Released Form

Published November 2024

Grade 5 Science

North Carolina End-of-Grade Assessment

Public Schools of North Carolina
Department of Public Instruction | State Board of Education
Division of Accountability Services/North Carolina Testing Program

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1 Kennedy measured the daily high temperature outside her home for four days. She compared these measurements to the average high temperature for her region using the table below.

Day	Daily High Temperature (°F)	Average High Temperature (°F)
Monday	65	85
Tuesday	70	88
Wednesday	72	89
Thursday	72	87

What do Kennedy's measurements show?

A The recent temperatures are lower than the normal average for her region.

B The recent temperatures are higher than the normal average for her region.

C The season is changing because there is a large difference between recent temperatures and average high temperatures.

D The season is changing because there is a small difference between recent temperatures and average high temperatures.

2 A meteorologist reads a barometer at 9:00 a.m. He reads it again in the afternoon and notices a significant drop in pressure. Which choice describes the ***most likely*** weather in the evening for that location?

A It will be a sunny, clear evening.

B It will be a hot and humid evening.

C There will be many storms.

D There will be a light breeze.

Questions 3–7 are part of an item set. Use the following information to answer the questions.

Measuring Motion

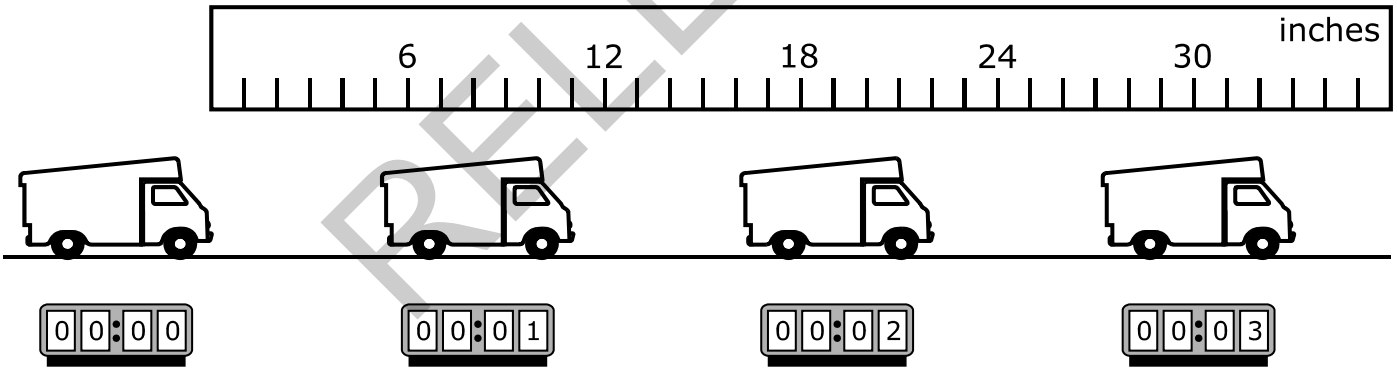
Ziba played with a toy truck that could hold up to two wooden blocks. Ziba thinks the truck would move slowest when carrying two blocks.

Ziba carried out an investigation to test her prediction. This list describes Ziba's investigation:

- Ziba placed a yardstick on the wood floor.
- She gave the truck a short push and then measured the truck's position every second.
- Ziba recorded the truck's position and time in a diagram.

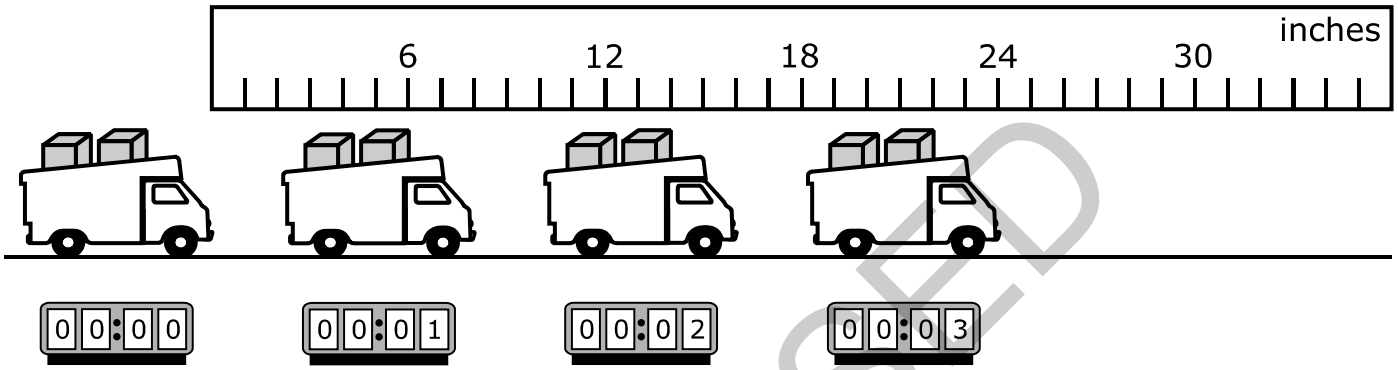
Figure 1 shows the diagram of the truck's motion.

Figure 1: Truck's Motion with No Blocks



Ziba then repeated the procedure, but this time placed two blocks into the back of the truck. Figure 2 shows the position and time measurements for the truck that carried two blocks.

Figure 2: Truck's Motion While Carrying Two Blocks



Go to the next page.

3 Ziba pushed the truck in each investigation with equal force. Select (click) ***two*** choices that explain the difference in motion shown in Figure 1 and Figure 2.

- ☐ Putting blocks in the truck increased the truck's total mass.
- ☐ Putting blocks in the truck decreased the truck's total mass.
- ☐ Ziba's push produced a greater change in motion when the truck carried no blocks.
- ☐ Ziba's push produced the same change in motion when the truck was empty and when it carried two blocks.
- ☐ Ziba's push produced a greater change in motion when the truck carried two blocks.

