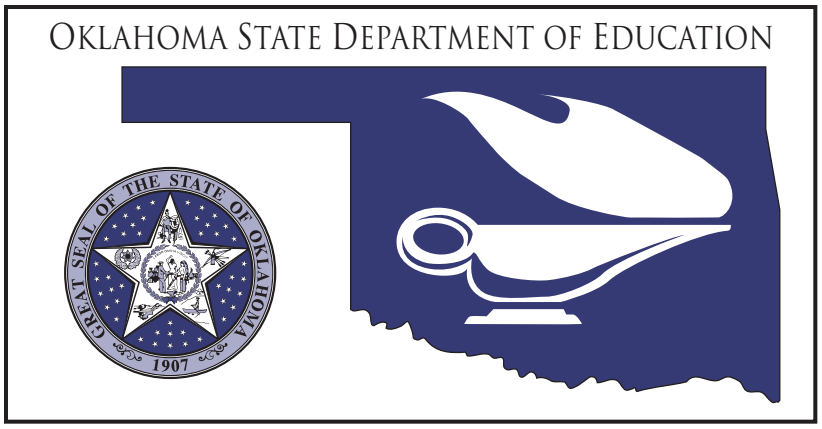
Oklahoma School Testing Program



Oklahoma Core Curriculum Tests

2010–2011 Released Items

End-of-Instruction
Biology I

Oklahoma State Department of Education
Oklahoma City, Oklahoma

Copyright © 2010 by the Oklahoma State Department of Education. All rights reserved. Any other use or reproduction of this document, in whole or in part, requires written permission of the Oklahoma State Department of Education.

Section 1

Section 1

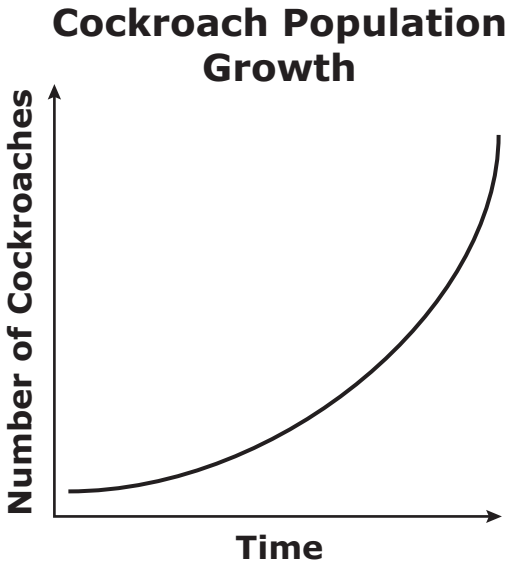
Directions

Read each question and choose the best answer.

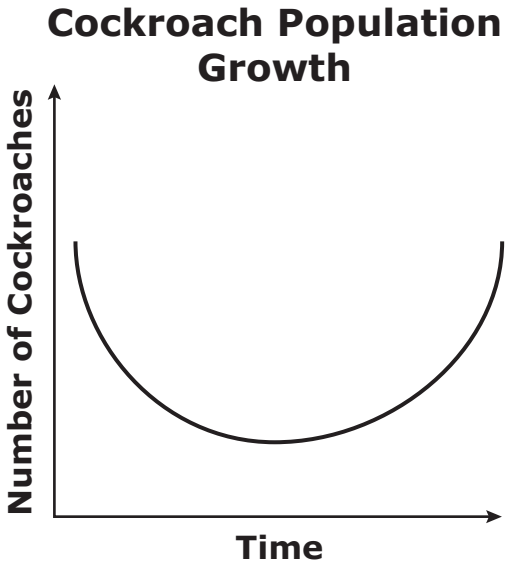
1 **A student designed an experiment to study the growth of a cockroach population.**

If there are unlimited resources in a cockroach's environment, which graph would represent the population growth of the cockroach?

