

Released Form

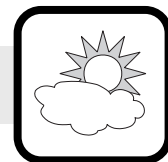
Student Name: _____

Spring 2013
North Carolina
Measures of Student Learning:
NC's Common Exams
Grade 7 Science—Form A



Public Schools of North Carolina
State Board of Education
Department of Public Instruction
Raleigh, North Carolina 27699-6314

Student Booklet



- 1 Steven threw four balls into the air and recorded their heights. The chart below shows the maximum height for each ball.

Maximum Height Reached by Four Balls

Ball	Maximum Height (m)
M	2.0
N	1.5
O	4.2
P	3.0

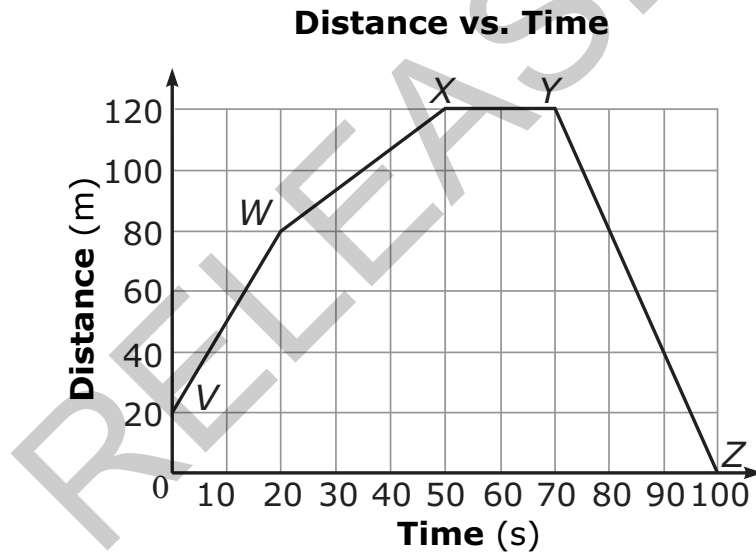
Which describes their motion?

- A Ball P went twice as high as Ball N.
 - B Ball M went twice as high as Ball N.
 - C Ball P went two meters higher than Ball O.
 - D Ball N went two meters higher than Ball O.
- 2 John wants to build a racetrack that will allow his toy cars to travel fast when force is applied. Which material should he use?
- A carpet, because friction will be high
 - B gravel, because friction will be high
 - C plastic, because friction will be low
 - D sandpaper, because friction will be low



- 3 A magnet is placed near a pile of steel paper clips. Which will **most likely** occur?
- A The magnet will provide a balanced force, causing the paper clips to spin in circles.
 - B The magnet will provide an unbalanced force, keeping the paper clips stationary.
 - C The magnet will provide a balanced force, pushing the paper clips away from it.
 - D The magnet will provide an unbalanced force, pulling the paper clips toward it.

4 The graph below shows the distance traveled by an object over 100 seconds.



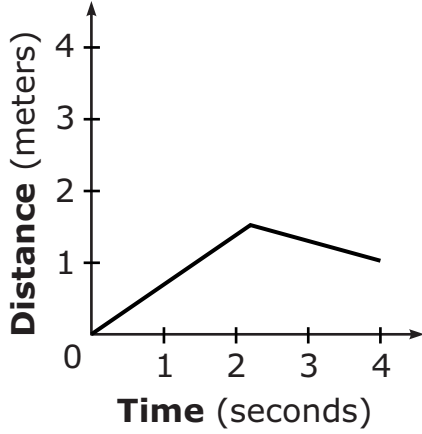
What happened to the motion of the object between $t = 50$ s and $t = 70$ s?

- A The object increased its speed.
- B The object decreased its speed.
- C The object stopped moving.
- D The object changed directions.

