Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Look at the figure below.

What is this an example of?

A. a model
B. a hypothesis
C. an experiment
D. an observation

2. Identifying the independent and dependent variables in an experiment will help you better interpret and convey results. What is the difference between the independent and dependent variables in an experiment?

A. The independent variable is always a number, and the dependent variable is never a number.
B. The independent variable is what you control, and the dependent variable is what changes as a result.
C. The dependent variable is what the investigator controls, and the independent variable is what happens as a result of this.
D. The dependent variable is typically found in the first column of a table, and the independent variable is typically found in the second column.

3. The school physician performed an experiment to investigate the effects of aerobic exercise on high school freshmen. He examined 25 student volunteers and found them to be in good health. He then had the students perform aerobic exercises, such as jogging, swimming, and bicycling. The doctor recorded the students’ pulse rates before each activity, during each activity, and after each activity. Which was the dependent variable in this experiment?
4. The average price of a new car in selected years is shown in the data table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average price of a new car</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>$640</td>
</tr>
<tr>
<td>1940</td>
<td>$850</td>
</tr>
<tr>
<td>1950</td>
<td>$1,510</td>
</tr>
<tr>
<td>1960</td>
<td>$2,600</td>
</tr>
<tr>
<td>1970</td>
<td>$3,900</td>
</tr>
<tr>
<td>1980</td>
<td>$7,210</td>
</tr>
<tr>
<td>1990</td>
<td>$16,000</td>
</tr>
<tr>
<td>1999</td>
<td>$21,100</td>
</tr>
<tr>
<td>2009</td>
<td>$28,000</td>
</tr>
</tbody>
</table>

Which conclusion can be made from this data table?

A. From 1930 to 2009, the average price of a new car steadily increased.
B. From 1930 to 2009, there is no apparent trend in the average price of a new car.
C. From 1930 to 2009, the average price of a new car both increased and decreased.
D. From 1930 to 2009, the average price of a new car decreased at regular intervals.

5. The average price of a new car in selected years is shown in the table below.

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How much did the average price of a new car increase from 1950 to 1990?

A. about $6,000
B. about $7,500
C. about $14,500
D. about $16,500

6. The average mass of a particular breed of dog is shown in the table below.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Average mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>13.2</td>
</tr>
<tr>
<td>1</td>
<td>35.4</td>
</tr>
<tr>
<td>2</td>
<td>37.4</td>
</tr>
<tr>
<td>3</td>
<td>37.5</td>
</tr>
<tr>
<td>4</td>
<td>37.8</td>
</tr>
<tr>
<td>5</td>
<td>?</td>
</tr>
<tr>
<td>6</td>
<td>38.2</td>
</tr>
<tr>
<td>7</td>
<td>38.4</td>
</tr>
<tr>
<td>8</td>
<td>38.4</td>
</tr>
<tr>
<td>9</td>
<td>38.5</td>
</tr>
</tbody>
</table>

Between which two ages is there the greatest change in mass?

A. between ages 0 and 1
B. between ages 1 and 2
C. between ages 2 and 3
D. between ages 3 and 4

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<tr>
<td>9</td>
<td>38.5</td>
</tr>
</tbody>
</table>

What would you expect the dog’s average mass to be at age 5?

A. 25.0 kg
B. 36.1 kg
C. 38.0 kg
D. 39.9 kg

8. Sunrise and sunset data for Cocoa Beach, Florida, are shown in the table below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Sunrise (a.m.)</th>
<th>Sunset (p.m.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 5</td>
<td>7:15</td>
<td>5:40</td>
</tr>
<tr>
<td>March 5</td>
<td>6:43</td>
<td>6:25</td>
</tr>
<tr>
<td>May 5</td>
<td>6:39</td>
<td>?</td>
</tr>
<tr>
<td>July 5</td>
<td>6:31</td>
<td>8:23</td>
</tr>
</tbody>
</table>

Which time would you expect to appear where the question mark is in the table?
A. 5:15 p.m.
B. 6:00 p.m.
C. 8:00 p.m.
D. 9:00 p.m.

9. Sunrise and sunset data for Cocoa Beach, Florida, are shown in the table below.

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<td>?</td>
</tr>
<tr>
<td>July 5, 2008</td>
<td>6:31</td>
<td>8:23</td>
</tr>
</tbody>
</table>

Which conclusion can you accurately reach from this information?
A. From January to July, it gets colder in Cocoa Beach each day.
B. From January to July, there are more hours of daylight each day.
C. From January to July, the sun rises later in the morning each day.
D. From January to July, the sun sets earlier in the evening each day.

10. Ms. McAdam, a high school principal, examines the number of male and female athletes on her school’s teams over the last four years. The bar graph below shows the number of male and female high school athletes over a four-year period of time.
What was the increase in the number of female athletes from 2006 to 2007?

A. 22  
B. 26  
C. 31  
D. 45

11. Ms. McAdam, a high school principal, examines the number of male and female athletes on her school’s teams over the last four years. The bar graph below shows the number of male and female high school athletes over a four-year period of time.

Which year had the greatest number of male athletes?

A. 2005  
B. 2006
12. Ms. McAdam, a high school principal, examines the number of male and female athletes on her school’s teams over the last four years. The bar graph below shows the number of male and female high school athletes over a four-year period of time.

Which year had the greatest number of female athletes?

A. 2005  
B. 2006  
C. 2007  
D. 2008

13. Ms. McAdam, a high school principal, examines the number of male and female athletes on her school’s teams over the last four years. The bar graph below shows the number of male and female high school athletes over a four-year period of time.
Which year had an equal number of male and female athletes?
A. 2005
B. 2006
C. 2007
D. 2008

14. The mayor of Fairview obtains data on his town’s population. The pictograph below shows the town’s population over a four-year period.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>😊😊😊😊</td>
</tr>
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<td>2006</td>
<td>😊😊😊😊😊😊😊😊</td>
</tr>
<tr>
<td>2007</td>
<td>😊😊😊😊</td>
</tr>
<tr>
<td>2008</td>
<td>😊😊😊😊😊😊</td>
</tr>
</tbody>
</table>

😊 = 1,000 people

How large was the population in 2006?
A. 4,000
B. 5,500
C. 6,000
D. 6,500
15. The mayor of Fairview obtains data on his town’s population. The pictograph below shows the town’s population over a four-year period.

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<td>2008</td>
<td>😊😊😊😊 😊</td>
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</tbody>
</table>

😊 = 1,000 people

What was the change in the town’s population between 2007 and 2008?

A. It had 500 fewer people.
B. It had 1,000 fewer people.
C. It had 1,500 fewer people.
D. It had 2,000 fewer people.

16. The line graph below shows the average annual salary at a company over a nine-year period.

How much greater was the average salary in 2007 than in 2008?

A. $2,600
17. The line graph below shows the average annual salary at a company over a nine-year period.

From 2000 to 2008, how many times did the average annual salary decrease?

A. once
B. twice
C. three times
D. four times

18. Wilson measured the air temperature at a particular location every three hours for one day. He organized his findings using a bar graph.

---

B. $3,000  
C. $3,800  
D. $4,400

______
At what time was the temperature the **hottest**?

A. 12:00 p.m. (noon)  
B. 3:00 p.m.  
C. 6:00 p.m.  
D. 9:00 p.m.

19. Wilson measured the air temperature at a particular location every three hours for one day. He organized his findings using a bar graph.

What is the difference between the coldest and the warmest temperatures on this day?

A. 7 °C  
B. 11 °C  
C. 13 °C  
D. 17 °C

20. The graph below shows the number of college students studying each of seven majors.
How many more biology majors are there than chemistry majors?

A. 20  
B. 30  
C. 91  
D. 121

21. The graph below shows the number of college students studying each of seven majors.

How many students are studying either English or history?

A. 31  
B. 290  
C. 374  
D. 435
22. The pie chart below shows how a city’s budget is allocated.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public works</td>
<td>25%</td>
</tr>
<tr>
<td>Community development</td>
<td>20%</td>
</tr>
<tr>
<td>Police</td>
<td>25%</td>
</tr>
<tr>
<td>Government operations</td>
<td>10%</td>
</tr>
<tr>
<td>Fire department</td>
<td>20%</td>
</tr>
</tbody>
</table>

What percentage of the city’s budget is spent on the fire department?

A. 10%
B. 15%
C. 20%
D. 25%

23. The circle graph below shows how a city’s budget is allocated.
If the city spends $200,000 on government operations, how much does it spend on community development?

A. $100,000  
B. $200,000  
C. $300,000  
D. $400,000

24. The pie graph below shows the distribution of grades on a test taken in Dr. Kurilla’s class.

If 20 students took the test, how many students earned a grade of C?

A. 2 students  
B. 4 students  
C. 6 students  
D. 8 students

25. The pie graph below shows the distribution of grades on a test taken in Dr. Kurilla’s class.
If 20 students took the test, how many students earned a grade of B or better?

A. 9 students  
B. 12 students  
C. 15 students  
D. 18 students

26. The students in Mrs. Dhaibar’s science class take a test. The results of the test are shown in the table below.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage of students who earned this grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>25%</td>
</tr>
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<td>25%</td>
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<tr>
<td>C</td>
<td>35%</td>
</tr>
<tr>
<td>D</td>
<td>10%</td>
</tr>
<tr>
<td>F</td>
<td>5%</td>
</tr>
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Mrs. Dhaibar creates a pie chart to display this data.
27. The students in Mrs. Dhaibar's science class took a test. The results of the test are shown in the table below.

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<td>D</td>
<td>10%</td>
</tr>
<tr>
<td>F</td>
<td>5%</td>
</tr>
</tbody>
</table>

Which percentage of students earned a grade below C?

A. 5%
B. 10%
C. 15%
D. 50%

28. A graph can help scientists display and convey data. What part of a line graph shows trends?

A. title
B. legend
C. x- and y-axis labels
D. line of best fit
29. Paleontology is the study of the history of life. In 1988, a team of paleontologists discovered the earliest dinosaurs that are thought to have roamed Earth. How did this discovery most likely affect the world of paleontology?

A. It led to increased interest in paleontology at schools.
B. It provided evidence for the reason that dinosaurs became extinct.
C. It introduced paleontologists to new methods for hunting dinosaur fossils.
D. It gave the best picture of what the beginning of the dinosaur era was like.

30. In the United States, many children are given vaccines to prevent diseases. A vaccine causes the body to produce antibodies. For example, children who are given the polio vaccine will not contract polio because their bodies will make antibodies to destroy the polio virus. Which disease has been nearly eliminated in the United States because of vaccines?

A. cancer
B. measles
C. influenza
D. common cold

31. Children in the United States are often vaccinated against certain diseases, such as polio. How has the development of vaccines affected the health of people in the United States?

A. Vaccines have prevented millions of people from contracting certain diseases.
B. Vaccines have led to outbreaks of certain diseases in different parts of the country.
C. Vaccines have allowed people to get more effective treatment to quickly cure disease.
D. Vaccines have caused people who contract certain diseases to experience fewer symptoms.

32. Artificial satellites are constantly orbiting Earth. Which type of satellite provides information that is most helpful in preparing for natural disasters, such as hurricanes and tornadoes?

A. navigation
B. storm tracking
C. global positioning
D. television broadcasting

33. In 1895, German physicist Wilhelm Conrad Roentgen discovered x-rays. The drawing below shows an example of a chest x-ray of an adult human.
What was the impact of Roentgen’s discovery on medicine?

A. It helped doctors develop new ways to treat infections of the bone.
B. It led to new ways to treat viral illnesses such as influenza and smallpox.
C. It encouraged more people to visit doctors after they became ill.
D. It enabled doctors to make more accurate diagnoses than they could before.

34. Today, many illnesses can be treated with medicines that did not exist a century ago. For example, antibiotics can be used to treat bacterial infections. Which of these factors was most important in the discovery of antibiotics?

A. human behavior
B. government laws
C. scientific research
D. industrial development

35. Early computers took up an entire room and were accessible only to a few people. Today, most computers are small enough to fit on a desk, and many people around the world use them. Which breakthrough in computer science made it possible for people to connect with each other around the world?

A. file sharing
B. the Internet
C. laptop computers
D. wireless technology

36. Scientific research has led to many life-changing discoveries, such as the Internet. Which of these statements describes the greatest impact of the Internet on society?

A. People can track and store their personal financial records.
B. People can connect to databases of information around the world.
C. People can create and store documents without using a typewriter.
D. People are able to store information more easily for their homes and businesses.

37. The image below shows one way people are using new technologies to conserve nonrenewable resources.

Which nonrenewable resource does this new technology enable us to conserve?
A. rain water
B. fossil fuels
C. wind power
D. solar energy

38. Genetic engineering is the scientific process of changing the genome of an organism for specific purposes. Which genetically engineered food crop would have the greatest positive impact on the health of people in developing nations?
A. rice that resists drought
B. tomatoes that will ripen slowly
C. cotton that is resistant to insect pests
D. carrots that can be grown in cool temperatures

39. Scientists have been observing and recording the weather for hundreds of years. Today, satellites help meteorologists track and predict the weather. The figure below shows a weather satellite orbiting Earth.
How do weather satellites help save lives?

A. They issue warnings several hours ahead of a deadly tornado.
B. They show builders where to construct hurricane-proof buildings.
C. They predict the locations where lightning is most likely to strike.
D. They alert weather trackers when a dangerous storm is approaching.

40. George Washington Carver was an African-American scientist who created hundreds of products and uses for peanuts and sweet potatoes. These products included foods, household maintenance items, fuels, and many others. Carver encouraged farmers in the southern United States to grow peanuts or sweet potatoes instead of cotton, which had limited uses. How might Carver’s scientific advances have helped society?

A. It provided an early understanding of genetics.
B. It provided more food and nutrition options.
C. It provided more cotton for textile development.
D. It damaged the farm economy because growing peanuts and sweet potatoes takes more land than growing cotton does.

41. George Washington Carver was an African-American scientist who lived from 1864 to 1943. He studied plants and developed hundreds of new uses for peanuts, including use within foods, cosmetics, and household products. In which area of science and technology did Carver work?

A. medicine  
B. agriculture  
C. transportation  
D. weather prevention

42. Scientific research has led to a greater understanding of our environment and how to protect it. Which scientist made the greatest contribution to environmental protection?

A. Jonas Salk, one of the scientists who developed the polio vaccine
B. Louis Pasteur, who developed vaccines against cholera and anthrax in the late 1800s
C. Rachel Carson, who researched and wrote about the negative effects of pesticide use after World War II
D. Barbara McClintock, whose work on the ability of genes to change places on a chromosome earned her the Nobel Prize

43. Scientific research has led to discoveries that have changed the world. Which area of scientific research can directly affect how the world uses natural resources?
A. gene mapping
B. geothermal heating
C. vaccine manufacturing
D. computer technology

44. Rosalyn Yalow won a Nobel Prize in 1977. She developed a highly sensitive method of measuring hormones in the body. In which area did her work have an impact?
A. energy
B. medicine
C. evolution
D. weather prediction

45. Through photosynthesis, carbon dioxide is converted into carbohydrates and other organic compounds. Melvin Calvin is credited with discovering the pathway that carbon takes in photosynthesis. In which area did Calvin’s discovery have the greatest impact?
A. zoology and the study of animals
B. evolution and the study of new species
C. biochemistry and the study of cell processes
D. anatomy and the study of the digestive system

46. At one time, most people did not believe that microorganisms, sometimes called germs, cause diseases. The germ theory of disease was established around the mid-1800s. What caused this change?
A. world leaders dictating scientific policies
B. government regulations establishing facts
C. scientists sharing information with each other
D. new scientific information challenging existing scientific knowledge

47. The United States government passes many laws every year. Which government agency would most likely be responsible for laws regarding industrial air pollution?
A. Department of Labor
B. Agricultural Research Service
C. Department of Homeland Security
D. Environmental Protection Agency
48. The bald eagle is no longer on the list of threatened and endangered species. But in 1963, only 417 nesting pairs of bald eagles were counted in the United States. The problem stemmed from eggs breaking open before the chick was ready to hatch. Which change is most responsible for the recovery of the bald eagle?

A. banning a chemical that caused weakened eggshells  
B. introducing bald eagles to habitats in different climates  
C. removing eggs from the nests and raising them in captivity  
D. passing a law that prohibits the capture, killing, or sale of bald eagles

49. The Centers for Disease Control and Prevention (CDC) has a recommended schedule of the vaccines that children should receive and at what ages. In many communities, children need to be vaccinated before they can start school. Which health concern most likely led to this requirement?

A. Vaccines are less expensive to manufacture when they are made in large quantities.  
B. Fewer parents will have to stay home from work if their children have been vaccinated.  
C. The government is responsible for covering hospital expenses for unvaccinated children.  
D. An outbreak of disease among school children could spread to families and then through the population.

50. The Cuyahoga River in Ohio has caught fire eleven times. The last time was in 1969, when sparks from a train are believed to have ignited an oil slick on the river. The condition of the Cuyahoga River most likely helped persuade Congress to pass which act?

A. the Wilderness Act  
B. the Clean Water Act  
C. the Flood Control and Coastal Emergency Act  
D. the Marine Protection, Research, and Sanctuaries Act

51. The graph below shows the number of people who visited doctors because of influenza-like illnesses over a two-year period.
What can you conclude from this graph?

A. Influenza-like illnesses follow a steady pattern throughout the year.
B. The number of influenza-like illnesses will decrease for 2009–2010.
C. People who got medical care in both years generally reported feeling better than if they had not gotten treatment.
D. The number of people who developed influenza-like illnesses did not peak at the same time in 2008–2009 as it did in 2007–2008.

52. The H1N1 influenza virus was first reported in patients in the spring of 2009. The graph below shows the number of people who visited doctors because of influenza-like illnesses over a two-year period.

What can you conclude about 2008–2009, when H1N1 was present, compared to 2007–2008, when H1N1 was not present?

C. Fewer people got sick with other illnesses in 2008–2009 than they did in

53. In 2009, there were many cases of influenza in the United States, including a large number caused by the H1N1 influenza virus. What was the most significant economic effect of influenza in 2009?

A. people missing work
B. students staying home from school
C. fewer people attending the movies
D. more people thoroughly washing their hands

54. The American Recovery and Reinvestment Act of 2009 included $16.8 billion for the Office of Energy Efficiency and Renewable Energy. Part of this money is being used to support wind energy projects, solar technology development, and geothermal technologies. Which statement best describes an environmental reason to spend money in these areas?

A. Americans use about 380 million gallons of gasoline every day.
B. Burning fossil fuels produces carbon dioxide, which is a greenhouse gas.
C. Increasing the use of renewable energy technologies helps lower unemployment.
D. Nonrenewable energy resources cost more than wind, solar, or geothermal energy.

55. The United States government prohibits lead in gasoline because of the potential effects on human health, especially children’s health. When leaded gasoline was commonly used, which of these actions was a common cause of harm to children’s health?

A. inhaling exhaust fumes from cars
B. directly contacting gas on the skin
C. drinking water contaminated with gas
D. playing with toys made from leaded gas

56. In the 20th century, it became clear that some animals were declining in number because of human activity. Scientists warned that many animal species were in danger of becoming extinct. Which government act had the greatest impact on protecting animals?

A. the Wilderness Act
B. the Endangered Species Act
C. the Wild and Scenic Rivers Act
D. the Land and Water Conservation Act

57. The amount of carbon dioxide in the air increased significantly in the 1900s, and most scientists believe this substance is contributing to global warming. Politicians must decide which areas to fund in order to reduce carbon dioxide emissions. The pie graph below shows the major sources of carbon dioxide.
Based on the information in the graph, in which area is a politician least likely to support funding for research about global warming?

A. power plants  
B. cars and trucks  
C. major transportation  
D. home heating systems

58. Which environmental factor has led to the increased popularity of hybrid cars and cars that use alternative fuels?

A. the high levels of carbon dioxide in the atmosphere  
B. the low levels of exhaust from traditional automobiles  
C. the low cost of oil imported from foreign countries  
D. the high cost of materials used in the car’s interior

59. Which of these actions involves a health issue of concern to most governments and international agencies?

A. stopping the spread of disease  
B. promoting new trade agreements  
C. expanding the Internet to rural areas  
D. searching for new oil and gas reserves

60. Scientific investigations involve many steps and processes. Which characteristics define a laboratory experiment?

A. hypothesis, models, and calculations  
B. test variables, data, and uncontrolled conditions  
C. data, conclusions, and unregulated environment  
D. independent and dependent variables, data, and controlled conditions
61. Scientists conduct many types of scientific investigations. Their efforts often include fieldwork, surveys, models, and experiments. Which statement about scientific investigations is true?

