MCAS Questions: Water

Reporting Category: Physical Sciences
Standard: 2 - Compare and contrast solids, liquids, and gases based on the basic properties of each of these states of matter.
Standard: 3 - Describe how water can be changed from one state to another by adding or taking away heat.

Reporting Category: Earth and Space Science
Standard: 10 - Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere.
Standard: 11 - Give examples of how the cycling of water, both in and out of the atmosphere, has an effect on climate.

1. (2013) An area received six inches of snow during the winter. Before the snow can continue through the water cycle as ground water or runoff, it must first

   A. condense.

   B. evaporate.

   C. freeze.

   D. melt.

2. (2013) The map below shows the location of South Carolina.

   South Carolina is humid during the summer months. Which of the following is the most likely cause of the humid conditions?

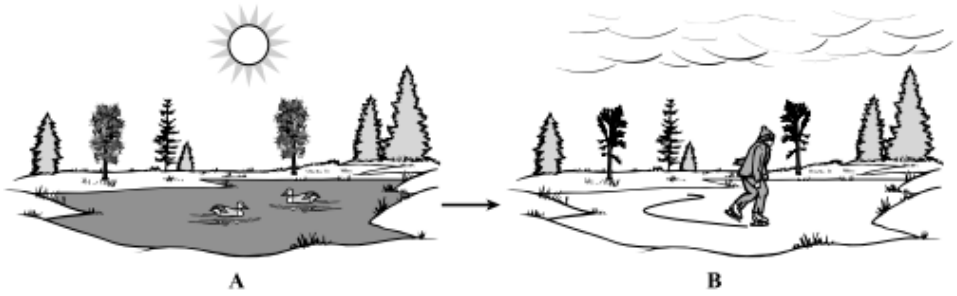
   A. runoff from inland mountains

   B. flooding from rivers and streams

C. groundwater bubbling to the surface

D. evaporation from the surface of the ocean

3. (2011) A pond is pictured below in two different seasons.



Which of the following has caused the changes in the pond from A to B?

A. The pond water has lost heat energy.

B. The pond water temperature has increased.

C. Warm water has risen to the top of the pond.

D. All of the water has evaporated from the pond.

4. (2011) In a city near the ocean, fog often forms on summer mornings. Which of the following statements best explains how this fog forms?

A. Ocean water evaporates and then condenses in the air.

B. Crashing waves spray tiny drops of ocean water into the air.

C. Water runoff moves toward the ocean and collects near the shore.

D. Rain clouds move in from the ocean and evaporate as they reach the shore.

5. (2011) Chris left a glass of water on a windowsill. When he looked at the glass a few days later, some of the water had evaporated. Which of the following **best** describes what happened to the particles of water that evaporated?

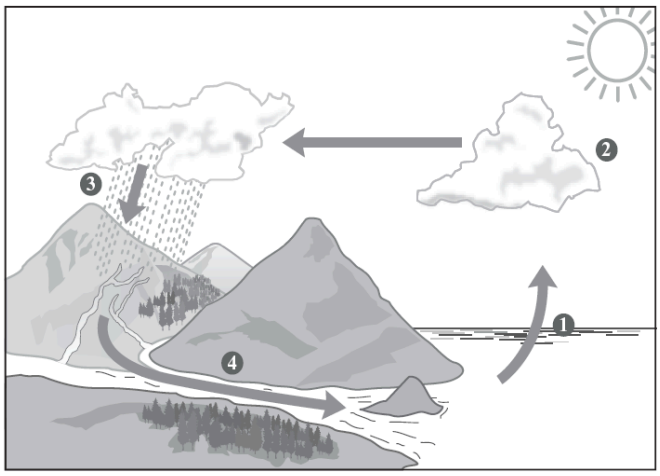
A. They became larger in size.

B. They spread out into the air.

C. They were absorbed by the glass.

D. They passed through the glass into the air.

6. (2009) The diagram below shows four stages of the water cycle.



Which change is occurring at stage 1 in the diagram?

A. Water is changing from a gas to a solid.

B. Water is changing from a liquid to a gas.

C. Water is changing from a liquid to a solid.

D. Water is changing from a solid to a liquid.

7. (2009) Which of the following changes is caused by removing heat?