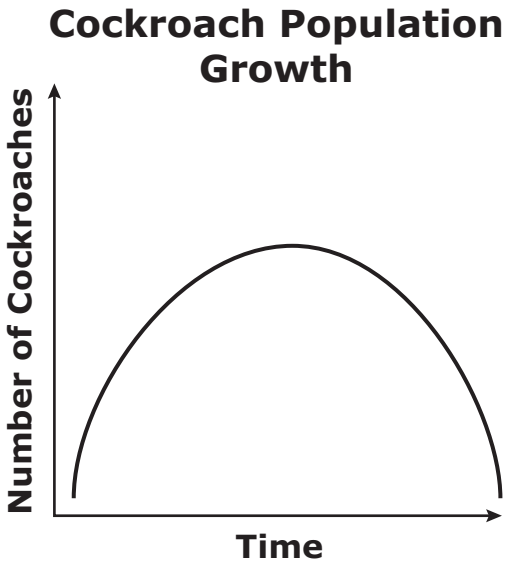
A



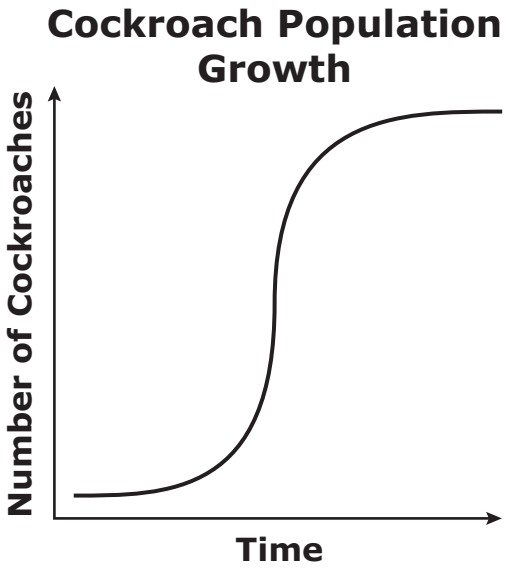
B



C



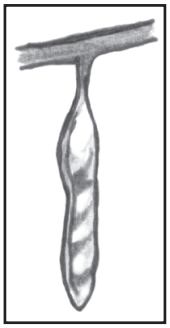
D



GO ON

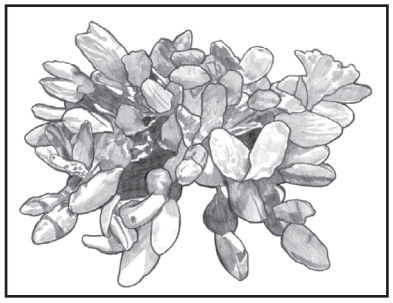
Use the information below to answer Numbers 2 through 6.

The state tree of Oklahoma is the eastern redbud. In the spring, clusters of bright red blossoms appear before the leaves. The redbud is pollinated by bees. It has heart-shaped, three- to five-inch green leaves which turn a bright yellow in the fall. The redbud is a member of the pea or legume family. Legumes produce their seeds in pods.

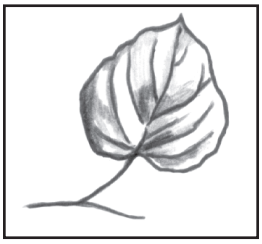


Fruit

Flower



Leaf



Many legumes, with the help of nitrogen-fixing bacteria, take nitrogen from the air and convert it into a useable form. A student wants to find out if the redbud tree helps put nitrogen into the soil. He designs an experiment in which he measures the amount of nitrogen in the soil around redbud trees and pine trees, before and after nitrogen-fixing bacteria are added to the soil.

2 **What is one observable adaptation of the redbud tree that makes it a member of the legume family?**

F the shape of the tree

G the color of the leaf

H the shape of the fruit

J the color of the flower

Section 1

3 **What is the logical hypothesis for the student's experiment?**

A Redbud trees increase soil nitrogen levels with the help of nitrogen-fixing bacteria.

