

Maryland School Assessment

Science

2007 Public Release

Grade 8

Acknowledgements:

A Sea Wall Just Molecule High

“A Sea Wall Just One Molecule High” by Nick D’Alto. From ODYSSEY’S February 2006 issue: *Surf’s Up!*, ©2006 Carus Publishing Company, published by Cobblestone Publishing, 30 Grove Street, Suite C, Peterborough, NH 03458. All Rights Reserved. Used by permission of the publisher.

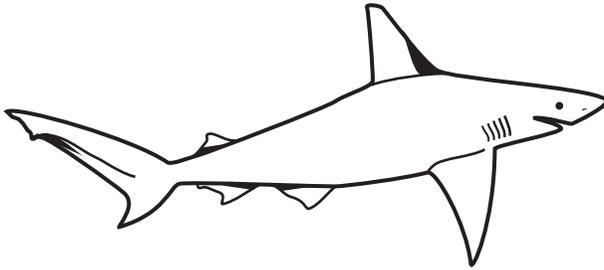
New ‘Time Machine’ From Ice

“New ‘Time Machine’ from Ice”, ©2005 AAAS (American Association for the Advancement of Science.) Reprinted with permission.

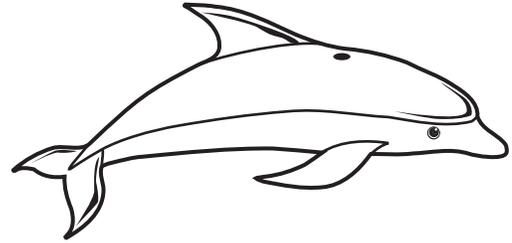
This page was
intentionally
left blank.

Session 1

- 1** The sandbar shark and the bottlenose dolphin pictured below live in water. Though the animals look similar, the shark is classified as a fish and the dolphin is classified as a mammal.



Sandbar shark



Bottlenose dolphin

Which statement best supports classifying the shark as a fish and the dolphin as a mammal?

- A** One gets energy from sunlight; the other gets energy from food.
- B** One has several fins on the belly; the other has no fins on the belly.
- C** One breathes using gills; the other breathes through a blowhole and lungs.
- D** One has eyes on the front of the head; the other has eyes on the side of the head.

- 2** The table below compares the average daily temperatures during the month of July in two cities. Both cities are along the Atlantic Ocean. Baltimore, Maryland, is in the Northern Hemisphere, and Buenos Aires, Argentina, is in the Southern Hemisphere.

City	Average Temperature in July
Baltimore, Maryland	33°C
Buenos Aires, Argentina	11°C

Which statement best explains why Baltimore is warmer in July?

- A** Ocean waves keep Baltimore warmer in July.
- B** There are fewer hours of daylight in Baltimore in July.
- C** The Northern Hemisphere is tilted toward the sun in July.
- D** The Southern Hemisphere is tilted toward the sun in July.

- 3** Logging companies cut trees in a forest and send the trees to lumber mills far from the forest. The mills make boards that are used for construction. Some logging companies do not plant tree seedlings after cutting trees.

Not planting tree seedlings might affect people who need boards in the future because

- A** the price of boards will increase
- B** the price of boards will decrease
- C** there will be more boards available
- D** there will be more trees for logging

Directions

Use The Periodic Table of the Elements and the information below to answer Numbers 4 through 6.

Magnesium metal (Mg) is grayish-white in color and reacts actively with water. Fluorine (F₂) is a greenish-yellow gas at room temperature and is a member of the halogen family. These two elements react to produce magnesium fluoride (MgF₂), a chemical commonly used in making windows and lenses.

4 According to the Periodic Table of the Elements, which element is most similar to magnesium (Mg)?

- A calcium (Ca)
- B iodine (I)
- C sodium (Na)
- D sulfur (S)