4 Ziba determines the truck weighs 35 ounces when holding two blocks. She removes the blocks and weighs the truck again; the truck weighs 29 ounces. Which choice ***best*** explains the change in weight?

A Each block added 6 ounces of weight to the truck.

B Each block added 3 ounces of weight to the truck.

C Each block added to the weight of the truck by decreasing friction.

D Each block added to the weight of the truck by increasing friction.

5 What was the speed of the truck from Figure 2?

A 2 inches per second

B 6 inches per second

C 8 inches per second

D 24 inches per second

6 Which choice ***best*** describes the motion shown in Figure 1 and Figure 2?

A Figure 1 shows that the truck's speed changed over time.

B Figure 2 shows that the truck's speed changed over time.

C Figure 1 and Figure 2 show that each truck's speed remained the same over time, but the truck from Figure 2 moved faster.

D Figure 1 and Figure 2 show that each truck's speed remained the same over time, but the truck from Figure 1 moved faster.

7 How far will the truck in Figure 1 have travelled after moving for 4 seconds?

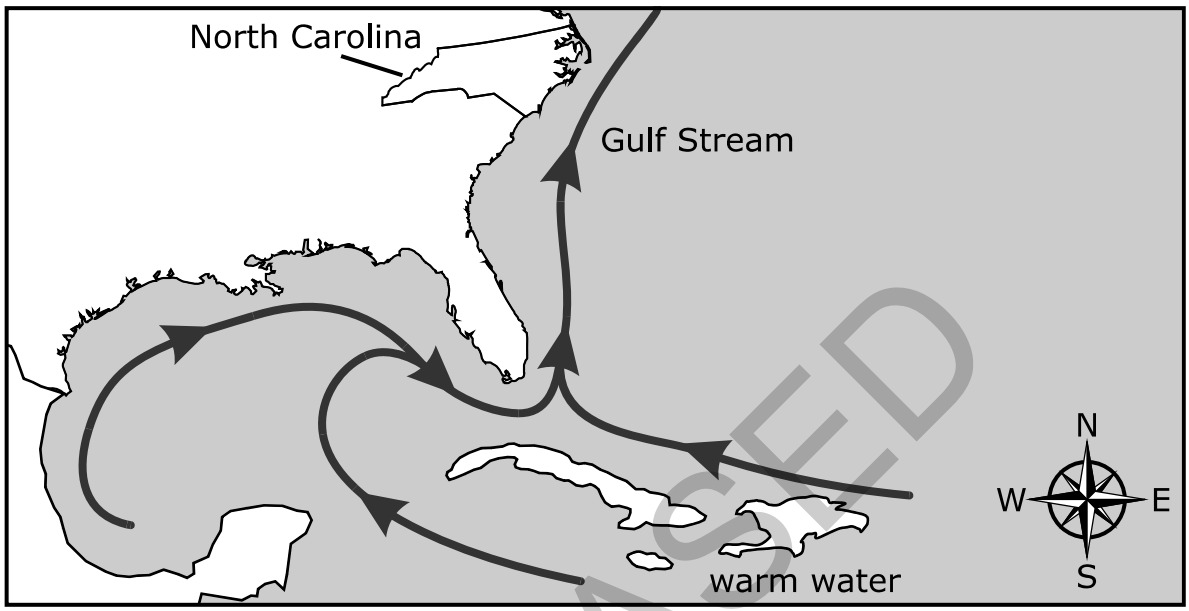
A 11 inches

B 36 inches

C 44 inches

D 55 inches

8 The map below shows the path of the Gulf Stream as it flows past the coastline of North Carolina.



Which statement ***best*** explains how the Gulf Stream affects the climate of North Carolina?

A The Gulf Stream pulls warm water from the north, making temperatures warmer during the winter and bringing more precipitation to the state.

B The Gulf Stream brings warm water from the south, making temperatures warmer during the winter and bringing more precipitation to the state.

C The Gulf Stream pushes winds eastward across the United States, preventing precipitation within the state.

D The Gulf Stream pushes wind westward across the ocean, making temperatures much cooler within the state.

9 On a hot, humid day Max noticed water droplets had formed on the outside of his bedroom window. What caused water droplets to form on the window?