A. A solid changes to a gas.

B. A liquid changes to a gas.

C. A solid changes to a liquid.

D. A liquid changes to a solid.

8. (2008) During most of the year, the air over Boston, Massachusetts, contains a high amount of moisture. Which of the following **best** explains why there is a high amount of moisture in the air?

   A. Boston is close to an ocean.

   B. Boston is at a low elevation.

   C. Boston is near many mountains.

   D. Boston is far north of the equator.

9. (2008) The picture below shows a solid floating in a liquid.

   Which of the following statements describes one way that solids are different from liquids?

   A. Solids have weight and liquids do not.

   B. Solids take up space and liquids do not.

   C. Solids have a definite shape and liquids do not.

   D. Solids have a definite volume and liquids do not.

10. (2007) Delilah put a container of water in the freezer and left it there overnight. The next morning she saw that the water in the container had changed to ice.

    Which of the following statements best explains why the water changed to ice?

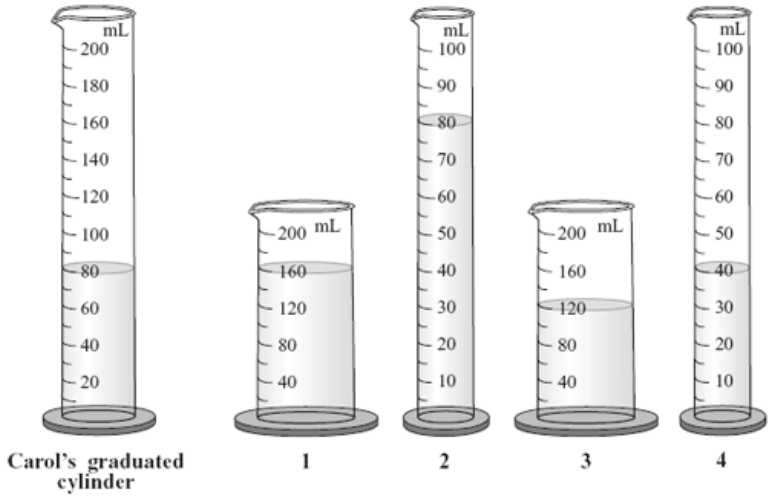
    A. The water gained energy.

    B. The water absorbed light.

    C. Mass was released from the water.

    D. Heat was taken away from the water.

11. (2007) Carol poured some water into a 200-milliliter (mL) graduated cylinder. Pictured below are Carol's graduated cylinder and four numbered graduated cylinders.



Which numbered graduated cylinder contains the same volume of water as Carol's graduated cylinder?

A. graduated cylinder 1

B. graduated cylinder 2

C. graduated cylinder 3

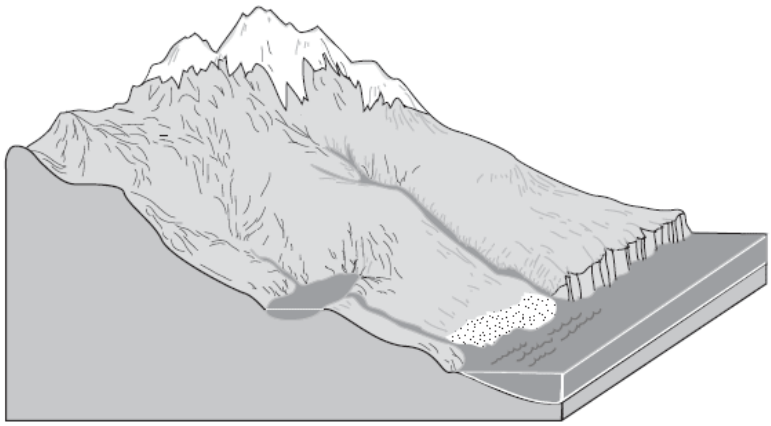
D. graduated cylinder 4

Open Response Questions

1. Some of the water in Lake Erie may one day fall as rain in the city of Boston. The map below shows the locations of Lake Erie and Boston.

Describe how the water cycle could cause some of the water in Lake Erie to one day fall as rain in the city of Boston. Be sure to identify each part of the water cycle in your response.