A. They rarely involve the collection of data under controlled conditions.
B. They follow exactly the same steps because there is only one scientific method.
C. They include multiple trials to increase the consistency of the data that are collected.
D. Their primary focus seldom includes comparing or describing the unregulated world.

62. When planning an experiment, a scientist must first choose a question to investigate. Renata conducts the experiment shown below. In the experiment, she changes the release height of the steel ball and measures the distance the ball travels from the ramp before falling to the ground.

Based on this procedure, which question is Renata investigating?

A. How much force does the ball exert when it strikes the floor?
B. How is the speed of the ball affected by the release height from a ramp?
C. How does the release height of a ball on a ramp affect the distance it travels from the ramp before falling to the floor?
D. How does the release height of a ball on a ramp affect the amount of time that passes before the ball hits the floor?

63. Roberta experiments by rolling a steel ball down a ramp. She conducts multiple trials by releasing the ball from varying heights on the ramp. For each trial, Roberta measures and records the release height of the ball and the distance the ball travels from the ramp before falling to the ground. Roberta’s experiment is shown below.
Which piece of equipment does Roberta need to collect her data?

A. balance  
B. meterstick  
C. stopwatch  
D. scale

64. Observation is the process of gathering information through the senses, including sight, sound, taste, smell, and touch. Which observation is an example of sensory data?

A. The mass of a pebble is 25.0 g.  
B. The volume of a pebble is 5.0 cm$^3$.  
C. A white pebble is speckled with gray spots.  
D. A pebble does not conduct an electric current.

65. Clara tests a hypothesis that the heavier of two materials will insulate cold drinks better than the lighter-weight material. She adds equal volumes of the same cold beverage to two cups. One cup is made of lightweight plastic foam, and the other cup is made of a heavier, ceramic material. She records her results in a chart.

<table>
<thead>
<tr>
<th>Material</th>
<th>Time for beverage to warm to room temperature (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>plastic foam</td>
<td>3.25</td>
</tr>
<tr>
<td>ceramic</td>
<td>2.50</td>
</tr>
</tbody>
</table>

How are these experimental results valuable to Clara?

A. The results explain why the materials perform differently.
B. Clara has to accept that her hypothesis was not supported.
C. Clara can use a different heavier material to see if she obtains different results.
D. The results can be communicated with others through newspapers, magazines, and the Internet to increase the validity of her results.

66. Cathy designs an experiment to investigate how well cups made of different materials maintain the temperature of a cold drink. Which step will increase the accuracy and validity of Cathy’s results?

A. Use a different beverage in each cup.
B. Conduct the experiment in a cool room.
C. Conduct multiple trials and have another scientist repeat the experiment.
D. Analyze the experimental results and organize experimental data in a table.

67. A biomedical company uses a certain type of bacteria to manufacture a new medicine. A researcher for the company studies how temperature affects the rate at which the bacteria reproduce. He records his results in a graph.

![Graph showing bacterial population vs. temperature range]

Currently, the company grows the bacteria in a lab maintained at 18 °C. If the company wants to grow the bacteria as quickly as possible, which recommendation should the researcher make?

A. The current lab temperature is ideal for growing the bacteria.
B. The lab temperature should be increased to between 20 °C and 30 °C.
C. The lab temperature should be increased to between 30 °C and 40 °C.
D. The lab temperature should be increased to between 40 °C and 50 °C.

68. Cindy predicts that plastic foam insulates cold drinks better than metal or ceramic materials do. To test the hypothesis, she fills cups made from these materials with equal amounts of cold water. She records the temperature of the water in each cup, using scientific thermometers, every 10 minutes until the water reaches room temperature. Which of these conditions must be the same for this experiment to be valid?
A. the thermometer that is in each cup  
B. the starting temperature of the water in each cup  
C. the ending temperature of the water in each cup  
D. the material that makes up each cup

69. Ella paints three identical pieces of metal different colors. She then makes sure they are the same temperature and places them near each other in direct sunlight for 30 minutes. She records temperature data in a table.  

<table>
<thead>
<tr>
<th>Color of metal</th>
<th>Temperature of metal (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>40</td>
</tr>
<tr>
<td>green</td>
<td>66</td>
</tr>
<tr>
<td>black</td>
<td>70</td>
</tr>
</tbody>
</table>

Based on the procedure and the data, which explanation tells why the temperatures are not the same?

A. Each color absorbs a different amount of heat energy.  
B. A different amount of sunlight strikes each piece of metal.  
C. The mass of each sample varies, which affects heat absorption.  
D. The temperatures of the metal pieces vary at the beginning of the experiment.

70. Repetition is an important element of a good scientific investigation. Which data table has places to record information for repeated trials?

A.  

<table>
<thead>
<tr>
<th>Distance traveled (m)</th>
<th>Time (s)</th>
<th>Average speed (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B.  

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Shakira hypothesizes that hot objects cool at constant rates. She experiments by heating a metal object with a Bunsen burner and then allowing it to cool to room temperature. She records her results in a graph.

Which choice describes the results of the experiment and tells what Shakira should do next?

A. The result of the experiment is not conclusive. Shakira should repeat the experiment.
B. The downward curve supports the hypothesis. Shakira should present her results to the class.
C. The graph supports the hypothesis. Shakira should conduct several more trials to increase the accuracy of her data.
D. The graph does not support the original hypothesis. Shakira should revise the hypothesis and design a new experiment.

Four different lab groups perform an experiment to determine the density of the same small rock. The groups record their results in a table.
<table>
<thead>
<tr>
<th>Group</th>
<th>Mass of rock (g)</th>
<th>Volume of rock (cm³)</th>
<th>Density of rock (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12.8</td>
<td>4.0</td>
<td>3.2</td>
</tr>
<tr>
<td>2</td>
<td>12.4</td>
<td>4.0</td>
<td>3.1</td>
</tr>
<tr>
<td>3</td>
<td>10.0</td>
<td>4.0</td>
<td>2.5</td>
</tr>
<tr>
<td>4</td>
<td>12.7</td>
<td>4.0</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Which statement is the best interpretation of the data?

A. The density of the rock is between 2.5 g/cm³ and 3.2 g/cm³.
B. Lab groups 1, 2, and 4 incorrectly measured the mass. The density of the rock is 2.5 g/cm³.
C. Lab group 3 incorrectly measured the mass. The density of the rock is approximately 3.2 g/cm³.
D. Because the calculated density values range from 2.5 g/cm³ to 3.2 g/cm³, it is likely that the density of the rock varied during the experiments.

73. Ana is in charge of studying how air quality affects the respiratory health of the citizens in her state. Which testable statement does she investigate?

A. The quality of the air varies throughout the state.
B. Air quality in her state is worse than it is in other states.
C. Air quality has a relationship to respiratory problems.
D. Air quality is worsening due to increasing population and industrialization.

74. Joshua investigates the effect of varying amounts of sunlight on the rate of plant growth. He experiments by exposing seedlings to different amounts of sunlight each day. He stops the experiment when each seedling reaches 20 cm in height. Which variable does Joshua control in the experiment?

A. rate of plant growth
B. amount of water per plant per day
C. amount of sunlight per plant per day
D. time needed to reach a height of 20 cm

75. Which term describes the information that a scientist gathers during an investigation?

A. data
B. hypothesis
C. observation
D. variable

76. In chemistry, scientists classify some elements as metals. Copper is an example of a metal. Copper is often used in electrical wiring. Which property of copper can a scientist identify through observation alone?
A. Its density is 8.96 g/cm³.
B. It is a good conductor of heat.
C. It has a low electrical resistance.
D. It has a metallic, golden-brown color.

77. Why might a scientist choose to do fieldwork instead of a laboratory experiment?

A. She needs a large amount of control.
B. He needs to change one or more variables at a time.
C. She needs to observe organisms under natural conditions.
D. He needs to make exact measurements using large equipment.

78. During several trials, a group of scientists tests the reaction of a new medicine on a strain of bacteria. Which step is essential for proving the validity of the results?

A. Make the process public so the results can be replicated.
B. Change the procedure to check whether the same results take place.
C. Have another scientist check to make sure the medicine was properly produced.
D. Have each group member use a different medicine and see what happens when they test it on the bacteria.

79. Raha is goalie for her soccer team. Her coach has been working with her on how to deflect a shot to the goal so it will go farther down the field and away from her goal. The coach has studied a lot of data and has drawn a diagram showing the angle at which most shots approach the goalie. The coach is experimenting with Raha on the correct angle to deflect a shot so it goes away from the person who kicked the ball.

In the experiment on deflecting the shot, what is the element that Raha can control?

A. the mass of the ball being shot
80. Adam’s hypothesis states that an object’s speed constantly changes. Which data requires Adam to form a new hypothesis?

A. 

B. 

C. 

D. 

B. the speed of the shot moving toward her
C. the direction of the ball coming toward her
D. the direction of the force applied to blocking the shot
81. Dr. Misra is conducting an experiment in which she is testing a substance she believes will turn green when put into different acid solutions. She finds that sometimes the substance turns green, but at other times it turns red. What would be a logical hypothesis for her to develop for a new experiment with the substance?

A. The substance will turn red whenever it is put into an acid solution.
B. The substance will never turn green when it is put into an acid solution.
C. The substance will not change colors when it is put into an acid solution.
D. The substance will turn green when it is put into an acid solution with a pH between 3 and 4.

82. New experimental data does not support a currently accepted hypothesis. Which course of action should the researcher take?

A. Do the experiment until the results support the hypothesis.
B. Change the data to fit the hypothesis.
C. Form a new hypothesis and plan a new experiment.
D. Change the procedure to obtain the desired outcome.

83. Scientists gather data through the use of appropriate equipment. Which piece of equipment does a scientist use to measure force?

A.
84. According to the current theory regarding the extinction of the dinosaurs, the extinction was triggered by the effects of a large meteor that struck Mexico 65 million years ago. What is the *best* evidence of this theory?

A. fossil remains of dinosaurs found in Mexico
B. magnetic mapping of rocks that reveals a buried crater in Mexico
C. a permanent change in world sea levels about 65 million years ago
D. rock studies that show the age of the rocks where the meteor struck

85. One of the following scientists contributed to the modification of atomic theory by showing that electrons orbit an atom’s nucleus and that electron orbits have a particular amount of energy. Which scientist and his work led to the modification of atomic theory?
A. Joseph Thomson discovered electrons, which he believed did not move.
B. John Dalton proposed a model of the atom showing it as a solid sphere.
C. James Chadwick found that, in addition to protons and electrons, atoms also contain neutrons.
D. Niels Bohr’s research showed that electrons follow specific paths around the nucleus of an atom.

86. Karsten is researching a recent, controversial scientific issue. Which of these sources is a reliable source for Karsten to use for unbiased scientific information?

A. an encyclopedia article in a respected, older encyclopedia
B. a scientific journal with peer-reviewed articles
C. a personal website or blog
D. an informative pamphlet mailed to your home by a politician or lobby group

87. Part of cell theory says that all living things are made up of one or more cells. Scientists had to find ways to test this theory. Which investigation could scientists use to test this part of cell theory?

A. heat plant or animal tissue on a hot plate
B. test plant or animal tissue with a pH meter
C. examine plant or animal tissue with a microscope
D. measure the mass of plant or animal tissue with a scale

88. Early scientists wondered how two parents with brown eyes could have a child with blue eyes. Which of these studies would best help scientists investigate how blue eye color is inherited from brown-eyed parents?

A. study the history of the family eye color of 100 random people
B. study the history of the family eye color of 50 blue-eyed people
C. study the history of a family in which all individuals within the past five generations were born with blue eyes
D. study the history of four generations of 20 different families in which brown-eyed parents had at least one blue-eyed child

89. Geologist Alfred Wegener believed that all the land on Earth once formed a giant continent called Pangaea. Wegener theorized that Pangaea broke apart into smaller continents that moved away from each other. This theory is called continental drift. The map below shows the continents as they exist today.
Which of these facts best supports the theory that today’s continents were once part of a larger landmass that broke up and drifted apart?

A. The Asian and Australian continents are close together.
B. Most of the continents are north of the equator.
C. The continent of Asia is nearly twice the size of the continent of North America.
D. The Atlantic coastlines of South America and Africa fit together like jigsaw pieces.

90. Gregor Mendel performed many experiments with pea plants before developing his theory of inheritance. What evidence did Mendel use to support his theory?

A. a plan for his experiments  
B. data from his experiments  
C. a hypothesis that he investigated  
D. hypotheses proposed by other scientists

91. A geneticist is a type of biologist who studies heredity. Which of these tools might geneticists use to interpret genetic data?

A. a list of the levels of classification for living organisms  
B. an ATP conversion diagram showing energy use in cells  
C. a metamorphosis chart that shows stages in the life cycle of an insect  
D. a Punnett square that predicts the offspring of a particular set of parents

92. According to Gregor Mendel’s laws of genetic inheritance, when two parents have different genes for a trait, one form of the trait will be dominant and the other recessive. The dominant form normally appears in the offspring. In this illustration, one cat parent has genes for gray fur and the other has genes for white fur. Gray fur is dominant. The gene for gray fur is A. The gene for white fur is a.
What color would the kittens have to be in order to provide evidence supporting Mendel’s laws?

A. gray
B. white
C. white with gray spots
D. gray stripes

93. Scientists think that a crater discovered on Mexico’s Yucatan Peninsula resulted from the impact of a large meteor about 65 million years ago. To find evidence for their theory, scientists examined rock samples from the crater to see if they contained shocked quartz. Shocked quartz is a type of rock produced by a high-energy impact, such as one a meteor would cause.
In addition to the Yucatan Peninsula, where should scientists look for and test rock samples?

A. Mexico City  
B. Pacific Ocean 
C. Caribbean Sea 
D. Gulf of Mexico

94. Scientists are not certain what signals cause Florida manatees to begin migrating, although manatees seem to sense when cold weather is coming. By tracking manatees, scientists have found evidence that manatees travel hundreds of miles during their seasonal migration. The map below shows the migratory range of the Florida manatee.
According to the map, which are the farthest points in the Atlantic Ocean and Gulf of Mexico where manatees commonly migrate?

A. Miami, Florida, and Mobile, Alabama  
B. Savannah, Georgia, and Tampa, Florida  
C. Pensacola, Florida, and Jacksonville, Florida  
D. Wilmington, North Carolina, and Mobile, Alabama

95. Scientists hypothesize that manatees travel generally south in winter to stay in warm water. The map below shows migration patterns observed for the Florida manatee.
According to the map, finding manatees in which area during January would give the greatest evidence to support this hypothesis?

A. between Mobile, Alabama, and Pensacola, Florida  
B. between Tampa, Florida, and Jacksonville, Florida  
C. between Savannah, Georgia, and Wilmington, North Carolina  
D. between Jacksonville, Florida, and Myrtle Beach, South Carolina

96. The map shows the migratory range of the Florida manatee, an endangered species. In tracking manatees, biologists determine the animals’ range. Conservation groups can use such data to support plans for protecting manatees from power boats, which injure and kill many manatees.
According to the map, where would conservation groups want to concentrate their efforts by talking to boaters during the **winter**?

A. Georgia and Florida  
B. Alabama and Florida  
C. Georgia and Alabama  
D. South Carolina and Florida

97. Biologists track the migration patterns of manatees to test predictions about how far the animals travel. The tracking devices are monitored by satellite. Biologists collect the transmitted data on their computers. The figure below shows a Florida manatee wearing a device for tracking its migration pattern.
Why is this method of evidence collection a good way to obtain support for the biologists’ predictions?

A. It restricts the manatees to the biologists’ facility.  
B. It records manatees’ breeding habits for biologists to study.  
C. It allows manatees to travel freely.  
D. It requires the team of biologists to do in-person checks on the manatees on a daily basis.

98. This Florida manatee is wearing a radio tracking device that allows biologists to gather evidence on manatee migration. Some tracking devices include a global positioning system (GPS).

What information would a global positioning system provide to the biologists about manatee migration?

A. monitoring of the manatee’s health  
B. precise data on the manatee’s location  
C. updates on the manatee’s food supplies  
D. predictions of how far the manatee will travel

99. In 1897, Joseph Thomson discovered that atoms contained electrons. He proposed a change in the atomic theory of that time, and the theory was modified because of his discovery. Since Thomson’s discovery, atomic theory has been further modified. What is the best explanation for why scientific theories are modified?

A. Theories more than ten years old are usually out of date.  
B. Scientists want to prove that the work of other scientists is wrong.  
C. New evidence that supports a revision prompts scientists to modify earlier theories.  
D. So much information is available today that it is harder to focus research and disprove theories.
The theory of plate tectonics says that Earth’s crust is made up of moving pieces called plates. The continents and oceans are part of the plates. The shape of the land and the oceans changes as plates collide or move apart. The map shows the Indian and Eurasian plates.

Which feature on the map indicates evidence for the theory of plate tectonics?

A. the Indian Plate including both land and ocean
B. the position of the Tibetan Plateau next to the Himalayas
C. the position of the Indian Plate south of the Eurasian Plate
D. the arrows showing movement of the Indian and Eurasian plates toward each other

Scientists once believed that Earth’s continents were fixed in position. Then scientists began to theorize that the continents started as one large landmass. Today, this idea is commonly accepted as part of the theory of plate tectonics. Which of the following events could have led scientists to change their ideas and accept the theory that Earth’s crust is made of moving plates?

A. the observation of changing sea levels
B. the idea that Earth’s core is made of mostly iron and nickel
C. the observation that earthquakes and volcanoes occur along certain lines
D. the observation that new rock forms on parts of Earth’s surface

To be unbiased means to not favor one side or another. Why is it important for scientists to be unbiased when investigating their theories?

A. so that they can examine research results fairly
B. so that they can publish their research results and become famous
C. so that they can select research results that will be most profitable
D. so that they can choose research results that appeal to them personally

103. What is the purpose of repeating trials after reaching a conclusion in an investigation?

A. to develop a new theory
B. to repeat experiments and verify results
C. to conduct experiments with more variables
D. to revise each step of their research procedure

104. Cosmologists are scientists who study the history of the universe. Some cosmologists theorize that our universe is constantly expanding, or getting larger all the time. Which of these observations is most likely to support this theory?

A. galaxies moving farther apart
B. galaxies moving closer together
C. galaxies not moving away from or toward each other
D. galaxies spiraling away and towards each other

105. In geology, the law of superposition says that the oldest layer of rock is on the bottom and the newest layer of rock is on the top. When examining a sedimentary rock with several layers, what could a geologist do to look for evidence of this law?

A. determine the age of a sample from each layer
B. determine the age of a sample from the top layer
C. determine the age of a sample from the bottom layer
D. determine the age of a sample of all layers mixed together

106. Paleontologists study fossils. A team of paleontologists published an article in a scientific journal announcing which dinosaur a set of fossil eggs came from. Which of these sources is a poor one for contributing to the knowledge represented in the article?

A. research about the dinosaur that laid the eggs
B. media interview of a rival paleontologist about the work
C. part of a book on fossil eggs by a famous paleontologist
D. report from a professor of paleontology who reviewed the data

107. Evan and his sister Jessica were in the house. Evan put his glass of orange juice on the kitchen table. He let the dog in and then went to his room to get a book. When he got back to the kitchen, the glass was knocked over. Evan was pretty sure the dog did it. Which statement offers the best support for Evan’s inference?

A. The dog barked.
B. The dog went back outside.
C. Jessica said she heard the dog bark.
D. Jessica said she heard a crash just after the dog went into the kitchen.
108. Star systems are made up of a single star or a small number of stars that orbit each other. The table below summarizes the number of stars in some star systems and gives examples of each type of system.

<table>
<thead>
<tr>
<th>Types of Star Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Star System</td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Binary</td>
</tr>
<tr>
<td>Triple</td>
</tr>
<tr>
<td>Quadruple</td>
</tr>
<tr>
<td>Quintuple</td>
</tr>
<tr>
<td>Sextuple</td>
</tr>
</tbody>
</table>

Carlos is studying a star system that appears to have two stars. When a more powerful telescope provides a better image, he discovers that one of the stars is actually two stars. With which other star system would he classify this system?

