures of nearby land more extreme. Less
- F 65. Cool air is less dense and therefore flows over warm air. more, under
- T 66. Uneven heating of the atmosphere leads to differences in air pressure which causes wind.
- F 67. The layer of our atmosphere in which weather occurs is the mesosphere. Troposphere

	Wet	Dry	Air masses
Warm	Maritime tropical	Continental tropical	68. Which air mass forms over land? <u>Continental</u> 69. Which air mass can bring thunderstorms to the United States in summer. <u>Mt</u>
Cold	Maritime polar	Continental polar	70. Which air mass is warm and moist? <u>Maritime Tropical</u> 71. Which air mass is most likely near water? <u>maritime</u>

Which front is which? Use occluded, stationary, cold or warm.

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- 72. When a warm air mass overtakes a cold air mass, it forms a(an) warm front.
- 73. When a rapidly moving cold air mass overtakes a slow-moving warm air mass, the result is a(an) cold front.
- 74. Where a warm air mass is caught between two cooler air masses, a(an) Occluded front occurs.
- 75. Contrast the three ways in which heat is transferred; Conduction, Convection Radiation. → Conduction - direct contact
- 76. The transfer of energy through empty space is called radiation.
- 77. Scientists think that convection currents flow in Earth's mantle.

Convection - heat rises, cold falls  
Radiation - Electro-magnetic waves

b. Unequal heating of land and water surfaces cause large global wind systems tornados and thunderstorms.

- 78. Global winds are generally influenced by the uneven heating of Earth's surface.
- 79. Earth's rotation makes global winds curve creating Coriolis effect.

Answer True or False and correct if False 80-82

- F 80. A funnel-shaped cloud that touches Earth's surface is called a hurricane. tornado
- F 81. Thunderstorms form within high altocumulus clouds. Cumulonimbus
- F 82. The eye of the hurricane has the highest winds. calmest

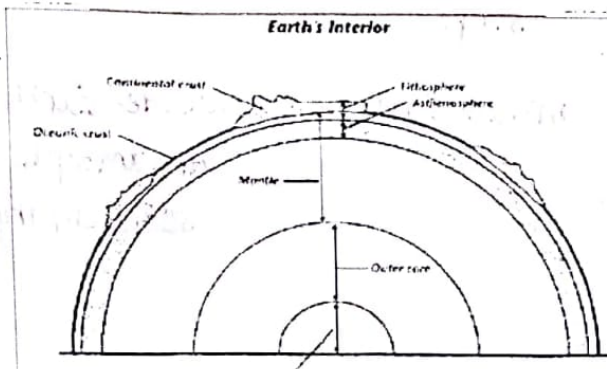
S6E5. Students will investigate the scientific view of how the earth's surface is formed.

e. lithospheric plates constantly move and cause major geological events on the earth's surface.

Boundary Type	Motion	Effects on crust	(Fault Type)	(Stress)	Feature formed	Example
<u>Transform</u>	<u>Sliding past</u>	Sheared, slips past		shearing	earthquakes	San Andreas Fault in CA
<u>Convergent</u>	Two plates come together	<u>crust pushed upwards</u>	Reverse		<u>volcanic island arcs, mountains</u>	Rocky Mountains in US
Divergent	<u>spreading apart</u>	Crust pulled apart			Mid-ocean ridge, rift valley	Rio Grande in New Mexico

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**a. Earth's crust, mantle, and core including temperature, density, and composition**



83. Pressure increases with depth toward the center of Earth. In which layer would you expect pressure to be the greatest?

Inner core

84. What is the inner most layer of Earth?

Inner Core

85. Which layer is directly under and part of the crust?

Asthenosphere

86. This is our deepest layer.

Inner core

87. The rock found under our oceans is

Oceanic crust

88. The rock that makes up our continental crust is called

lithosphere

**b. Investigate the contribution of minerals to rock composition**

Match the definitions

89. A cleavage

A. a mineral splits easily

90. D minerals

B. The shininess of a rock.

100. B luster

C. The color the mineral makes when scratched across a surface.

101. C streak

D. A non-living substance that rocks are made of.

**Mohs' Scale of Hardness:**

Mineral	Rating	Testing Method
Talc	1	Softest known mineral. can scratch with a fingernail.
Gypsum	2	A fingernail can easily scratch it.
Calcite	3	A fingernail cannot scratch it, but a copper penny can.
Fluorite	4	A steel knife can easily scratch it.
Apatite	5	A steel knife can scratch it.
Feldspar	6	Cannot be scratched by a steel knife, but it can scratch window glass.
Quartz	7	Can scratch steel and hard glass easily.
Topaz	8	Can scratch quartz.
Corundum	9	Can scratch topaz.
Diamond	10	Hardest known mineral. Diamond can scratch all other substances.