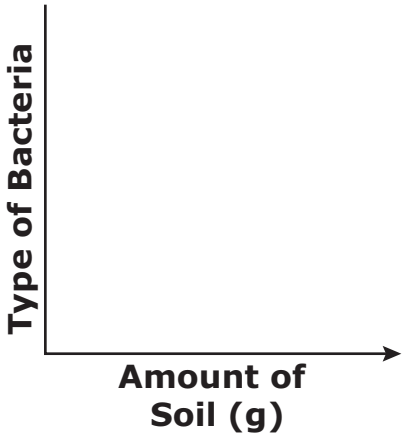
B Nitrogen-fixing bacteria populations grow faster when soil nitrogen is present.

C Nitrogen-fixing bacteria increase soil nitrogen levels.

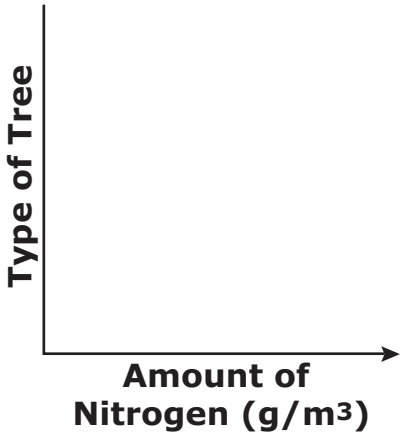
D Redbud trees grow faster when soil nitrogen is present.

4 **How should the student label the axes of a graph to illustrate the data from his experiment?**

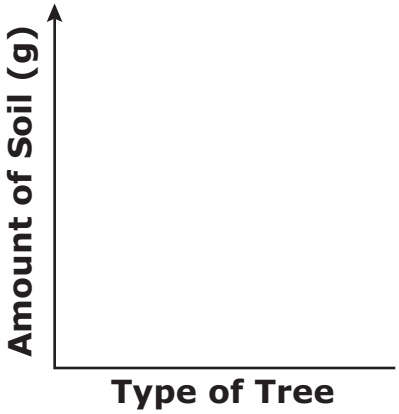
F



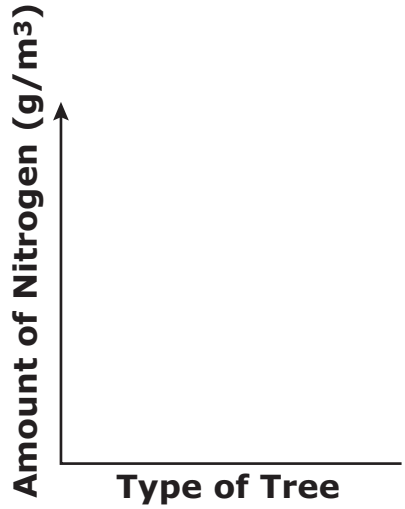
G



H



J



5 **What is the dependent variable in this experiment?**

A the type of tree

B the type of bacteria

C the amount of soil measured

D the amount of soil nitrogen measured

6 **Which of these is a biotic factor in the environment of a redbud tree?**

F the air temperature

G the number of bees

H the amount of sunlight

J the amount of nitrogen in the air

Section 1

7 **A researcher designed an investigation to test what effect eating different types of food would have on blood insulin levels. She selected 10 male subjects who were all 25 years of age and in good health. The experiment took place over 3 days. At 8:00 a.m. on each day, the subjects ate a meal consisting of only 1 type of food. They had their blood insulin levels measured after consuming the meal. On Day 1 they ate a high fat diet, on Day 2 they ate a high protein diet, and on Day 3 they ate a high sugar diet.**

What is the independent variable in this experiment?

A the age of the subjects

B the blood insulin level

C the type of food consumed

D the time of day the meal was consumed

8 **Thakur is designing an experiment to test the hypothesis that exposure to an increased level of ultraviolet radiation reduces the growth of corn plants. He has 200 corn seedlings planted in two groups of 100 seedlings each.**

He is trying to decide how much water, fertilizer, and ultraviolet radiation each group should receive. Which of the factors should he keep the same in both plant groups in order to successfully test the hypothesis?