A. sun  
B. Mizar  
C. Polaris  
D. Castor  

109. The table below summarizes the number of stars in some star systems and gives examples of each type.

<table>
<thead>
<tr>
<th>Types of Star Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Star System</td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Binary</td>
</tr>
<tr>
<td>Triple</td>
</tr>
<tr>
<td>Quadruple</td>
</tr>
<tr>
<td>Quintuple</td>
</tr>
<tr>
<td>Sextuple</td>
</tr>
</tbody>
</table>

A scientist examines a star system that is made up of two pairs of stars. What type of system is the scientist examining?

A. single  
B. binary  
C. triple  
D. quadruple  

110. The table below compiles information about the distance of various stars from Earth, their apparent magnitude, and their absolute magnitude.

Apparent Magnitude and Absolute Magnitude of Various Stars
<table>
<thead>
<tr>
<th>Star</th>
<th>Distance from Earth (ly)</th>
<th>Apparent Magnitude</th>
<th>Absolute Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sirius</td>
<td>8.6</td>
<td>–1.46</td>
<td>1.4</td>
</tr>
<tr>
<td>Vega</td>
<td>25</td>
<td>0.03</td>
<td>0.6</td>
</tr>
<tr>
<td>Arcturus</td>
<td>34</td>
<td>–0.04</td>
<td>–0.3</td>
</tr>
<tr>
<td>Aldebaran</td>
<td>60</td>
<td>0.85</td>
<td>–0.3</td>
</tr>
<tr>
<td>Rigel</td>
<td>1,400</td>
<td>0.12</td>
<td>–8.1</td>
</tr>
<tr>
<td>Betelgeuse</td>
<td>1,400</td>
<td>0.50</td>
<td>–7.2</td>
</tr>
</tbody>
</table>

Which of the stars listed in the table above would look the brightest when observed from Earth?

A. Sirius  
B. Rigel  
C. Arcturus  
D. Aldebaran

111. The table below compiles information about the distance of various stars from Earth, their apparent magnitude, and their absolute magnitude.

<table>
<thead>
<tr>
<th>Star</th>
<th>Distance from Earth (ly)</th>
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<td>Betelgeuse</td>
<td>1,400</td>
<td>0.50</td>
<td>–7.2</td>
</tr>
</tbody>
</table>

Based on the information in the table, which of these statements is true?

A. Sirius and Arcturus appear blue when observed from Earth.  
B. When observed from Earth, Rigel and Betelgeuse appear the dimmest.  
C. Aldebaran, Rigel, and Betelgeuse have lower luminosity than Sirius, Vega, and Arcturus do.  
D. Sirius looks the brightest from Earth, but Rigel has the greatest luminosity.

112. The graph below summarizes the relationship between absolute magnitude and color in stars.
Based on the graph above, what conclusion can be drawn about the relationship between temperature and absolute magnitude?

A. Absolute magnitude is not related to the temperature of a star.
B. A hotter star has a greater absolute magnitude than a cooler star.
C. There is an inverse relationship between temperature and absolute magnitude.
D. Hotter stars will have a more positive value for absolute magnitude, which measures luminosity.

113. The picture below shows several stars and the solar radius of each.

In a scale drawing, Arneb has a radius of 37 mm. What would the radius of the sun be in the same drawing?

A. 0.5 mm
114. Anthony’s teacher posted the following chart on the wall of his classroom.

The teacher asked the class to list various items from the chart in order from brightest to dimmest apparent magnitude. Which object should Anthony list first?

A. Venus
B. full moon
C. Barnard’s Star
D. Alpha Centauri

115. The following chart shows the apparent magnitude of various objects in the sky.
Based on the chart, which tool could be used to observe an object with an apparent magnitude of 25?

A. naked eye  
B. binoculars  
C. Hale telescope  
D. 1-m telescope

116. Which of the following statements best describes a binary star system?

A. A star appears blue in the night sky.  
B. A star is orbited by a gas giant planet.  
C. Two pairs of stars orbit each other.  
D. Two stars orbit each other.

117. Natasia examined a table that lists the characteristics of four stars.

<table>
<thead>
<tr>
<th>Star</th>
<th>Temperature (K)</th>
<th>Distance from Earth (ly)</th>
<th>Apparent Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10,000</td>
<td>23</td>
<td>– 1.44</td>
</tr>
<tr>
<td>B</td>
<td>7,000</td>
<td>132</td>
<td>1.23</td>
</tr>
<tr>
<td>C</td>
<td>31,000</td>
<td>58</td>
<td>– 0.31</td>
</tr>
</tbody>
</table>
Which star would appear the dimmest from Earth’s surface?

A. star A  
B. star B  
C. star C  
D. star D

118. The illustration below shows several planets orbiting a star.

Which of the following does the illustration show?

A. a constellation  
B. a galaxy  
C. a solar system  
D. the universe

119. Our solar system consists of eight planets. Which phrase correctly describes a planet?

A. a large celestial body that is composed of gas and emits light  
B. any one of the primary bodies that orbits a star  
C. many stars held together by gravity  
D. space and all the matter and energy in it

120. When we say an object is in orbit, we mean that it is traveling around another object in space. What do planets in a solar system orbit?

A. a star  
B. a moon  
C. a galaxy  
D. a universe
121. The objects that compose our solar system vary in size. What is the largest object in our solar system?
   A. Earth  
   B. Jupiter  
   C. sun  
   D. Earth's moon

122. Our solar system consists of eight planets. Each planet is classified as either a terrestrial planet or a gas giant planet. Which is a difference between these two types of planets?
   A. Terrestrial planets are larger than gas giant planets.  
   B. Gas giant planets are denser than terrestrial planets.  
   C. Terrestrial planets have thinner atmospheres than gas giant planets.  
   D. Gas giant planets have rockier crusts than terrestrial planets.

123. The diameter of Saturn is nearly ten times that of Earth. However, the density of Saturn is much less than that of Earth. What is the reason for this?
   A. Earth is farther from the sun than Saturn.  
   B. Saturn has a ring system.  
   C. Earth is hotter than Saturn.  
   D. Saturn is a gaseous planet.

124. The diagram below shows a crust, mantle, and core.

   ![Diagram of Earth's layers]

   What is shown in the diagram?
   A. a star  
   B. a galaxy  
   C. a gas giant  
   D. a terrestrial planet

125. Planets can be classified based on their physical composition. Some planets are small and dense; other planets are large and less dense. Which of the following describes the physical composition of a terrestrial planet?
A. bright  
B. rocky  
C. liquid  
D. gaseous

126. The pie graph below shows the elements that make up the Sun by percentages of mass.

Which element makes up most of the Sun’s mass?
A. carbon  
B. helium  
C. oxygen  
D. hydrogen

127. An astronomer uses a telescope to observe a star. She observes that the color of this star is similar to the color of the sun. Therefore, she infers that the star and the sun have similar sizes and surface temperatures. Using this information, what can the astronomer conclude about the star?
A. The star is a white dwarf.  
B. The star is medium sized.  
C. The star is hotter than most other stars in our galaxy.  
D. The star is brighter than most other stars in our galaxy.

128. A scientist finds a star that is located far from Earth. Upon closer examination, she discovers that the star appears to have several smaller bodies orbiting it. The scientist draws a simple diagram of her findings.
Which of these terms would the scientist use to describe her findings?
A. a moon  
B. a planet  
C. a galaxy  
D. a solar system

129. The sun is the center of our solar system. Which statement accurately describes the sun?
A. It is a solid body.  
B. It is one of Earth’s moons.  
C. It is a medium-sized star.  
D. It is the largest planet in our solar system.

130. A galaxy contains stars, gas, and dust. This matter must be held together or the galaxy will break apart. What is responsible for holding the stars, gas, and dust together in a galaxy?
A. heat  
B. light  
C. gravity  
D. friction

131. In 1995, the Hubble Space Telescope photographed a tiny spot in the sky for a period of ten days; 342 exposures were placed together to create an image known as the Hubble Deep Field. Although the sample is tiny, it is representative of the universe, which looks similar in all directions. The image below shows a collection of billions of stars. The Hubble Deep Field shows at least 3,000 groups of these stars.
Which term describes this group of stars?
A. moon  
B. galaxy  
C. universe  
D. solar system

132. Galaxies are large groups of millions, billions, or even trillions of stars. What keeps the stars in a galaxy from moving away from each other?
A. gravity  
B. density  
C. composition  
D. temperature

133. The universe consists of space and all the matter and energy in it. What do we call the parts of the universe that are located between galaxies?
A. stars  
B. voids  
C. moons  
D. planets

134. Scientists use the light-year to describe the relationships between objects in space. What does a light-year measure?
A. the distance that light can travel in one year  
B. the brightness of light that travels through space  
C. the number of years it takes light to travel to Earth  
D. the time it takes light to travel 1 million km

135. A special unit called a *light-year* is used to describe the relationship between objects in space. How long is a light-year?
A. 365 days
B. 950,000 km
C. 9.5 trillion days
D. 9.5 trillion km

136. Astronomers use the light-year to describe the relationship between objects in space. For example, the Andromeda galaxy is 2.5 million ly from Earth. Which of the following units is most similar to the light-year?
   A. gram
   B. second
   C. kilometer
   D. degrees Celsius

137. Distances between objects in space can be enormous. Which of the following distances is the longest?
   A. 2.1 ly
   B. 950,000 km
   C. 9.5 trillion km
   D. 1 million ly

138. Two stars are 2 ly apart. How many kilometers apart are these two stars?
   A. 19 billion km
   B. 90 billion km
   C. 19 trillion km
   D. 90 trillion km

139. A light-year (ly) is the distance that light travels in one year. If a star is 3 ly from Earth, how long does it take light from that star to reach Earth?
   A. 3 min
   B. 3 h
   C. 3 y
   D. 3 ly

140. The following table displays the average distance from Earth for four objects.

<table>
<thead>
<tr>
<th>Object</th>
<th>Average Distance from Earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnard’s Star</td>
<td>6 ly</td>
</tr>
<tr>
<td>Andromeda galaxy</td>
<td>2.4 million ly</td>
</tr>
<tr>
<td>Triangulum galaxy</td>
<td>2.6 million ly</td>
</tr>
<tr>
<td>Planet Neptune</td>
<td>4.3 billion km</td>
</tr>
</tbody>
</table>

Which object is closest to Earth?
   A. Barnard’s Star
   B. Planet Neptune
   C. Andromeda galaxy
   D. Triangulum galaxy
141. The sun is much larger than the moon. However, as viewed from Earth, the sun and moon appear to be the same size. Why do the sun and moon appear to be the same size when viewed from Earth?
   A. The moon is much hotter than the sun.
   B. The moon is much denser than the sun.
   C. The moon is much brighter than the sun.
   D. The moon is much closer to Earth than the sun.

142. Which two objects in space are located farthest apart?
   A. Earth and Mars
   B. Earth and the sun
   C. Earth and the moon
   D. the Milky Way galaxy and the Andromeda galaxy

143. Space exploration has advanced our knowledge of the universe. Which space journey would take the longest?
   A. a journey from Earth to the sun
   B. a journey from Earth to the moon
   C. a journey from Earth to a star in the constellation Centaurus
   D. a journey from Earth to the farthest planet in our solar system, Neptune

144. We use modern spacecraft to explore space. About how fast do these spacecraft travel?
   A. about \(\frac{1}{10,000}\) as fast as the speed of light
   B. about \(\frac{1}{2}\) as fast as the speed of light
   C. at the speed of light
   D. about 2 times faster than the speed of light

145. One way to compare the objects of space is by their relative sizes. Which of the following is larger than a galaxy?
   A. a star
   B. a planet
   C. the universe
   D. a solar system

146. Which of the following correctly lists the objects of space in order from largest to smallest?
   A. universe, galaxy, star, planet
   B. universe, galaxy, planet, star
   C. galaxy, universe, star, planet
   D. galaxy, universe, planet, star

147. Celestial bodies can be classified based on their sizes. Which of the following is the smallest?
   A. a planet
   B. the sun
   C. a red supergiant star
D. a red giant star

148. For a school project, Kate is building a model of the solar system. In her model, Kate uses a tiny bead to represent Earth and a giant beach ball to represent the sun.

Why did Kate choose a tiny bead to represent Earth and a giant beach ball to represent the sun in her model?
A. because the sun is brighter than Earth
B. because the sun is denser than Earth
C. because the sun is greater in size and mass than Earth
D. because the sun is a gas giant planet, and Earth is a terrestrial planet

149. The following table shows the densities of the planets in our solar system.

<table>
<thead>
<tr>
<th>Planet</th>
<th>Density (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>5.427</td>
</tr>
<tr>
<td>Venus</td>
<td>5.204</td>
</tr>
<tr>
<td>Earth</td>
<td>5.515</td>
</tr>
<tr>
<td>Mars</td>
<td>3.934</td>
</tr>
<tr>
<td>Jupiter</td>
<td>1.326</td>
</tr>
<tr>
<td>Saturn</td>
<td>0.687</td>
</tr>
<tr>
<td>Uranus</td>
<td>1.290</td>
</tr>
<tr>
<td>Neptune</td>
<td>1.638</td>
</tr>
</tbody>
</table>

Which planet has the greatest density?
A. Mercury
B. Earth
C. Saturn
D. Uranus

150. The following table shows the densities of the planets in our solar system.

<table>
<thead>
<tr>
<th>Planet</th>
<th>Density (g/cm³)</th>
</tr>
</thead>
<tbody>
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<td>5.427</td>
</tr>
<tr>
<td>Venus</td>
<td>5.204</td>
</tr>
</tbody>
</table>
Based on its density, which kind of planet is Uranus?
A. gas giant
B. terrestrial
C. supergiant
D. white dwarf

151. The following table shows the densities of the planets in our solar system.

<table>
<thead>
<tr>
<th>Planet</th>
<th>Density (g/cm³)</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Uranus</td>
<td>1.290</td>
</tr>
<tr>
<td>Neptune</td>
<td>1.638</td>
</tr>
</tbody>
</table>

The density of the sun is 1.409 g/cm³. Which planet has a density closest to that of the sun?
A. Mercury
B. Earth
C. Mars
D. Jupiter

152. The following table shows the densities of the planets in our solar system.

<table>
<thead>
<tr>
<th>Planet</th>
<th>Density (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
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<tr>
<td>Venus</td>
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</tr>
<tr>
<td>Earth</td>
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<tr>
<td>Mars</td>
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</tr>
<tr>
<td>Jupiter</td>
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<td>0.687</td>
</tr>
<tr>
<td>Uranus</td>
<td>1.290</td>
</tr>
<tr>
<td>Neptune</td>
<td>1.638</td>
</tr>
</tbody>
</table>
Water has a density of 1.000 g/cm³. Any object with a density higher than that of water will sink. Any object with a density lower than that of water will float. If you could build a swimming pool large enough, which planet would float in the water?
A. Jupiter  
B. Saturn  
C. Uranus  
D. Neptune

153. Which phrase best defines science?
A. study of living organisms  
B. observational study of Earth  
C. discussion of feelings and thoughts  
D. systematic study of natural events and conditions

154. What limits what scientists can study in their work?
A. They can study only phenomena that they can observe or model.  
B. They can study only the events that take place on Earth.  
C. They can investigate only questions that they were the first to ask.  
D. They can investigate only the areas of science in which they are experts.

155. Which of the following best supports a scientific explanation?
A. personal bias and the opinion of the scientist  
B. hypothesis formed after initial observations  
C. imagination and originality of the hypothesis  
D. experimental data obtained by using technology to get objective measurements

156. Which phrase defines the limits of what science can study?
A. any phenomenon that a scientist can observe or model  
B. only a phenomenon that a scientist can observe with instruments  
C. only a phenomenon that a scientist can observe without instruments  
D. only a phenomenon that a scientist will be able to explain with certainty

157. When scientists obtain new information, what happens to an existing scientific theory?
A. It is revised.  
B. It is reevaluated.  
C. It becomes a law.  
D. It remains the same.

158. Which personal trait stimulates scientists to develop questions about the natural world?
A. creativity  
B. curiosity  
C. objectivity
159. Scientists are extremely observant when they examine the natural world. What information do scientists collect when they observe the natural world?

A. data  
B. investigations  
C. experimental designs  
D. explanations of experimental data

160. Which personal trait do scientists mainly depend upon when they design an experiment?

A. creativity  
B. determination  
C. objectivity  
D. skepticism

161. A scientist graphs the mass and volume of three samples, as shown in the graph below.

Which personal trait does the scientist need when attempting to analyze data like the information shown here?

A. curiosity  
B. imagination  
C. logic  
D. skepticism

162. A scientist measures the mass and volume of each sample. She then plots the data, as shown in the graph below.
Which personal trait does a scientist require when collecting data and making measurements like those recorded on this graph?

A. curiosity  
B. creativity  
C. logic  
D. objectivity

____163. In the 1950s, a scientist conducted a study on the changes in a population of moths. Dead moths of the same species, but of two different color types were fastened to trees to study which color of moth was most likely to be eaten by birds. On dark trees, the light moths were eaten. On light trees, the dark moths were eaten. Other scientists criticized the investigation because birds’ food choice using live moths should also have been studied. Which personal trait prompts scientists to question the validity of an investigation?

A. creativity  
B. determination  
C. imagination  
D. skepticism

____164. Scientists try to develop an explanation for what they see happening in the natural world. What must be true of any explanation they develop?

A. It must be supported by evidence.  
B. It can never be changed.  
C. It must be shown to have practical value for humans.  
D. It must be based on information that other scientists have also gathered.

____165. Astrology is an example of pseudoscience. Astrologists use horoscopes that are based upon the positions of planets and stars to make predictions about a person’s life. How is science different than pseudoscience?
A. Pseudoscience does not involve making observations.
B. Pseudoscience does not examine phenomena in the natural world.
C. Pseudoscience does not attempt to provide explanations for phenomena.
D. Pseudoscientific conclusions are not supported by data gathered using scientific methods.

166. Carefully read the following definition.

*Its biggest fault is the lack of carefully controlled and thoughtfully interpreted experiments.*

What is being defined?

A. hypothesis  
B. pseudoscience  
C. natural science  
D. scientific method

167. Which title should be classified as pseudoscience?

A. *Is Life Possible on Mars?*  
B. *Aliens Built the Pyramids!*  
C. *The Best Days for Making Money*  
D. *The Disappearance of Ancient Civilizations in South America*

168. The sixth-grader in this figure is displaying a trait that scientists must use in their work.

Come to a conclusion

Which trait does this figure best represent?

A. curiosity  
B. objectivity  
C. skepticism  
D. logical reasoning

169. The figure below shows a sequence of steps that a scientist might take during a scientific investigation.
Which letter best represents the step where a scientist takes accurate measurements?

A. A  
B. B  
C. C  
D. D  

170. The illustration below shows what Henry used to examine his cheek cells.

How does this illustration help define the scope of science?

A. guesses regarding microscopic objects  
B. systematic and careful study of natural events  
C. observable phenomena with the aid of an instrument  
D. observable phenomena without the aid of an instrument  

171. Scientists depend upon various traits to carry out their work. An example is shown in the figure below.
Which of these terms **best** describes the scientist in this figure?

A. creative  
B. logical  
C. observant  
D. skeptical

172. Which statement **best** describes the nature of scientific explanations?

A. They are based upon feelings.  
B. They are based upon unguided guesses.  
C. They are based upon evaluation of data.  
D. They are based upon careful planning of experimental design.

173. Which description defines pseudoscience?

A. process of investigation that resembles science and follows scientific methods  
B. process of investigation that resembles science, but does not follow scientific methods  
C. process of investigation that does not resemble science, but follows scientific methods  
D. process of investigation that does not resemble science and does not follow scientific methods

174. Astrologists relate the location of stars and planets to events in human lives. Many years ago, people classified astrology as a science. Why do modern scientists consider astrology to be a pseudoscience?

A. Astrology does not involve the use of telescopes.  
B. Astrology does not offer conclusive proof of its claims.  
C. Astrology is based on observations of extremely distant objects.
D. Astrology is not supported by empirical evidence.

175. More than 2,000 years ago, in about 400 BCE, Democritus proposed that all matter is made up of atoms. Scientists have revised the atomic theory many times since Democritus first used the word *atom*. Why has the atomic theory changed over time?

