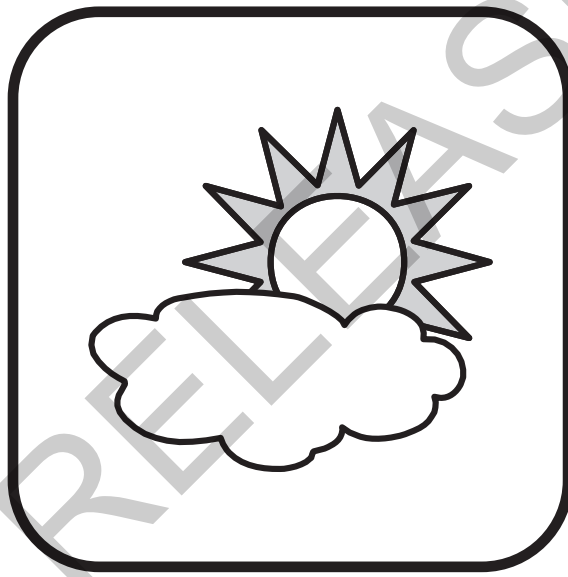


# Released Items

Student Name: \_\_\_\_\_

## Grade 6 Science



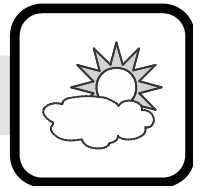
## 2018–2019



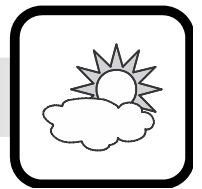
**Public Schools of North Carolina**  
Department of Public Instruction | State Board of Education  
Division of Accountability Services/North Carolina Testing Program

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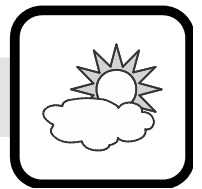
# NC Final Exam



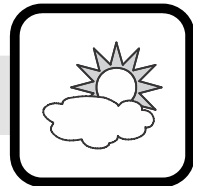
- 1 How does sonar detect an object in water?
- A by sending sound waves that reflect off the object
  - B by sending sound waves that are absorbed by the object
  - C by sending sound waves to detect the composition of the object
  - D by sending sound waves that measure the object's temperature
- 2 Which causes an object to appear green?
- A While reflecting all the other colors in the visible spectrum, it absorbs green.
  - B While reflecting all the other colors in the visible spectrum, it scatters green.
  - C While absorbing all the other colors in the visible spectrum, it reflects green.
  - D While scattering all the other colors in the visible spectrum, it reflects green.
- 3 How do foam earplugs affect the sound a person hears?
- A The foam reduces the rate of sound vibration.
  - B The foam increases the rate of sound vibration.
  - C The foam reduces the amount of energy in the sound vibrations.
  - D The foam increases the amount of energy in the sound vibrations.



- 4 Some earthquakes cause the ground to shake more than others. What factor in an earthquake's waves causes a greater shaking of the ground?
- A less energy
  - B lower frequency
  - C larger amplitude
  - D slower speed
- 5 Which statement **best** describes white light after it passes through a prism?
- A The white light is a combination of all wavelengths of the visible spectrum.
  - B The white light is a combination of the wavelengths of red and blue.
  - C The white light has no electromagnetic energy.
  - D The white light contains ultraviolet energy.
- 6 Why are humans unable to hear ultrasound waves?
- A Ultrasound waves do not cause matter to vibrate.
  - B Ultrasound waves do not have energy when traveling.
  - C Ultrasound waves have a higher frequency than humans can hear.
  - D Ultrasound waves have a larger amplitude than humans can hear.