F the amount of fertilizer only

G the amount of fertilizer and water

H the amount of ultraviolet radiation only

J the amount of fertilizer, water, and ultraviolet radiation

9 **In her biology laboratory class Michelle broke a beaker which caused acid and broken glass to spill onto the floor. What is the first step Michelle should take after the accident?**

A carefully pick up large, sharp pieces of broken glass with tongs and place them into the wastebasket

B wipe her face and hands with a paper towel

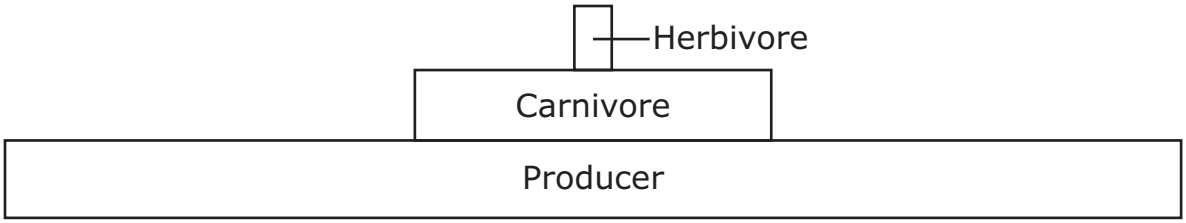
C use a sponge to absorb the acid that has spilled onto the floor

D report the accident to her teacher

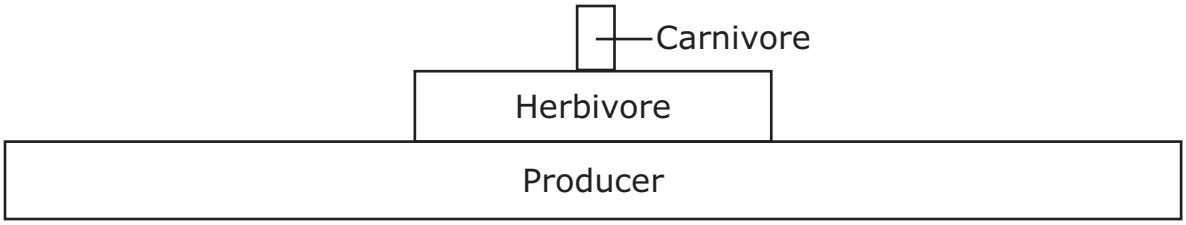
GO ON ▶

10 **Which biomass pyramid <u>best</u> represents a stable grassland community?**