A. Theories always change over time.
B. The feelings of scientists changed over time.
C. Other scientists interpreted Democritus’ evidence differently.
D. After new, relevant evidence emerged, scientists reevaluated the theory.

176. What must happen before a scientific explanation is widely accepted?

A. verification of faulty logic by unbiased peers
B. inability of peers to prove the claims true or false
C. inability of peers to replicate the scientific methods
D. evaluation of the conclusions by knowledgeable peers

177. Carlos had to write a lab report on an experiment he did on motion. He measured the speed of four moving objects over time. Carlos then recorded the results of his experiment on the graph shown below. Before Carlos wrote his conclusion, his science teacher reminded the class that scientists use logical reasoning to explain the data they record.

![Graph showing speed over time for objects A, B, C, and D.]

What is a trend displayed on the graph?

A. The speed of object A increased over time.
B. The speed of object B decreased over time.
C. The speed of object C remained constant over time.
D. The speed of object D first decreased and then remained constant over time.

178. Telekinesis is the idea that a person can use mental powers rather than physical means to move an object. For example, just concentrate on moving your book across the desk rather than trying to push it. Why is telekinesis considered pseudoscience?
A. It has never been supported by scientific evidence.
B. It does not involve scientific processes, such as observing.
C. It does not relate to phenomena found in the natural world.
D. It makes claims that are based upon logical reasoning and skeptical analysis.

179. Imagine that the label on a sunscreen product reads, “Recommended by nine out of ten doctors.” No other information regarding this claim is provided. Why would a scientist tell a consumer to be wary of this statistical claim?

A. Sunscreen products are ineffective.
B. The supporting scientific data are missing.
C. The claim cannot be confirmed or refuted.
D. The claim cannot be reevaluated when new information emerges.

180. Scientists use objective measurements and logical reasoning to classify both living and nonliving things. Among the nonliving things they classify are stars. The table below shows one way scientists classify stars.

<table>
<thead>
<tr>
<th>Color</th>
<th>Surface temperature (K)</th>
<th>Mass compared to our Sun</th>
<th>Brightness compared to our Sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>blue</td>
<td>over 7,500</td>
<td>at least 3.2 times</td>
<td>at least 80 times brighter</td>
</tr>
<tr>
<td>blue/white</td>
<td>7,500 to 9,500</td>
<td>at least 1.7 times</td>
<td>at least 6 times brighter</td>
</tr>
<tr>
<td>white/yellow</td>
<td>5,000 to 6,000</td>
<td>at least 1.1 times</td>
<td>at least 1.2 times brighter</td>
</tr>
<tr>
<td>orange/red</td>
<td>3,900 to 5,200</td>
<td>at least 0.8 times</td>
<td>about half the brightness</td>
</tr>
<tr>
<td>red</td>
<td>under 3,900</td>
<td>at least 0.3 times</td>
<td>very faint</td>
</tr>
</tbody>
</table>

What new information would cause scientists to reevaluate this method of classifying stars?

A. the discovery of a red star that has about twice the mass of the sun
B. the discovery of a blue star that has twenty times the mass of the sun
C. the discovery of a white/yellow star that has a surface temperature of 5,625 K
D. the discovery of a star that has about half the mass of the sun and gives off an orange/red light

181. In 1999, a team of scientists claimed that they had discovered a new element. Other scientists refuted the claim because no one could reproduce the element. In 2002, another group of scientists did a similar experiment and made atoms of the new element. Why did this experiment strengthen the claim of the first team?
A. The second group of scientists was more logical.
B. The second group of scientists guessed that the element existed.
C. The second group of scientists provided more information about the element.
D. The second group of scientists supported the findings of the first group of scientists.

182. Which phrase defines the limits of what science can study?
A. any phenomenon that a scientist can closely observe
B. only a phenomenon that a scientist can observe with instruments
C. only a phenomenon that a scientist can observe without instruments
D. only a phenomenon that a scientist will be able to explain with certainty

183. Astrology is an example of pseudoscience. Astrologists use horoscopes that are based upon the positions of planets and stars to make predictions about a person’s life. How is science different than pseudoscience?
A. Pseudoscience does not involve making observations.
B. Pseudoscience does not examine phenomena in the natural world.
C. Pseudoscience does not follow the practices used by scientists in their work.
D. Pseudoscientific conclusions are not supported by data gathered using scientific methods.
1. ANS: A
   A is correct because the figure is a visual representation of an atom and therefore is a model.
   B is incorrect because a hypothesis is an attempt to explain observed phenomena.
   C is incorrect because an experiment consists of various steps designed to answer a question.
   D is incorrect because an observation is something a scientist takes note of to collect information.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
REF: 4e43f4d0-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.1.5 | SC.8.N.1.6
TOP: Model: Define model. | Model: Use model to represent aspects of the natural world.
| Model: Select appropriate model to relate scientific data.
KEY: model | atoms | scientific model
MSC: Test Generator | Uses visual element

2. ANS: B
   A is incorrect because the independent and dependent variables may or may not be numbers.
   B is correct because the independent variable is what the investigator controls, and the dependent variable changes as a result of this manipulation.
   C is incorrect because the independent variable is what you control, and the dependent variable is what happens as a result of this.
   D is incorrect because the independent variable is typically found in the first column of a table, and the dependent variable is typically found in the second column.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
REF: 4e46572b-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.1.6
TOP: Tables: Define independent variable. | Tables: Define dependent variable.
KEY: independent variable | dependent variable | variable
MSC: Test Generator | g8_unit1 Lesson Quiz

3. ANS: D
   A is incorrect because the physician was the investigator.
   B is incorrect because the exercises were the independent variable in this experiment.
   C is incorrect because the student volunteers were the subjects of this experiment.
D is correct because the pulse rates depended on the exercises that the students performed.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.1.6
TOP: Tables: Define independent variable. | Tables: Define dependent variable.
KEY: independent variable | dependent variable | variable
MSC: Florida FCAT Preparation

4. ANS: A
A is correct because the average price of a new car did show a steady increase.
B is incorrect because the average price of a new car did increase steadily.
C is incorrect because the average price of a new car did not decrease.
D is incorrect because the average price of a new car never decreased from one year to the next.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.3.1
TOP: Tables: Interpret data in tables.
KEY: table | data | interpret
MSC: Test Generator | Uses visual element | g8_unit1_Unit Test A | IN g8_u1 Unit Test A

5. ANS: C
A is incorrect because in 1950 the average price of a new car was $1,510, and in 1990 the average price of a new car was $16,000. This is a difference of about $14,500, not $6,000.
B is incorrect because in 1950 the average price of a new car was $1,510, and in 1990 the average price of a new car was $16,000. This is a difference of about $14,500, not $7,500.
C is correct because in 1950 the average price of a new car was $1,510, and in 1990 the average price of a new car was $16,000. This is a difference of about $14,500.
D is incorrect because in 1950 the average price of a new car was $1,510, and in 1990 the average price of a new car was $16,000. This is a difference of about $14,500, not $16,500.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.3.1
TOP: Tables: Interpret data in tables.
KEY: table | data | interpret
MSC: Test Generator | Uses visual element | g8_unit1_Unit Test B | IN g8_u1 Unit Test
6. ANS: A

A is correct because the greatest change in mass, 22.2 kg, takes place between ages 0 and 1.
B is incorrect because the greatest change in mass, 22.2 kg, takes place between ages 0 and 1, not between ages 1 and 2, where the difference in mass is only 2.0 kg.
C is incorrect because the greatest change in mass, 22.2 kg, takes place between ages 0 and 1, not between ages 2 and 3, where the difference in mass is only 0.1 kg.
D is incorrect because the greatest change in mass, 22.2 kg, takes place between ages 0 and 1, not between ages 3 and 4, where the difference in mass is only 0.3 kg.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 4e4b42f1-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.3.1
TOP: Tables: Interpret data in tables.
KEY: table | data | interpret
MSC: Test Generator | Uses visual element

7. ANS: C

A is incorrect because according to the data trend, the missing mass (in kg) should be between 37.8 and 38.2. A mass of 25.0 kg is not within this interval.
B is incorrect because according to the data trend, the missing mass (in kg) should be between 37.8 and 38.2. A mass of 36.1 kg is not within this interval.
C is correct because according to the data trend, the missing mass (in kg) should be between 37.8 and 38.2. A mass of 38.0 kg is within this interval.
D is incorrect because according to the data trend, the missing mass (in kg) should be between 37.8 and 38.2. A mass of 39.9 kg is not within this interval.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 4e4d7e3c-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.3.1
KEY: table | data | interpret
MSC: Test Generator | Uses visual element

8. ANS: C

A is incorrect because according to the data trend, the missing sunset time should be between 6:25 p.m. and 8:23 p.m. A time of 5:15 p.m. is not within this interval.
B is incorrect because according to the data trend, the missing sunset time should be between 6:25 p.m. and 8:23 p.m. A time of 6:00 p.m. is not within this interval.
C is correct because according to the data trend, the missing sunset time should be between 6:25 p.m. and 8:23 p.m. A time of 8:00 p.m. is within this interval.
D is incorrect because according to the data trend, the missing sunset time should be between 6:25 p.m. and 8:23 p.m. A time of 9:00 p.m. is not within this interval.

PTS: 1
9. **ANS:** B

A is incorrect because the table provides no temperature data.
B is correct because there are more hours of daylight, as shown in the table.
C is incorrect because from January to July, the sun rises earlier, not later, in the morning.
D is incorrect because from January to July, the sun sets later, not earlier, in the evening.

**PTS:** 1

**10.** **ANS:** B

A is incorrect because the number of female athletes increased by 26, not 22.
B is correct because the number of female athletes increased by 26 (from 96 in 2006 to 122 in 2007).
C is incorrect because the number of female athletes increased by 26, not 31.
D is incorrect because the number of female athletes increased by 26, not 45.

**PTS:** 1

**11.** **ANS:** A

A is correct because in 2005, there were 138 male athletes, the greatest number of male athletes in any one year.
B is incorrect because in 2006, there were only 103 male athletes.
C is incorrect because in 2007, there were only 122 male athletes.
D is incorrect because in 2008, there were only 77 male athletes.

**PTS:** 1
12. ANS: C

A is incorrect because in 2005, there were only 118 female athletes.
B is incorrect because in 2006, there were only 96 female athletes.
C is correct because in 2007, there were 122 female athletes, the greatest number of female athletes in any one year.
D is incorrect because in 2008, there were only 91 female athletes.

PTS: 1

DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

REF: 4e54a54d-e685-11de-9c72-001185f0d2ea

13. ANS: C

A is incorrect because in 2005, there were more male athletes than female athletes.
B is incorrect because in 2006, there were more male athletes than female athletes.
C is correct because in 2007, there was the same number of male athletes and female athletes: 122 males and 122 females.
D is incorrect because in 2008, there were more female athletes than male athletes.

PTS: 1

DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

REF: 4e5707a8-e685-11de-9c72-001185f0d2ea

14. ANS: D

A is incorrect because the town’s population in 2006 was 6,500.
B is incorrect because the town’s population in 2006 was 6,500.
C is incorrect because the town’s population in 2006 was 6,500.
D is correct because the town’s population in 2006 was 6,500.

PTS: 1

DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

REF: 4e572eb8-e685-11de-9c72-001185f0d2ea

15. ANS: A
A is correct because in 2007, the population was 6,000, and in 2008, the population was 5,500. This is a decrease of 500 people.
B is incorrect because in 2007, the population was 6,000, and in 2008, the population was 5,500. This is a decrease of 500 people, not 1,000 people.
C is incorrect because in 2007, the population was 6,000, and in 2008, the population was 5,500. This is a decrease of 500 people, not 1,500 people.
D is incorrect because in 2007, the population was 6,000, and in 2008, the population was 5,500. This is a decrease of 500 people, not 2,000 people.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.3.1
TOP: Graphs: Interpret data in graphs. KEY: graph | data | interpret
MSC: Florida FCAT Preparation | Uses visual element | g8_unit1_Unit Test B | IN g8_u1

16. ANS: B
A is incorrect because in 2007, the average salary was $54,000, and in 2008, the average salary was $51,000. This is a difference of $3,000, not $2,600.
B is correct because in 2007, the average salary was $54,000, and in 2008, the average salary was $51,000. This is a difference of $3,000.
C is incorrect because in 2007, the average salary was $54,000, and in 2008, the average salary was $51,000. This is a difference of $3,000, not $3,800.
D is incorrect because in 2007, the average salary was $54,000, and in 2008, the average salary was $51,000. This is a difference of $3,000, not $4,400.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.3.1
TOP: Graphs: Interpret data in graphs. KEY: graph | data | interpret
MSC: Florida FCAT Preparation | Uses visual element

17. ANS: C
A is incorrect because the average salary decreased not once, but three times from 2000 to 2008 (between 2001 and 2002, between 2003 and 2004, and between 2007 and 2008).
B is incorrect because the average salary decreased not twice, but three times from 2000 to 2008 (between 2001 and 2002, between 2003 and 2004, and between 2007 and 2008).
C is correct because the average salary decreased three times from 2000 to 2008 (between 2001 and 2002, between 2003 and 2004, and between 2007 and 2008).
D is incorrect because the average salary decreased not four times, but three times from 2000 to 2008 (between 2001 and 2002, between 2003 and 2004, and between 2007 and 2008).
18. ANS: B
A is incorrect because the hottest temperature (34 °C) took place at 3:00 p.m., not 12:00 p.m. (noon).
B is correct because the hottest temperature (34 °C) took place at 3:00 p.m.
C is incorrect because the hottest temperature (34 °C) took place at 3:00 p.m., not 6:00 p.m.
D is incorrect because the hottest temperature (34 °C) took place at 3:00 p.m., not 9:00 p.m.

19. ANS: D
A is incorrect because the coldest temperature was 17 °C, and the warmest temperature was 34 °C. This is a difference of 17 °C, not 7 °C.
B is incorrect because the coldest temperature was 17 °C, and the warmest temperature was 34 °C. This is a difference of 17 °C, not 11 °C.
C is incorrect because the coldest temperature was 17 °C, and the warmest temperature was 34 °C. This is a difference of 17 °C, not 13 °C.
D is correct because the coldest temperature was 17 °C, and the warmest temperature was 34 °C. This is a difference of 17 °C.

20. ANS: B
A is incorrect because there are 121 biology majors and 91 chemistry majors. This is a difference of 30 students, not 20.
B is correct because there are 121 biology majors and 91 chemistry majors. This is a difference of 30 students.
C is incorrect because there are 121 biology majors and 91 chemistry majors. This is a difference of 30 students, not 91.
D is incorrect because there are 121 biology majors and 91 chemistry majors. This is a difference of 30 students, not 121.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData
TOP: Graphs: Interpret data in graphs.
MSC: Test Generator | Uses visual element

21. ANS: D
A is incorrect because 202 students are studying English, and 233 students are studying history. This is a total of 435 students, not 31 students.
B is incorrect because 202 students are studying English, and 233 students are studying history. This is a total of 435 students, not 290 students.
C is incorrect because 202 students are studying English, and 233 students are studying history. This is a total of 435 students, not 374 students.
D is correct because 202 students are studying English, and 233 students are studying history. This is a total of 435 students.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData
TOP: Graphs: Interpret data in graphs.
MSC: Test Generator | Uses visual element

22. ANS: C
A is incorrect because according to the graph, 20% of the city’s budget, not 10%, is spent on the fire department.
B is incorrect because according to the graph, 20% of the city’s budget, not 15%, is spent on the fire department.
C is correct because according to the graph, 20% of the city’s budget is spent on the fire department.
D is incorrect because according to the graph, 20% of the city’s budget, not 25%, is spent on the fire department.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_97020_RepresentingData
TOP: Graphs: Interpret data in graphs.
23. ANS: D

A is incorrect because the city spends twice as much on community development as it does on government operations. Therefore, it spends $400,000, not $100,000, on community development.
B is incorrect because the city spends twice as much on community development as it does on government operations. Therefore, it spends $400,000, not $200,000, on community development.
C is incorrect because the city spends twice as much on community development as it does on government operations. Therefore, it spends $400,000, not $300,000, on community development.
D is correct because the city spends twice as much on community development as it does on government operations. Therefore, it spends $400,000 on community development.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Advanced | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.3.1
TOP: Graphs: Interpret data in graphs.
KEY: graph | data | interpret | circle graph | visual representation
MSC: Test Generator | Uses visual element
REF: 4e6555ca-e685-11de-9c72-001185f0d2ea

24. ANS: B

A is incorrect because 20% of the 20 students earned a C. Twenty percent of 20 students would be 4 students, not 2 students.
B is correct because 20% of the 20 students earned a C. Twenty percent of 20 students would be 4 students.
C is incorrect because 20% of the 20 students earned a C. Twenty percent of 20 students would be 4 students, not 6 students.
D is incorrect because 20% of the 20 students earned a C. Twenty percent of 20 students would be 4 students, not 8 students.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Advanced | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_97020_RepresentingData STA: SC.8.N.3.1
TOP: Graphs: Interpret data in graphs.
KEY: graph | data | interpret
MSC: Test Generator | Uses visual element
REF: 4e67b825-e685-11de-9c72-001185f0d2ea

25. ANS: B

A is incorrect because 60% of the 20 students earned a B or better. Sixty percent of 20 students would be 12 students, not 9 students.
B is correct because 60% of the 20 students earned a B or better. Sixty percent of 20 students would be 12 students.
C is incorrect because 60% of the 20 students earned a B or better. Sixty percent of 20 students would be 12 students, not 15 students.
D is incorrect because 60% of the 20 students earned a B or better. Sixty percent of 20 students would be 12 students, not 18 students.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Advanced | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 4e67df35-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.3.1
TOP: Graphs: Interpret data in graphs.
KEY: graph | data | interpret
MSC: Test Generator | Uses visual element

26. ANS: C
A is incorrect because about 35% of the circle graph is shaded, which corresponds to students who earned a C, not an A.
B is incorrect because about 35% of the circle graph is shaded, which corresponds to students who earned a C, not a B.
C is correct because about 35% of the circle graph is shaded, which corresponds to students who earned a C.
D is incorrect because about 35% of the circle graph is shaded, which corresponds to students who earned a C, not a D.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 4e6a1a80-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.3.1
KEY: graph | data | interpret
MSC: Test Generator | Uses visual element

27. ANS: C
A is incorrect because 10% of the students earned a D, and 5% of the students earned an F. This is a total of 15%, not 5%.
B is incorrect because 10% of the students earned a D, and 5% of the students earned an F. This is a total of 15%, not 10%.
C is correct because 10% of the students earned a D, and 5% of the students earned an F. This is a total of 15%.
D is incorrect because 10% of the students earned a D, and 5% of the students earned an F. This is a total of 15%, not 50%.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 4e6c7cdb-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97020_RepresentingData
STA: SC.8.N.3.1
KEY: graph | data | interpret
MSC: Test Generator | Uses visual element
28. ANS: D
A is incorrect because the title of a line graph indicates what the graph represents.
B is incorrect because the legend of a line graph indicates what each type of line represents.
C is incorrect because the axes of a line graph show the independent and dependent variables.
D is correct because trends are shown on line graphs by lines of best fit that are based on data points.

PTS:  1
DIF:  Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ:  G6_NC_97020_RepresentingData
STA:  SC.8.N.1.6 | SC.8.N.3.1
TOP:  Graphs: Interpret data in graphs.
KEY:  graph | data | interpret
MSC:  Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson4 Quiz

29. ANS: D
A is incorrect because there is no evidence on which to base this conclusion.
B is incorrect. Because the dinosaurs discovered were alive millions of years before the dinosaurs became extinct, they would not provide information about the extinction of the dinosaurs.
C is incorrect because there is no evidence on which to base this conclusion.
D is correct because by discovering the earliest dinosaurs to roam Earth, paleontologists uncovered information that helped them understand what the beginning of the dinosaur era was like.

PTS:  1
DIF:  Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Analysis | Bloom’s Revised: Analyzing
OBJ:  G6_NC_87360_ScienceAndSociety
STA:  SC.8.N.4.1 | SC.8.N.4.2
TOP:  Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.
KEY:  paleontology | Sereno | paleontologist
MSC:  Florida FCAT Preparation | SE Unit g8_unit1 FCAT pages

30. ANS: B
A is incorrect because most cancers cannot be prevented with a vaccine, and cancer is still prevalent in the United States.
B is correct because measles has been nearly eliminated in the United States due to vaccines. Unfortunately, measles still exists in other parts of the world.
C is incorrect because although there are seasonal flu shots that reduce the risk of getting influenza, there is no influenza vaccine.
D is incorrect because there is no vaccination for the common cold.
31. **ANS: A**

A is correct because a vaccine prevents people from contracting the disease they were vaccinated for.