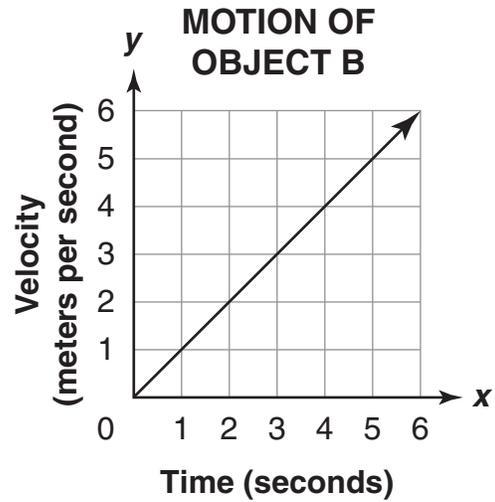
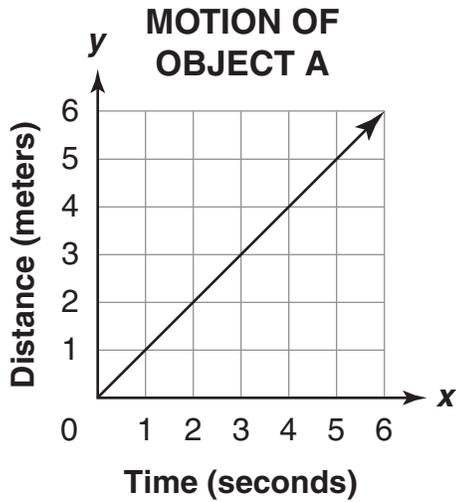
5 How do the elements magnesium (Mg) and fluorine (F₂) produce the compound magnesium fluoride (MgF₂)?

- A by nuclear connection
- B by physically combining
- C by magnetic connection
- D by chemically combining

6 How does adding heat energy affect magnesium fluoride (MgF₂) molecules ?

- A The motion of the molecules stops.
- B The motion of the molecules increases.
- C The motion of the molecules decreases.
- D The motion of the molecules is at a constant rate.

7 The graphs below represent the motion of two objects, A and B.



Describe the types of motion represented by the two graphs. In your description, be sure to include

- the type of motion represented by each graph
- the difference between the two types of motion

Write your answer in the space provided.

Object A Graph

Object B Graph

Directions

Use the information below to answer Numbers 8 through 10.

The map below shows the geographic relationship between two cities in the United States. Cleveland, Ohio is approximately 600 kilometers northwest of Baltimore, Maryland.



The data below represents the weather conditions on a specific Monday in Cleveland, Ohio and Baltimore, Maryland.

Weather Condition	Cleveland	Baltimore
Temperature	7°C (45°F)	25°C (77°F)
Winds	From NW, 40 kilometers per hour	From SW, 8 kilometers per hour
Air pressure	1,008 millibars, stable	1,015 millibars, falling
Precipitation	Heavy rains	None
Cloud cover	Cloudy	Clear

Average air pressure = 1,013 millibars

8 On this Monday, the weather in Cleveland is influenced by a

- A tornado
- B blizzard
- C low pressure area
- D high pressure area

9 A weather forecaster in Baltimore said, “There will be increasing clouds in Baltimore late Monday night.”

Which statement about the Monday weather best supports this prediction?

- A In Cleveland, clouds are clearing.
- B In Baltimore, the air pressure is falling.
- C In Cleveland, the air pressure is stable.
- D In Baltimore, there is a moderate breeze from the southwest.

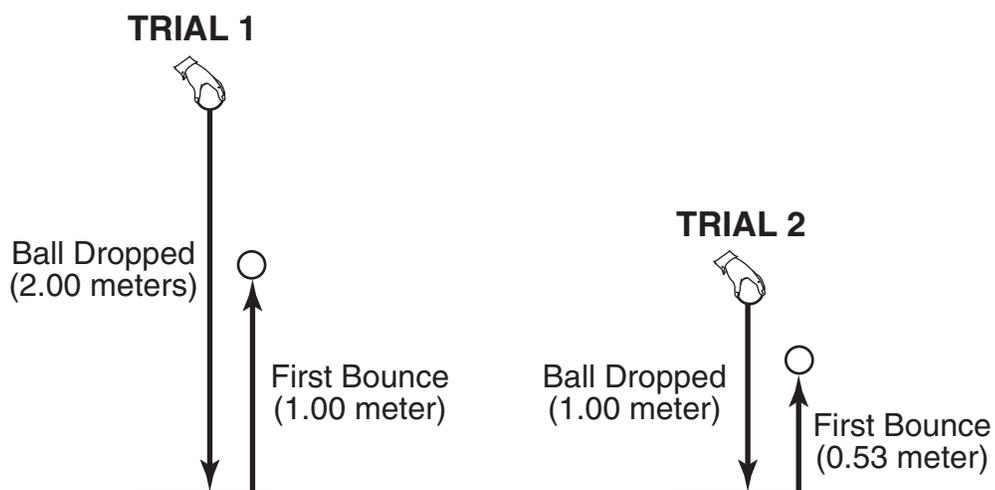
10 Which description best represents a high pressure system in the northern hemisphere?