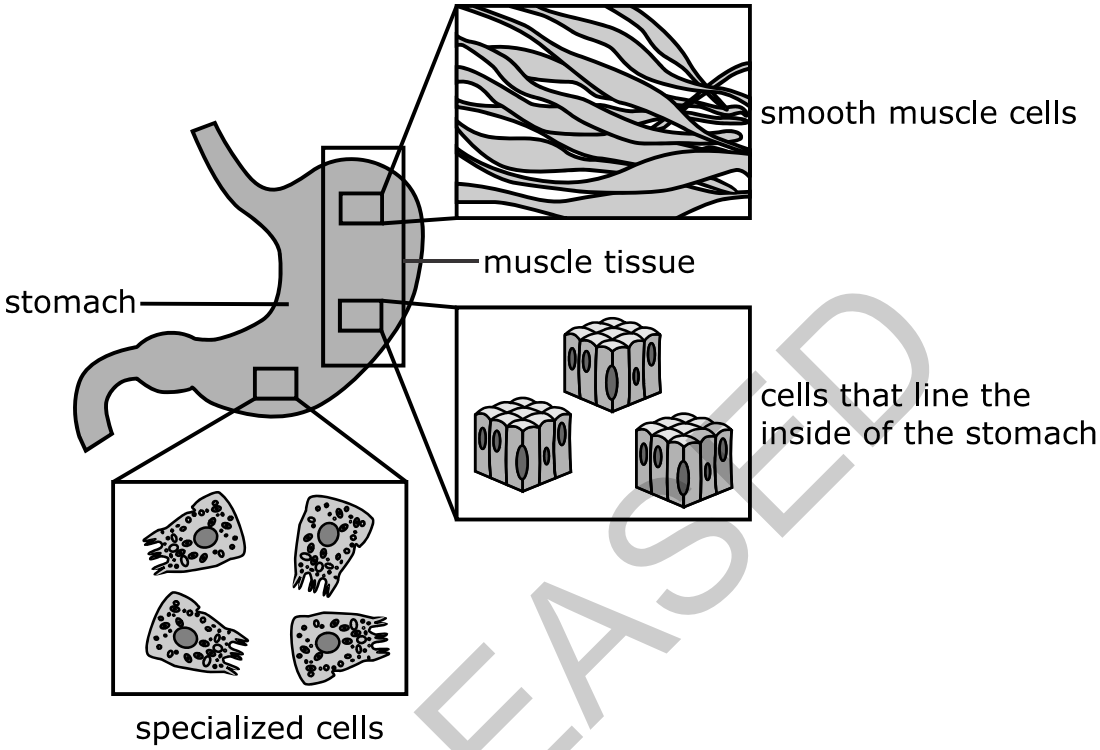
A condensation

B evaporation

C precipitation

D transpiration

10 The stomach helps break down food and move it throughout the body. This diagram shows the structure of the stomach.



Select (click) ***three*** statements that correctly describe the stomach.

- ☐ Stomach tissue is composed only of muscle cells.
- ☐ Stomach tissue includes many different types of cells.
- ☐ Muscle tissue in the stomach is made of muscle cells.
- ☐ Muscle cells and cells that line the inside of the stomach are made of stomach tissue.
- ☐ The stomach is an organ within the digestive system.
- ☐ The stomach is a tissue within the digestive system.

11 What will ***most likely*** happen to the squirrel population in an area if the trees are removed?

A The squirrel population in the area will not change.

B The squirrel population will move to another area.

C The squirrel population will increase because of an increase in predators.

D The squirrel population will decrease because of a decrease in predators.

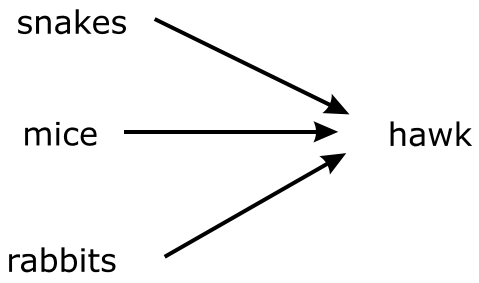
12 The data table below shows the population of otters in the rivers and streams of a region in North Carolina.

	Spring	Summer	Autumn	Winter
Number of Otters Found in Rivers	55	62	58	48
Number of Otters Found in Streams	25	22	24	20

Select (click) ***three*** statements the data table supports.

- ☐ The otters can find enough water resources to survive in either habitat.
- ☐ The river habitat can support a larger population of otters because rivers are larger than streams.
- ☐ The stream habitat is better suited to the otter population because streams are smaller and more secure than rivers.
- ☐ The populations of otters in both river and stream habitats decrease throughout the year as they use all available resources.
- ☐ The populations of otters in both river and stream habitats decrease in the winter because there are fewer available resources.

13 This diagram shows a portion of a forest food web.



Based on the diagram, how is the hawk classified?

A scavenger

B decomposer

C producer

D consumer

14 This is a food chain in an ocean ecosystem.

plankton → minnows → tuna

The tuna population decreases because of overfishing. Select (click and drag) the effect of the decrease in the tuna population on the other populations in the food chain. Fill in all of the cells.

How will the minnow population be affected?	*1*	How will the plankton population be affected?	*2*

1	***2***
It will increase.	It will increase.
It will decrease.	It will decrease.

15 Jeremy is visiting a zoo and notices that the zebras are herding together in their habitat. Jeremy wonders why the zebras, even the babies, do this. Which question would ***most likely*** help him understand this behavior?

A Is it instinctual for zebras to herd together?

B Is there a limit on how many zebras can herd together?

C How many characteristics do the zebras in the herd share?

D How many zebras in the herd have similar color patterns?

16 Which is an example of an inherited trait?

A favorite food

B reading fast

C language

D handedness

17 Bonnie had a rubber ball that weighed 10 ounces. She placed it outside, then later noticed the ball was warm. Which choice describes the weight of the warm rubber ball?

A The warm rubber ball should weigh 10 ounces.

B The warm rubber ball should weigh more than 10 ounces.

C The warm rubber ball should weigh less than 10 ounces.

D The warm rubber ball's weight cannot be determined.

18 Which example would ***most likely*** suggest a new substance was formed?

A a substance changing shape when bent

B a substance changing color after dye was added

C a substance giving off bubbles without being heated

D a substance going from solid to liquid when heat was added

19 Why are some materials considered to be good conductors of heat?

A because they can quickly transfer heat

B because they easily bend when heated

C because they absorb heat without touching an object

D because they require a great amount of heat to melt

20 A student puts 20 pounds of bricks in one wagon and 30 pounds of bricks in another identical wagon. The same force is applied to both wagons, and their speed is tracked for 20 seconds. Which statement ***best*** explains the motion of the wagons?

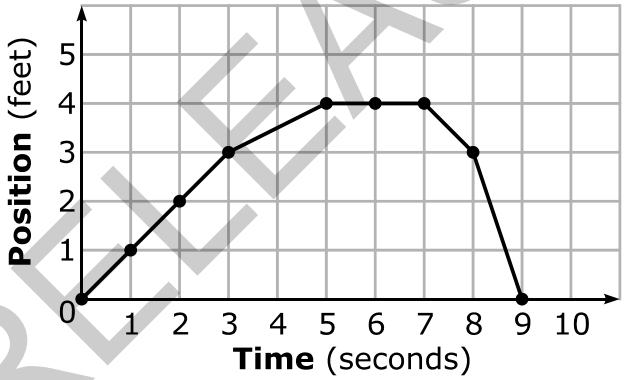
A The wagon with 20 pounds of bricks will move faster.