B is incorrect because disease outbreaks are not caused by vaccinations but rather happen when people have not been vaccinated.

C is incorrect because vaccinations prevent diseases but do not play any role in the treatment of a disease.

D is incorrect because vaccinations are designed to prevent diseases, not to make people have fewer symptoms.

32. **ANS: B**

A is incorrect because navigation does not help authorities prepare for natural disasters.

B is correct because satellites that help meteorologists to predict the weather enable those meteorologists to alert the authorities before certain natural disasters take place.

C is incorrect because global positioning systems help people track their movements.

D is incorrect because although television signals are helpful in preparing for natural disasters, the weather information that most helps authorities prepare for a natural disaster comes from satellites that monitor weather conditions.
have had a tremendous impact on society throughout history.

KEY: weather | prediction | satellite

MSC: Florida FCAT Preparation | g8_Benchmark Test B

33. ANS: D
A is incorrect because although x-rays may be used in treating diseases of the bone, the greatest impact of x-rays was the ability to view internal body parts for diagnostic purposes.
B is incorrect because x-rays cannot treat influenza or smallpox.
C is incorrect because although more people may have visited doctors after the discovery of x-rays, the greater impact of x-rays was the ability to diagnose diseases with greater accuracy.
D is correct because x-rays enabled doctors to diagnose illnesses, such as lung cancer, more accurately.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
REF: 4dca5caf-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.
KEY: Roentgen | X-ray | medicine
MSC: Test Generator | Uses visual element

34. ANS: C
A is incorrect because human behavior is a broad category that includes scientific research, but scientific research is the specific behavior that led to the development of antibiotics.
B is incorrect because although government laws sometimes support the pursuit of scientific research, it is the research itself that led to the development of antibiotics.
C is correct because scientific research led to the development of antibiotics.
D is incorrect because industrial development may have contributed to the production of antibiotic medicines, but it did not lead to the development of antibiotics.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
REF: 4dca83bf-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Describe how scientific thought and investigation have had a tremendous impact on society throughout history.
KEY: antibiotics | scientific research | medicine
MSC: Florida FCAT Preparation

35. ANS: B
A is incorrect because people can connect with each other without sharing files.
B is correct because the Internet is a network of millions of computers around the world that work together to connect computer users to each other, no matter where they are. C is incorrect because laptop computers make it easier for people to travel with their computers, but people can connect with each other with other types of computers. D is incorrect because although wireless technology does make it easier to access the Internet, it is the Internet that enables people to connect easily.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Describe how scientific thought and investigation have had a tremendous impact on society throughout history.
KEY: Internet | computer | computer science
MSC: Florida FCAT Preparation | g8_unit1_Unit Test B

36. ANS: B
A is incorrect because although people can use computers to keep track of their finances, this is not the greatest impact of the Internet. B is correct because people have access to huge data banks of information that were unavailable to them before the Internet. C is incorrect because this is an impact of software development, not the Internet. D is incorrect because although people can store information for their homes and businesses, this is not the greatest impact of the Internet.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Describe how scientific thought and investigation have had a tremendous impact on society throughout history.
KEY: Internet | computer | invention
MSC: Florida FCAT Preparation | Uses visual element | g8_unit1_Unit Test A | IN g8_u1_Unit Test A

37. ANS: B
A is incorrect because water is a renewable resource. B is correct because the main reason for using solar energy is to conserve nonrenewable resources such as coal and petroleum. C is incorrect because wind power is a renewable resource. D is incorrect because solar panels depend on solar energy, a renewable resource, to operate.

PTS: 1
38. ANS: A
A is correct because many millions of people depend on rice for their main diet.
B is incorrect because tomatoes are not a major food source for developing nations.
C is incorrect because cotton is not a food crop.
D is incorrect because carrots are not a staple of people’s diets in developing nations.

PTS: 1

39. ANS: D
A is incorrect because meteorologists cannot predict tornadoes hours in advance.
B is incorrect because the purpose of weather satellites is to gather information about the weather.
C is incorrect because lightning strikes do not affect many people each year.
D is correct because weather satellites help meteorologists to predict whether a dangerous storm, such as a hurricane, is approaching.

PTS: 1

40. ANS: B
A is incorrect because there is no indication from the information given that Carver experimented with genetics.
B is correct because Carver developed uses for peanuts and sweet potatoes that included food uses.

C is incorrect because Carver encouraged farmers to plant peanuts and sweet potatoes instead of cotton. This would mean less cotton was grown and used in textile development.

D is incorrect because Carver encouraged substituting farm crops, not turning farmland into urban land.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing

REF: 4dd40d2b-e685-11de-9c72-001185f0d2ea

OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2

TOP: Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.

KEY: George Washington Carver | science and society

MSC: Florida FCAT Preparation | g8_unit1_Unit Test A | IN g8_u1 Unit Test A

41. ANS: B

A is incorrect because the field of medicine is directly concerned with people’s health, whereas Carver’s work was concerned with plants.

B is correct because Carver worked with plants, which is part of agricultural studies.

C is incorrect because transportation involves vehicles and other ways of moving people and materials, whereas Carver’s work was concerned with plants.

D is incorrect because Carver’s study of plants is not related to weather prediction.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

REF: 4dd64876-e685-11de-9c72-001185f0d2ea

OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2

TOP: Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.

KEY: George Washington Carver | agriculture | peanut

MSC: Florida FCAT Preparation | g8_unit1_Unit Test B | IN g8_u1 Unit Test B

42. ANS: C

A is incorrect because the development of the polio vaccine contributed to human health, not environmental protection.

B is incorrect because the development of vaccines against cholera and anthrax contributed to human health, not environmental protection.

C is correct because Rachel Carson’s work contributed to an understanding of how pesticides damage the environment.

D is incorrect because the discoveries about genes and chromosomes contributed to an improvement in genetics, not environmental protection.
PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying
REF: 4dd8aad1-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.
KEY: Rachel Carson | environmental protection | pesticides
MSC: Florida FCAT Preparation | g8_unit1 Lesson Quiz | IN g8_u1 Lesson5 Quiz

43. ANS: B
A is incorrect because research in gene mapping will affect the prevention and treatment of disease, not the conservation of natural resources.
B is correct because research in geothermal energy can reduce the need for fossil fuels to heat buildings.
C is incorrect because research in vaccine manufacturing will affect the health of society, not the conservation of natural resources.
D is incorrect because research in computer technology will not directly affect the conservation of natural resources.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
REF: 4dd8d1e1-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Describe how scientific thought and investigation have had a tremendous impact on society throughout history.
KEY: natural resource | wind energy | scientific research
MSC: Florida FCAT Preparation | g8_unit1_Pretest | IN g8_u1 Pretest

44. ANS: B
A is incorrect because her work did not involve a study of energy.
B is correct because her work helped doctors to diagnose diseases caused by hormonal factors.
C is incorrect because her work had nothing to do with how life changes over time.
D is incorrect because her work had nothing to do with weather predictions.

PTS: 1
REF: 4ddb0d2c-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.
KEY: Rosalyn Yalow | physicist | radioimmunoassay | cancer
45. ANS: C
A is incorrect because photosynthesis takes place in plants, not in animals.
B is incorrect because Calvin’s work did not involve an investigation of new species.
C is correct because photosynthesis is a cellular process, and biochemistry is the study of chemical processes in living things.
D is incorrect because photosynthesis is a cellular process and is not a subject for anatomy.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying
REF: 4ddd6f87-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Identify scientists who have made important contributions to society throughout history.
KEY: Melvin Calvin | photosynthesis | agriculture | carbon

46. ANS: D
A is incorrect because scientists, not world leaders, establish and challenge scientific knowledge.
B is incorrect because scientists, not politicians, establish and challenge scientific knowledge.
C is incorrect because the sharing of scientific information does not necessarily lead to a modification or rejection of existing scientific knowledge.
D is correct because this change is an example of how new scientific information challenges existing scientific knowledge.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
REF: 4ddfd1e2-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Impact of Science on Society: Describe how scientific thought and investigation have had a tremendous impact on society throughout history.
KEY: scientific knowledge | scientific theory

47. ANS: D
A is incorrect because the Department of Labor regulates issues relating to employment.
B is incorrect because the Agricultural Research Service is involved in research relating to farms and farm products.
C is incorrect because the Department of Homeland Security is responsible for the safety of the nation.
D is correct because the Environmental Protection Agency is responsible for writing regulations relating to air pollution as well as other types of pollution.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Explain that political, social, and economic concerns can affect science and scientific investigation, and vice versa.
KEY: government | law | air pollution | Environmental Protection Agency
MSC: Florida FCAT Preparation | g8_unit1 Lesson Quiz | IN g8_u1 Lesson5 Quiz

48. ANS: A
A is correct because the chemical DDT caused weakened eggshells, which was a major factor in the decline of the bald eagle population.
B is incorrect because introducing a species to a new habitat in a different climate is unlikely to provide a suitable home for promoting species recovery or expansion.
C is incorrect because the eggshells would still break whether they were in their natural habitat or in captivity.
D is incorrect because although the Bald Eagle Protection Act prohibited these actions, it did not deal with the environmental issue that was killing the eagles.

PTS: 1
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Describe how science and scientific thinking can help inform decision-making at many levels of society.
KEY: DDT | bald eagle | recovery | endangered species
MSC: Florida FCAT Preparation

49. ANS: D
A is incorrect because this is an economic concern, not a health concern.
B is incorrect because although this statement is true, this concern is related to productive and economics rather than health.
C is incorrect because this statement is an economic concern, not a health concern.
D is correct because an outbreak spreads quickly among children, then to their families, and then to the rest of the population.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_87360_ScienceAndSociety
50. **ANS: B**
A is incorrect because the pollution on the Cuyahoga River highlighted the need for clean water, not wilderness protection.
B is correct because the dangers of pollution in the Cuyahoga River highlighted the need for clean water and led to the passage of the Clean Water Act.
C is incorrect because the pollution on the Cuyahoga River highlighted the need for clean water and had nothing to do with flooding.
D is incorrect because the pollution on the Cuyahoga River highlighted the need for clean water, and the river is not a marine environment.

**PTS: 1**
**DIF:** Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
**REF:** 4de49698-e685-11de-9c72-001185f0d2ea

**51. **ANS: D**
A is incorrect because the graph shows peaks that represent times of the year when there are more doctor visits due to influenza-like illnesses.
B is incorrect because the graph does not indicate a decrease from 2007–2008 to 2008–2009. Therefore, there is no reason to predict a decrease for 2009–2010.
C is incorrect because the graph has no information about how patients felt after treatment.
D is correct because the peak for each year is during different weeks of the year.

**PTS: 1**
**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying
**REF:** 4def6f8f3-e685-11de-9c72-001185f0d2ea

**52. **ANS: D
A is incorrect because the graph has no information about how many people got flu shots in any of the years.
B is incorrect because the graph shows only those people who visited doctors because of influenza-like illnesses. There is no information about the total number of people who had the flu.
C is incorrect because the graph does not show how many people got sick with other illnesses during these years.

PTS: 1
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Explain that political, social, and economic concerns can affect science and scientific investigation, and vice versa.
KEY: influenza | H1N1 | economic concerns | government recommendations
MSC: Florida FCAT Preparation | Uses visual element

53. ANS: A
A is correct because loss of job income is a significant economic factor.
B is incorrect because staying home from school does not have a significant economic effect.
C is incorrect because a decline in movie attendance is not a significant economic factor compared to loss of job income.
D is incorrect because washing hands has no economic impact.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Describe how science and scientific thinking can help inform decision-making at many levels of society.
KEY: H1N1 | influenza | schools | decision
MSC: Florida FCAT Preparation | Uses visual element

54. ANS: B
A is incorrect because this fact does not specifically describe an environmental reason for researching these forms of clean energy.
B is correct because burning fossil fuels has been cited as a major cause of global warming.
C is incorrect because this fact does not specifically describe an environmental reason for researching these forms of clean energy.
D is incorrect because this is an economic, not an environmental, reason for researching these forms of clean energy.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Describe how science and scientific thinking can help inform decision-making at many levels of society.
KEY: environment | gasoline | greenhouse gas | carbon dioxide | clean energy
MSC: Florida FCAT Preparation | g8_unit1 Lesson Quiz | IN g8_u1 Lesson5 Quiz

55. ANS: A
A is correct because children breathe air, and lead particles spread easily through the air from car exhaust.
B is incorrect because children were not commonly exposed to gas on the skin.
C is incorrect because children were not commonly exposed to drinking water contaminated with gas.
D is incorrect because toys were not made from leaded gas.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Explain that political, social, and economic concerns can affect science and scientific investigation, and vice versa.
KEY: fuel efficiency standards | government | automobile industry
MSC: Test Generator | g8_unit1_Unit Test

56. ANS: B
A is incorrect because the Wilderness Act provided protection for the wilderness.
B is correct because the Endangered Species Act provided protection for species in danger of becoming extinct.
C is incorrect because the Wild and Scenic Rivers Act protected rivers, not animals, in danger of becoming extinct.
D is incorrect because the Land and Water Conservation Act provided for the protection of habitats but did not provide directly for the protection of endangered species.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Describe how science and scientific thinking can help inform decision-making at many levels of society.

KEY: endangered species | government | Endangered Species Act

MSC: Florida FCAT Preparation

57. ANS: C
   A is incorrect because power plants account for one-third of carbon dioxide emissions.
   B is incorrect because cars and trucks account for almost one-fourth of carbon dioxide emissions.
   C is correct because major transportation contributes the least to carbon dioxide emissions.
   D is incorrect because home heating systems, along with factories, are a major contributor to carbon dioxide emissions.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Advanced | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Analysis | Bloom’s Revised: Analyzing

REF: 4df0825f-e685-11de-9c72-001185f0d2ea

OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2

58. ANS: A
   A is correct because automobiles release large amounts of carbon dioxide.
   B is incorrect because the high levels of exhaust from typical automobiles, not the low levels of exhaust, would lead to increased research into alternative fuels.
   C is incorrect because the high cost, not the low cost, of imported oil would lead to increased research into hybrid cars and alternative fuels.
   D is incorrect because the interior of a car is a style issue and is not a factor in deciding to purchase a car that uses alternative fuels.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying

REF: 4df0a96f-e685-11de-9c72-001185f0d2ea

OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2

59. ANS: A
   A is correct because the spread of disease is a health issue.
   B is incorrect because trade agreements do not represent a health issue.
   C is incorrect because expanding the Internet is not a health issue.
D is incorrect because the search for new sources of fossil fuels is not a health issue.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_87360_ScienceAndSociety
STA: SC.8.N.4.1 | SC.8.N.4.2
TOP: Science and Decision-Making: Describe how science and scientific thinking can help inform decision-making at many levels of society.
KEY: international government | disease | decision
MSC: Test Generator

ANS: D

A is incorrect because not all lab experiments involve models.
B is incorrect because lab experiments do not involve uncontrolled conditions.
C is incorrect because lab experiments do not take place in unregulated environments.
D is correct because lab experiments must include all of these characteristics.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.1 | SC.8.N.1.2
TOP: Types of Scientific investigation: Define experiment.
KEY: laboratory experiment | controlled condition | dependent variable | independent variable
MSC: Florida FCAT Preparation | SE Unit g8_unit1 FCAT pages

ANS: C

A is incorrect because scientists do conduct experiments under controlled conditions.
B is incorrect because there is more than one scientifically based method for conducting investigations.
C is correct because investigations often do include multiple trials.
D is incorrect because many investigations focus on exploring unregulated surroundings.

PTS: 1
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.1
TOP: Characteristic of Good Scientific investigation: List some characteristic of good scientific investigation.
KEY: scientific method | repetition | controlled condition
MSC: Florida FCAT Preparation | g8_unit1_Pretest | IN g8_u1 Pretest

ANS: C

A is incorrect because Renata is not measuring force.
B is incorrect because Renata is not measuring the speed of the ball.
C is correct because Renata is controlling the release height of the ball and measuring the effect on the distance the ball travels from the ramp before falling to the ground. D is incorrect because Renata is not measuring time.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_87010_ScientificInvestigation
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.
KEY: independent variable | question | hypothesis
MSC: Florida FCAT Preparation | Uses visual element | g8_unit1_Unit Test B | IN g8_u1 Unit Test B

63. ANS: B
A is incorrect because a balance measures mass, not length.
B is correct because both the ball’s release height and the distance traveled are length measurements, and a meterstick is used to measure length.
C is incorrect because a stopwatch measures time, not length.
D is incorrect because a scale measures force, not distance.

PTS: 1
OBJ: G6_NC_87010_ScientificInvestigation
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.
KEY: height | distance | equipment | meterstick
MSC: Florida FCAT Preparation | Uses visual element | g8 ISTEP+ Practice 1

64. ANS: C
A is incorrect because determining the pebble's mass requires the use of a balance.
B is incorrect because determining the pebble’s volume requires the use of a graduated cylinder and the water displacement method.
C is correct because the appearance of the pebble can be observed through the sense of sight.
D is incorrect because determining the pebble's conductivity requires the use of electrical testing equipment.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87010_ScientificInvestigation
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.
KEY: observation | sense | equipment
MSC: Florida FCAT Preparation | g8_unit1_Pretest | IN g8_u1 Pretest
65. **ANS: B**

A is incorrect because the results do not explain why the materials perform differently.
B is correct. Although Clara’s hypothesis was not supported, it may lead to further investigations.
C is incorrect because even if she used a different heavier material, Clara’s hypothesis would be invalid.
D is incorrect because the results do not support the hypothesis.

**PTS: 1**

**DIF:** Cognitive Complexity: High Complexity | Student Level: Average | Depth of Knowledge 3: Strategic Thinking | Bloom’s Traditional: Synthesis and Evaluation |
Bloom’s Revised: Evaluating

**OBJ:** G6_NC_87010_ScientificInvestigation

**STA:** SC.8.N.1.4

**TOP:** Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.

**KEY:** hypothesis | evidence | investigation

**MSC:** Florida FCAT Preparation | SE Unit g8_unit1 FCAT pages | Uses visual element

66. **ANS: C**

A is incorrect because different beverages introduce another variable and decrease the accuracy and validity of the results.
B is incorrect because all drinks will be in the same setting, and this will not change the results or ensure accuracy and validity.
C is correct because repetition and replication increase accuracy and validity.
D is incorrect because these common experimental practices do not increase the accuracy and validity of the results.

**PTS: 1**

**DIF:** Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application |
Bloom’s Revised: Applying

**OBJ:** G6_NC_87010_ScientificInvestigation

**STA:** SC.8.N.1.2

**TOP:** Characteristic of Good Scientific investigation: List some characteristic of good scientific investigation.

**KEY:** repetition | replication | result

**MSC:** Florida FCAT Preparation

67. **ANS: B**

A is incorrect because the data shows that the bacteria reproduce faster at higher temperatures.
B is correct because the bacteria reproduce fastest in the 20 °C to 30 °C range.
C is incorrect because the bacteria reproduce faster at lower temperatures.
D is incorrect because the bacteria reproduce faster at lower temperatures.

**PTS: 1**

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Synthesis and Evaluation |
Bloom’s Revised: Evaluating

**OBJ:** G6_NC_87010_ScientificInvestigation

**STA:** SC.8.N.1.6

**TOP:** Conducting a Scientific Experiment: Explain the major processes involved in
conducting a scientific investigation.  

**KEY:** bar graph | data | bacteria

**MSC:** Florida FCAT Preparation | Uses visual element

**68. ANS:** B

A is incorrect because the same thermometers cannot be in each cup at every 10 minutes. Each thermometer must be calibrated and accurate so that the measurements are accurate.

B is correct because if determining the ability of different materials to insulate is the goal of the experiment, then each cup must start at the same temperature so the experimenter can see the relationship of the temperatures among the cups.

C is incorrect because this is the dependent variable of the experiment. The temperatures may end up being the same, but the experiment is being run to see if the water temperatures are different in different cups.