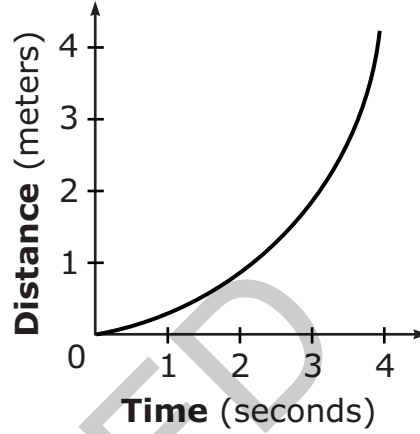


5 Which graph represents a moving object with a constant speed throughout its entire travel time?

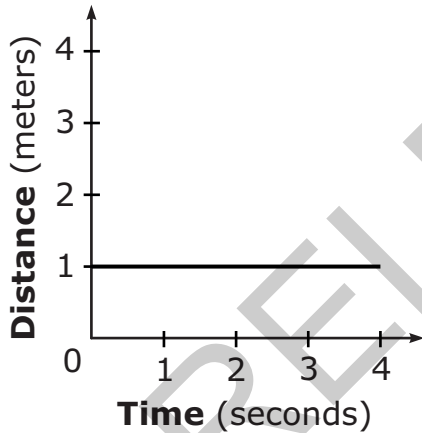
A



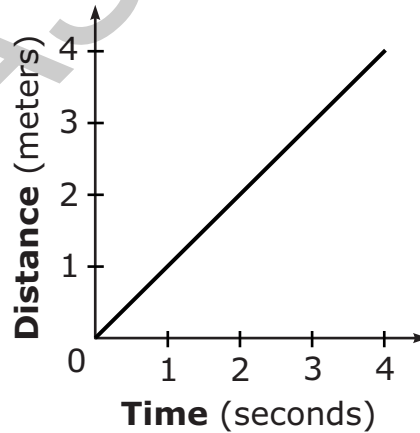
B



C

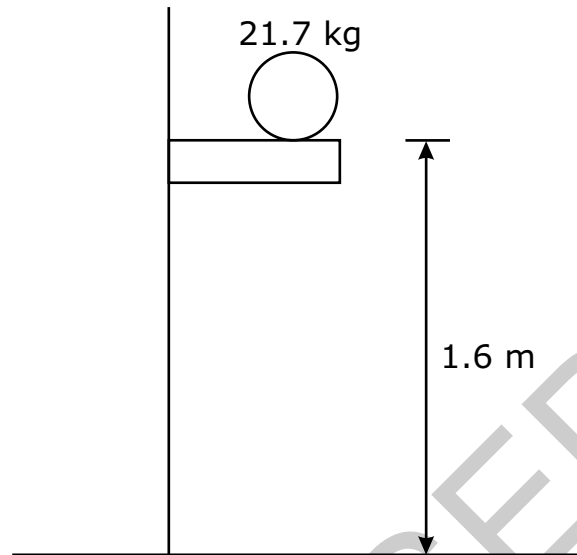


D



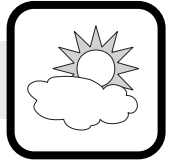


- 6 The diagram shows a 21.7-kg ball located on a shelf 1.6 m above the ground.

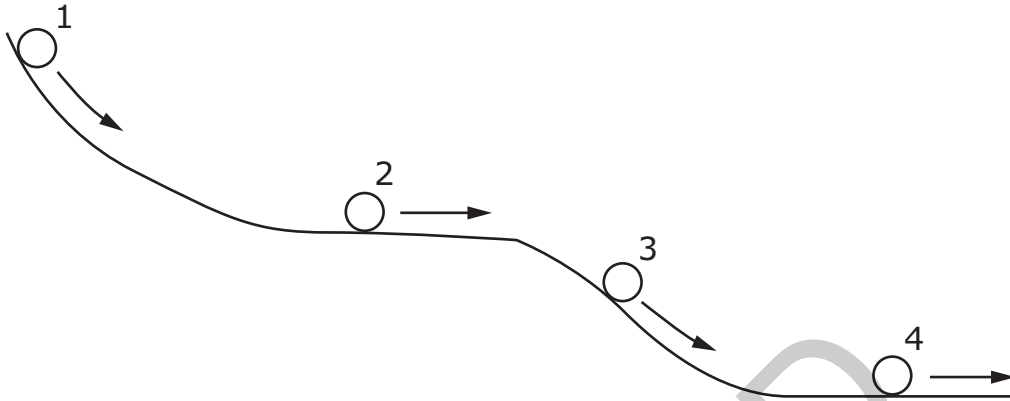


Which **best** describes the energy of the ball?

- A Its energy is lost once it falls off the shelf.
- B Its energy depends upon the speed the ball will travel.
- C It has mechanical energy in the form of potential energy.
- D It has mechanical energy in the form of kinetic energy.

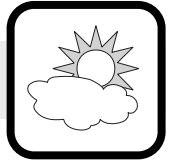


7 This diagram shows the motion of a ball down a hill.



What happened to the ball's energy from Point 1 to Point 4?