B The wagon with 30 pounds of bricks will move faster.

C The wagons will both start at the same speed, but then the wagon with 30 pounds will move faster.

D The wagons will both start at the same speed, but then the wagon with 20 pounds of bricks will move faster.

21 This graph shows the movement of an object.



How long did the object remain motionless?

A 0 seconds

B 1 second

C 2 seconds

D 3 seconds

22 The table below shows average temperature measurements from a city.

Day	**Average Temperature** (°F)
Monday	54
Tuesday	57
Wednesday	61
Thursday	63
Friday	64

Between which two days did the city experience the greatest temperature change?

A between Monday and Tuesday

B between Tuesday and Wednesday

C between Wednesday and Thursday

D between Thursday and Friday

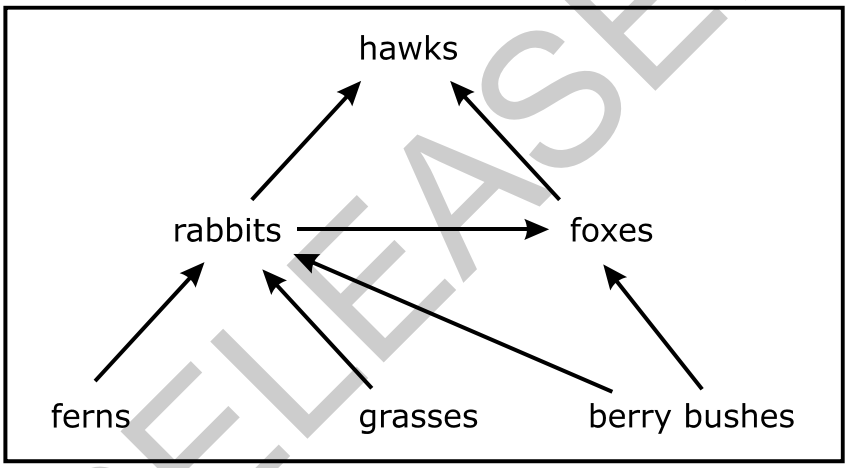
Questions 23–27 are part of an item set. Use the following information to answer the questions.

The Forest

Rabbits, foxes, and hawks live together in a forest ecosystem. In this ecosystem, there are many bushes, ferns, and grasses. A river flows through the ecosystem, providing water to the animals that live there.

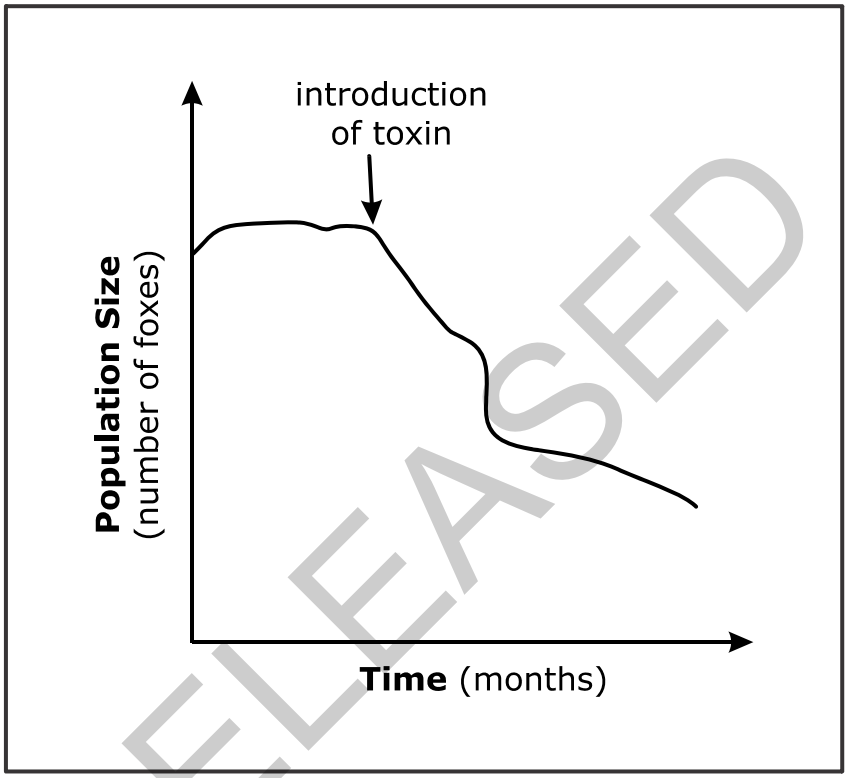
The food web below (Figure 1) shows some of the relationships between these organisms.

Figure 1: Forest Food Web



Scientists have detected a toxin* in the river supply, but it seems to affect only the foxes in the ecosystem. The graph below (Figure 2) shows how the fox population has changed since the toxin was introduced.

Figure 2: Fox Population



*__toxin:__ a substance that can be poisonous to plants or animals

Go to the next page.

23 Amy and Belle were discussing ways to help the fox population. There is a grassland ecosystem nearby with these characteristics:

- There are few trees, shrubs, and ferns, and no berry bushes in the grassland;
- the river does not flow through the grassland;
- some rabbits are found in the grassland, but because there are few hiding places, the rabbits are easily caught by hawks.

Amy states that the remaining foxes should be removed from the forest and taken to the grassland. Belle disagrees. Which student is correct?

