



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

**Released Items
2015**

**Grade 11
Science**

Science

- 1 Four solid black cubes were used in a lab experiment. The results of the lab experiment are displayed in the data table below.

Properties of Four Cubes

Property	Cube W	Cube X	Cube Y	Cube Z
Magnetic	No	No	No	Yes
Floats	Yes	Yes	Yes	No
Malleable	No	No	No	Yes
Combustible	Yes	Yes	No	No

Which cube is **most likely** a metal cube?

- A. Cube W
- B. Cube X
- C. Cube Y
- D. Cube Z

- 2 A student wants to know whether soil heats faster than water. He follows the procedure below using identical containers.
- Pour 250 mL of soil into container I, 250 mL of salt water into container II, and 250 mL of tap water into container III.
 - Place the three containers an equal distance from a light source.
 - Turn on the light source.
 - Measure the temperature of the substance in each container every 10 minutes for 30 minutes.

Which additional step would **best** improve the student's investigation?

- A. Use two different types of soil.
- B. Use smaller amounts of soil and more water.
- C. Measure the temperature of soil and water before beginning.
- D. Measure the light intensity using a light meter.

Please use the formula guide on the reference sheet to answer the question.

- 3 The table below shows the acceleration rates of a 5-kg mass when acted on by different net forces.

Acceleration Rates of a 5-kg Mass

Acceleration (m/s ²)	Net Force (N)
5	25
10	50
15	75

Based on the table, what is the acceleration rate of the 5-kg mass when acted on by a net force of 60 N?

- A. 7 m/s²
- B. 12 m/s²
- C. 14 m/s²
- D. 16 m/s²

- 4 The table below provides information about Old Faithful geyser in Yellowstone National Park.

Eruptions at Old Faithful Geyser

Duration of Eruption (min)	Time before Next Eruption (min)
1.5	51
2.0	58
2.5	65
3.0	71
3.5	76
4.0	82
4.5	89
5.0	95

Which conclusion about the eruptions does the information in the table **best** support?

- A. The duration of an eruption can be used to predict the amount of time that will pass before the next eruption.
- B. Eruptions with short durations discharge more water than eruptions with long durations.
- C. The next eruption occurs more quickly after a long eruption than after a short eruption.
- D. Eruptions follow a steady progression from eruptions with a short duration to eruptions with a long duration.

- 5 Scientists have collected evidence indicating that

- an ocean was once located in the midwestern United States,
- a tropical island was once located in Alaska, and
- swamps were once located in Antarctica.

What is the **most likely** cause for the differences at these locations today?

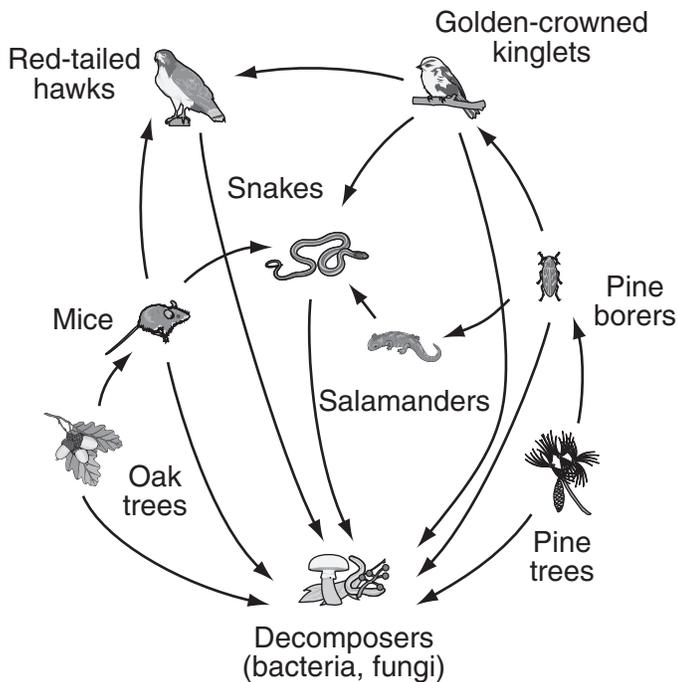
- A. ice ages
- B. massive earthquakes
- C. plate movements
- D. volcanic eruptions

- 6 Radio telescopes have been used to observe quasars, pulsars, and gas clouds between stars.

How has using radio telescopes advanced scientists' understanding of the universe?

- A. Radio waves travel faster than visible light, so discoveries are made more frequently.
- B. Radio telescopes are connected in arrays, so more scientists can study the data.
- C. Objects that do not give off visible light can be studied.
- D. Objects that do not have mass can be detected.

- 7 The diagram below shows a food web.



Which two organisms shown in the diagram occupy the tertiary (third) trophic level?

- A. decomposers and pine borers
 - B. golden-crowned kinglets and pine trees
 - C. red-tailed hawks and mice
 - D. snakes and salamanders
- 8 Erminette chickens have an allele for black feathers (B) and an allele for white feathers (W). Heterozygous erminette chickens have a speckled black-and-white appearance.

Two heterozygous erminette chickens with the genotype BW are crossed. What percentage of the offspring will have **only** white feathers?

- A. 25%
- B. 50%
- C. 75%
- D. 100%

- 9 The Canadian lynx is a wild cat uniquely adapted to hunting snowshoe hares in deep snow. The Canadian lynx is found in the northern United States and Canada.

A climate model predicts the temperature will increase and reduce the area of snow cover in the Canadian lynx's habitat.

Which conclusion about the future of the Canadian lynx is the **most likely** if the climate model is accurate?

- A. The Canadian lynx will become extinct in the northern United States and Canada.
- B. The Canadian lynx will hunt other prey within the warmer habitat.
- C. The Canadian lynx will migrate to colder regions to find snowshoe hares.
- D. The Canadian lynx will reproduce with other cat species to survive in warmer habitats.

- 10 The table below shows traits of different plant groups.

Plant Traits

Group	Flowers	Waxy Cuticle on Leaves	Stomates in Leaves	Xylem and Phloem	Seeds	More Than One Vein in Leaves
Angiosperms	X	X	X	X	X	X
Mosses		X	X			
Ferns		X	X	X		X
Gymnosperms		X	X	X	X	X
Lycophytes		X	X	X		
Liverworts		X				

- a. Identify the two plant groups that are most closely related to mosses, and explain your reasoning.
- b. Draw a diagram to show the evolutionary relationships among the six plant groups shown in the table.