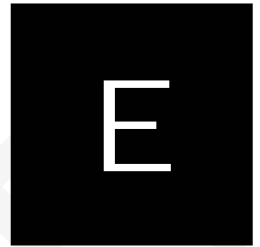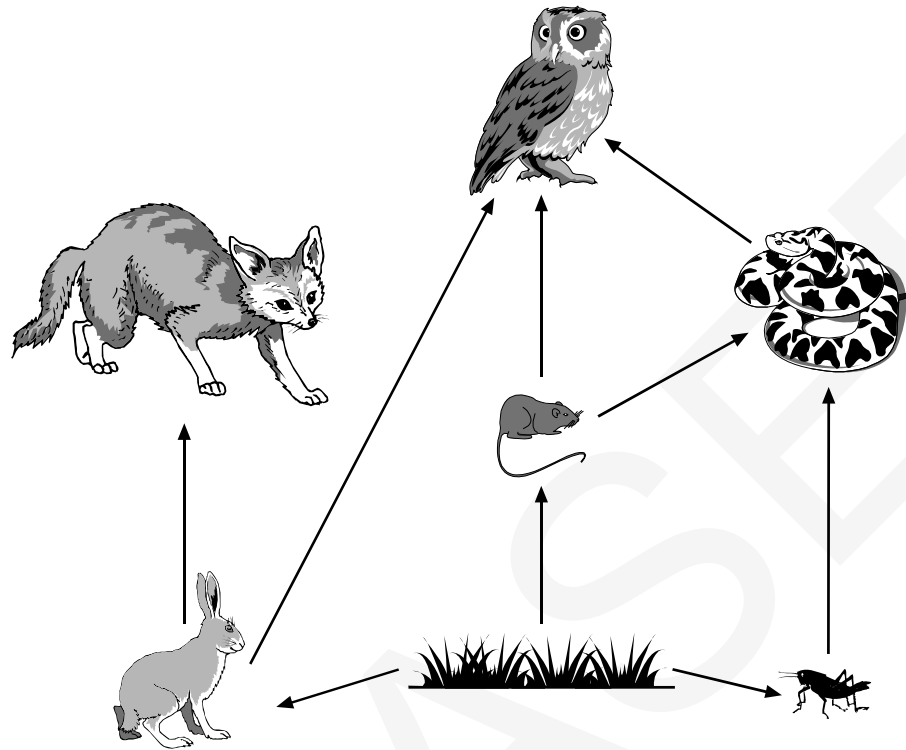Grade 5

Form E

E

North Carolina Test of

Science–Grade 5

Public Schools of North Carolina
www.ncpublicschools.org
State Board of Education
Department of Public Instruction
Division of Accountability Services/North Carolina Testing Program
Raleigh, North Carolina 27699-6314

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1.   Which food chain is in the correct order?

        A   grasshopper → grass → snake → frog → hawk

        B   grasshopper → frog → hawk → snake → grass

        C   grass → grasshopper → frog → snake → hawk

        D   grass → grasshopper → snake → frog → hawk

2.   How have desert plants adapted to their environment?

        A   by limiting the use of sunlight

        B   by storing water

        C   by distributing certain nutrients

        D   by releasing water

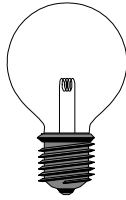3.   This diagram represents a food web.

What is the role of the owl in the food web?

A   consumer

B   decomposer

C   herbivore

D   producer

4.   Why can frogs and snakes live in the same garden?

   A   Both keep weeds out of the garden.

   B   Both help different plants to grow.

   C   Both occupy different niches.

   D   Both compete for water.

5.   What prevents plant growth beneath the trees in thick forests?

   A   The trees limit the amount of sunlight that is able to reach the ground.

   B   The roots of the trees make it difficult for plants to grow.

   C   Little water reaches the ground under the trees.

   D   The temperature of the soil under the trees does not allow plants to grow.

6.   Which is the ***best*** example of habitat reduction caused by humans?

   A   Birds and animals flee a forest fire caused by lightning.

