

46 [3] Allow a maximum of 3 credits, allocated as follows:

- a Allow 1 credit if four or five **X**s are plotted correctly  $\pm 0.5^\circ$  for September 6–10.  
Allow 0 credit if only zero to three **X**s are plotted correctly  $\pm 0.5^\circ$  for September 6–10.

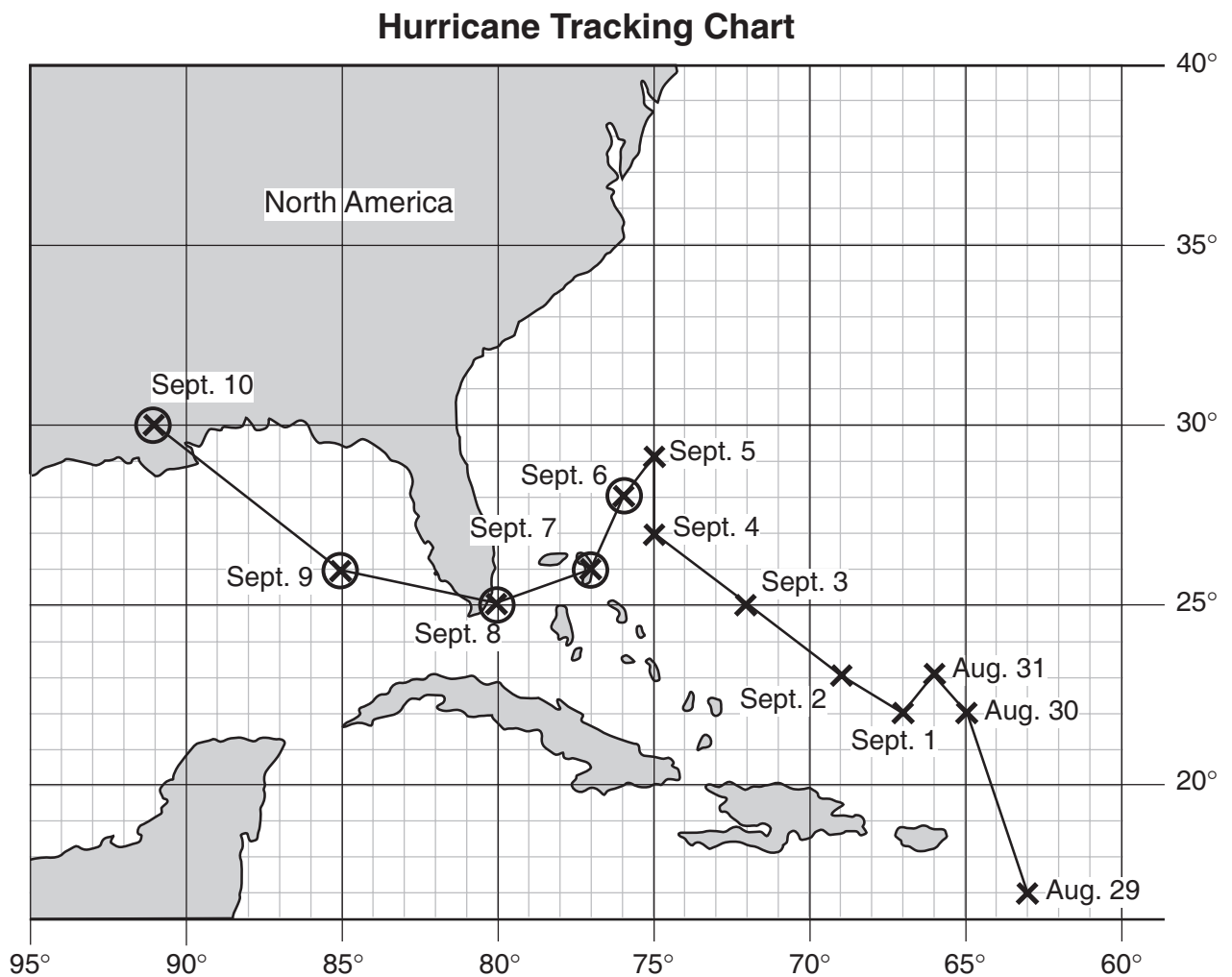
**Note:** Allow credit if the student uses a symbol other than an **X** to plot the points.