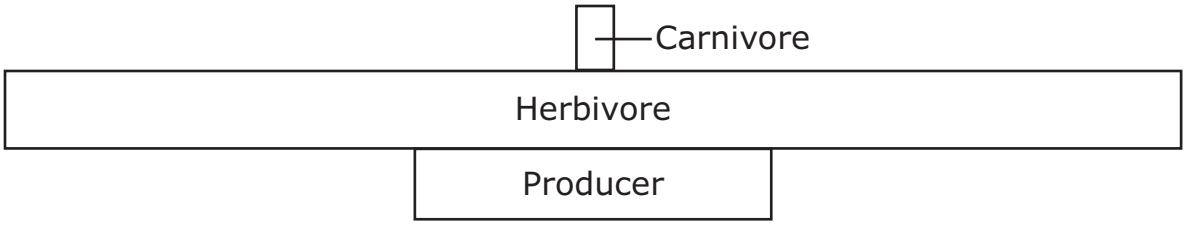
F



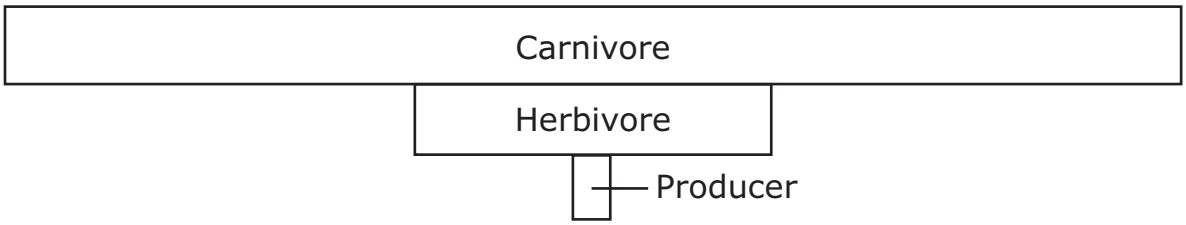
G



H

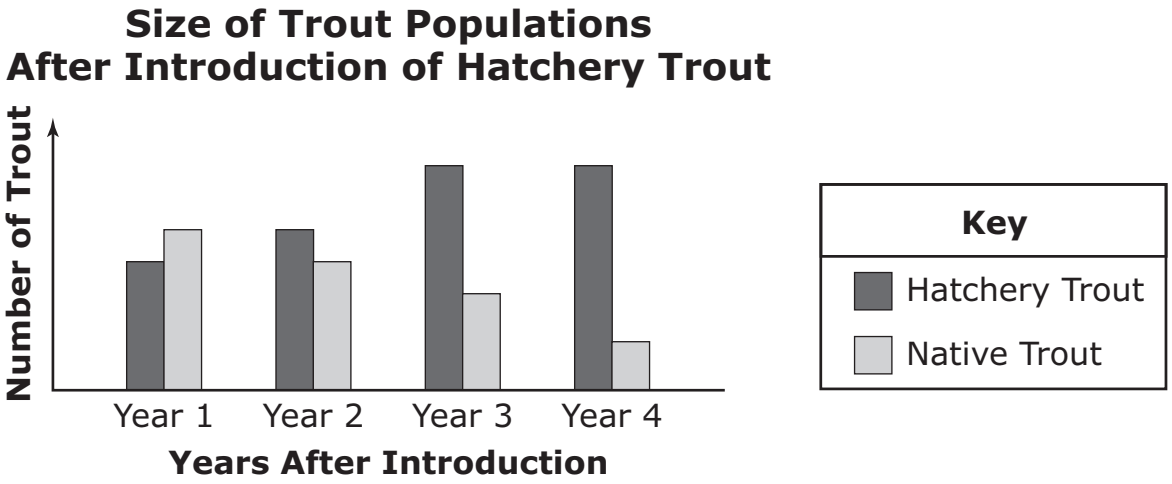


J



Section 1

11 **A stream with a population of native trout was studied for four years following the introduction of trout that were raised in a fish hatchery.**



Based on the trend seen in the graph, which statement is most likely true?

A The hatchery trout and native trout both benefit from living together.

B The hatchery trout and native trout compete for the same resources.

C The native trout are unaffected by the presence of hatchery trout.

D The native trout are parasites of the hatchery trout.

12 **Mr. Larkin's biology class is studying the effect of temperature on fish growth. To study this effect, the class will perform the following steps.**

1. **Measure and record the length of each fish.**
2. **Feed the fish in both tanks equal amounts of food for one month.**
3. **Set up two fish tanks with thermostats and heaters to maintain the tanks at two different temperatures.**
4. **Place ten fish of equal length in each tank.**

Which is the correct order in which to complete these steps?

F 1 – 3 – 4 – 1 – 2

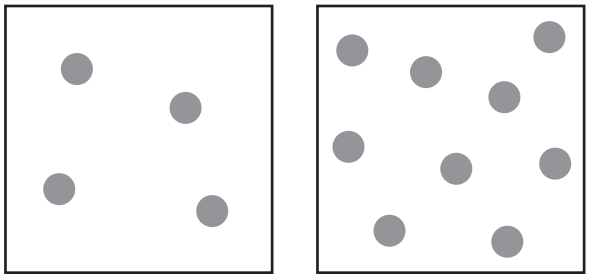
G 3 – 1 – 2 – 1 – 4

H 3 – 1 – 4 – 2 – 1

J 1 – 4 – 3 – 2 – 1

Section 1

13 **A scientist determines that the carrying capacity of whitetail deer on a given land type is 1 deer for every 5 square kilometers. He studies two 100-square-kilometer plots that have deer on them.**



Plot 1 Plot 2

Each ● represents 5 whitetail deer.

The deer population in Plot 1 is at carrying capacity while the population in Plot 2 exceeds carrying capacity.

By how much does the population in Plot 2 exceed carrying capacity?