   B   Birds become sick from eating insects new to their area.

   C   Fish swimming to breeding grounds are blocked by dams.

   D   A new species of fish migrates up a river, competing with native fish for food.

7.   How is a delta ***most likely*** formed?

   A   irrigation

   B   glacier movement

   C   precipitation and condensation

   D   deposition of sediment

8.   Which human activity will ***most likely*** increase the amount of soil erosion?

   A   growing crops

   B   mowing grass

   C   planting flowers

   D   clear-cutting wooded areas

9. All of the landforms on Earth are constantly changing shape. What is *most* responsible for the changes in the landforms?

    A   earthquakes

    B   water erosion

    C   pollution

    D   oceans

10. How does water help to break apart rock?

    A   by freezing and expanding

    B   by melting and contracting

    C   by condensing and expanding

    D   by evaporating and contracting

11. Which statement *best* describes runoff?

    A   Water vapor cools off and changes into water droplets.

    B   Water in the form of rain, snow, sleet, or hail falls from clouds.

    C   Precipitation that falls to Earth ultimately flows over land into lakes, streams, and rivers.

    D   Water from the oceans and the surface of the earth changes into water vapor.

12. Sometimes the weather in North Carolina is affected by air masses moving from the Gulf of Mexico. Which *best* describes these air masses?

    A   cold and moist

    B   warm and moist

    C   cold and dry

    D   warm and dry

13. What do meteorologists depend on to forecast an approaching storm?

    A   air pressure

    B   temperature

    C   humidity

    D   wind speed

14. Most warm and cold air masses that enter North Carolina are moved by global winds. Which global winds are responsible for most of the local weather in North Carolina?

    A   northeast trade

    B   southeast trade

    C   polar easterlies
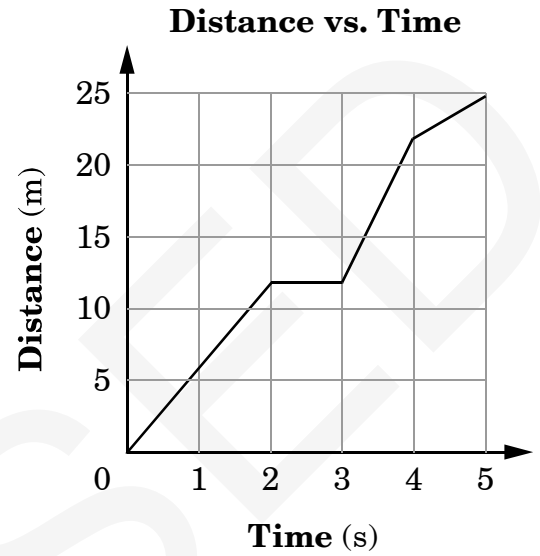
    D   prevailing westerlies

15. This diagram shows a light bulb. The bottom of the light bulb is shaped so that the bulb fits securely into a light socket.

Which type of simple machine is the bottom of the bulb?

A lever

B pulley

C screw

D wedge

16. Two people are each pulling on the opposite ends of a rope. If they are pulling on the rope with equal but opposite forces, what will happen to the rope?

A It will stay in place between the two people.

B It will move toward the right.

C It will move toward the left.

D It will fall to the ground.

17. This graph shows the motion of an animal.

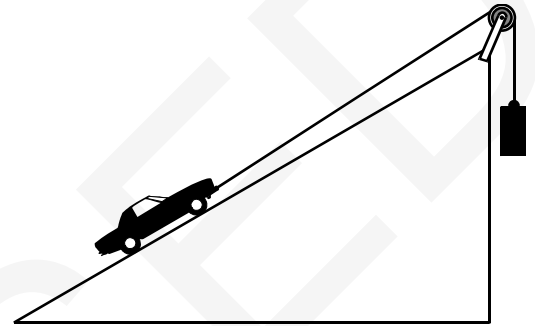**Distance vs. Time**

When does the animal remain still?