- b Allow 1 credit for labeling all student-plotted **X**s with the correct date. The **X**s must be labeled in sequential order; the month and day must be included.

- c Allow 1 credit for a line connecting the student-plotted **X**s. To receive credit, the student must connect the **X** for September 5 with **at least three** student-plotted points in sequential order. For example, the student connects September 5, 6, 9, and 10, but skips September 7 and 8. This response would receive 1 credit.

**Note:** It is suggested that schools create an overlay to use in rating this question.

**Example of a 3-credit response:**



Source: Adapted from The Weather Underground, Inc., "Weather Underground: 1965 Hurricane Archive," [www.wunderground.com/Hurricane/at196503.asp](http://www.wunderground.com/Hurricane/at196503.asp) (9/27/02)

- 47 [2] Allow a maximum of 2 credits, 1 for each acceptable response. Acceptable responses include, but are not limited to:

- vacate area
- move to higher ground
- go to a shelter
- secure boats that are docked
- leave water areas
- board up windows
- prepare for a power outage/buy batteries
- stock up on supplies/food/water
- prepare home for severe wind damage
- evacuate areas near the coast

*Unacceptable* responses include:

- go to the basement
- take cover
- stay away from windows

- 48 [5] Allow a maximum of 5 credits, allocated as follows:

- a* • Allow 1 credit if both column headings are correct. Acceptable responses include, but are not limited to:

Column Related to Particle Size	Column Related to Water
<ul style="list-style-type: none"> <li>— Average Particle Size</li> <li>— Particle Size</li> <li>— Soil Size</li> </ul>	<ul style="list-style-type: none"> <li>— Amount of Water</li> <li>— Water Flow</li> <li>— Amount of Water in Cylinder</li> <li>— Amount of Water that Flowed Through the Soil</li> <li>— Volume of Water in Cylinder</li> </ul> <p><i>Unacceptable</i> responses include: water</p>

- Allow 1 credit for correct units in the data table. Acceptable responses include, but are not limited to:

Column Related to Particle Size	Column Related to Water
<ul style="list-style-type: none"> <li>— mm</li> <li>— millimeters</li> </ul>	<ul style="list-style-type: none"> <li>— mL</li> <li>— milliliters</li> </ul>

- Allow 1 credit if all eight numerical values are correct.

**Examples of 3-credit responses to question 48 a:**

Soil Color	Average Particle Size	Amount of Water that Flowed Through the Soil
gray	2.0 mm	80 mL
brown	1.5 mm	60 mL
black	1.0 mm	50 mL
tan	0.5 mm	40 mL

Soil Color	Amount of Water (mL)	Particle Size (mm)
gray	80	2
brown	60	1.5
black	50	1
tan	40	.5

- b* Allow 1 credit. Acceptable responses include, but are not limited to:

- volume of water in the cylinder
- amount of water flow
- how much water flowed through
- volume of water

*Unacceptable* responses include:

amount of water poured in

- c* Allow 1 credit. Acceptable responses include, but are not limited to:

- Gray soil allows the most water to flow through.
- Particle size affects the amount of water that will flow through the soil.
- As particle size changes, the amount of water that flows through the soil changes.
- Larger particles allow more water to flow through.
- Smaller particles allow less water to flow through.
- Tan soil allows the least amount of water to flow through.

**Note:** Do *not* allow credit for “Gray soil has the largest particles” or any other statement that is an observation rather than a conclusion.