A Amy, because there will be more food for the foxes in the grassland ecosystem

B Amy, because there is no water, and therefore no toxin present in the grassland ecosystem

C Belle, because there will be fewer predators for the foxes in the grassland ecosystem

D Belle, because the foxes will not have the resources they need to survive in the grassland ecosystem

24 Scientists have found a way to remove the toxin from the river. What effect would this have on the berry bush population?

A The berry bush population would increase because there would be more foxes.

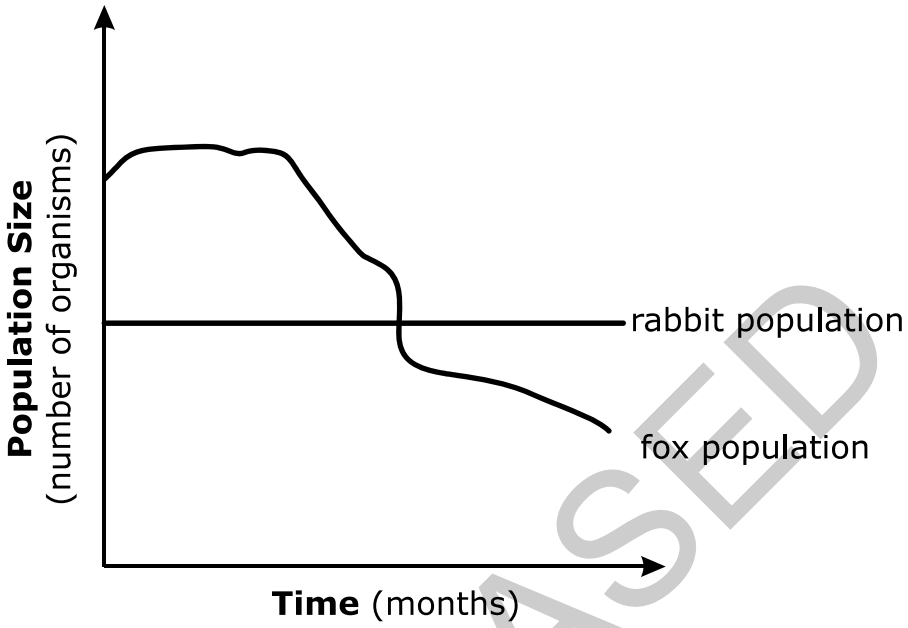
B The berry bush population would decrease because there would be more foxes.

C The berry bush population would increase because there would be fewer foxes.

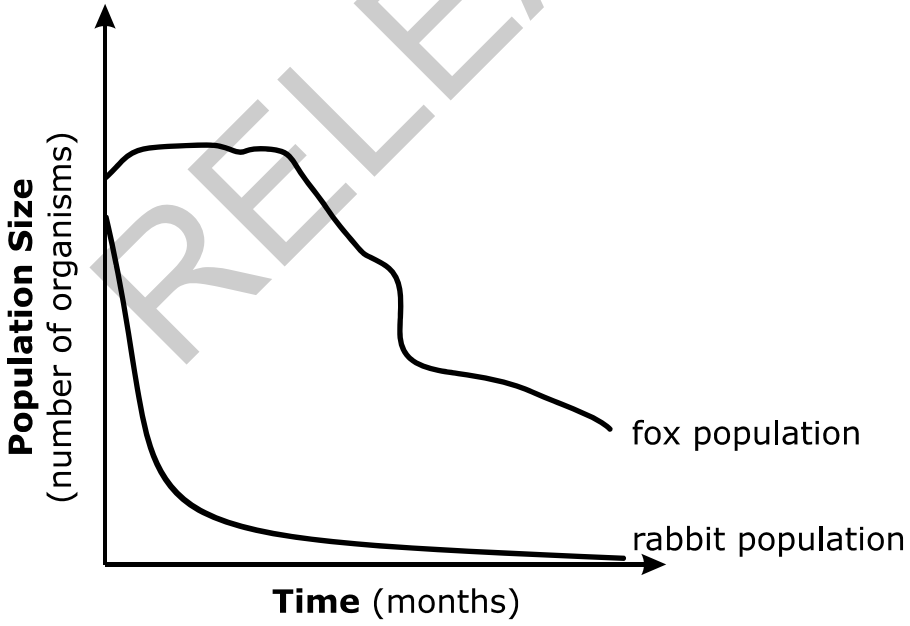
D The berry bush population would decrease because there would be fewer foxes.