A between second 1 and second 2

B between second 2 and second 3

C between second 3 and second 4

D between second 4 and second 5

18.	Which statement **best** describes what must happen in order for a person to lift an object?

A	The force of gravity must be greater than the mass of the object.

B	The mass of the object must be greater than the force of gravity.

C	The force of gravity must be greater than the upward pull or push on the object.

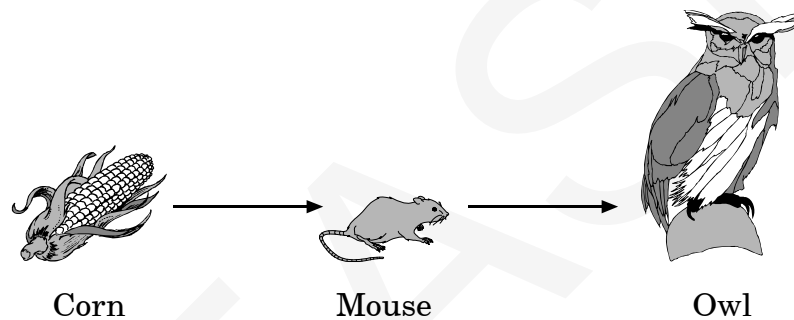D	The upward pull or push on the object must be greater than the force of gravity.

19.	This diagram shows a ramp with a toy car at the bottom. A string is attached to the front of the car and the string goes over a pulley at the top of the ramp. A weight is attached to the other end of the string.

What would be **most** responsible for the toy car being pulled up the ramp?

A	friction

B	gravity

C	kinetic energy

D	momentum

20.	What increases as a rock falls to the ground?

A	the density of the rock

B	the pull of gravity on the rock

C	the inertia of the rock

D	the momentum of the rock

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21. A small fish, called a cleaner fish, picks bits of food from a shark's teeth. What can **best** be concluded about this behavior?

   A   It takes needed nutrition away from the shark.

   B   It helps both the cleaner fish and the shark.

   C   It removes food from inside the shark's body.

   D   It helps the shark blend in with its surroundings.

22. This diagram shows a food chain.

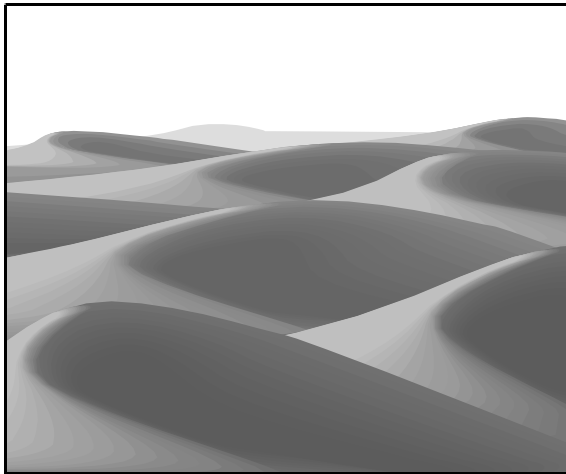   Corn   Mouse   Owl

   Which term describes the role of the corn in this food chain?

   A   carnivore

   B   consumer

   C   herbivore

   D   producer

23. Which resource do decomposers return to the environment?

    A   light

    B   nutrients

    C   oxygen

    D   water

24. Which is the greatest threat to the survival of large predator species, like mountain lions and tigers?

    A   loss of other predator species

    B   global climate changes

    C   loss of large wilderness areas

    D   animal diseases

25. Which statement **best** explains why there are fewer carnivores living in tundra environments than in other environments?

    A   The short growing season limits the number of herbivores that support carnivores.

    B   There is not enough sunlight for primary producers to carry out photosynthesis.

    C   The large number of predators limits the number of carnivores that live in the tundra.

    D   There are more disease-causing insects present in the tundra environment.

26. A class wants to find the ideal temperature for plants to grow in a terrarium. If the students set up several terrariums, what should they do to get the best results?

