

Released Items

Student Name: _____

Grade 7 Science



2016–2017



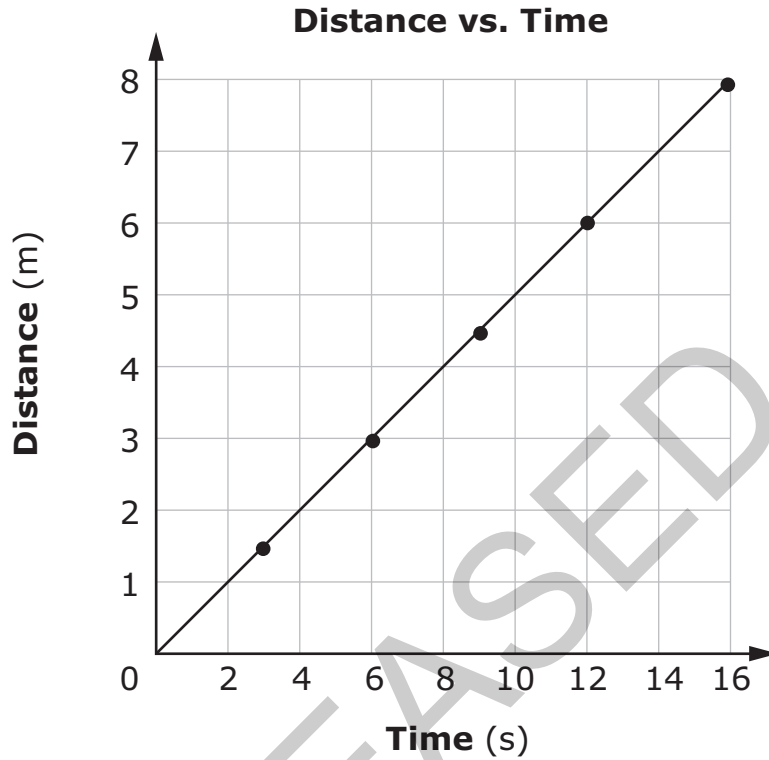
Public Schools of North Carolina
State Board of Education
Department of Public Instruction
Raleigh, North Carolina 27699-6314

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NC Final Exam



1 Sally ran a distance of 8 m in 16 s. The graph below shows her motion.



Which **best** describes her motion?

- A Her speed was constantly changing.
- B Her speed remained constant.
- C She stopped moving after four seconds.
- D She decreased her speed after four seconds.



- 2 How does the energy of a roller-coaster cart change as the cart travels from the top of the roller coaster to the bottom?
- A The cart has greater kinetic energy at the top than it does at the bottom.
 - B The cart has no energy at the top and more energy at the bottom.
 - C The cart has less potential energy at the top than it does at the bottom.
 - D The cart has potential energy at the top that is transformed to kinetic energy as it moves to the bottom.
- 3 How can simple machines make work easier?
- A by decreasing the force needed to complete the task
 - B by increasing the friction between the machine and the object
 - C by adding more work on the object than originally applied
 - D by removing the force of gravity on the object
- 4 Why does the troposphere experience the greatest amount of atmospheric pressure compared to the other atmospheric layers?
- A It produces the ozone layer.
 - B It has the highest temperatures.
 - C It contains a high concentration of gas particles.
 - D It is the region in which weather occurs.



- 5 Which explains why most of the rain that falls comes from the ocean?
- A The majority of evaporation takes place over the ocean.
 - B The majority of precipitation takes place over the ocean.
 - C Most rivers deposit freshwater into the ocean.
 - D Most clouds form near or over the ocean.
- 6 Barometric pressure has been dropping all day. What weather conditions will **most likely** occur?
- A sunny weather
 - B stormy weather
 - C calm weather
 - D hot weather
- 7 A sea breeze blows from the ocean toward the shore. Why does this occur?
- A High pressure over the land causes a downdraft to occur.
 - B The tide carries the wind to the shore as it moves back and forth.
 - C Conduction of heat from the warm water produces wind from the ocean.
 - D Air over land heats faster than air over water, which causes convection.