25 Which graph shows how the rabbit population ***most likely*** changed after the toxin was introduced?

A

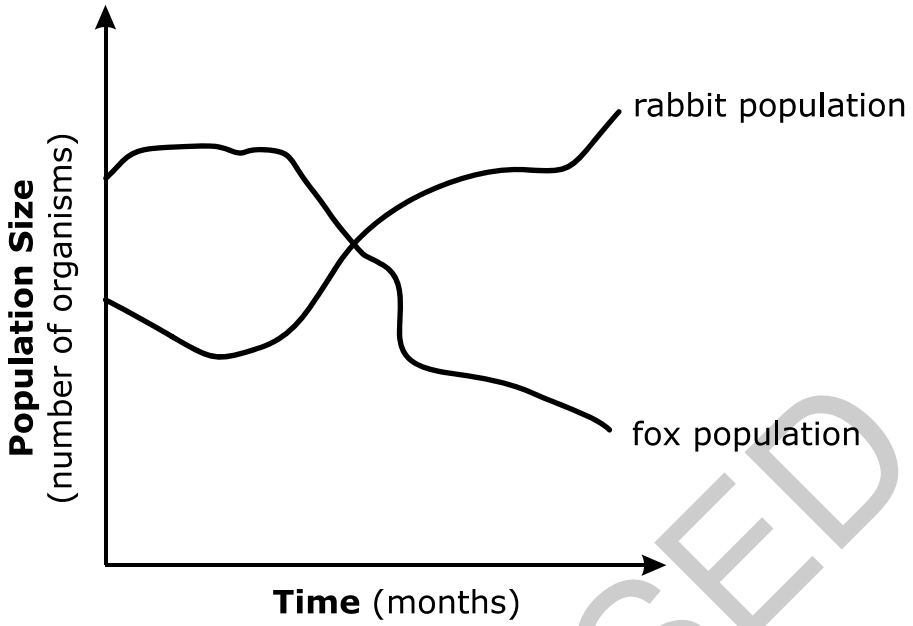


B

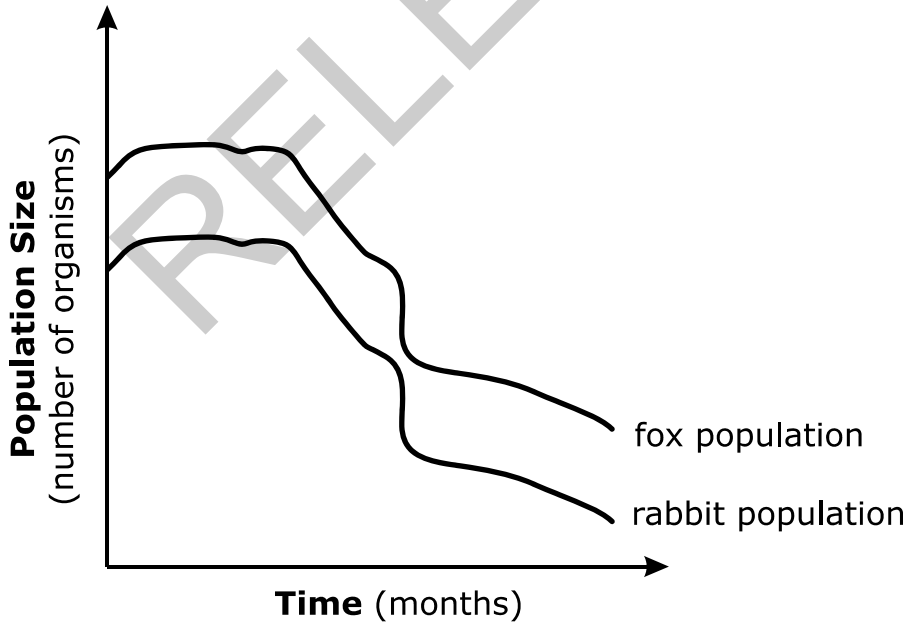


Answer choices C and D are on the following page.

C



D



26 How would the change in the fox population affect the other organisms? Select (click and drag) the correct terms to describe the effects on the organisms. Fill in all of the cells.

There would be [1] rabbits and [2] grass.

1	2
fewer	less
more	more
the same amount of	the same amount of

27 A scientist fills a beaker with a 100-gram sample from the river. She separates the toxin from the water to examine it more closely. She pours the liquid toxin into another container. How does this affect the weight of the water sample left in the beaker?

A It weighs the same because there was more water than toxin in the sample.

B It weighs less because the water sample is cleaner without the toxin.

C It weighs the same because the toxin is a liquid and has no mass.

D It weighs less because the toxin is a liquid and has mass.

28 On a warm winter day in North Carolina, the wind is blowing steadily from the south. The wind is supposed to change direction the next day and begin blowing from the north. Which prediction about the weather can be made, based on this information?

A No precipitation will form.

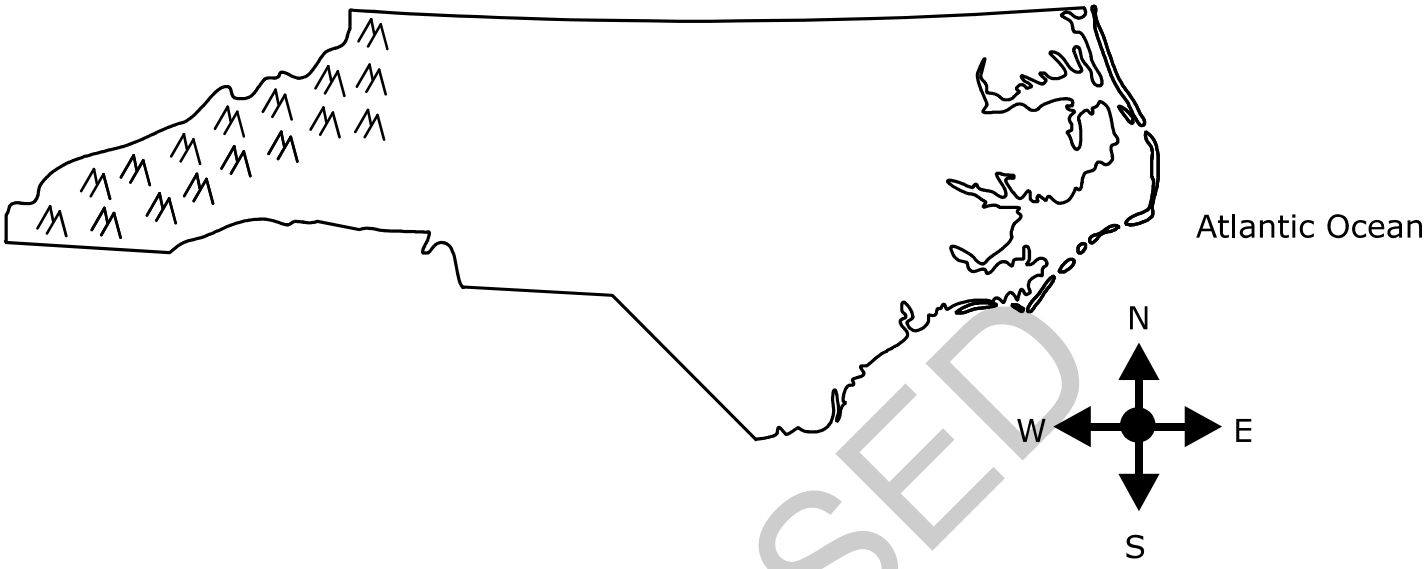
B More clouds will form.