    A   plant different kinds of plants in each terrarium

    B   use a light bulb with a different brightness in each terrarium

    C   add different amounts of water to each terrarium

    D   place different types of fertilizer in each terrarium

27. Which factor causes a mud slide?

  A   the amount of rain in an area

  B   the amount of carbon dioxide in an area

  C   the amount of pollution in an area

  D   the amount of wind in an area

28. The diagram below shows sand dunes.

  Which natural force *most likely* shaped this landform?

  A   gravity

  B   rain

  C   river

  D   wind

29. Which type of event is *most likely* to form canyons and valleys?

  A   earthquake

  B   erosion

  C   hurricane

  D   ice storm

30. Which will *most likely* be the result of a flood?

  A   Rock and soil will be deposited on a floodplain.

  B   Sand dunes will form along the river.

  C   The land around the river will be less able to grow plants.

  D   Nutrients will be picked up and flow back to the river's source.

31. Which is *most likely* part of a weather station in a school?

  A   balance scales

  B   magnifying lens

  C   rain gauge

  D   telescope

32. A student picks up a glass of ice water and her hand gets wet. What ***most likely*** caused her hand to get wet?

    A   The table was wet.

    B   The water in the glass evaporated.

    C   Some of the ice in the water melted.

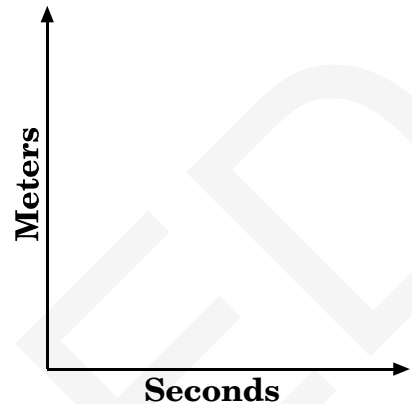   D   Condensation formed on the outside of the glass.

33. During evaporation, which change best describes what happens to water?

    A   A gas changes to a liquid.

    B   A gas changes to a solid.

    C   A liquid changes to a gas.

    D   A liquid changes to a solid.

34. Where do climate conditions cause hurricanes to become larger and more powerful?

    A   over warm water

    B   over cold water

    C   over mountains

    D   over dry, flat land

35. This type of graph is used to describe something about an object.

What could this graph describe?

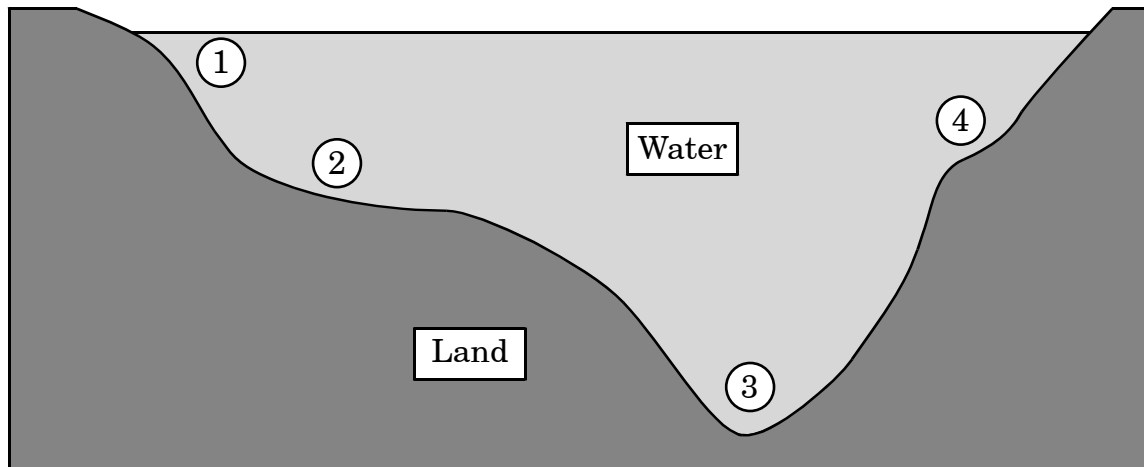   A   friction

    B   volume

    C   mass

    D   speed

36. A student is riding a bike and applies the brakes. Which ***most*** helps the bike to stop?

    A   friction

    B   gravity

    C   heat

    D   momentum

37.	A car moves along a road that has markers every kilometer. Over time, it passes the markers in shorter periods of time. Which ***best*** describes the motion of the car?