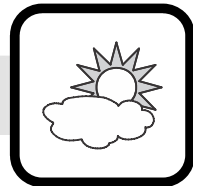


- 7 Sam found two pieces of pure silver on two different continents and melted them. Why did the two pieces of pure silver have the same melting point?
- A Silver is a metal with high conductivity.
  - B The melting point of all metals is the same.
  - C Silver is composed of the same types of atoms.
  - D The melting point of all natural minerals is the same.
- 8 What happens to steam during condensation?
- A It loses energy and changes to a liquid.
  - B It loses energy and changes to a gas.
  - C It gains energy and changes to a liquid.
  - D It gains energy and changes to a gas.
- 9 What is the **best** way to determine if a sample is pure gold?
- A compare the color of the sample with a sample of pure gold
  - B compare the luster of the sample with a sample of pure gold
  - C compare the volume of the sample with a sample of pure gold
  - D compare the melting point of the sample with a sample of pure gold

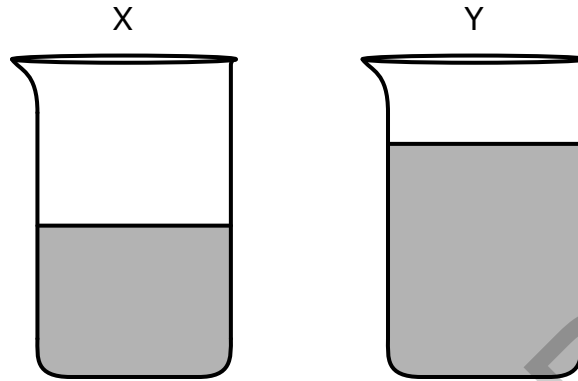


- 10 Two pieces of copper wire are rolled into a coil to make a bracelet. Which statement describes the copper wire?
- A Both copper wires are different because they came from different sources.
  - B Both copper wires are the same because they were able to bend.
  - C Both copper wires are made of the same types of atoms.
  - D Both copper wires are made of different types of atoms.
- 11 What change occurs when a liquid evaporates?
- A The particles absorb heat and get closer together.
  - B The particles absorb heat and spread farther apart.
  - C The particles release heat and get closer together.
  - D The particles release heat and spread farther apart.

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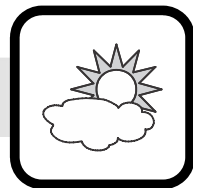


- 12 Two identical beakers containing water, which have not yet been placed in the sun, are shown below.

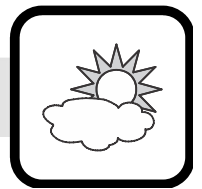


If both beakers are placed outside, in the sun, for the same amount of time, what effect will the sun have on the water in each beaker?

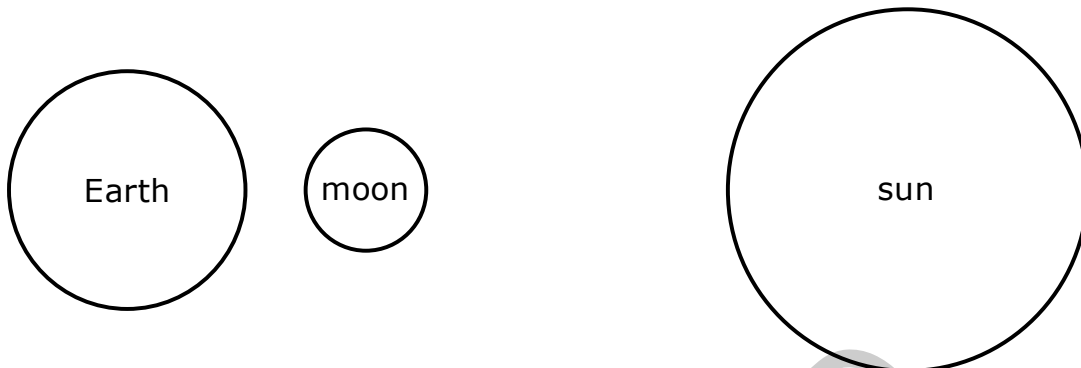
- A The water in beaker Y will heat faster because the volume of the water is greater.
- B The water in beaker Y will heat faster because the density of the water is greater.
- C The water in beaker X will heat faster because the density of the water is lower.
- D The water in beaker X will heat faster because the volume of the water is lower.
- 13 What will initially happen when a metal rod with a temperature of  $60^{\circ}\text{C}$  is placed into a  $5^{\circ}\text{C}$  cold water bath?
- A Heat will travel out of the metal rod and into the water.
- B Heat will travel out of the water and into the metal rod.
- C The temperatures of the metal rod and the water will both increase.
- D The temperatures of the metal rod and the water will both decrease.