D is incorrect. The material of each cup must be different because this is the independent variable of the experiment.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing

**OBJ:** G6_NC_87010_ScientificInvestigation

**STA:** SC.8.N.1.6

**TOP:** Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.  

**KEY:** data | evidence | variable

**MSC:** Florida FCAT Preparation | Uses visual element

**70. ANS:** C

A is incorrect because the data table does not include multiple trials.

B is incorrect because the data table shows places for recording temperature at different times but does not include multiple trials.

C is correct because the data table includes multiple trials. Repetition of trials increases the sample size of the data and decreases error.
D is incorrect because the data table has places to show the beginning and ending temperatures but does not include multiple trials.

PTS: 1
REF: 4d5f12b0-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.2
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation. KEY: multiple trial | data collection | repetition
MSC: Test Generator | Uses visual element

71. ANS: D
A is incorrect because the results are conclusive. They do not support the hypothesis.
B is incorrect because the results do not support the hypothesis. If the cooling rate is constant, the graph should have a downward-sloping straight line.
C is incorrect because the results do not support the hypothesis. Increasing the number of trials will not change the results. Shakira needs to formulate a new hypothesis and plan a new experiment.
D is correct because even a hypothesis that is not supported by experimental data is useful when it leads to further investigation.

PTS: 1
REF: 4d5f39c0-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.4
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation. KEY: hypothesis | cooling | heat
MSC: Florida FCAT Preparation | Uses visual element | g8_Benchmark Test B

72. ANS: C
A is incorrect. The interpretation does not take into account that because lab group 3’s results are much different from those of the other three groups, group 3 very likely made an error when measuring the mass.
B is incorrect. It is much more likely that group 3 made an error when measuring mass because this value is inconsistent with the other groups’ mass measurements.
C is correct because groups 1, 2, and 4 recorded similar values for mass. Hence, the density calculations from these groups are also very similar.
D is incorrect because the density of a solid material such as a rock would not vary significantly.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Synthesis and Evaluation | Bloom's Revised: Evaluating
REF: 4d61750b-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.6
TOP: Characteristic of Good Scientific investigation: Evaluate the quality of scientific
information from different source. KEY: mass | volume | density
MSC: Test Generator | Uses visual element

73. ANS: C
A is incorrect because although she may find this is true during her investigation, she is looking to see if there is a relationship between air quality and respiratory health. B is incorrect because she is not investigating air quality in other states. C is correct because she is trying to identify a relationship between air quality and the respiratory health of citizens in her state. D is incorrect because this hypothesis does not address respiratory health.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Synthesis and Evaluation | Bloom’s Revised: Evaluating
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.1
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation. KEY: hypothesis | air quality | respiratory health
MSC: Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson3 Quiz

74. ANS: C
A is incorrect because the rate depends on the amount of sunlight, which Joshua controls. B is incorrect because the amount of water per plant is not a variable in the experiment. C is correct because the amount of sunlight is the factor directly controlled by Joshua. The other factors, such as rate of plant growth and time needed to reach 20 cm, depend on the amount of sunlight. They are dependent variables. D is incorrect because the time needed for each plant to reach a height of 20 cm is not directly set by Joshua. The time depends on the amount of sunlight, which Joshua controls.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.1
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.
KEY: dependent variable | experiment | control variable | independent variable
MSC: Florida FCAT Preparation | g8_Benchmark Test A

75. ANS: A
A is correct because data is information gathered through observation or experimentation that is used for calculation or reasoning. B is incorrect because a hypothesis is a testable idea that leads to a scientific explanation. C is incorrect because observation is the process of obtaining information through the use of the senses.
D is incorrect because a variable is any factor that changes during a scientific investigation.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom’s Revised: Remembering
REF: 4d689c1c-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation STA: SC.8.N.1.6
TOP: Conducting a Scientific Experiment: Define hypothesis, variable, observation, and data. KEY: data | hypothesis | observation | variable
MSC: Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson3 Quiz

76. ANS: D
A is incorrect because determining density requires scientific equipment.
B is incorrect because testing for heat conduction requires scientific equipment.
C is incorrect because testing for electrical resistance requires scientific equipment.
D is correct because color can be observed through sight.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
REF: 4d6afe77-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation STA: SC.8.N.1.1
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation. KEY: observation | sense | sight
MSC: Florida FCAT Preparation

77. ANS: C
A is incorrect because a lab experiment provides for a large amount of control.
B is incorrect because a lab experiment allows a scientist to alter one or more variables at a time.
C is correct because a lab setting cannot offer the exact conditions of nature.
D is incorrect. A lab setting offers the best conditions for using large equipment to make exact measurements because equipment like this is difficult to move, needs exact calibration, and often needs controlled laboratory conditions.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
REF: 4d6b2587-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation STA: SC.8.N.1.1
TOP: Types of Scientific investigation: Describe the relative benefit and limitation of experiments and other types of scientific investigation. KEY: benefit | limitation | fieldwork | experiment
MSC: Test Generator

78. ANS: A
A is correct because having other scientists perform the experiment will determine if it can be replicated and happen with frequency.
B is incorrect because if the scientists change the procedure, they cannot be sure if the conditions of the first procedure are replicated by the second procedure.
C is incorrect because it does not check the validity of the experiment.
D is incorrect because this step tests how the medicines react to the bacteria but does not test the validity of the original experiment.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
REF: 4d6d60d2-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87010_ScientificInvestigation
STA: SC.8.N.1.2
TOP: Characteristic of Good Scientific investigation: List some characteristic of good scientific investigation.
KEY: repetition | replication | equipment | procedure
MSC: Test Generator | g8_Benchmark Test B

79. ANS: D
A is incorrect because the mass of the ball is constant.
B is incorrect because the kicker and the current motion of the ball control the speed of the shot.
C is incorrect because the kicker and the placement of the ball control the direction of the shot.
D is correct because the goalie controls the direction of the force applied to blocking the shot.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 4d6fc32d-e685-11de-9c72-001185f0d2ea
OBJ: G6 NC_87010_ScientificInvestigation
STA: SC.8.N.1.1
TOP: Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.
KEY: variable | constant | angle | force | direction
MSC: Test Generator | Uses visual element

80. ANS: A
A is correct because the graph shows a constant speed, which does not support the hypothesis.
B is incorrect because the graph shows a constant increase in speed, which supports the hypothesis.
C is incorrect because the graph shows a constant decrease in speed, which supports the hypothesis.
D is incorrect because the graph shows a variable increase in speed, which supports the hypothesis.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Synthesis and Evaluation |
81. **ANS:** D

A is incorrect because the doctor already knows that sometimes the substance turns green and not red.

B is incorrect because although the substance did not always turn green, it did so sometimes.

C is incorrect because the substance did change colors, but it turned two different colors.

D is correct because the substance turned green only sometimes. The doctor could have looked at which acids caused which changes to make a new informed hypothesis.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying

**OBJ:** G6_NC_87010_ScientificInvestigation  
**STA:** SC.8.N.1.4

**TOP:** Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.  
**KEY:** hypothesis | supporting evidence | model

**MSC:** Test Generator

82. **ANS:** C

A is incorrect because the results are not valid, so forming a new hypothesis and planning a new experiment would be the correct procedure.

B is incorrect because changing data is unethical and does not produce valid results.

C is correct because the researcher needs a new hypothesis and a new plan for investigating the new hypothesis.

D is incorrect because an experimental procedure must be reproducible and cannot be altered from one trial to the next.

**PTS:** 1

**DIF:** Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

**OBJ:** G6_NC_87010_ScientificInvestigation  
**STA:** SC.8.N.1.4

**TOP:** Conducting a Scientific Experiment: Explain the major processes involved in conducting a scientific investigation.  
**KEY:** scientific method | hypothesis | supporting evidence  
**MSC:** Test Generator

83. **ANS:** B

A is incorrect because a balance measures mass.

B is correct because a spring scale measures force.

C is incorrect because a thermometer measures temperature.

D is incorrect because a Bunsen burner heats objects.

**PTS:** 1
84. ANS: B
A is incorrect because fossil remains of dinosaurs have been found in many places other
than Mexico and indicate only that dinosaurs are extinct, not how they became extinct.
B is correct because a map showing a buried crater provides evidence that the meteor hit
in Mexico.
C is incorrect because a meteor falling in Mexico would not permanently change sea
levels worldwide.
D is incorrect because studies that show the age of rocks when the meteor struck show
only the age of the rocks, not their composition.

PTS: 1

85. ANS: D
A is incorrect because Thomson’s idea of static electrons did not cause modification of
the accepted atomic theory of the time.
B is incorrect because Dalton’s theory did not lead to modification of the accepted atomic
theory of Dalton’s time.
C is incorrect because Chadwick’s discovery of neutrons did not result in modification of
the accepted atomic theory of the time.
D is correct because Bohr showed that electrons orbit around the nucleus. His research
was accepted by his contemporaries and led to the modification of otherwise accepted
atomic theory.

PTS: 1
A is incorrect because an older encyclopedia may not have the latest scientific knowledge based on the latest evidence.
B is correct because articles in peer-reviewed scientific journals are subject to critique and scrutiny of other scientists; these articles are likely to contain scientific information without bias.
C is incorrect because personal websites and blogs are not subject to review and may contain the writer’s bias and incomplete or inaccurate information.
D is incorrect because politicians and lobby groups may publish pamphlets that contain bias or incomplete or inaccurate information.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Evaluating Evidence: Distinguish between reliable and unreliable scientific source.
KEY: scientific journal | website | peer review | source
MSC: Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson2 Quiz

87. ANS: B
A is incorrect because heating animal or plant tissues will not make the cells visible.
B is incorrect because the pH meter tests acidity and alkalinity and would not be used to view the cells.
C is correct because the cells in animal or plant tissue can be seen with a microscope.
D is incorrect because measuring the mass of plant or animal tissue will not enable scientists to see the cells.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Applying
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Developing Explanations: Describe different method scientists may use to develop a scientific explanation.
KEY: method | testing | support a theory
MSC: Test Generator

88. ANS: D
A is incorrect because the study would need to specifically include brown-eyed and blue-eyed people.
B is incorrect because the study would have to incorporate brown-eyed parents as well as blue-eyed offspring.
C is incorrect because the study will need to include brown-eyed parents, not just families of all blue-eyed people.
D is correct because the study takes into account the specified inheritance factors for eye color: brown-eyed parents producing blue-eyed children.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of
Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

REF: 4d8ee8dc-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Developing Explanations: Describe different method scientists may use to develop a scientific explanation.
KEY: theory | inheritance | eye color | method | scientific investigation | scientific explanation
MSC: Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson2 Quiz

89. ANS: D
A is incorrect because the fact that Australia and Asia are not far apart now does not provide enough evidence that they were connected.
B is incorrect because the latitude of the continents is not a factor in continental movement.
C is incorrect because the comparative size of the continents does not relate to Pangaea or to continental movement.
D is correct because South America's and Africa's Atlantic coasts are mirror images of each other and would fit together like jigsaw pieces.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge

90. ANS: B
A is incorrect because a plan for experiments comes before a scientist can cite data as evidence to support his theory.
B is correct because data from experiments is the evidence scientists present to support scientific explanations, such as theories.
C is incorrect because a hypothesis is a testable statement that leads to investigation, but the hypothesis itself does not support scientific explanations.
D is incorrect because hypotheses are testables statement that leads to investigation, but the hypotheses themselves do not support scientific explanations.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge

91. ANS: D
A is incorrect because a list of the levels of classification shows names, not relationships that would reflect heredity.
B is incorrect because an energy conversion diagram shows the how cells cycle energy using ATP.
C is incorrect because metamorphosis is the process by which certain organisms develop from eggs to their adult form.
D is correct because a Punnett square shows the probable combination of traits in an offspring.

PTS: 1

DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Developing Explanations: Describe different method scientists may use to develop a scientific explanation.
KEY: geneticist | heredity | Punnett square | explanation
MSC: Test Generator

ANS: A

A is correct because gray kittens would support the idea that one form of a trait is dominant.
B is incorrect because white is the recessive trait, and four white kittens would fail to support Mendel’s theories.
C is incorrect because gray is dominant, and there is no indication that the color traits would mix.
D is incorrect because gray is dominant over white, and there is no indication that the color traits would mix.

PTS: 1

DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_8730_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Supporting Theories: Identify a scientific theory and describe the evidence that supports it.
KEY: supporting theory | explanation | dominant | recessive | scientific evidence
MSC: Florida FCAT Preparation | Uses visual element

ANS: D

A is incorrect because Mexico City is not on the Yucatan Peninsula.
B is incorrect because the Yucatan Peninsula does not border the Pacific Ocean.
C is incorrect because the Caribbean Sea is on the opposite side of the peninsula.
D is correct because craters are most likely round, and part of the meteor crater would be underwater in the Gulf of Mexico.

PTS: 1

DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
Developing Explanations: Describe different methods that scientists may use to develop a scientific explanation.

**TOP:**
- Developing Explanations: Describe different methods that scientists may use to develop a scientific explanation.

**KEY:**
- evidence | method | fieldwork | explanation

**MSC:**
- Florida FCAT Preparation | Uses visual element | g8_unit1_Pretest

**94.**

**ANS:** D

A is incorrect because Miami and Mobile are not as far apart as Wilmington and Mobile.

B is incorrect because Savannah and Tampa are not as far apart as Wilmington and Mobile.

C is incorrect because Pensacola and Jacksonville are not as far apart as Wilmington and Mobile.

D is correct because Wilmington and Mobile are the farthest apart on the map.

**PTS:** 1

**DIF:** Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding

**OBJ:**
- G6_NC_87350_ScientificKnowledge

**STA:**
- SC.8.N.1.5

**TOP:**
- Developing Explanations: Describe different methods that scientists may use to develop a scientific explanation.

**KEY:**
- migratory range | manatee | tracking | mapping

**MSC:**
- Florida FCAT Preparation | Uses visual element |

**95.**

**ANS:** B

A is incorrect because the area from Mobile to Pensacola is at the northwestern edge of the manatees’ summer range, and the water there is not likely to be warm enough in January.

B is correct because the area from the coast of Tampa to Jacksonville is where the water will be warmest during January.

C is incorrect because this area is at the northeastern edge of the manatees’ summer range, and the water between Savannah and Wilmington is likely to be too cold in January.

D is incorrect because Jacksonville is the northernmost point of the manatees’ winter range in the Gulf of Mexico, and manatees are unlikely to be found north of there in January.

**PTS:** 1

**DIF:** Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding

**OBJ:**
- G6_NC_87350_ScientificKnowledge

**STA:**
- SC.8.N.1.3 | SC.8.N.1.5

**TOP:**
- Developing Explanations: Describe different methods that scientists may use to develop a scientific explanation.

**KEY:**
- biologists | research | track | evidence | migration

**MSC:**
- Florida FCAT Preparation | Uses visual element |
96. ANS: A
A is correct because the map shows the manatee winter range in Florida and Georgia.
B is incorrect because the map does not include Alabama in the manatee winter range.
C is incorrect because the map does not include Alabama in the manatee winter range.
D is incorrect because the map does not include South Carolina in the manatee winter range.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Supporting Theories: Identify a scientific theory and describe the evidence that supports it.
KEY: migratory range | manatee | method | evidence | map support
MSC: Florida FCAT Preparation | Uses visual element | g8_unit1_Pretest

97. ANS: C
A is incorrect because the description of the set up indicates that the manatees are in open water and can travel; the description does not indicate that the manatees are restricted to a scientific facility.
B is incorrect because the description indicates the tracking devices monitor travel, not breeding habits.
C is correct because the description indicates that the tracking devices allow the manatees to travel in their normal ranges.
D is incorrect because the description indicates that the manatees are monitored via satellite, not with in-person checks.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Average | Depth of Knowledge: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Developing Explanations: Describe different method scientists may use to develop a scientific explanation.
KEY: evidence | scientific investigation
MSC: Florida FCAT Preparation | Uses visual element | g8_unit1_Unit Test A | IN g8_u1_Unit Test A

98. ANS: B
A is incorrect because health monitoring would require more than a global positioning system.
B is correct because a global positioning system provides precise information on the location of its target.
C is incorrect because a global positioning system does not provide information on the manatee's food supplies.
D is incorrect because a global positioning system monitors where the manatee is, not where it will go.

PTS: 1
99. **ANS:** C
A is incorrect because theories remain valid until new evidence supports a theory modification, which may be longer than ten years.
B is incorrect because scientists want to validate their own work.
C is correct because when new evidence supports a revision to an existing theory, it is modified.
D is incorrect because quantity of information does not, by itself, make it harder or easier to provide evidence to support or fail to support a theory.

PTS: 1

100. **ANS:** D
A is incorrect because the Indian Plate, including land and ocean, is not relevant to the movement of plates.
B is incorrect because the position of the Tibetan Plateau is not relevant to movement of plates as shown by the arrows.
C is incorrect because the position of the Indian Plates is not relevant to the movement of plates as shown by the arrows.
D is correct because the arrows show movement of the plates. This map feature supports the theory of plate tectonics, which says that crustal plates move.

PTS: 1
A is incorrect because changing sea levels would not be evidence that the crust is made of moving plates.

B is incorrect because the idea that Earth’s core is mostly iron and nickel would not cause scientists to accept plate tectonics.

C is correct because knowing that earthquakes are concentrated in certain areas means something is happening in Earth’s crust in those areas that could lead to the theory of plate movement.

D is incorrect because new rock can form independently of plate movement.

PTS: 1


OBJ: G6_NC_87350_ScientificKnowledge

STA: SC.8.N.1.5

TOP: Supporting Theories: Describe the evidence that caused scientists to modify the theory.

KEY: earthquake | modify | plate tectonics theory

MSC: Florida FCAT Preparation

ANS: A

A is correct because examining their results fairly will allow scientists to make honest conclusions.

B is incorrect because the goal is to find a scientifically correct theory, which may or may not win the scientists fame.

C is incorrect because the scientific goal is to find the truth in the research results. This work may or may not be profitable.

D is incorrect because the scientific goal is evidence that supports a theory as valid, whatever its personal appeal to the researcher.

PTS: 1

DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

OBJ: G6_NC_87350_ScientificKnowledge

STA: SC.8.N.1.5

TOP: Evaluating Evidence: Distinguish between reliable and unreliable scientific source.

KEY: scientific research | explanation | unbiased investigation

MSC: Test Generator

ANS: B

A is incorrect because theories are based on much evidence collected from many different investigations. Repeating a specific investigation does not form a theory.

B is correct because scientists repeat experiments or trials to be certain their results can be duplicated by others.

C is incorrect because the repeating an experiment requires following the original experimental protocols to maximize confidence in the validity of the data.

D is incorrect because repeat experiments are conducted using the original procedures and protocols.

PTS: 1
104. ANS: A
A is correct because, in an expanding universe, the distance between galaxies increases. B is incorrect because the observation that galaxies are moving closer to each other supports the idea of a collapsing universe, not an expanding universe. C is incorrect because the observation that galaxies are not moving toward or away from each other supports the idea of a static universe, not an expanding universe. D is incorrect because the observation that galaxies are spiraling away toward each other does not support the theory of an expanding universe.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.3 | SC.8.N.1.5
TOP: Evaluating Evidence: Understand the meaning of scientific proof.
KEY: expanding universe | scientific theory | evidence
MSC: Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson2 Quiz

105. ANS: A
A is correct because determining the age for each layer will show that the bottom layer is oldest and provide evidence for the law of superposition. B is incorrect because determining age for the top layer only will not determine which layer is oldest. C is incorrect because determining age for the bottom layer only will not determine which layer is oldest. D is incorrect because mixing samples of all layers together will make it impossible to determine the age of each layer.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_87350_ScientificKnowledge
STA: SC.8.N.1.5
TOP: Developing Explanations: Describe different method scientists may use to develop a scientific explanation.
KEY: rock layer | law of superposition | explanation | evidence | method
MSC: Test Generator
A is incorrect because research about the dinosaur that laid the eggs is good source for expanding the knowledge already published.
B is correct because a rival scientist may be biased and not inclined to support the work presented in the article.
C is incorrect because part of a book by an expert paleontologist would contribute to, and expand, knowledge presented in the article.
D is incorrect because a report by an expert who reviewed the data represented in the article is validating the work, thus contributing to the knowledge presented in the journal.

107. ANS: D
A is incorrect because the dog barking is something the dog can do independently of anything happening to the glass.
B is incorrect because the dog can go outside independently of anything happening to the glass.
C is incorrect because Jessica might hear the dog bark when it was unrelated to anything happening to the glass.
D is correct because Jessica heard the crash at a time when the dog was most likely to have caused something to happen to the glass.