A 25%

B 125%

C 250%

D 500%

14 **In a certain type of mouse, black fur is dominant and white fur is recessive. A scientist crosses a heterozygous black mouse with a white mouse. What percentage of the offspring will most likely have black fur?**

F 0%

G 50%

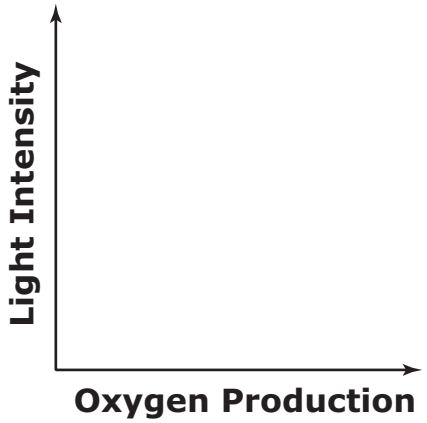
H 75%

J 100%

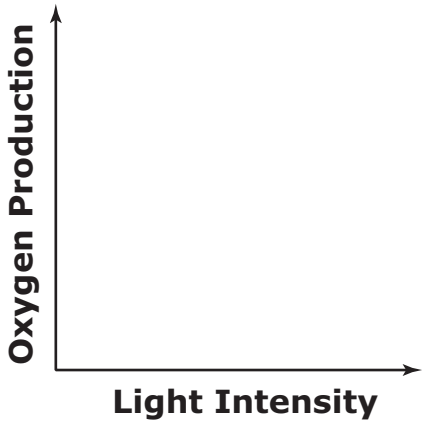
15 A student performed an experiment to determine the effects of light intensity on the rate of photosynthesis in a plant.

Which graph should the student use to plot his data?