C Temperatures will be cooler.

D Temperatures will be warmer.

Go to the next page.

29 The map below shows the state of North Carolina.



During the winter months, western North Carolina generally experiences more snow than eastern North Carolina. Which statement ***best*** explains this?

A Cool air from the ocean moves west across the state, allowing western North Carolina to experience snow.

B Warm air from the ocean moves west across the state, allowing western North Carolina to experience snow.

C Warm, dense air pushes from western North Carolina toward the north, allowing the region to experience snow, while cool air from the ocean cools down the atmosphere in the east.

D Cold, dense air pushes from the north toward western North Carolina, allowing the region to experience snow, while warm air from the ocean heats up the atmosphere in the east.

30 What role does the sun's energy play in the process of transpiration in plants?

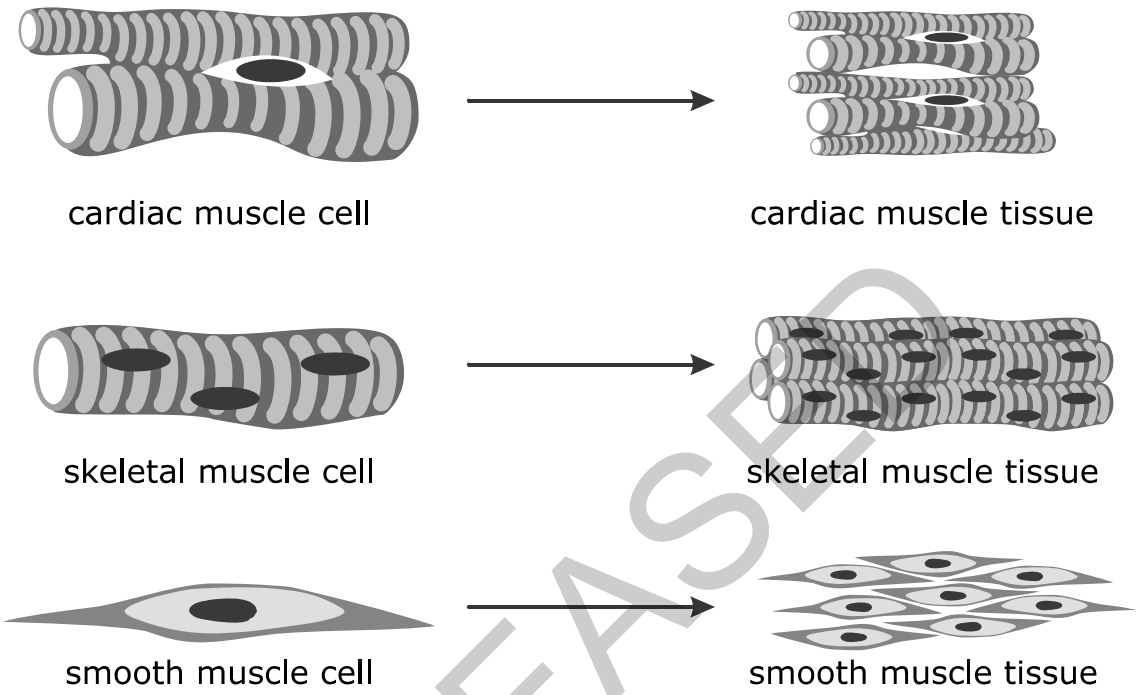
A The sun's energy causes the moisture in plants to evaporate.

B The sun's energy causes the moisture in plants to drip off the leaves.

C The sun's energy causes the moisture in plants to return to the ground.

D The sun's energy causes the moisture in plants to stay in the leaves until it rains.

31 The illustrations below show three different types of muscle cells in the human body.



Which statement do the illustrations support?

A Muscle cells are made up of connected muscle tissues.

B A muscle is an organ made up of only one type of muscle cell.

C Different types of muscle cells make up different types of muscle tissue in the human body.

D Different types of muscle cells make up the same type of muscle tissue in all parts of the human body.

32 What do the digestive system and circulatory system of the human body have in common?

A They work together to help give the body the ability to speak, smell, and breathe.

B They work together to give cells the nutrients needed to produce energy.

C They work together to reduce waste and keep the body clean.

D They work together to pump blood throughout the body.

33 What is one way lakes and ponds are different?

A Ponds are usually more shallow.

B Ponds contain brackish water.

C Ponds have more animal life.

D Ponds have larger waves.

34 Which is a producer in a forest ecosystem?

A bacteria

B moss

C worm

D beetle

35 How do the digestive and circulatory systems differ in how they help the body obtain nutrients?

A The digestive system breaks down food into red blood cells, and the circulatory system carries these red blood cells throughout the body.

B The digestive system breaks down food into usable nutrients, and the circulatory system carries these nutrients throughout the body.

C The digestive system breaks down food, and the circulatory system moves the food from the stomach to the large intestines.

D The digestive system mixes food with water, and the circulatory system moves the mixture through the intestines.

36 Alyssa is in the sixth grade. She and her mom share the same hair and eye color. They are planning a trip to Mexico. Alyssa's mom can speak Spanish but Alyssa cannot. Why is Alyssa unable to speak Spanish?

A Alyssa's mom inherited the ability to speak Spanish, but Alyssa did not.

B Alyssa only inherited the ability to speak English from her mom.

C Alyssa cannot learn to speak Spanish because she is too young.

D Alyssa's mom learned to speak Spanish, but Alyssa did not.

Go to the next page.