2. (2008) Marco is studying how natural processes cause water on Earth to move in different forms in different locations. The picture below shows an area with a snow-covered mountain near an ocean.



a. Describe how natural processes can cause snow on the top of the mountain to someday end up as water in the ocean.

b. Describe how natural processes can cause some of the water in the ocean to someday fall as rain or snow on the mountain.

3. (2008) Water is commonly found on Earth in three states of matter: solid, liquid, and gas. In everyday life, water often changes from one form to another form.

a. Describe one example of water changing from a liquid to a solid.

b. For the example you gave in part (a), explain what caused this change.

c. Describe one example of water changing from a liquid to a gas.

d. For the example you gave in part (c), explain what caused this change.

MCAS Questions: Water
Multiple Choice Answers

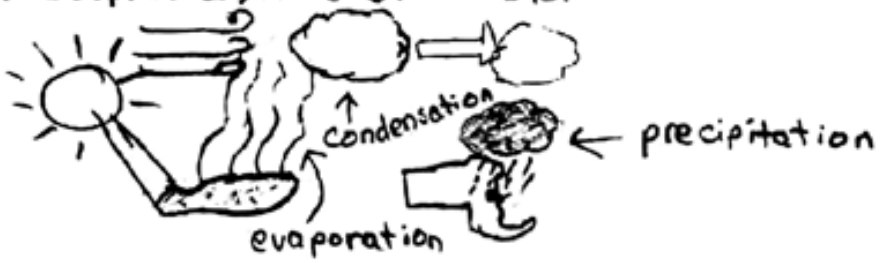
1. D
2. D
3. A
4. A
5. B
6. B
7. D
8. A
9. C
10. D
11. B

Open Response Answers

1. Lake Erie to Boston

Score Point 4

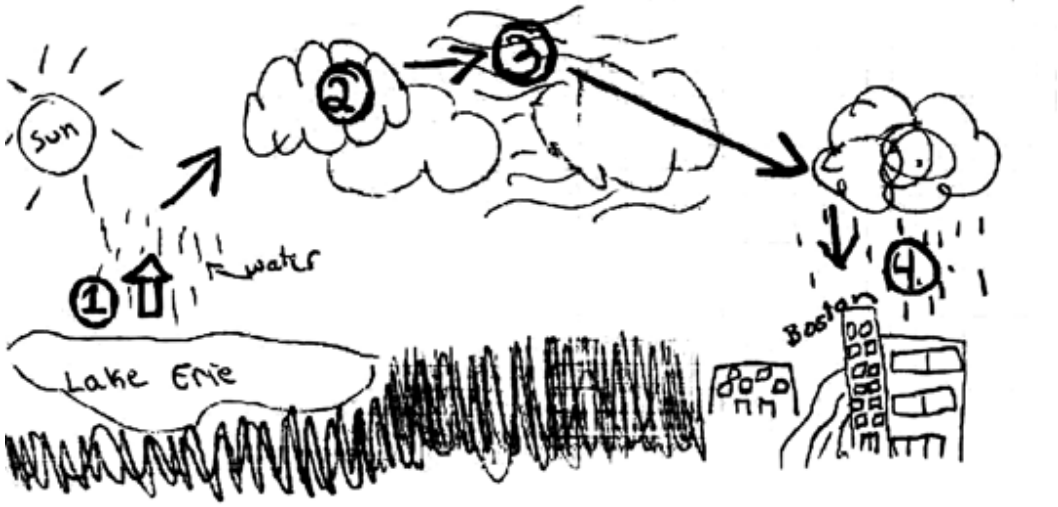
The sun warms Lake Erie's water, so it evaporates as gas and floats higher into colder air, the gas gets colder as well. Then the gas condenses and turns into tiny water particles. The particals form together to create a cloud. Then the air pushes the cloud over Boston. When it holds too much water the cloud precipitates, rains on Boston.



Score Point 4

I have described how water from lake Erie may one day fall as rain in Boston using a picture and numbers.

1. Heat from the sun causes some of the water in lake erie to turn to a gas and evaporates.
2. When the gas gets high enough, it gets cool and turns into a cloud. This is called condensing
3. Wind coming from the west moves the clouds east, toward Boston.
4. When the cloud gets heavy enough, the water in it will fall a rain over Boston. This is called precipitation.