108. ANS: C
• A is incorrect because the sun is a single star, but the system Carlos is studying has three stars, which makes it a triple system.
• B is incorrect because Mizar is a quadruple system, but the system Carlos is studying has three stars, which makes it a triple system.
• C is correct because the system has three stars, which makes it a triple system like Polaris.
• D is incorrect because Castor is a sextuple star system, but the system Carlos is studying has three stars, which makes it a triple system.
109. ANS: D
   • A is incorrect because single star systems have only one star.
   • B is incorrect because the system is made up of two binary stars, which makes it a quadruple system.
   • C is incorrect because the system has four stars, not three as found in triple systems.
   • D is correct because the system has a pair of binaries, which makes a total of four stars in the system.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Depth of Knowledge 2: Basic Application of Skill | Student Level: Basic | Bloom's Traditional: Application | Bloom's Revised: Applying
OBJ: G6_EC_81110_Stars STA: SC.8.E.5.5
TOP: Stars: Identify the different types of star systems.
KEY: star | star system | binary
MSC: Test Generator | Uses visual element | g8_unit2_Unit Test B

110. ANS: A
   • A is correct because the star with the smallest apparent magnitude would appear to be the brightest.
   • B is incorrect because stars with bigger apparent magnitudes are dimmer, and stars with smaller apparent magnitudes are brighter.
   • C is incorrect because Arcturus has a bigger apparent magnitude than Sirius, which makes Arcturus appear dimmer from Earth than Sirius.
   • D is incorrect because stars with bigger apparent magnitudes are dimmer, and stars with smaller apparent magnitudes are brighter.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Depth of Knowledge 2: Basic Application of Skill | Student Level: Average | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_EC_81110_Stars STA: SC.8.E.5.5
TOP: Brightness and Luminosity: Describe the way in which astronomers measure the brightness of stars.
KEY: luminosity | brightness | apparent magnitude | absolute magnitude
MSC: Test Generator | Uses visual element | g8_unit2_Lesson Quiz

111. ANS: D
   • A is incorrect because color is used to estimate a star's surface temperature and not to calculate apparent magnitude or luminosity.
   • B is incorrect because Aldebaran appears the dimmest from Earth.
• C is incorrect because stars that have smaller absolute magnitudes are more luminous than stars that have bigger absolute magnitudes.
• D is correct because Sirius has the smallest apparent magnitude, which makes it look brightest from Earth, and Rigel has the smallest absolute magnitude, which makes it the most luminous star.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Depth of Knowledge 3: Strategic Thinking | Student Level: Advanced | Bloom’s Traditional: Synthesis and Evaluation | Bloom’s Revised: Evaluating
OBJ: G6_EC_81110_Stars
STA: SC.8.E.5.5
TOP: Brightness and Luminosity: Describe the way in which astronomers measure the luminosity of stars.
KEY: absolute magnitude | apparent magnitude | luminosity | brightness
MSC: Test Generator | Uses visual element

ANS: B
• A is incorrect because the graph clearly shows a relationship between temperature and absolute magnitude.
• B is correct because hotter stars are positioned higher on the y-axis, which indicates that they have a greater absolute magnitude.
• C is incorrect because the relationship is not an inverse one; the hotter the star, the greater the luminosity.
• D is incorrect because hotter stars would have smaller absolute magnitudes.

PTS: 1
OBJ: G6_EC_81110_Stars
STA: SC.8.E.5.5
TOP: Brightness and Luminosity: Describe the way in which astronomers measure the luminosity of stars.
KEY: luminosity | brightness | temperature | absolute magnitude
MSC: Test Generator | Uses visual element | g8_unit2_Unit Test B

ANS: A
• A is correct. Arneb is 74 times larger than the sun. If the radius of the sun measures 0.5 mm, then the radius of Arneb would have to be 37 mm to be to scale.
• B is incorrect because the drawing of Arneb would need to be 74 mm in radius for the sun to measure 1 mm in diameter.
• C is incorrect because Arneb and the sun are not the same size in the original drawing.
• D is incorrect because the sun would have a radius of 1 mm if the drawing of Arneb had a radius of 74 mm.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Depth of Knowledge 3: Strategic Thinking | Student Level: Advanced | Bloom’s Traditional: Analysis | Bloom’s Revised: Analyzing
REF: 469eae09-e685-11de-9c72-001185f0d2ea
OBJ: G6_EC_81110_Stars
STA: SC.8.E.5.5  TOP: Size: Compare the size of the sun to the size of other stars.
KEY: sun | size | solar radius  MSC: Test Generator | Uses visual element |

114. ANS: B
• A is incorrect because the apparent magnitude of Venus is bigger than the apparent magnitude of the full moon, so it is dimmer.
• B is correct because of the objects listed, the full moon has the smallest apparent magnitude, making it the brightest object observed from Earth.
• C is incorrect because Barnard’s Star has the biggest apparent magnitude in the chart, so it is the dimmest object listed.
• D is incorrect because Alpha Centauri has a bigger apparent magnitude than the full moon and Venus, so it is dimmer.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Depth of Knowledge 1: Recall | Student Level: Basic | Bloom's Traditional: Application | Bloom's Revised: Applying
REF: 46aa72c0-e685-11de-9c72-001185f0d2ea  OBJ: G6_EC_81110_Stars
STA: SC.8.E.5.5
TOP: Brightness and Luminosity: Describe the way in which astronomers measure the brightness of stars.
KEY: star | brightness | apparent magnitude
MSC: Florida FCAT Preparation | Uses visual element | g8_unit2_Pretest

115. ANS: C
• A is incorrect because any objects with an apparent magnitude bigger than 6 cannot be seen with the naked eye.
• B is incorrect because any objects with an apparent magnitude bigger than 10 cannot be seen with binoculars.
• C is correct because the Hale telescope can be used to observe an object of apparent magnitude 27.
• D is incorrect because a 1-m telescope can be used to observe objects having an apparent magnitude of 19 or brighter.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Depth of Knowledge 2: Basic Application of Skill | Student Level: Average | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
REF: 46aa99d0-e685-11de-9c72-001185f0d2ea  OBJ: G6_EC_81110_Stars
STA: SC.8.E.5.5
TOP: Brightness and Luminosity: Describe the way in which astronomers measure the brightness of stars.
KEY: star | brightness | absolute magnitude
MSC: Test Generator | Uses visual element | g8_unit2_Unit Test A

116. ANS: D
• A is incorrect because the color of a star does not indicate whether it is a single star or part of a multiple star system.
• B is incorrect because the system described has only one star, so it is a single star system.
• C is incorrect because a binary star system consists of two stars, not four stars.
• D is correct because a binary star system consists of two stars that orbit each other.
PTS: 1
OBJ: G6_EC_81110_Stars STA: SC.8.E.5.5
TOP: Stars: Identify the different types of star systems.
KEY: star | star system | binary
MSC: Test Generator | g8_unit2_Lesson Quiz

117. ANS: D
  • A is incorrect because star A has a negative apparent magnitude, which means it is a brighter star.
  • B is incorrect because even though star B has a big apparent magnitude, it does not have the biggest apparent magnitude of the stars listed.
  • C is incorrect because stars that have smaller apparent magnitudes appear brighter.
  • D is correct because star D has the biggest apparent magnitude, which means it is the dimmest star.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying
OBJ: G6_EC_81100_Stars STA: SC.8.E.5.5
TOP: Describe the way in which astronomers measure the brightness of stars.
KEY: starts | temperature | characteristic
MSC: Florida FCAT Preparation | Uses visual element | g8_unit2_Unit Test A

118. ANS: C
  • A is incorrect because a constellation is a group of stars that forms a pattern in the sky.
  • B is incorrect because a galaxy consists of millions or billions of stars.
  • C is correct because a solar system, like the one shown, consists of a star and its family of orbiting bodies.
  • D is incorrect because the universe consists of all the matter and energy in space.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Comprehension | Bloom's Revised: Remembering
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Solar System: Define solar system.
KEY: solar system | star | planets
MSC: Test Generator | Uses visual element | g8_unit2_Unit Test A

119. ANS: B
  • A is incorrect because a large celestial body that is composed of gas and emits light is a star.
  • B is correct because a planet is any one of the primary bodies that orbits a star.
  • C is incorrect because many stars held together by gravity describes a galaxy.
  • D is incorrect because space and all the matter and energy in it describes the universe.
PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
REF: 45e48f3f-e685-11de-9c72-001185f0d2ea
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Planets: Define planet. KEY: planets | orbit | solar | system
MSC: Test Generator | g8_unit2_Lesson Quiz

120. ANS: A
• A is correct because planets in a solar system orbit a star.
• B is incorrect because planets in a solar system do not orbit a moon, they orbit a star.
• C is incorrect because planets in a solar system do not orbit a galaxy, they orbit a star.
• D is incorrect because planets in a solar system do not orbit the universe, they orbit a star.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
REF: 45e6f19a-e685-11de-9c72-001185f0d2ea
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Solar System: Define solar system. | Planets: Define planet. KEY: solar | system | orbit | planets
MSC: Test Generator | g8_unit2_Unit Test A

121. ANS: C
• A is incorrect because the sun, not Earth, is the largest body in our solar system.
• B is incorrect because Jupiter is the largest planet in our solar system, but the sun is the largest object in our solar system.
• C is correct because the sun is the largest object in our solar system.
• D is incorrect because the sun, not Earth’s moon, is the largest object in our solar system.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
REF: 45e718aa-e685-11de-9c72-001185f0d2ea
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Solar System: Define solar system. | Planets: Describe the size of planets. KEY: planets | sun | solar system
MSC: Test Generator | g8_unit2_Unit Test B

122. ANS: C
• A is incorrect because gas giant planets are larger than terrestrial planets.
• B is incorrect because terrestrial planets are denser than gas giant planets.
• C is correct because terrestrial planets have thinner atmospheres than gas giant planets.
• D is incorrect because terrestrial planets have rocky crusts, and gas giant planets do not.

PTS: 1
123. **ANS:** D

- A is incorrect because the Earth is located closer to the sun than Saturn.
- B is incorrect because having a ring system does not determine or affect a planet's density.
- C is incorrect because the surface temperature of a planet does not determine its density.
- D is correct because Saturn is a gaseous planet, which would make its density less than that of Earth, a terrestrial planet.

**PTS:** 1

124. **ANS:** D

- A is incorrect because a star does not have a crust, mantle, and core.
- B is incorrect because a galaxy is a group of millions or billions of stars held together by gravity.
- C is incorrect because a gas giant does not have a crust, mantle, and core.
- D is correct because a terrestrial planet has a crust, mantle, and core.

**PTS:** 1

125. **ANS:** B

- A is incorrect because the physical composition of a planet cannot be described as bright, and planets do not emit their own light.
- B is correct because terrestrial planets tend to be rocky.
- C is incorrect because a terrestrial planet is not liquid.
- D is incorrect because a terrestrial planet is not gaseous.
126. ANS: D
• A is incorrect because carbon makes up only about 0.4% of the Sun’s mass.
• B is incorrect because helium makes up only about 27% of the Sun’s mass.
• C is incorrect because oxygen makes up only about 1% of the Sun’s mass.
• D is correct because hydrogen makes up about 71% of the Sun’s mass.

127. ANS: B
• A is incorrect because the star is similar to the sun in color, size, and surface temperature, so it is not a white dwarf but a medium-sized yellow star, like the sun.
• B is correct because the star is similar to the sun in color, size, and surface temperature, so it is a medium-sized yellow star, like the sun.
• C is incorrect because the star is similar to the sun in color, size, and surface temperature, so it is a medium-sized yellow star, like the sun, and would not be hotter than most other stars in our galaxy.
• D is incorrect because the star is similar to the sun in color, size, and surface temperature, so it is a medium-sized yellow star, like the sun, and would not be brighter than most other stars in our galaxy.

128. ANS: D
• A is incorrect because a moon is a satellite of a single planet, not a group of objects orbiting a star.
• B is incorrect because a planet is a body that orbits a star, not a group of objects in orbit around a star.
• C is incorrect because a galaxy contains millions or billions of stars held together by gravity.
• D is correct because a solar system consists of a star and all the objects in orbit around it.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Revised: Applying
OBJ: G6_EC_81010_TheStructureOfTheUniverse
TOP: Solar System: Define solar system.
KEY: solar | system | orbit | planets | star
MSC: Florida FCAT Preparation | Uses visual element | g8_unit2_Pretest

129. ANS: C
• A is incorrect because the sun is not solid, it is gaseous.
• B is incorrect because the sun is not a moon, it is a star.
• C is correct because the sun is a medium-sized star.
• D is incorrect because the sun is not a planet, it is a star.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse
TOP: Solar System: Define solar system.
KEY: star | sun | solar system
MSC: Test Generator | g8_unit2_Unit Test B

130. ANS: C
• A is incorrect because gravity, not heat, holds a galaxy together.
• B is incorrect because gravity, not light, holds a galaxy together.
• C is correct because gravity holds a galaxy together.
• D is incorrect because gravity, not friction, holds a galaxy together.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom’s Revised: Remembering
OBJ: G6_EC_81010_TheStructureOfTheUniverse
TOP: Galaxies: Define galaxy.
KEY: galaxy | gravity | force
MSC: Florida FCAT Preparation | SE Unit g8_unit2 FCAT pages

131. ANS: B
• A is incorrect because a galaxy, not a moon, is a collection of stars. A moon is a natural satellite that revolves around a planet.
• B is correct because galaxies are groups of millions or billions of stars held together by their own gravity.
• C is incorrect because a galaxy, not the universe, is a collection of millions or billions of stars. The universe is made up of a very large number of galaxies.
• D is incorrect because a galaxy, not a solar system, is a collection of millions or billions of stars. A solar system is made up of a star and the objects that orbit it.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.2
TOP: Galaxies: Define galaxy. | Galaxies: Describe the size and composition of galaxies.
KEY: galaxy | star | gravity
MSC: Florida FCAT Preparation | Uses visual element | SE Unit g8_unit2 FCAT pages

132. ANS: A
• A is correct because gravity holds stars together in a galaxy.
• B is incorrect because gravity, not density, holds stars together in a galaxy.
• C is incorrect because gravity, not star composition, holds stars together in a galaxy.
• D is incorrect because gravity, not the temperatures of the stars, holds stars together in a galaxy.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom’s Traditional: Knowledge | Bloom’s Revised: Remembering
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.2
TOP: Galaxies: Define galaxy. | Galaxies: Describe the size and composition of galaxies.
KEY: galaxy | gravity | star
MSC: Test Generator | g8_unit2_Lesson Quiz

133. ANS: B
• A is incorrect because most stars are located within galaxies.
• B is correct because the universe is made up of galaxies and voids.
• C is incorrect because moons are located within solar systems, and solar systems are located within galaxies.
• D is incorrect because planets are located within galaxies.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.2
TOP: The Universe: Define universe. | The Universe: Describe the composition of the universe.
KEY: universe | galaxy | voids
MSC: Test Generator | g8_Benchmark Test A

134. ANS: A
• A is correct because a light-year is the distance light can travel in one year.
• B is incorrect because a light-year is the distance light can travel in one year. It is not a measure of the brightness of light.
• C is incorrect because a light-year is the distance light can travel in one year, not the number of years it takes light to travel to Earth.
• D is incorrect because a light-year is a measure of distance, not time.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.1
TOP: Light-year: Define light-year. KEY: light-year | distance | measure
MSC: Test Generator

135. ANS: D
• A is incorrect because a light-year is a unit of length, not time.
• B is incorrect because a light-year is 9.5 trillion km, not 950,000 km.
• C is incorrect because a light-year is a unit of length, not time.
• D is correct because a light-year is 9.5 trillion km.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.1
TOP: Light-year: Define light-year. KEY: light-year | length | distance
MSC: Test Generator | g8_unit2_Unit Test A

136. ANS: C
• A is incorrect because the light-year is a unit of length, and the gram is a unit of mass.
• B is incorrect because the light-year is a unit of length, and the second is a unit of time.
• C is correct because both the light-year and the kilometer are units of length.
• D is incorrect because the light-year is a unit of length, and degrees Celsius is a unit of temperature.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Average | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.1
TOP: Light-year: Define light-year. KEY: light | year | distance | kilometer | unit
MSC: Florida FCAT Preparation | g8_unit2_Pretest

137. ANS: D
• A is incorrect because 2.1 ly is about 20 trillion km, which is not as long a distance as 1 million ly.
• B is incorrect because 950,000 km is not as long a distance as 1 million ly.
• C is incorrect because 9.5 trillion km (1 ly) is not as long a distance as 1 million ly.
• D  is correct because 1 light-year is about 9.5 trillion km, so 1 million ly is about $9.5 \times 10^{18}$ km, which is the longest distance listed.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Analysis | Bloom's Revised: Analyzing
OBJ: G6 EC 81010_TheStructureOfTheUniverse STA: SC.8.E.5.1
TOP: Light-year: Define light-year. | Light-year: Describe the scale of distances in the universe.
KEY: light | year | distance | kilometer | km
MSC: Test Generator | g8_unit2_Unit Test B

ANS: C
• A is incorrect because 2 ly is equivalent to 19 trillion km, not 19 billion km.
• B is incorrect because 2 ly is equivalent to 19 trillion km, not 90 billion km.
• C is correct because 2 ly is equivalent to 19 trillion km.
• D is incorrect because 2 ly is equivalent to 19 trillion km, not 90 trillion km.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying
OBJ: G6 EC 81010_TheStructureOfTheUniverse STA: SC.8.E.5.1
TOP: Light-year: Define light-year.
KEY: light | year | unit | distance | kilometer
MSC: Test Generator

ANS: C
• A is incorrect because the light from a star 3 ly away would take 3 y to reach Earth, not 3 min.
• B is incorrect because the light from a star 3 ly away would take 3 y to reach Earth, not 3 h.
• C is correct because the light from a star 3 light-years away would take 3 y to reach Earth.
• D is incorrect because the light-year is a unit of distance, not time.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Advanced | Depth of Knowledge 3: Strategic Thinking | Bloom's Traditional: Application | Bloom's Revised: Analyzing
OBJ: G6 EC 81010_TheStructureOfTheUniverse STA: SC.8.E.5.1
TOP: Light-year: Define light-year.
KEY: light | year | unit
MSC: Test Generator | g8_unit2_Lesson Quiz

ANS: B
• A is incorrect because Barnard’s Star and Earth are about 6 ly apart, which is not the shortest distance listed in the table.
• B is correct because Neptune and Earth are about 4.3 billion km apart, which is just a fraction of a light-year and the shortest distance listed.
• C is incorrect because the Andromeda galaxy and Earth are about 2.4 million ly apart, which is not the shortest distance listed.
• D is incorrect because the Triangulum galaxy and Earth are about 2.6 million ly away, which is not the shortest distance listed.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying
OBJ: G6_EC_81010_TheStructureOfTheUniverse | STA: SC.8.E.5.1
TOP: Light-year: Describe the scale of distances in the universe.
KEY: light-year | unit | kilometer
MSC: Test Generator | Uses visual element | g8_unit2_Unit Test A

141. ANS: D
A is incorrect because the moon is not hotter than the sun, and this would not affect how their sizes are viewed from Earth.
• B is incorrect because the densities of the sun and moon do not affect their sizes when viewed from Earth.
• C is incorrect because the moon is not brighter than the sun, and this would not affect how their sizes are viewed from Earth.
• D is correct. The moon and sun appear to be the same size when viewed from Earth because the moon is closer to Earth than the sun.