- 14 How does a 5-g sample of pure gold compare to a 50-g sample of pure gold?
- A They have the same melting point but different masses.
  - B They have the same volume but different melting points.
  - C They have the same volume but different boiling points.
  - D They have the same mass but different boiling points.
- 15 Lin notices that the temperature of the room increases when the afternoon sun shines through the window. She experiments by covering the window using four different materials to find out which works best to reduce the temperature of the room. Which material works best?
- A black paper, because it reflects light
  - B white paper, because it absorbs light
  - C aluminum foil, because it reflects light
  - D newspaper, because it absorbs light
- 16 People who work on electrical power lines wear thick rubber gloves. Why are their gloves made of rubber?
- A Rubber conducts heat.
  - B Rubber conducts electricity.
  - C Rubber does not conduct heat.
  - D Rubber does not conduct electricity.



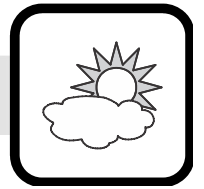
17 An arrangement is shown below.



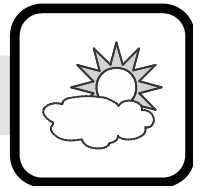
What effect does this arrangement have on the tidal range?

- A The tide is larger than normal because the gravitational forces of the sun and moon pull in the same direction.
  - B The tide is larger than normal because the gravitational forces of the sun and moon pull in opposite directions.
  - C The tide is smaller than normal because the gravitational forces of the sun and moon pull in the same direction.
  - D The tide is smaller than normal because the gravitational forces of the sun and moon pull in opposite directions.
- 18 Why is the distance between Earth and the sun **most** important?
- A The distance prevents solar flares from reaching Earth's atmosphere.
  - B The distance is the source of Earth's magnetic field.
  - C The distance causes the different seasons on Earth.
  - D The distance contributes to Earth's ability to support life.

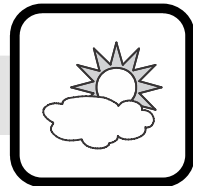




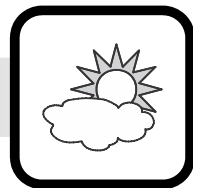
- 19 As planets revolve around distant stars, they block some of the light from reaching the Kepler space telescope. The telescope measures changes in the brightness of stars as planets move in front of them. How has the Kepler telescope improved our understanding of the universe?
- A It has aided in the discovery of planets outside the solar system.
  - B It has aided in the discovery of planets inside the solar system.
  - C It has aided in the discovery of life outside the solar system.
  - D It has aided in the discovery of life inside the solar system.
- 20 What causes the summer to be the warmest season?
- A The Earth's tilt causes the shortest days with the most intense sunlight.
  - B The Earth's tilt causes the longest days with the most intense sunlight.
  - C The Earth's tilt causes the longest days with the least intense sunlight.
  - D The Earth's tilt causes the shortest days with the least intense sunlight.
- 21 Which **best** describes Earth's crust?
- A It is the thickest layer of Earth.
  - B It is composed of several continental plates.
  - C It contains layers of stationary rock.
  - D It is more dense than the other layers of Earth.