Score Point 3

It is possible for the water in lake Erie to fall as rain in Boston. This could happen because the water can evaporate into the air. Evaporation is when the sun heats water from rivers, lakes, streams, and the ocean into a gas in the air. Then the gas could form a cloud, this is called condensation. Then the clouds could move to Boston and fall as precipitation, rain. Or this could happen again and instead of directly moving from lake Erie to Boston, the rain could fall in other rivers and streams and eventually get to Boston. That is how the water in Lake Erie can fall as precipitation in Boston.

Score Point 2

The water in Lake Erie may fall as rain in Boston one day. First some of the water might evaporate into the clouds. When the clouds get full enough and pour our with rain that is called precipitation. The moisture also allows it do that.

Score Point 1

Water from lake Erie can become rain in boston because some of the water in lake Erie can evaporate and the become rainfall in boston.

Score Point 0

The Erie lake will cause it to fall as rain in the city of Boston because the lake might get to full and come throgh Boston and flod it.

2. Snow-covered Mountain

Score Point 4

(A) Natural processes could cause the snow to end up in the ocean by melting the snow. The left over water could evaporate into clouds. It could then rain and a lot of the water would end up in the ocean.

(B) The water in the ocean could evaporate. It could then change back to liquid form, rain on the mountain. If it was cold enough, it would snow.

Score Point 4

A. A natural process that can cause Snow on a top of a mountain near the ocean to Someday be water in they ocean is called melting. How it will travel from the top to the bottom of the mountain is it will form Small creeks. and will travel Slowly down the mountain into the ocean. By causing Small creeks this will cause a ongoing cycle.
B. The way that the water in the ocean can Soon fall from the Sky is first evaporation, then condon Sation, and last Precipitation witch is rain-fall. This is all apar-t of the water cycle. See evaporation is when water evapor-ates into the air, then condensation is when it condens-es into a clound, and precipitation is a tipe of Snow, Sleet, rain, or hail falling from the Sky.

Score Point 3

A.) Mother nature causes snow on the tip of the mountin then the sun comes out and melts the snow and turns it in to water. Then the water goes into a stream and the stream follows into the ocean.

B.) The ocean water turns into rain or snow because of the water cycle. First comes Evaporation, Condensation, and Precipatation.

Score Point 2

A. How the snow from the top of the hill can processes to the water in the ocean is becaus the heat from the sun melts it into water so it flows down the moutian.

B. The clouds carrie it up into the sky and then it starts all over again.

Score Point 1

Ⓐ Snow could end up as water because it melts into water.

Ⓑ By it melting.

Score Point 0

A.) weather can make the mountain get snow on it and there could be erosion to get the snow off.
B.) The Mountain is so high up that it gets all of the rain, and snow.

3. States of Matter

Score Point 4

A. When you put water in the freezer it becomes ice.
B. this is caused by the lowering of the temperature
C. when you boil water to make something like Mac and Cheese some of the water becomese water vapor
D. this is caused by raising the temperature

Score Point 4

A. One example of water changing from liquid to solid is if you put water in the freezer it'll eventually turn to ice.
B. This happens because water freezes a tempatures of 32 and below and it is less than 32° in a freezer.
C. One example of water changing to a gas is when you boil it.
D. This happens because when water is heated at high tempotures it evaporates.

Score Point 3

A) One example of water changing from a liquid to a solid is when you freeze water into ice cubes.
B.) The cause for the change was when the particles in the water joined in w/ the freezing temperature they quickly froze together into a solid matter.
C. One way a liquid can change to gas is when you cook food on the stove and the water boiles and steam rises.
D. The change caused was the water reached very hot temperatures and the particles are moving around. When you open the hot pot some steam releases due to the water boiling.

Score Point 2

a) How water changing from a liquid from a solid. The liquid comes from ground when you put water in the grow the water turns into more solid because of the water.
b) the water turns into more solid because of the water that is put into the ground when you plant

c) When liquid is changing into gas it is simple like this. If I have water ina cup and it is so hot outside and the heat touches the cup it is going to leave the cup and turn into gas.
d) The Heat touches to cup and it evaperas into gas.

Score Point 1

A.) You can change it for a liquid to a solid by pouring. Then you can freezen it.

B.) It is going to by freezen to get to a solid.

C.) You can get a liquid to a gas by spraying it in the air.

D.) By geting a hoze and spraying it to the sky.

Score Point 0