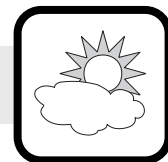
- A Stored energy was transformed into energy of motion.
 - B Energy of motion was transformed into chemical energy.
 - C Stored energy in the ball applied a force to get the ball to move.
 - D Internal energy caused the ball to move until the energy was gone.
- 8 As a roller coaster car travels down a hill, which type of change in energy allows it to speed up?
- A potential energy changing into heat energy
 - B potential energy changing into kinetic energy
 - C kinetic energy changing into heat energy
 - D kinetic energy changing into potential energy



- 9 Which form of energy does a car's engine convert into mechanical energy?
- A light
 - B wind
 - C chemical
 - D gravitational
- 10 Which type of energy is changed by plants into chemical energy?
- A solar
 - B nuclear
 - C thermal
 - D gravitational
- 11 How can an inclined plane make work easier?
- A by increasing the amount of friction necessary for the task
 - B by increasing the effort necessary to raise an object
 - C by decreasing the effort required to raise an object
 - D by decreasing the efficiency of the task



- 12 Which simple machine would be the **most** efficient for lifting an object 30 m off the ground?
- A pulley
 - B screw
 - C wedge
 - D lever
- 13 Why does air pressure decrease from the troposphere to the exosphere?
- A because there are fewer air molecules as altitude increases
 - B because there are more air molecules as altitude increases
 - C because there are higher temperatures as altitude increases
 - D because there are lower temperatures as altitude increases
- 14 How does the temperature of the stratosphere compare to the mesosphere?
- A It is colder than the mesosphere because the stratosphere contains the ozone layer.
 - B It is warmer than the mesosphere because the stratosphere contains the ozone layer.
 - C It is colder than the mesosphere because the stratosphere contains the ionosphere.
 - D It is warmer than the mesosphere because the stratosphere contains the ionosphere.



15 Which occurs within a high-pressure system?

- A the formation of tornadoes
- B the formation of hurricanes
- C large clouds, as air rises
- D calm weather, as air sinks

16 The data table below shows the weather conditions for City X over the course of one day.

Weather Conditions for City X

Day and Time	Tuesday at 8:00 a.m.	Tuesday at 2:00 p.m.
Temperature	60°F	40°F
Pressure	30.28 in.	29.97 in.
winds	Southwest	Northwest
skies	Partly Cloudy	Cloudy; Rain and Thunder

What has **most likely** occurred in this area?

- A A warm front has passed.
- B A cold front has passed.
- C A blizzard has taken place.
- D A high-pressure system has stalled.



- 17 The chart below shows the recorded temperatures in a city for several days at the same time.

Four-Day Temperature Recordings at 3:00 p.m.

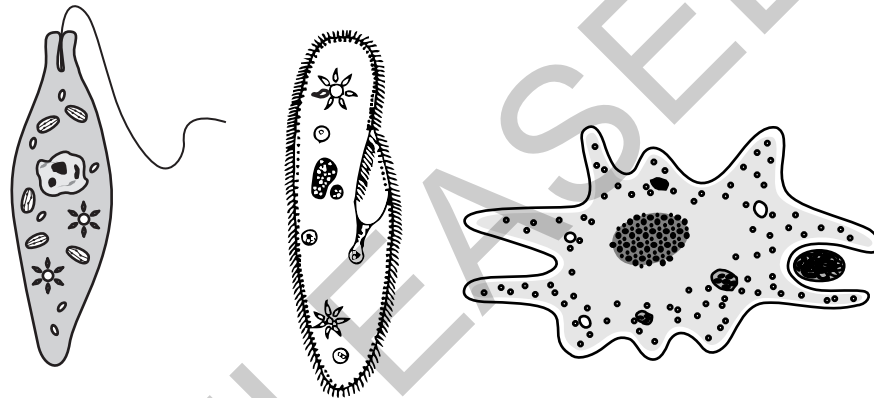
Day	Temperature (°F)
Thursday	59
Friday	63
Saturday	72
Sunday	64

On which day could the air have held the **greatest** amount of water vapor at 3:00 p.m.?

- A Thursday
 - B Friday
 - C Saturday
 - D Sunday
- 18 How does the convection of air produce thunderstorms?
- A by causing warm air to sink and cold air to rise
 - B by causing warm air to rise and cold air to sink
 - C by causing both warm air and cold air to rise
 - D by causing both warm air and cold air to sink
- 19 Which **best** explains how the Coriolis effect influences weather conditions?
- A It causes winds to rotate, forming tornadoes on Earth.
 - B It causes winds to move to the right in the southern hemisphere.
 - C It causes winds to turn to the right in the northern hemisphere.
 - D It causes winds to follow a straight-line path around Earth.