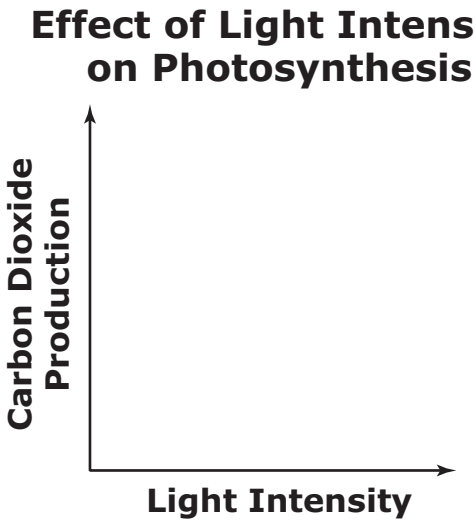
A



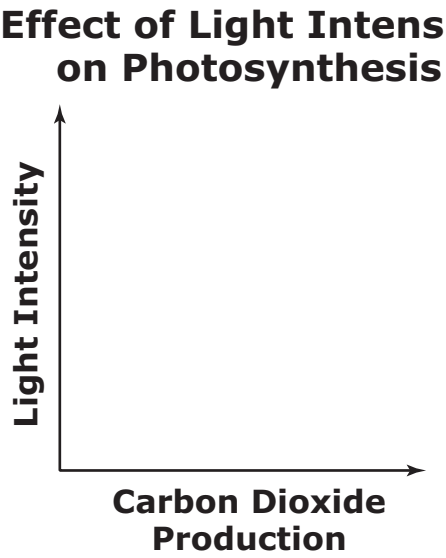
B



C

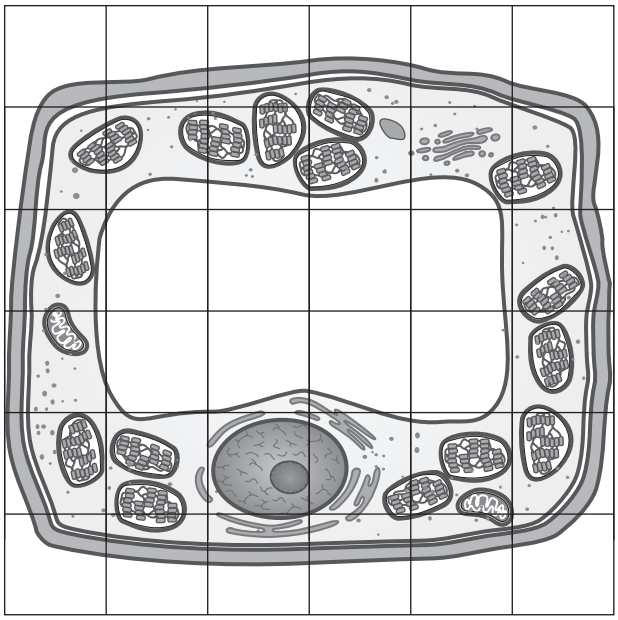


D



Section 1

16 **A student observes a cell through a microscope.**



About how long is a vacuole in this sample?

F 3 µm

G 7 µm

H 20 µm

J 30 µm

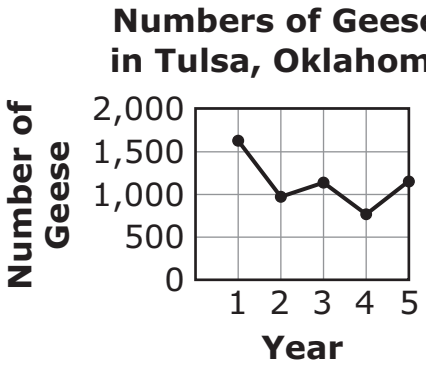
17

Numbers of Geese in Tulsa, Oklahoma

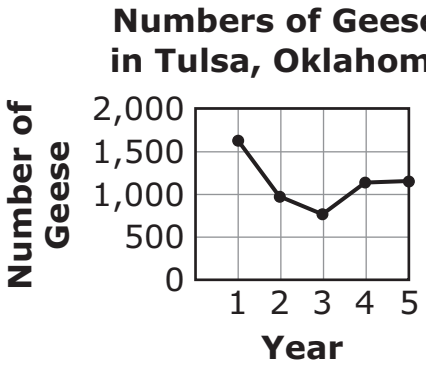
Year	Number of Geese
1	1,630
2	973
3	768
4	1,139
5	1,152

Which graph correctly displays the geese population data in Tulsa, Oklahoma?

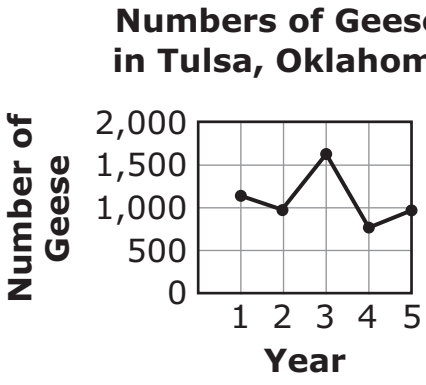
A



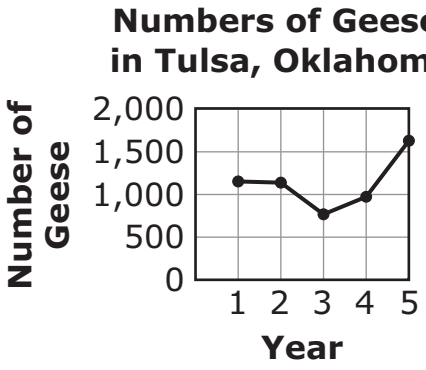
B



C



D



18 **Which of the following would be produced if a messenger RNA strand is coded from the DNA sequence CCCGGAATT?**