A	The car is keeping the same direction.

B	The car is maintaining the same speed.

C	The car is increasing speed.

D	The car is changing direction.

38.	An object is moving at a constant speed. If a balanced force is applied in the opposite direction the object is moving, what will ***most likely*** happen?

A	The object will speed up.

B	The object will change direction.

C	The object will continue moving at a constant speed.

D	The object will slow down and eventually stop moving.

39.	Which ***best*** explains why a moving wagon on a sidewalk will slow down?

A	The friction between the box and the floor decreases when it is pushed.

B	The pull of gravity on the box decreases when it is pushed.

C	Unbalanced forces cause the box to move.

D	Balanced forces cause the box to move.

40.	A scientist is designing a speedboat to travel through the water with the ***least*** amount of resistance. What would the scientist ***most likely*** need to consider when designing the boat?

A	the length of the boat

B	the shape of the boat

C	the power of the boat

D	the weight of the boat

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41. Which **best** describes the role of a producer in an ecosystem?

   A   to use energy from the sun to make food

   B   to decompose dead organisms

   C   to eat other living organisms

   D   to feed on dead organisms

42. What would **most likely** be the reason for a deer to move to another location?

   A   No vegetation is left in its habitat.

   B   No animals are left in its habitat.

   C   No predators are left in its habitat.

   D   No decomposers are left in its habitat.

43. Which type of environment is mostly populated with oak, hickory, beech, and maple trees?

   A   taiga

   B   deciduous forest

   C   tundra

   D   tropical rain forest

44.	This diagram shows a cross section of a lake.

①

②

Water

④

Land

③

What part of the lake would ***most likely*** have the smallest number of producers?
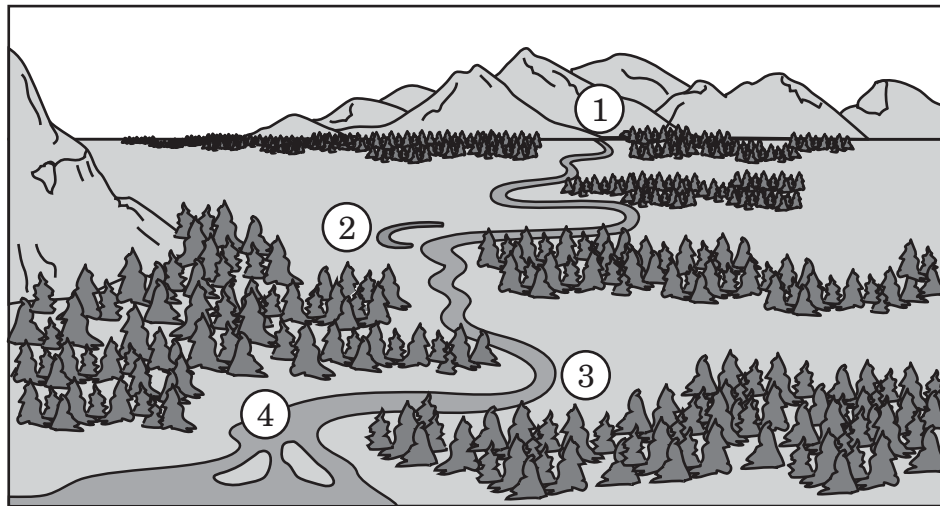
A	①

B	②

C	③

D	④

45.	What is needed for an ecosystem to support the greatest variety of organisms over the longest period of time?

A	many different kinds of bacteria

B	many different kinds of animals

C	many different kinds of minerals

D	many different kinds of plants

46.	When hiking, what is the ***best*** reference material to use to determine elevation?

A	a globe of the world

B	a topographic map of the area

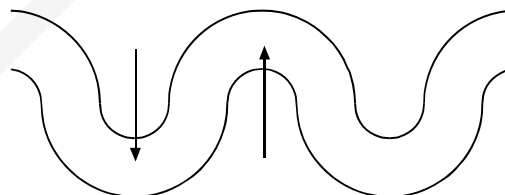C	a road map of the state

D	an atlas of the country

47.   This illustration shows a river running through a river valley.

In which location has a delta formed?