- 8 Which two organisms contain chloroplasts and eyespots?
- A amoeba and paramecium
 - B paramecium and volvox
 - C volvox and euglena
 - D euglena and amoeba
- 9 How do a paramecium and an amoeba obtain food to live?
- A A paramecium and an amoeba both use contractile vacuoles to capture food.
 - B A paramecium and an amoeba both make their own food through photosynthesis.
 - C A paramecium collects food into an oral groove, while an amoeba uses pseudopods to surround food.
 - D A paramecium uses pseudopods to capture food, while an amoeba uses chloroplasts to make its food.
- 10 Tina observed a cell under a microscope. She concluded that it was a plant cell instead of an animal cell. Which structure helped her come to this conclusion?
- A She saw a vacuole, which animal cells lack.
 - B She saw a nucleus, which animal cells lack.
 - C She saw a chloroplast, which animal cells lack.
 - D She saw a cell membrane, which animal cells lack.



- 11 Which is a function of the respiratory system?
- A to provide the body with carbon dioxide, which reacts with food to produce energy
 - B to provide the body with oxygen, which reacts with food to produce energy
 - C to provide the cells with glucose, which is used as a source of energy
 - D to provide the cells with water, which is used as a source of energy
- 12 Why would the offspring resulting from fertilization have more differences than the offspring resulting from budding?
- A Two parents provide all of their genes to their offspring during budding, unlike during fertilization.
 - B Each parent provides half of its genes to its offspring during budding, unlike during fertilization.
 - C Two parents provide all of their genes to their offspring during fertilization, unlike during budding.
 - D Each parent provides half of its genes to its offspring during fertilization, unlike during budding.



- 13 Freckles (F) are dominant to not having freckles (f). The diagram shows the cross of a homozygous dominant parent (FF) with a parent of an unknown genotype for freckles.

	F	F
?	Ff	Ff
?	Ff	Ff

What is the unknown genotype and phenotype for the parent?

- A homozygous dominant with freckles
 - B homozygous recessive without freckles
 - C heterozygous with freckles
 - D heterozygous without freckles
- 14 Two black guinea pigs were crossed and they produced a litter of 4 black and 3 white guinea pigs. Which **best** explains this occurrence?
- A White fur is dominant to black fur.
 - B White fur was the result of a mutation.
 - C Both parents were heterozygous for black fur.
 - D Both parents were homozygous for black fur.
- 15 Doppler radar shows a vertical rotating column of air with high wind speeds. Which is **most likely** occurring?
- A the formation of a hurricane
 - B the formation of a tornado
 - C approaching warm front
 - D approaching snowstorm



- 16 How are tissues and organs related?
- A Groups of tissues form cells, which work together to make up a single organ.
 - B Groups of organs form cells, which work together to make up a single tissue.
 - C Groups of tissues work together to make up a single organ.
 - D Groups of organs work together to make up a single tissue.
- 17 How does the cell wall of a plant cell compare to the plasma membrane of an animal cell?
- A The cell wall controls what enters and leaves the plant cell; the plasma membrane provides mostly structure and support.
 - B The cell wall converts sunlight into sugars; the plasma membrane controls energy production in the cell.
 - C The cell wall provides structure and support; the plasma membrane controls the substances that enter and leave the cell.
 - D The cell wall provides structure and support; the plasma membrane is surrounded by a structure that contains genetic information.
- 18 How do forces act on a dropped object as it is falling?
- A Air resistance is pushing up on the object, while gravity is pulling it down.
 - B Air resistance is pulling down on the object, while gravity is pushing it up.
 - C Both gravity and air resistance are pulling down on the object.
 - D Both gravity and air resistance are pushing up on the object.



- 19 What happens when a pebble lying on the ground is kicked?
- A Energy is completely lost.
 - B Energy is transferred.
 - C Energy is destroyed.
 - D Energy is created.
- 20 Why is it important to monitor the atmosphere during and after natural events, such as forest fires and volcanic eruptions?
- A These events increase the amount of oxygen, which may contribute to a decrease in respiratory illnesses.
 - B These events decrease the amount of dust, which may contribute to an increase in respiratory illnesses.
 - C These events increase the level of harmful particles, which may contribute to an increase in respiratory illnesses.
 - D These events decrease the amount of greenhouse gases, which may contribute to a decrease in respiratory illnesses.



- 21 This chart shows the relationship between temperature and altitude within each layer of Earth’s atmosphere.

Temperature and Altitude within Earth’s Atmospheric Layers

Atmospheric Layer	Temperature at Low Altitude	Temperature at High Altitude
Troposphere	62°F	-60°F
Stratosphere	-60°F	5°F
Mesosphere	5°F	-184°F
Thermosphere	-184°F	3,600°F

Which comparison between layers of the atmosphere is accurate?