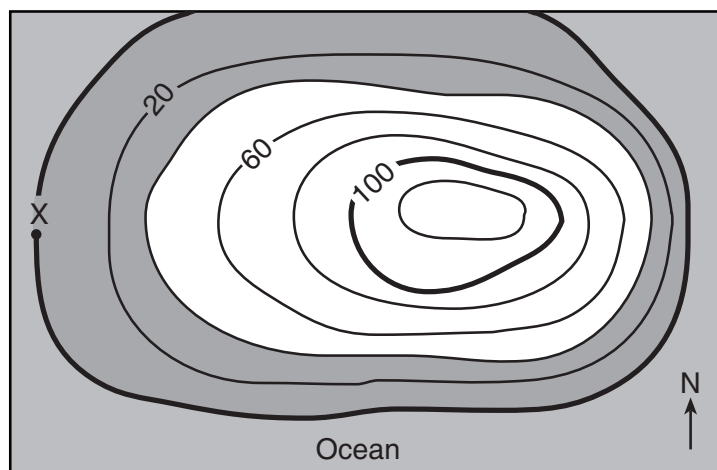
49 [1] Allow 1 credit for 0 *or* sea level.

50 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The contour lines that are closest together will have the steepest slope.
- The farther apart the lines, the less steep it is.
- The greater the difference in elevation per distance measurement, the steeper the area.

51 [1] Allow 1 credit for shading the entire area from the shoreline to the 40-meter contour line.

**Example of a 1-credit response:**



52 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- heat/thermal
- electrical
- wind
- mechanical
- electromagnetic
- potential energy
- kinetic energy
- static electricity

*Unacceptable* responses include:

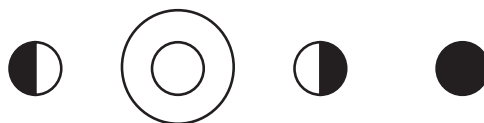
- static
- chemical

53 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Air particles carry the sound waves.
- The air particles speed up and bump into each other and that carries the sound.
- The air particles vibrate.

54 [2] Allow a maximum of 2 credits, allocated as follows:

a Allow 1 credit if the full Moon phase is circled, as shown below.



b Allow 1 credit. Acceptable responses include, but are not limited to:

- 1 month
- 4 weeks
- 27 to 31 days

55 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- gravity
- centripetal force
- Sun's gravity

*Unacceptable* response include:

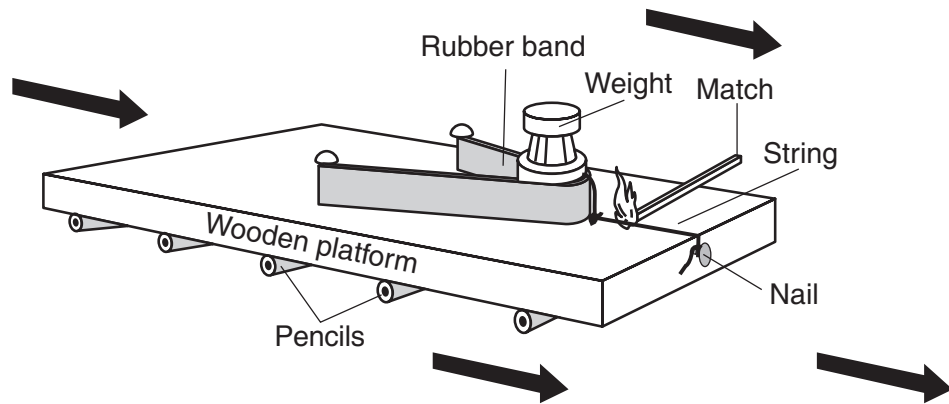
centrifugal force

56 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- 1 year
- 365 days
- $365\frac{1}{4}$  days
- 12 months

57 [1] Allow 1 credit for an arrow showing forward movement of the wooden platform.

**Examples of 1-credit responses:**



Source: Adapted from, Constantine Constant, *Earth Science Workbook*, AMSCO, 1972

58 [3] Allow a maximum of 3 credits, allocated as follows:

Allow 3 credits for all four correct responses circled on the chart.  
 Allow 2 credits for only three correct responses circled on the chart.  
 Allow 1 credit for only two correct responses circled on the chart.