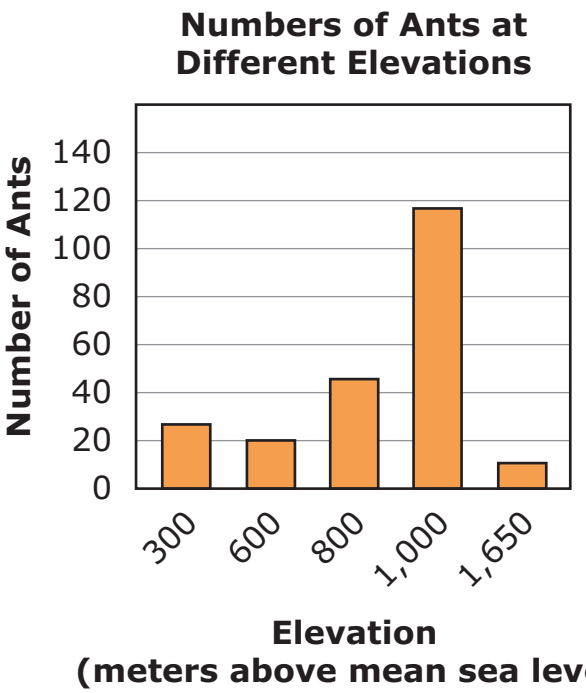
F CCCGGAAUU

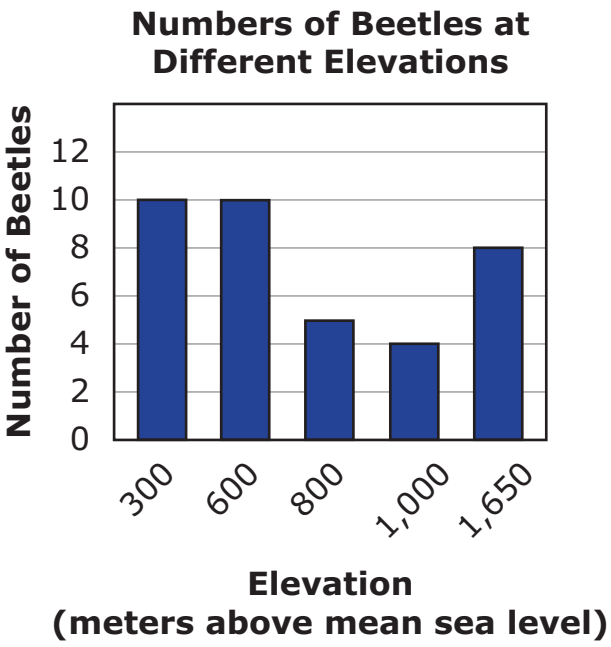
G GGGCCTTAA

H AAATTCCGG

J GGGCCUUAA

19 **Ants and beetles compete for resources at some elevations. Scientists collected leaf litter from different elevations. The scientists recorded the number of ants and the number of beetles found in the leaf litter at each elevation and created graphs showing the data.**





Which conclusion do the data best support?

A Ants are the prey species of beetles.

B Ants have high survival rates with fewer competitors.

C Ants have large populations when many beetles are in the community.

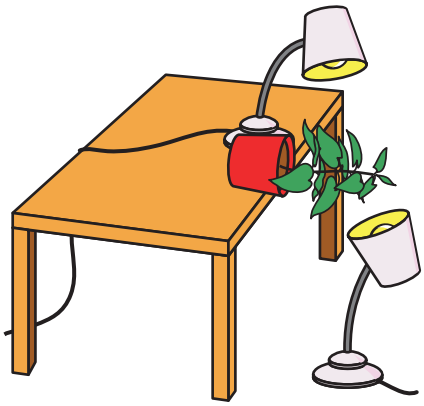
D Ants are more likely to survive at higher elevations than at lower elevations.

20 **A student wants to determine whether plant growth is influenced more by gravity or light.**

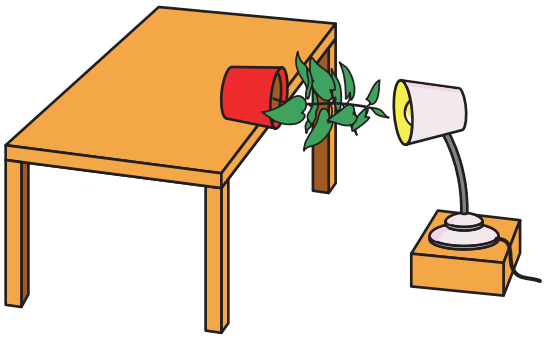
Which experimental setup should the student use to obtain the best results?

F

G



H



J

STOP

END OF SECTION 1

527903 1 2 3 4 5 A B C D E Printed in the USA ISD1621