A   ①

B   ②

C   ③

D   ④

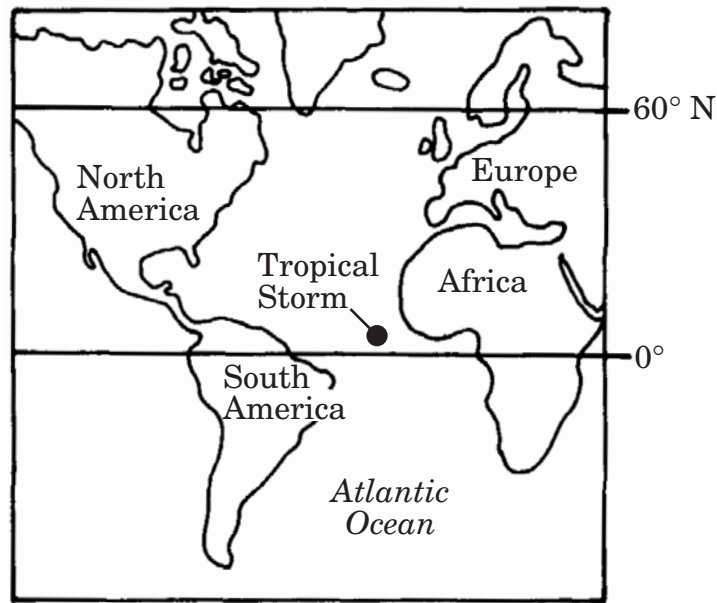48.   This diagram shows the path of a river.

The arrows are pointing to which features of the river?

A   deltas

B   floodplains

C   meanders

D   tributaries

49. Which is an example of weathering?

   A   soil being carried downstream by fast-moving water

   B   rocks being formed by volcanoes

   C   rocks being broken apart by freezing water

   D   sand being moved by strong winds

50. What has caused the formation of most of the valleys that exist on Earth?

   A   rivers and glaciers

   B   wind and rain

   C   lakes and rivers

   D   canyons and plateaus

51. Which factor is *most* helpful in determining where a thunderstorm is coming from and where it may go?

   A   humidity

   B   wind speed

   C   wind direction

   D   amount of rainfall

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52. This map shows part of the Atlantic Ocean.

If a tropical storm forms off the west coast of Africa, what effect will the storm ***most likely*** have on weather in the eastern parts of North America?

A   a reduction in the probability of severe winter weather

B   an increase in the probability of severe winter weather

C   a reduction in the probability of a hurricane
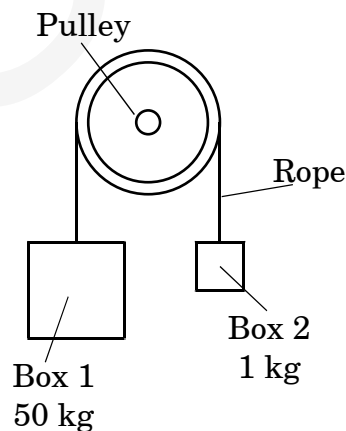
D   an increase in the probability of a hurricane

53. Which cloud type is made up of ice crystals?

A   fog

B   stratus

C   cumulus

D   cirrus

54. Which **best** describes a correct order of the water cycle?

A   precipitation, runoff, condensation, evaporation, precipitation

B   precipitation, runoff, evaporation, condensation, precipitation

C   precipitation, evaporation, condensation, runoff, precipitation

D   precipitation, evaporation, runoff, condensation, precipitation

---

55. What occurs when cool air moves from the beach toward the ocean during the night?

A   a land breeze

B   prevailing winds

C   a sea breeze

D   updrafts

56. This diagram shows two boxes hanging over a pulley. The boxes are fastened to the opposite ends of the same piece of rope. The rope does not stretch or break.