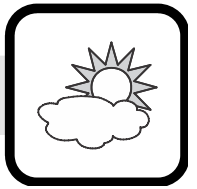
- 22 Which **most likely** causes seafloor spreading?
- A earthquakes
  - B divergent boundaries
  - C convergent boundaries
  - D transform fault boundaries
- 23 Which statement **best** explains the role of environmental conditions in the formation of soil?
- A Areas near fresh or salt water produce wet, sandy soil.
  - B Areas with high temperatures produce soil at a faster rate.
  - C The rocks and climate of an area determine the type of soil.
  - D The number of organisms living in the soil determine its type.
- 24 Which **best** describes the density of Earth's layers?
- A The crust is the most dense because it is the top layer.
  - B The mantle is the most dense because it is the thickest layer.
  - C The outer core is the most dense because it is the only liquid layer.
  - D The inner core is the most dense because it is under the most pressure.



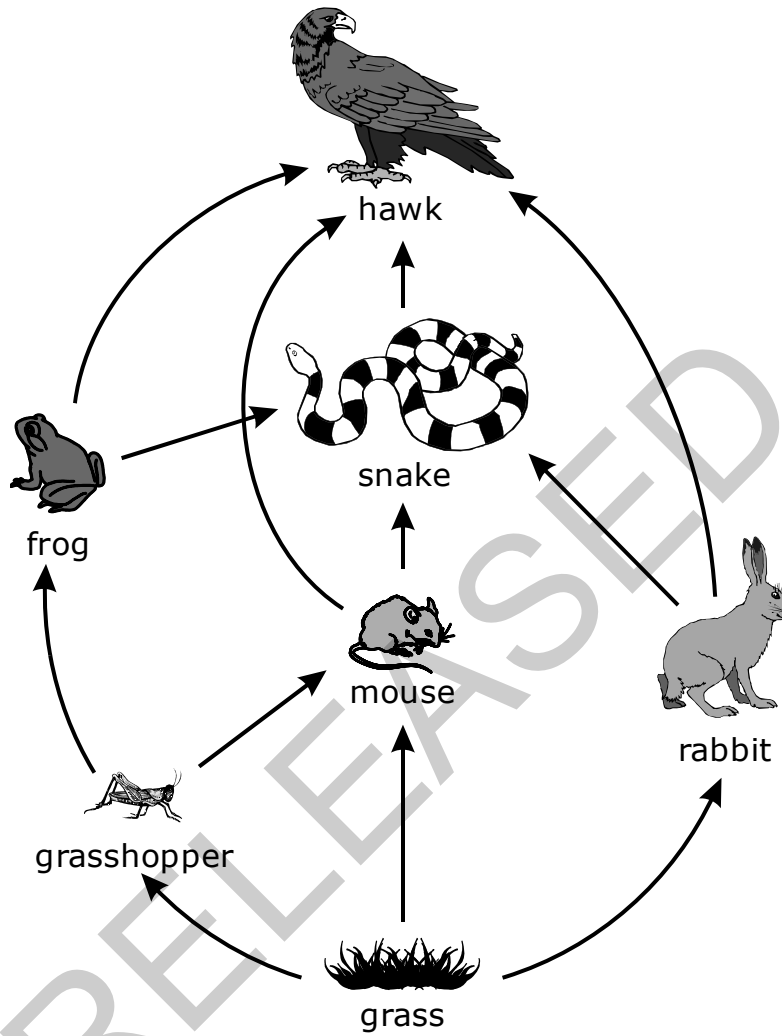
- 25 What process is responsible for the Atlantic Ocean becoming wider by a few centimeters each year?
- A one plate moving under the other plate
  - B two plates meeting at a transform boundary
  - C seafloor spreading along the Mid-Atlantic Ridge
  - D the edges of the continents are subsiding
- 26 Which type of environment would contain nutrient-rich soil?
- A an environment with a low population of producers
  - B an environment with a wet climate and many plants
  - C an environment with a high population of consumers
  - D an environment with a dry climate and few plants
- 27 Which choice describes Earth's crust?
- A a thick layer of rock floating on liquid metal
  - B a group of continents floating on a large ocean
  - C a warm layer of rock floating on a cold layer of rock
  - D a thin layer of rock floating on a solid but fluid-like layer