- 20 Why is it important for the United States to monitor air pollution levels in other countries?
- A Air pollution can improve the ozone layer amounts in the atmosphere.
 - B Air pollution can travel to the United States and affect people’s health.
 - C The United States is the only country able to monitor the air quality.
 - D The United States has clean air and is able to help other countries.
- 21 The illustrations below are of a euglena, a paramecium, and an amoeba.

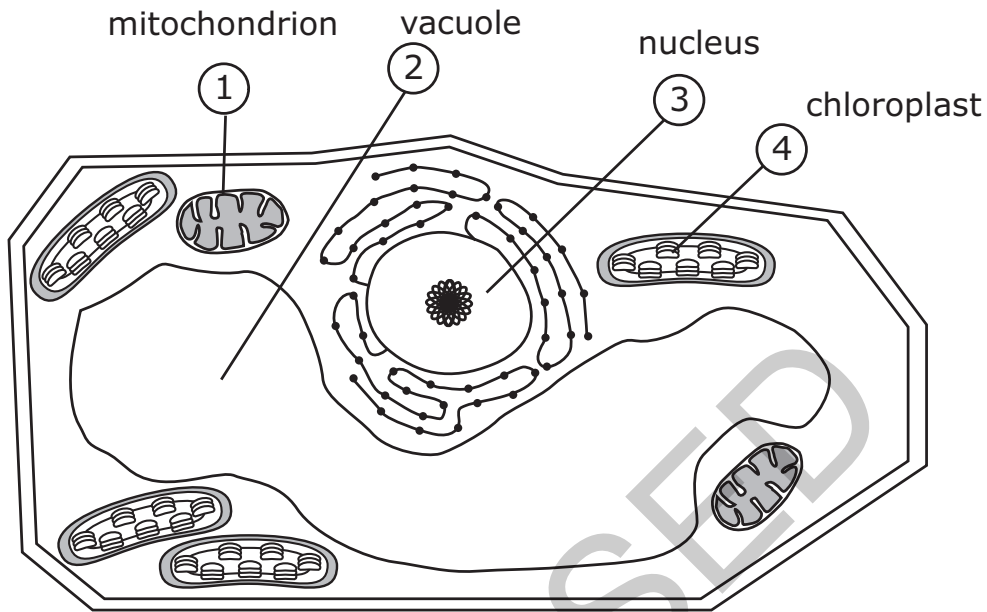


How do these organisms compare?

- A They use different structures for movement.
- B They use different structures to control cell activity.
- C They all make their own food by photosynthesis.
- D They all have eyespots to sense sunlight.



22 This is a diagram of a plant cell.



Which organelle is used to transfer energy and can also be found in an animal cell?

- A (1)
- B (2)
- C (3)
- D (4)

23 The cell membrane is unable to work properly. How could this affect plant and animal cells?

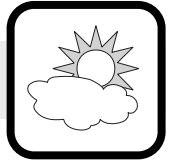
- A It could affect their ability to absorb sunlight.
- B It could affect their ability to make proteins.
- C It could affect their ability to store water.
- D It could affect their ability to remove waste.



- 24 Which **best** summarizes organ systems?
- A a group of organelles working together to perform a certain job
 - B a group of tissues working together to perform a certain job
 - C a group of organs working together to perform a certain job
 - D a group of cells working together to perform a certain job
- 25 Which function summarizes the excretory system?
- A It removes waste.
 - B It collects oxygen.
 - C It attacks diseases.
 - D It delivers nutrients.
- 26 How do the respiratory and circulatory systems work together?
- A The respiratory system takes in carbon dioxide, while the circulatory system delivers carbon dioxide to the cells.
 - B The circulatory system takes in carbon dioxide, while the respiratory system delivers carbon dioxide to the cells.
 - C The respiratory system takes in oxygen, while the circulatory system delivers oxygen to the cells.
 - D The circulatory system takes in oxygen, while the respiratory system delivers oxygen to the cells.