PTS: 1
OBJ: G6_EC_81010_TheStructureOfTheUniverse | STA: SC.8.E.5.1
TOP: Light-year: Describe the scale of distances in the universe.
KEY: moon | sun | distance
MSC: Florida FCAT Preparation | SE Unit g8_unit2 FCAT pages

142. ANS: D
• A is incorrect because two planets in the same solar system are not located farther apart than two galaxies.
• B is incorrect because Earth and the sun are in the same solar system and are not located farther apart than two galaxies.
• C is incorrect because Earth and the moon are not located farther apart than two galaxies.
• D is correct because two galaxies are located the farthest apart of any other pair of objects listed.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Applying
OBJ: G6_EC_81010_TheStructureOfTheUniverse | STA: SC.8.E.5.1
TOP: Light-year: Describe the scale of distances in the universe.
KEY: light-year | distance | Milky Way | Andromeda | galaxy
MSC: Test Generator | g8_unit2_Unit Test B

143. ANS: C
- A is incorrect because Earth and the sun are in the same solar system, so this journey would not take the longest.
- B is incorrect because Earth and the moon are in the same solar system, so this journey would not take the longest.
- C is correct because a journey from Earth to a star outside the solar system would take the longest.
- D is incorrect because Earth and Neptune are in the same solar system, so this journey would not take the longest.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Application | Bloom’s Revised: Analyzing
REF: 460879a4-e685-11de-9c72-001185f0d2ea
OBJ: G6_EC_81010_TheStructureOfTheUniverse
STA: SC.8.E.5.1

144. ANS: A
- A is correct because spacecraft travel at about 58,000 km/h or about \( \frac{1}{10,000} \) the speed of light.
- B is incorrect because spacecraft cannot travel at half the speed of light; they travel much slower.
- C is incorrect because spacecraft cannot travel at the speed of light; they travel much slower.
- D is incorrect because spacecraft cannot travel at twice the speed of light; they travel much slower.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom’s Traditional: Knowledge | Bloom’s Revised: Understanding
REF: 460ab4ef-e685-11de-9c72-001185f0d2ea
OBJ: G6_EC_81010_TheStructureOfTheUniverse
STA: SC.8.E.5.1

145. ANS: C
- A is incorrect because a star is smaller than a galaxy.
- B is incorrect because a planet is smaller than a galaxy.
- C is correct because the universe is larger than a galaxy.
- D is incorrect because a solar system is smaller than a galaxy.
146. ANS: A
• A is correct because the universe is larger than a galaxy, a galaxy is larger than a star, and a star is larger than a planet.
• B is incorrect because a star is larger than a planet.
• C is incorrect because the universe is larger than a galaxy.
• D is incorrect because the universe is larger than a galaxy, and a star is larger than a planet.

147. ANS: A
• A is correct because planets are generally smaller than stars, and the sun, a red supergiant star, and a red giant star are all larger than a planet.
• B is incorrect because planets are generally smaller than stars, and the sun is a medium-sized star.
• C is incorrect because planets are generally smaller than stars, and a red supergiant is a very large star.
• D is incorrect because planets are generally smaller than stars, and a red giant is a large star.

148. ANS: C
• A is incorrect because brightness would not affect the sizes of the models that Kate chose to use.
• B is incorrect because density would not affect the sizes of the models that Kate chose to use.
• C is correct because Earth is smaller in size and mass than the sun, which is why Kate chose a smaller object to represent Earth and a much larger object to represent the sun.
• D is incorrect because the sun is not a gas giant planet.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Planets: Describe the size of planets. | Stars: Describe the size and composition of stars. KEY: planets | Earth | sun | model | size | mass
MSC: Florida FCAT Preparation | Uses visual element | g8_unit2_Pretest
149. ANS: B
• A is incorrect because Mercury’s density is not the greatest on the list.
• B is correct because Earth’s density is the greatest on the list.
• C is incorrect because Saturn’s density is not the greatest on the list.
• D is incorrect because Uranus’ density is not the greatest on the list.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Planets: Explain the differences in composition of the planets. KEY: density | table | planets
MSC: Test Generator | Uses visual element | g8_unit2_Unit Test A
150. ANS: A
• A is correct because gas giant planets have lower densities than terrestrial planets.
• B is incorrect because terrestrial planets have higher densities than gas giant planets.
• C is incorrect because a supergiant is not a type of planet but a type of star.
• D is incorrect because a white dwarf is not a type of planet but a type of star.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Analyzing
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Planets: Explain the differences in composition of the planets. KEY: density | table | planets
MSC: Florida FCAT Preparation | Uses visual element | g8_unit2_Unit Test B
151. ANS: D
• A is incorrect because Mercury’s density is not the closest to the sun’s density.
• B is incorrect because Earth’s density is not the closest to the sun’s density.
• C is incorrect because Mars’ density is not the closest to the sun’s density.
• D is correct because Jupiter’s density is the closest to that of the sun.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Understanding
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Planets: Explain the differences in composition of the planets.
KEY: density | table | planets
MSC: Test Generator | Uses visual element

152. ANS: B
• A is incorrect because Jupiter’s density is greater than that of water.
• B is correct because Saturn’s density is less than that of water.
• C is incorrect because Uranus’ density is greater than that of water.
• D is incorrect because Neptune’s density is greater than that of water.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Application | Bloom's Revised: Analyzing
OBJ: G6_EC_81010_TheStructureOfTheUniverse STA: SC.8.E.5.3
TOP: Planets: Explain the differences in composition of the planets.
KEY: density | table | planets | water | float | sink
MSC: Florida FCAT Preparation | Uses visual element | g8_unit2_Pretest

153. ANS: D
A is incorrect because science involves the study of nonliving items, as well.
B is incorrect because science involves the observational study of the entire universe.
C is incorrect because science is based on systematic study and evidence, not on feelings and thoughts.
D is correct because science is the systematic study of natural events and conditions.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
REF: 4e7868a2-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.2.2
TOP: Science and Scientific Explanations: Define science.
KEY: science | nature
MSC: Test Generator | g8_unit1_Unit Test A | IN g8_u1 Unit Test A

154. ANS: A
A is correct because a natural phenomenon cannot be investigated unless it can be closely observed, which may require special instruments such as microscopes and telescopes.
B is incorrect because scientists study objects that are found in outer space, such as other planets and stars.
C is incorrect because scientists often investigate issues that others first raised. In many cases, the scientists uncover new information.
D is incorrect because a scientist may collaborate with others who can provide the expertise that is needed.
Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Knowledge | Bloom’s Revised: Remembering

OBJ: G6_NC_97990_WhatIsScience

STA: SC.8.N.2.2

TOP: Science and Scientific Explanations: Evaluate the strengths and limits of science in terms of scope, topic, and explanations.

KEY: science | scientist | observation

MSC: Test Generator | g8_unit1 Lesson Quiz

157. ANS: B

A is incorrect because the new information may support the existing theory.
B is correct because scientists must reevaluate the theory to determine whether it needs to be revised as a result of the new information.
C is incorrect because the new information may cause the existing theory to be discarded.
D is incorrect because the new information may cause scientists to modify or even discard the existing theory.

PTS: 1

DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding

REF: 4e7d5468-e685-11de-9c72-001185f0d2ea

OBJ: G6_NC_97990_WhatIsScience

STA: SC.8.N.2.2

TOP: Science and Scientific Explanations: Evaluate the strengths and limits of science in terms of scope, topic, and explanations.

KEY: science | scientist | theory

MSC: Test Generator | g8_unit1 Lesson Quiz

158. ANS: B

A is incorrect because creativity involves making or designing something, not developing questions about observations.
B is correct because scientists use their curiosity to wonder why natural events happen the way they do.
C is incorrect because objectivity involves evaluating facts in an unbiased way, not developing questions about observations.
D is incorrect because skepticism involves doubting a conclusion, not developing questions about observations.

PTS: 1

DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding

REF: 4e7f8fb3-e685-11de-9c72-001185f0d2ea

OBJ: G6_NC_97990_WhatIsScience

STA: SC.8.N.1.6

TOP: Traits of scientists: List the trait people use when they engage in science, assessing how each aids in advancing science.

KEY: science | scientist

MSC: Test Generator | g8_unit1_Unit Test A

159. ANS: A

A is correct because by being observant, scientists record the details of the phenomena they are studying.
B is incorrect because investigations are not part of observation. Instead, they are the result of planning.
C is incorrect because scientists plan their experimental designs after observing the natural world.
D is incorrect because explanations of experimental data are the result of analyzing the observations.

PTS: 0
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
REF: 4e81f20e-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.1.6
TOP: Traits of scientists: List the trait people use when they engage in science, assessing how each aids in advancing science.
KEY: science | scientist
MSC: Florida FCAT Preparation | g8_unit1_Pretest

160. ANS: A
A is correct because scientists use creativity to design experiments.
B is incorrect because determination is not the principal trait used by scientists in designing an experiment. Scientists may be determined to complete an investigation so that the question may be answered or the problem solved.
C is incorrect because objectivity is not the principal trait used by scientists in designing an experiment. Scientists depend upon objectivity when recording information so as not to allow personal bias to influence the process.
D is incorrect because skepticism is not the principal trait used by scientists in designing an experiment. Scientists typically use skepticism after designing the experiment—for example, when making repeated observations, replicating experiments, and examining experimental designs and conclusions.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
REF: 4e82191e-e685-11de-9c72-001185f0d2ea
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.1.6
TOP: Traits of scientists: List the trait people use when they engage in science, assessing how each aids in advancing science.
KEY: science | scientist
MSC: Test Generator | g8_unit1_Unit Test B

161. ANS: C
A is incorrect because a scientist needs curiosity to investigate questions about the natural world.
B is incorrect because a scientist needs imagination to inquire about the natural world and to obtain an explanation of what is happening.
C is correct because a scientist needs logic to devise an explanation for data.
D is incorrect because a scientist needs skepticism to repeat observations and evaluate designs and conclusions.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
162. **ANS:** D

A is incorrect because a scientist always needs objectivity to make accurate measurements. He needs curiosity when investigating questions about the natural or physical world.

B is incorrect because the scientist always needs objectivity to make accurate measurements. She needs creativity when designing experiments and devising explanations of data.

C is incorrect because the scientist always needs objectivity to make accurate measurements. He needs logic when reasoning, solving problems, and devising explanations of data.

D is correct because the scientist always needs objectivity to take accurate measurements. Measurements and observations must not depend on the mood or personal bias of the people making them.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

**OBJ:** G6_NC_97990_WhatIsScience | STA: SC.8.N.1.6

**TOP:** Traits of scientists: List the trait people use when they engage in science, assessing how each aids in advancing science.  

**KEY:** science | scientist

163. **ANS:** D

A is incorrect because creativity involves designing or making something new, not doubting the work of others.

B is incorrect because determination involves a firm commitment to one’s work despite obstacles and setbacks.

C is incorrect because imagination involves resourceful handling of problems, not doubting the work of others.

D is correct because scientists are skeptical when they reevaluate data that seem questionable.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

**OBJ:** G6_NC_97990_WhatIsScience | STA: SC.8.N.1.6

**TOP:** Traits of scientists: List the trait people use when they engage in science, assessing how each aids in advancing science.  

**KEY:** science | scientist

164. **ANS:** A
A is correct because an explanation is useless unless it is supported by evidence. B is incorrect because scientific explanations can be amended as new scientific evidence is found. C is incorrect because a practical application is a benefit but not a necessity. D is incorrect because a scientist can attempt to explain information that has not been previously gathered by anyone.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.2.2
TOP: Science and Scientific Explanations: Describe the nature of scientific explanations.
KEY: science | scientist
MSC: Florida FCAT Preparation | g8_unit1_Pretest | IN g8_u1 Pretest

165. ANS: D
A is incorrect because pseudoscience may involve making observations. For example, astrological predictions are based upon celestial observations. B is incorrect because pseudoscience often involves examining phenomena in the natural world. For example, astrology involves planets and stars, which are part of the natural world. C is incorrect because pseudoscience may involve topics that are important to people. For example, astrologists make predictions that concern people and their future. D is correct because pseudoscientific conclusions often cannot be supported scientifically because data is not gathered using scientific methods.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom’s Traditional: Comprehension | Bloom’s Revised: Understanding
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.2.1
TOP: Science and pseudoscience: Distinguish between scientific and pseudoscientific claims.
KEY: science | pseudoscience
MSC: Florida FCAT Preparation | g8_unit1_Unit Test B

166. ANS: B
A is incorrect because a hypothesis is a reasonable explanation of an observed phenomenon. B is correct because pseudoscience lacks support from valid scientific data. C is incorrect because natural science investigates our world with the help of experiments that involve the proper controls. D is incorrect because the scientific method often involves experiments that must be carefully designed and properly executed.

PTS: 1
DIF: Cognitive Complexity: High Complexity | Student Level: Advanced | Depth of Knowledge 3: Strategic Thinking | Bloom’s Traditional: Comprehension | Bloom’s
167. **ANS:** B

A is incorrect because this is a reasonable question that can be answered through scientific investigation.

B is correct because there is no evidence supporting the idea that aliens built the pyramids.

C is incorrect because the processes of science cannot be used to determine whether a particular day will be suitable for making money.

D is incorrect because scientists can explain what happened to ancient civilizations based on archaeological findings.

**PTS:** 1  
**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Synthesis and Evaluation | Bloom's Revised: Evaluating

168. **ANS:** D

A is incorrect because curiosity may lead to asking a question, not drawing a conclusion.

B is incorrect because objectivity is usually involved in making measurements and recording data.

C is incorrect because the student in this illustration seems happy rather than skeptical. Skepticism is a valuable trait in examining the process used and the data collected.

D is correct because the student is shown after drawing a conclusion, which is made by using the trait of logical reasoning.

**PTS:** 1  
**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

169. **ANS:** C

A is incorrect because asking a question may not require making measurements.

B is incorrect because forming a hypothesis may not require making measurements.

C is correct because objectivity is important when making measurements in an experiment.

D is incorrect because analyzing data and arriving at a conclusion may not require making measurements.
170. **ANS:** C

A is incorrect because science is not based on guesses.

B is incorrect because a microscope is not used to study a natural event, even though such a phenomenon falls within the scope of science.

C is correct because science is limited to phenomena scientists can observe with or without instruments of observation, such as a microscope.

D is incorrect because in this case, an instrument is being used to observe.

171. **ANS:** C

A is incorrect because a scientist looking through a telescope is not necessarily being creative.

B is incorrect because a scientist looking through a telescope is not necessarily being logical.

C is correct because a scientist looking through a telescope is being observant.

D is incorrect because a scientist looking through a telescope is not necessarily being skeptical.

172. **ANS:** C

A is incorrect because scientific explanations are not based on a scientist's feelings.
B is incorrect because scientific explanations are confirmations of hypotheses, which are sometimes defined as educated guesses.

C is correct because scientific explanations are based upon evidence obtained through observations, including those made in experiments.

D is incorrect because the careful planning may lead to a well-executed experiment. However, the experiment may still fail to provide data that leads to any meaningful explanation.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.2.2
TOP: Science and Scientific Explanations: Describe the nature of scientific explanations.
KEY: science | scientist
MSC: Test Generator

173. ANS: B
A is incorrect because, although pseudoscience resembles science, it does not follow scientific methods.
B is correct because pseudoscience does not follow scientific methods.
C is incorrect because pseudoscience resembles science, but does not follow scientific methods.
D is incorrect because pseudoscience resembles science.

PTS: 1
DIF: Cognitive Complexity: Low Complexity | Student Level: Basic | Depth of Knowledge 1: Recall | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.2.1
TOP: Science and pseudoscience: Define pseudoscience.
KEY: science | pseudoscience | scientific method
MSC: Test Generator | g8_unit1 Lesson Quiz | IN g8_u1 Lesson1 Quiz

174. ANS: D
A is incorrect because although telescopes are important in the study of stars, scientific observations can be made without them.
B is incorrect because science does not offer conclusive proof—all theories are open to modification.
C is incorrect because astronomy is a science that studies those same objects.
D is correct because science relies on empirical evidence, and astrologers have not provided evidence to show that stars and planets influence human events.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_97990_WhatIsScience STA: SC.8.N.2.1 | SC.8.N.1.3
TOP: Science and pseudoscience: Distinguish between scientific and pseudoscientific
175. **ANS: D**
A is incorrect because theories change only after new evidence brings about reevaluation.
B is incorrect because theories are based on evidence, not feelings.
C is incorrect because valid, scientific evidence can be confirmed by unbiased peers.
D is correct because when new, relevant information emerges, theories can change based on reevaluation.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

**REF:** 4e9c2bf7-e685-11de-9c72-001185f0d2ea

**OBJ:** G6_NC_97990_WhatIsScience

**STA:** SC.8.N.2.2

**TOP:** Science and Scientific Explanations: Evaluate the strengths and limits of science in terms of scope, topic, and explanations.

**KEY:** science | scientist | theory

**MSC:** Florida FCAT Preparation | g8_Benchmark Test A

176. **ANS: D**
A is incorrect because faulty logic is not an attribute of sound science.
B is incorrect because scientific theories must be testable.
C is incorrect because scientific explanations must be confirmed through replication by others.
D is correct because the acceptability of an answer to a question in science depends on the evaluation of the conclusions drawn by a group of people who have strong knowledge in one or more fields related to the question

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding

**REF:** 4e9c5307-e685-11de-9c72-001185f0d2ea

**OBJ:** G6_NC_97990_WhatIsScience

**STA:** SC.8.N.2.2

**TOP:** Science and Scientific Explanations: Evaluate the strengths and limits of science in terms of scope, topic, and explanations.

**KEY:** science | scientist

**MSC:** Test Generator

177. **ANS: D**
A is incorrect because the speed of object A remained constant.
B is incorrect because the speed of object B increased over time.
C is incorrect because the speed of object C decreased over time.
D is correct because the speed of object D first decreased and then remained unchanged.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of
178. **ANS:** A

A is correct because no scientific data exist to support the idea of telekinesis.
B is incorrect because a person claiming to be telekinetic will say that he or she observed the book moving.
C is incorrect because telekinesis involves objects that are part of the natural world.
D is incorrect because logical reasoning and skepticism usually disprove claims of telekinesis.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge

179. **ANS:** B

A is incorrect because sunscreen products do block ultraviolet radiation from penetrating the skin.
B is correct because scientists always present the data to support their claims.
C is incorrect because the claim can be confirmed or refuted by surveying doctors.
D is incorrect because scientists can always reevaluate any claim in light of new information that emerges.

**PTS:** 1

**DIF:** Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge

180. **ANS:** A

A is correct because this table shows that a red star has much less mass than the sun. Therefore, this discovery is new data that would cause a scientist to reevaluate this classification system.
B is incorrect because this classification system shows that blue stars are at least 3.2 times as massive as the sun.
C is incorrect because white/yellow stars have a surface temperature between 5,000 K and 6,000 K.
D is incorrect because this star fits nicely into this classification system.
PTS: 1
OBJ: G6_NC_97990_WhatIsScience
TOP: Science and Scientific Explanations: Describe the nature of scientific explanations.
KEY: science | scientist
MSC: Test Generator | Uses visual element

ANS: D
A is incorrect because the acceptability of a new discovery does not depend on the logic of scientists; it depends on the replication of results.
B is incorrect because science relies on evidence, not guesses.
C is incorrect because acknowledgment of the existence of the element does not depend on what properties the element has.
D is correct because the acceptability of a discovery or an answer to a question in science depends on support by many people who have strong knowledge in one or more fields related to the question.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Comprehension | Bloom's Revised: Understanding
OBJ: G6_NC_97990_WhatIsScience
TOP: Science and Scientific Explanations: Evaluate the strengths and limits of science in terms of scope, topic, and explanations.
KEY: science | scientist | observation
MSC: Test Generator | IN g8_u1 Lesson1 Quiz

ANS: A
A is correct because anything that can be closely observed, with or without instruments, is a legitimate subject for a scientist to study.
B is incorrect because a scientist can study something that can be detected with any of the five senses, including sight and smell.
C is incorrect because a scientist can use instruments, such as microscopes and telescopes, to study the natural world.
D is incorrect because a scientist may not be able to explain his or her observations.

PTS: 1
DIF: Cognitive Complexity: Medium Complexity | Student Level: Average | Depth of Knowledge 2: Basic Application of Skill | Bloom's Traditional: Knowledge | Bloom's Revised: Remembering
OBJ: G6_NC_97990_WhatIsScience
TOP: Science and Scientific Explanations: Evaluate the strengths and limits of science in terms of scope, topic, and explanations.
KEY: science | scientist | observation
MSC: Test Generator | IN g8_u1 Lesson1 Quiz

ANS: D
A is incorrect because pseudoscience may involve making observations. For example, astrological predictions are based upon celestial observations.

B is incorrect because pseudoscience often involves examining phenomena in the natural world. For example, astrology involves planets and stars, which are part of the natural world.

C is incorrect because pseudoscience may involve topics that are important to people. For example, astrologists make predictions that concern people and their future.

D is correct because pseudoscientific conclusions often cannot be supported scientifically because data is not gathered using scientific methods.