- 28 What would occur if the anthers were removed from a flower?
- A The flower would be unable to collect seeds.
  - B The flower would be unable to collect water.
  - C The flower would be unable to produce fruit.
  - D The flower would be unable to produce pollen.
- 29 Why is photosynthesis important to the survival of green plants?
- A because it helps absorb energy from the soil
  - B because it helps provide water that is necessary for life
  - C because it provides oxygen for other living things on Earth
  - D because it provides the energy and food necessary for growth
- 30 How do some plants defend themselves against predators?
- A Smaller plants bend and grow toward taller plants and trees.
  - B Plants can have thorns on their stems or poison on their leaves.
  - C Plants transpire and produce excess water to keep predators away.
  - D Plants grow roots deeper into the ground, making them harder to remove.

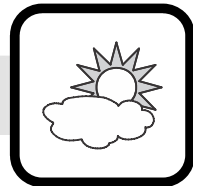


31 This diagram represents the food web of an ecosystem.

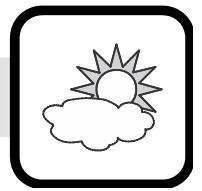


Based on the food web, which animal gets most of its energy from grass?

- A hawk
- B frog
- C snake
- D rabbit

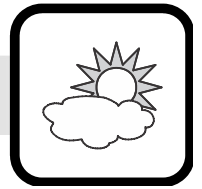


- 32 A plant is placed in front of a window inside a classroom. Over time, its stem and leaves bend toward the light. Why does this occur?
- A because the sun is a negative stimulus
  - B because the sun is a positive stimulus
  - C because gravity is a negative stimulus
  - D because gravity is a positive stimulus
- 33 The highest concentration of ocean life is found in the top 200 meters of the ocean. What is the **most** important factor in the ability of plants to grow in the ocean?
- A the amount of nutrients in the water
  - B the amount of sunlight received
  - C the small number of predators
  - D the types of gases at the surface
- 34 How do decomposers contribute as part of a food web?
- A They provide most of the energy needed by producers.
  - B They produce the oxygen needed for all organisms in the food web.
  - C They use energy from the sun to make sugars and other substances.
  - D They break down organic matter and produce different forms of energy.



- 35 A large tree in the forest blocks the sunlight for a smaller plant. How could this affect the smaller plant?
- A It could increase the amount of oxygen released by the smaller plant.
  - B It could decrease the amount of food produced by the smaller plant.
  - C It could force the smaller plant to retrieve food molecules from the soil.
  - D It could force the smaller plant to rely on water for nutrition until conditions improve.

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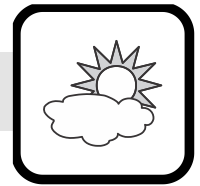
**This is the end of the Grade 6 Science Released Items.**

**Directions:**

- 1. Look back over your answers for the test questions.**
- 2. Make sure all your answers are entered on the answer sheet. Only what is entered on your answer sheet will be scored.**
- 3. 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.**
- 5. Remember, teachers are not allowed to discuss items from the test with you, and you are not allowed to discuss with others any of the test questions or information contained within the test.**

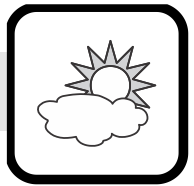
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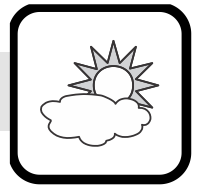