37 A student has two hamsters that are brothers. One hamster is named Arnold, and the other is named Chester. Arnold gets a lot of exercise because the student puts Arnold in a cage with a hamster wheel. Chester does not exercise as much as Arnold because the student puts Chester in a different cage without a hamster wheel. After one month, the student notices that Arnold can run much faster than Chester. Which choice ***best*** summarizes the student's observations?

A Arnold inherited the ability to run faster by exercising.

B Arnold acquired the ability to run faster by exercising.

C Chester inherited the ability to run faster by exercising.

D Chester acquired the ability to run faster by exercising.

38 Jordan collects some gold, white, and red rocks into a bucket. Then, he shakes the bucket so that the rocks are mixed. Jordan claims the rock mixture is a new substance. Why is Jordan's claim incorrect?

A because some of the rocks might have changed shape

B because the rocks made noise as he shook the bucket

C because he could separate individual rocks from the mixture

D because the mixture is only made of solids

39 A boy rolls a ball across two different flat surfaces with the same amount of force. The list below describes the motion of the ball on each surface.

- Surface 1: The ball rolled one meter in three seconds.
- Surface 2: The ball rolled two meters in three seconds.

What could have caused the ball to go farther in the same amount of time on Surface 2?

A Surface 1 had less mass than Surface 2.

B Surface 1 had more mass than Surface 2.

C The ball experienced more friction while rolling on Surface 2.

D The ball experienced less friction while rolling on Surface 2.

40 Two identical balls, X and Y, roll on a flat, horizontal surface. Ball Y rolls faster than ball X. Which statement explains the movement of the balls for 5 seconds?

A Both balls travel the same distance.

B Ball Y travels farther than ball X.

C Ball X travels farther than ball Y.

D Ball Y has more mass because it is moving faster.

Go to the next page.

41 Which choice describes the organizational structure of humans?

A Cells make up tissues.
Tissues make up organs.
Organs make up systems.

B Cells make up systems.
Tissues make up organs.
Organs make up organisms.

C Tissues make up cells.
Cells make up systems.
Systems make up organs.

D Tissues make up cells.
Cells make up organs.
Organs make up organisms.

42 Which choice explains how running as a type of exercise can improve some major systems in the human body?

A The respiratory system is improved as the lungs are exercised, while the digestive system is improved by movement.

B The skeletal system is improved as the body holds a person upright, while the circulatory system is improved as the heart pumps blood.

C The skeletal system is improved as the body holds a person upright, while the digestive system is improved by movement.

D The respiratory system is improved as the lungs are exercised, while the circulatory system is improved as the heart pumps blood.

Go to the next page.

43 Sam pushed a toy car across the concrete floor. The car traveled quickly until it reached the carpet, where it slowed down and eventually stopped. What happened to the car?

A The car's mass increased.

B The car's mass decreased.

C The force of friction on the car increased.

D The force of friction on the car decreased.

44 Which structures work as a group to form tissues?

A cells

B organs

C organisms

D body systems

Directions:

This is the end of the Science test.

1. **Look back over your answers for the test questions.**

2. **Put all of your papers inside your test book and close your test book.**

3. **Stay quietly in your seat until your teacher tells you that testing is finished.**

STOP

Grade 5 Science Released Form
2024
Answer Key

Table 1

Question Number	Question Type[1]	Key	Objective
1	MC	A	ESS.5.1.1
2	MC	C	ESS.5.1.2
3	MS	See Table 2	PS.5.2.1
4	MC	B	PS.5.1.1
5	MC	C	PS.5.2.2
6	MC	D	PS.5.2.2
7	MC	C	PS.5.2.2
8	MC	B	ESS.5.1.3
9	MC	A	ESS.5.1.4
10	MS	See Table 2	LS.5.1.1
11	MC	B	LS.5.2.3
12	MS	See Table 2	LS.5.2.1
13	MC	D	LS.5.2.2
14	TD	See Table 2	LS.5.2.3
15	MC	A	LS.5.3.1
16	MS	D	LS.5.3.2
17	MC	A	PS.5.1.1

Go to the next page.

Question Number	Question Type[1]	Key	Objective
18	MC	C	PS.5.1.2
19	MC	A	PS.5.1.3
20	MC	A	PS.5.2.1
21	MC	C	PS.5.2.2
22	MC	B	ESS.5.1.1
23	MC	D	LS.5.2.1
24	MC	B	LS.5.2.3
25	MC	C	LS.5.2.3
26	TD	See Table 2	LS.5.2.3
27	MS	D	PS.5.1.1
28	MC	C	ESS.5.1.2
29	MC	D	ESS.5.1.3
30	MC	A	ESS.5.1.4
31	MC	C	LS.5.1.1
32	MC	B	LS.5.1.2
33	MC	A	LS.5.2.1
34	MC	B	LS.5.2.2
35	MC	B	LS.5.1.2
36	MC	D	LS.5.3.1
37	MC	B	LS.5.3.2
38	MC	C	PS.5.1.2
39	MC	D	PS.5.2.1

Go to the next page.

Question Number	Question Type[1]	Key	Objective
40	MC	B	PS.5.2.2
41	MC	A	LS.5.1.1
42	MC	D	LS.5.1.2
43	MC	C	PS.5.2.1
44	MC	A	LS.5.1.1

[1]Question Type:
MC = multiple choice
MS = multiselect
DD = drag and drop
TD = targeted drop

Go to the next page.

Table 2

Question	Technology Enhanced Item Solution
3	Putting blocks in the truck increased the truck's total mass. Ziba's push produced a greater change in motion when the truck carried no blocks.
10	Stomach tissue includes many different types of cells. Muscle tissue in the stomach is made of muscle cells. The stomach is an organ within the digestive system.
12	The otters can find enough water resources to survive in either habitat. The river habitat can support a larger population of otters because rivers are larger than streams. The populations of otters in both river and stream habitats decrease in the winter because there are fewer available resources.
14	1: It will increase. 2: It will decrease.
26	1: more 2: less