**Example of a 3-credit response:**

Change to Materials	Effect this Change Will Have on the Distance the Wooden Platform Moves
Shorten the string to stretch the rubber band.	decrease <input checked="" type="radio"/> increase remain the same
Use a wooden platform that has a greater mass.	<input checked="" type="radio"/> decrease increase remain the same
Remove the pencils from under the wooden platform.	<input checked="" type="radio"/> decrease increase remain the same
Use scissors to cut the string instead of burning it with a match.	decrease increase <input checked="" type="radio"/> remain the same

- 59 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Ice is less dense than water.
  - The density of the iceberg is less than the density of the ocean.
  - The ice has more volume than water and the same mass, so its density is less.
  - An iceberg is made of frozen water and when water freezes it expands and the density is lower, so it floats.
  - Ocean water is more dense than ice.
  - Its density is less than 1.
  - Water expands when it freezes while its mass remains constant.

- 60 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The sea level would rise.
  - The climate would change.
  - Coastal areas would be under water.
  - flooding
  - less dry land, more water

- 61 [2] Allow a maximum of 2 credits, allocated as follows:

- Allow 1 credit for a correct phase change occurring at pan *A*. Acceptable responses include, but are not limited to:

- water into vapor
- liquid to gas
- water into steam
- evaporation
- boiling
- vaporization

- Allow 1 credit for a correct phase change occurring at pan *B*. Acceptable responses include, but are not limited to:

- solid to liquid
- ice into water
- gas to liquid
- water vapor into water
- steam into water
- condensation
- melting

**Note:** For purposes of rating this item, the terms “steam” and “water vapor” can be used interchangeably.

62 [1] Allow 1 credit for leaves, leaf, *or* stem.

63 [2] Allow a maximum of 2 credits, allocated as follows:

- Allow 1 credit for carbon dioxide *or* CO<sub>2</sub>.
- Allow 1 credit for water *or* H<sub>2</sub>O.

64 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- oxygen/O<sub>2</sub>
- water/H<sub>2</sub>O
- sugar/C<sub>6</sub> H<sub>12</sub> O<sub>6</sub>/glucose
- food/nutrients/stored energy

**Note:** Do *not* allow credit for simply “energy” because energy is taken in and converted during photosynthesis, but it is *not* produced.

65 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- the arrows
- the arrow symbol (→)
- consumes the previous organism
- Animals eat other animals.
- They eat the animals before them.

66 [1] Allow 1 credit for bacteria.

67 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Both are consumers.
- Both organisms are carnivores.
- Both organisms must eat to get their energy.
- They both eat other organisms/other living things.
- Both are predators.

**Note:** Do *not* allow credit for “both eat grasshoppers” or “both eat grain” unless the student refers to it as an *indirect* flow of energy (grain to grasshopper to frog to snake).

68 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Fossils can be used to study past environments.
- can be used to study extinct life-forms
- give us clues about the past

69 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Lava is so hot that the plant material is destroyed.
- The plant material will be destroyed.
- The amber would melt and the plant would be destroyed.
- The plant remains would burn because volcanic rocks are formed under heat, melting, and pressure.

**Note:** Do *not* allow credit for “plants do not grow near volcanoes.”

70 [1] Allow 1 credit for circling the symbol shown below.



71 [1] Allow 1 credit for Sun.

72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- There would be a decrease in the consumer population.
- less food for consumers
- less food for some of the animals
- decreased oxygen production
- Some animals will no longer be able to hide in the grass, so they may be killed.

*Unacceptable* responses include:

- Animals will die.
- Animals will become extinct.

73 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- only one parent
- The offspring are identical to the parent.
- Fertilization does not occur.
- One cell divides into two.

*Unacceptable* responses include:

splitting of cells