What will happen in this situation?

A   Box 1 will move up, and Box 2 will move down.

B   Box 1 will move down, and Box 2 will move up.

C   Both boxes will not move.

D   Both boxes will move down.

57. A car is traveling at a speed of 45 km/h to a town 90 km away. If $time\ =\ distance\ \div\ speed$, how long will the car take to get to the town?

A   0.5 hour

B   1 hour

C   1.5 hours

D   2 hours

58. When workers spread sand over icy bridges and roads in the winter, how does this help people drive on the roads?

A   The sand increases friction between the road and the tires of a car.

B   The sand increases the inertia of a car.

C   The sand increases the speed of a car.

D   The sand increases the momentum of a car.

59. An object moving along a surface suddenly increases speed. What can cause this to happen?

A   It is moved by balanced forces.

B   It is moved by two opposite forces.

C   It is moved by an unbalanced force.

D   It is moved by a force without direction.

60. Students designed a tool to dig and cut into the soil. Which type of simple machine did they create?

A   wheel and axle

B   inclined plane

C   pulley

D   wedge

STOP

End of Science Test

North Carolina Test of Science
Grade 5 Form E RELEASED Fall 2009
Answer Key

Item Number	Correct Answer	Goal
1	C	1 — Interdependence of Plants and Animals
2	B	1 — Interdependence of Plants and Animals
3	A	1 — Interdependence of Plants and Animals
4	C	1 — Interdependence of Plants and Animals
5	A	1 — Interdependence of Plants and Animals
6	C	1 — Interdependence of Plants and Animals
7	D	2 — Landforms
8	D	2 — Landforms
9	B	2 — Landforms
10	A	2 — Landforms
11	C	3 — Weather and Climates
12	B	3 — Weather and Climates
13	A	3 — Weather and Climates
14	D	3 — Weather and Climates
15	C	4 — Forces and Motion
16	A	4 — Forces and Motion
17	B	4 — Forces and Motion
18	D	4 — Forces and Motion
19	B	4 — Forces and Motion
20	D	4 — Forces and Motion
21	B	1 — Interdependence of Plants and Animals
22	D	1 — Interdependence of Plants and Animals
23	B	1 — Interdependence of Plants and Animals
24	C	1 — Interdependence of Plants and Animals
25	A	1 — Interdependence of Plants and Animals
26	B	1 — Interdependence of Plants and Animals
27	A	2 — Landforms
28	D	2 — Landforms
29	B	2 — Landforms
30	A	2 — Landforms
31	C	3 — Weather and Climates
32	D	3 — Weather and Climates
33	C	3 — Weather and Climates
34	A	3 — Weather and Climates
35	D	4 — Forces and Motion
36	A	4 — Forces and Motion
37	C	4 — Forces and Motion
38	D	4 — Forces and Motion
39	C	4 — Forces and Motion
40	B	4 — Forces and Motion
41	A	1 — Interdependence of Plants and Animals
42	A	1 — Interdependence of Plants and Animals

43	B	1 — Interdependence of Plants and Animals
44	C	1 — Interdependence of Plants and Animals
45	D	1 — Interdependence of Plants and Animals
46	B	2 — Landforms
47	D	2 — Landforms
48	C	2 — Landforms
49	C	2 — Landforms
50	A	2 — Landforms
51	C	3 — Weather and Climates
52	D	3 — Weather and Climates
53	D	3 — Weather and Climates
54	B	3 — Weather and Climates
55	A	3 — Weather and Climates
56	B	4 — Forces and Motion
57	D	4 — Forces and Motion
58	A	4 — Forces and Motion
59	C	4 — Forces and Motion
60	D	4 — Forces and Motion

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Grade 5 Form E RELEASED Fall 2009
Raw to Scale Score Conversion

Raw Score	Scale Score
0	120
1	121
2	121
3	122
4	122
5	123
6	123
7	124
8	125
9	126
10	126
11	127
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60	179