- A winds flowing outward and counterclockwise
- B winds flowing inward and counterclockwise
- C winds flowing outward and clockwise
- D winds flowing inward and clockwise

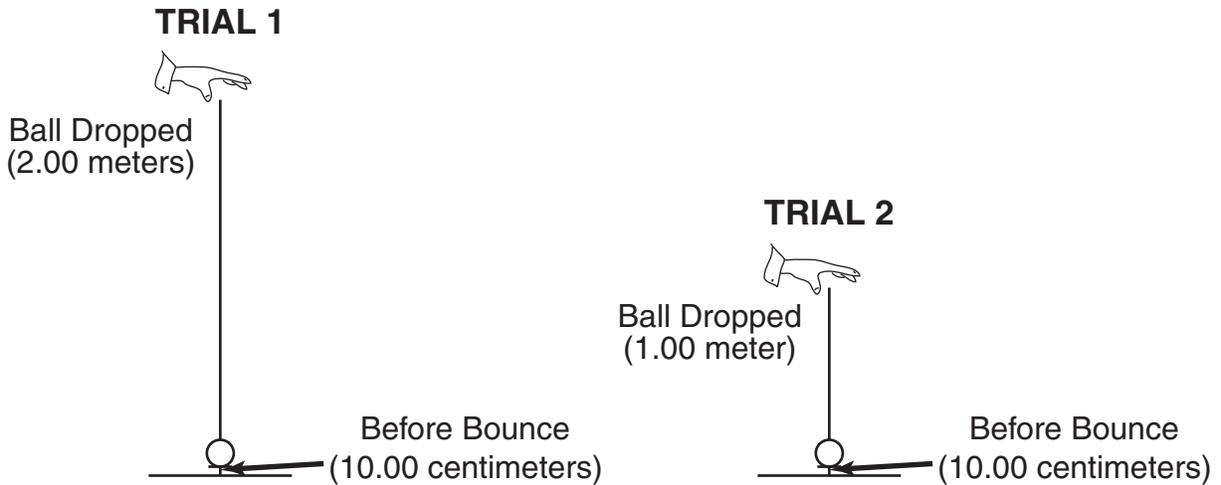
Directions

Use the information below to answer Numbers 11 through 13.

Students dropped a tennis ball from heights of 2.00 meters and 1.00 meter. The students compared the heights of the ball after the first bounce of each drop.



- 11** The diagrams below show the tennis ball after release and 10.00 centimeters before bouncing.



Which statement **best** describes the motion of the tennis ball 10.00 centimeters before bouncing in each trial?

- A** The speed and position of the tennis ball is the same in both trials.
- B** The speed and direction of the tennis ball is the same in both trials.
- C** The velocity and position of the tennis ball is the same in both trials.
- D** The direction and position of the tennis ball is the same in both trials.

12 The motion of the tennis ball as it falls is best described as

- A** accelerated motion
- B** constant motion
- C** periodic motion
- D** uniform motion

13 Students recorded the findings from Trial 1 and Trial 2 in the data table below.

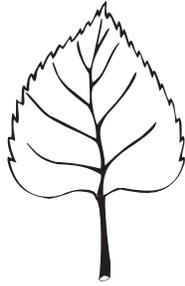
TENNIS BALL HEIGHTS

Drop Heights (meters)	First Bounce Height (meters)
2.00	1.00
1.00	0.53

Which mathematical operation can be used to calculate the ratio between the Drop Height (DH) and the First Bounce Height (BH)?

- A** $DH \div BH$
- B** $DH - BH$
- C** $BH \times DH$
- D** $DH + BH$

14 The picture below shows four leaves, each from a different tree.



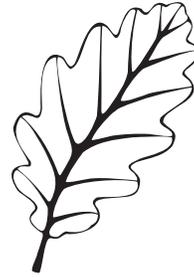
Poplar



Pine



Maple



Oak

Which leaf is best adapted to a dry environment?

- A poplar
- B pine
- C maple
- D oak

15 Human actions affect the environment.

Which human action affects the smallest area of the environment?

- A burning a forest
- B burning fossil fuels
- C digging a new landfill
- D spraying crops with chemicals

16 Scientists perform experiments to test hypotheses.

How do scientists try to remain objective during experiments?

- A** Scientists analyze all results.
- B** Scientists use safety precautions.
- C** Scientists conduct experiments once.
- D** Scientists change at least two variables.