**Grade 6 Science  
RELEASED Items<sup>1</sup>  
2018–2019  
Answer Key**

<b>Question Number</b>	<b>Question Type</b>	<b>Correct Answer</b>	<b>Percent Correct<sup>2</sup></b>	<b>Objective</b>
1	MC	A	64%	6.P.1.1
2	MC	C	61%	6.P.1.2
3	MC	C	41%	6.P.1.3
4	MC	C	77%	6.P.1.1
5	MC	A	66%	6.P.1.2
6	MC	C	61%	6.P.1.3
7	MC	C	64%	6.P.2.1
8	MC	A	45%	6.P.2.2
9	MC	D	48%	6.P.2.3
10	MC	C	72%	6.P.2.1
11	MC	B	74%	6.P.2.2
12	MC	D	53%	6.P.2.3
13	MC	A	72%	6.P.3.1
14	MC	A	74%	6.P.2.3
15	MC	C	53%	6.P.3.2
16	MC	D	69%	6.P.3.3



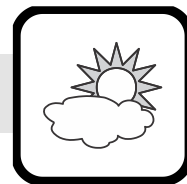
Question Number	Question Type	Correct Answer	Percent Correct <sup>2</sup>	Objective
17	MC	A	54%	6.E.1.1
18	MC	D	61%	6.E.1.2
19	MC	A	40%	6.E.1.3
20	MC	B	77%	6.E.1.1
21	MC	B	48%	6.E.2.1
22	MC	B	49	6.E.2.2
23	MC	C	43	6.E.2.3
24	MC	D	47	6.E.2.1
25	MC	C	58	6.E.2.2
26	MC	B	76	6.E.2.3
27	MC	D	63	6.E.2.1
28	MC	D	65	6.L.1.1
29	MC	D	65	6.L.1.2
30	MC	B	85	6.L.1.1
31	MC	D	74	6.L.2.1
32	MC	B	81	6.L.2.2
33	MC	B	65	6.L.2.3
34	MC	D	75%	6.L.2.1
35	MC	B	66%	6.L.2.3



<sup>1</sup>These 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/>.

<sup>2</sup>Percent correct is the percentage of students who answered the item correctly during a previous administration.

RELEASED



## 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/science/scos/support-tools/#standards>.

### 6.P.1.1 (Forces and Motion)

Compare the properties of waves to the wavelike property of energy in earthquakes, light and sound.

### 6.P.1.2 (Forces and Motion)

Explain the relationship among visible light, the electromagnetic spectrum, and sight.

### 6.P.1.3 (Forces and Motion)

Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and hearing.

### 6.P.2.1 (Properties and Change)

Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.

### 6.P.2.2 (Properties and Change)

Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.

### 6.P.2.3 (Properties and Change)

Compare the physical properties of pure substances that are independent of the amount of matter present including density, melting point, boiling point, and solubility to properties that are dependent on the amount of matter present to include volume, mass and weight.

### 6.P.3.1 (Conservation and Transfer)

Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation and convection and the effects that may result.

### 6.P.3.2 (Conservation and Transfer)

Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.

### 6.P.3.3 (Conservation and Transfer)

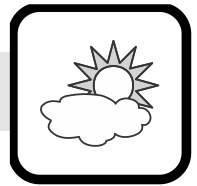
Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).

### 6.E.1.1 (Earth in the Universe)

Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.

### 6.E.1.2 (Earth in the Universe)

Explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere and gravitational force) and location to the Sun.



### **6.E.1.3 (Earth in the Universe)**

Summarize space exploration and the understandings gained from them.

### **6.E.2.1 (Earth Systems, Structures and Processes)**

Summarize the structure of the earth, including the layers, the mantle and core based on the relative position, composition and density.

### **6.E.2.2 (Earth Systems, Structures and Processes)**

Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth.

### **6.E.2.3 (Earth Systems, Structures and Processes)**

Explain how the formation of soil is related to the parent rock type and the environment in which it develops.

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

Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense.

### **6.L.1.2 (Structures and Functions of Living Organisms)**

Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms.

### **6.L.2.1 (Ecosystems)**

Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.

### **6.L.2.2 (Ecosystems)**

Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.

### **6.L.2.3 (Ecosystems)**

Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.