- 27 A scientist noticed that all of the offspring of the yeast fungus are identical to the parent. However, the offspring of a cat all look different. What **most likely** caused this to occur?
- A Yeast produced offspring through asexual reproduction, while the cat produced offspring through sexual reproduction.
 - B Yeast produced offspring through sexual reproduction, while the cat produced offspring through asexual reproduction.
 - C Both yeast and the cat produced offspring through asexual reproduction.
 - D Both yeast and the cat produced offspring through sexual reproduction.
- 28 How does mitosis compare to meiosis?
- A Mitosis produces two identical daughter cells, while meiosis produces sex cells with half the genetic information.
 - B Mitosis produces sex cells with half the genetic information, while meiosis produces two identical daughter cells.
 - C Mitosis only occurs in single-celled organisms, while meiosis only occurs in animals.
 - D Mitosis only occurs in animals, while meiosis only occurs in single-celled organisms.



- 29 Sarah's family has a long history of people who developed diabetes. Which lifestyle change should she make to try to prevent becoming diabetic?
- A watch television and drink water
 - B exercise frequently and watch her diet
 - C play video games and sit on the couch
 - D drink sodas daily and eat fried foods
- 30 How does smoking cigarettes affect the body?
- A It causes damage to various cells.
 - B It improves the function of the lungs.
 - C It lowers carbon dioxide amounts.
 - D It reduces the chance of cancer.

This is the end of the multiple-choice portion of the test.



The questions you read next will require you to answer in writing.

1. Write your answers on separate paper.
2. Be sure to write your name on each page.

1 The motion of an object can be represented in a line graph. The data table below charts the motion of an object in 20 seconds.

Distance vs. Time

Time (s)	Distance (m)
0	0
5	10
10	10
15	15
20	20

- Construct a line graph that shows the motion of the object. Be sure to label both axes.
- Using the graph, describe the motion of the object between 0 and 10 seconds.

2 Runoff is an important part of the water cycle.

- What is the final destination for runoff that flows on the surface of the continents?
- How can the runoff water contribute to the weather in an area?



- 3 In rabbits, black fur (B) is dominant to brown fur (b).
- Give the genotype of a heterozygous black rabbit.
 - If a heterozygous black rabbit and a brown rabbit were crossed, what is the probability that their offspring will be brown? Show your work.

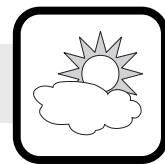
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This is the end of the Grade 7 Science test.

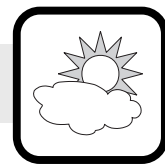
- 1. Look back over your answers.**
- 2. Put all of your papers inside your test book and close the test book.**
- 4. Stay quietly in your seat until your teacher tells you that testing is finished.**

RELEASED



**Grade 7 Science
RELEASED Form
Spring 2013
Answer Key**

Item number	Type	Key	Unifying Concept
1	MC	A	Forces and Motion
2	MC	C	Forces and Motion
3	MC	D	Forces and Motion
4	MC	C	Forces and Motion
5	MC	D	Forces and Motion
6	MC	C	Energy: Conservation and Transfer
7	MC	A	Energy: Conservation and Transfer
8	MC	B	Energy: Conservation and Transfer
9	MC	C	Energy: Conservation and Transfer
10	MC	A	Energy: Conservation and Transfer
11	MC	C	Energy: Conservation and Transfer
12	MC	A	Energy: Conservation and Transfer
13	MC	A	Earth Systems, Structures and Processes
14	MC	B	Earth Systems, Structures and Processes
15	MC	D	Earth Systems, Structures and Processes
16	MC	B	Earth Systems, Structures and Processes
17	MC	C	Earth Systems, Structures and Processes
18	MC	B	Earth Systems, Structures and Processes
19	MC	C	Earth Systems, Structures and Processes
20	MC	B	Earth Systems, Structures and Processes
21	MC	A	Structures and Functions of Living Organisms
22	MC	A	Structures and Functions of Living Organisms



Item number	Type	Key	Unifying Concept
23	MC	D	Structures and Functions of Living Organisms
24	MC	C	Structures and Functions of Living Organisms
25	MC	A	Structures and Functions of Living Organisms
26	MC	C	Structures and Functions of Living Organisms
27	MC	A	Evolution and Genetics
28	MC	A	Evolution and Genetics
29	MC	B	Evolution and Genetics
30	MC	A	Evolution and Genetics
31	CR	Rubric	Forces and Motion
32	CR	Rubric	Earth Systems, Structures and Processes
33	CR	Rubric	Evolution and Genetics

Item Types:

MC = multiple choice

CR = constructed response