102. What mineral is hardest? Diamond

103. Which mineral is the softest? Talc

104. Which minerals can be stretched with your fingernail? Gypsum

**a. Describe processes that changes rocks and the surface of the earth.**

105. Weathering, erosion, and deposition work hand in hand in a cycle to change earth's surface.

106. What type of weathering occurs underground?

acids in groundwater

107. What develops and hangs from the ceiling of a cave? Stalagmite and on the ground

Stalagmite

**c. Classify rocks by their processes of formation**

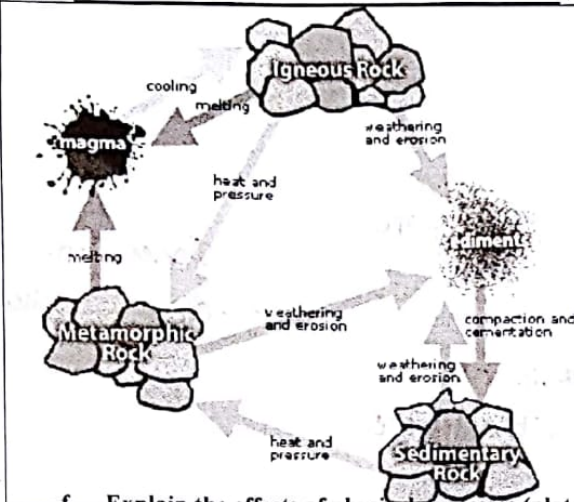
108. Put the following rocks into one group: limestone; sandstone; coal; basalt; pumice; granite; obsidian marble; slate;

Metamorphic	Sedimentary	Igneous
Marble slate Gniess	Limestone sandstone coal	Basalt(I) Pumice(E) Granite(I) Obsidian(E) Rhyolite(E) Gabbro(I)

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Date: \_\_\_\_\_



109. What are the three types of rocks? M, S, I

110. The Rock Cycle is a group of changes that never stops.

111. What are the two ways igneous rock can form? inside Earth and outside Earth

112. Sedimentary rock can change into metamorphic or into igneous rock.

113. Metamorphic rock can change into sedimentary or sedimentary rock.

f. Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides).

<p>The volcanoes along converging oceanic plate boundaries may form</p> <p>a. a hot spot. b. a part of the mid-ocean ridge. <input checked="" type="radio"/> c. an island arc.</p>	<p>Volcanic belts form along</p> <p>a. islands in the Pacific Ocean. b. North American mountain ranges. <input checked="" type="radio"/> c. the boundaries of Earth's plates.</p>	<p>Which of the following is made of layers of ash and cooled lava flows?</p> <p><input checked="" type="radio"/> a. Shield volcano b. Plateau c. Composite</p>
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114. Most volcanoes form along convergent and divergent plate boundaries.

115. A volcano that erupts violently has a high content of water.

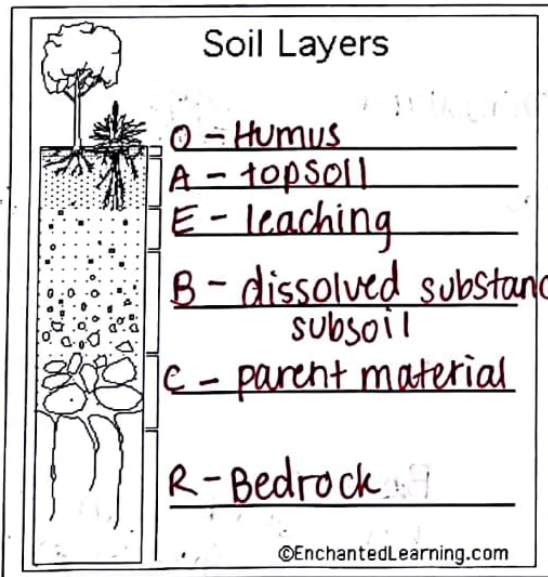
116. A major volcanic belt known as the Ring of Fire circles the Pacific Ocean.

117. Molten material that leaves a volcano's vent is called lava.

118. The major agent of erosion that shapes Earth's land surface is moving water.

**h. soil composition weathered rocks and decomposed organic material.**

Draw and label the soil horizon.



119. Which layer of soil contains fine soil particles and minerals but little organic matter? E

120. In which soil layer would you find loam that is rich in humus? O

121. Soil formation begins with the weathering of rock/bedrock

122. Soil rich in humus has high organic material

123. Plowing removed the grass from the Great Plains and exposed the soil. What effect did this have with a drought that struck the Great Plains during the 1930's?

High erosion, creating Dust Bowl

124. What term describes the overuse of soil that also causes loss of fertility? degradation