- A Temperature increases at high altitude in the troposphere because, unlike the other layers, it contains the ozone layer.
- B Temperature decreases at high altitude in the stratosphere because, unlike the other layers, it contains the ionosphere.
- C Temperature decreases at high altitude in the mesosphere because, unlike the other layers, it contains the ozone layer.
- D Temperature increases at high altitude in the thermosphere because, unlike the other layers, it contains the ionosphere.



**Grade 7 Science
RELEASED Items¹
2016–2017
Answer Key**

Question Number	Question Type ²	Correct Answer	Percent Correct ³	Objective
1	MC	B	64%	7.P.1.4
2	MC	D	77%	7.P.2.2
3	MC	A	80%	7.P.2.4
4	MC	C	23%	7.E.1.1
5	MC	A	78%	7.E.1.2
6	MC	B	64%	7.E.1.4
7	MC	D	41%	7.E.1.5
8	MC	C	29%	7.L.1.1
9	MC	C	35%	7.L.1.1
10	MC	C	60%	7.L.1.2
11	MC	B	71%	7.L.1.4
12	MC	D	51%	7.L.2.1
13	MC	B	50%	7.L.2.2
14	MC	C	52%	7.L.2.2
15	MC	B	73%	7.E.1.4



Question Number	Question Type ²	Correct Answer	Percent Correct ³	Objective
16	MC	C	55%	7.L.1.3
17	MC	C	49%	7.L.1.2
18	MC	A	65%	7.P.1.2
19	MC	B	71%	7.P.2.3
20	MC	C	78%	7.E.1.6
21	MC	D	46%	7.E.1.1

¹These released items were administered to students during a previous test administration. This sample set of released items may not reflect the breadth of the standards assessed and/or the range of item difficulty found on the NC Final Exam. Additional information about the NC Final Exam is available in the *Assessment Specification* for each exam located at <http://www.ncpublicschools.org/accountability/common-exams/specifications/>.

²This NC Final Exam contains only multiple-choice (MC) items.

³Percent correct is the percentage of students who answered the item correctly during a previous administration.



Clarifying Objectives Descriptions

Only clarifying objective descriptions addressed by the released items in this document are listed below. A complete list of North Carolina *Essential Standards* for Science may be reviewed at <http://www.ncpublicschools.org/curriculum/scos/support-tools/#standards>.

7.P.1.2 (Forces and Motion)

Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity and magnets).

7.P.1.4 (Forces and Motion)

Interpret distance versus time graphs for constant speed and variable motion.

7.P.2.2 (Energy: Conservation and Transfer)

Explain how energy can be transformed from one form to another (specifically potential energy and kinetic energy) using a model or diagram of a moving object (roller coaster, pendulum, or cars on ramps as examples).

7.P.2.3 (Energy: Conservation and Transfer)

Recognize that energy can be transferred from one system to another when two objects push or pull on each other over a distance (work) and electrical circuits require a complete loop through which an electrical current can pass.

7.P.2.4 (Energy: Conservation and Transfer)

Explain how simple machines such as inclined planes, pulleys, levers and wheel and axles are used to create mechanical advantage and increase efficiency.

7.E.1.1 (Earth Systems, Structures and Processes)

Compare the composition, properties and structure of Earth's atmosphere to include mixtures of gases and differences in temperature and pressure within layers.

7.E.1.2 (Earth Systems, Structures and Processes)

Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.

7.E.1.4 (Earth Systems, Structures and Processes)

Predict weather conditions and patterns based on information obtained from:

- Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure)
- Weather maps, satellites and radar
- Cloud shapes and types and associated elevation

7.E.1.5 (Earth Systems, Structures and Processes)

Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.

7.E.1.6 (Earth Systems, Structures and Processes)

Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.

**7.L.1.1 (Structures and Functions of Living Organisms)**

Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including: • Euglena; • Amoeba; • Paramecium; • Volvox

7.L.1.2 (Structures and Functions of Living Organisms)

Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).

7.L.1.3 (Structures and Functions of Living Organisms)

Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms.

7.L.1.4 (Structures and Functions of Living Organisms)

Summarize the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, and excretion) and ways that these systems interact with each other to sustain life.

7.L.2.1 (Evolution and Genetics)

Explain why offspring that result from sexual reproduction (fertilization and meiosis) have greater variation than offspring that result from asexual reproduction (budding and mitosis).

7.L.2.2 (Evolution and Genetics)

Infer patterns of heredity using information from Punnett squares and pedigree analysis.