Name _____ Date _____

Unit 1

Lesson 1 Quiz

What Is Science?

1. Christopher wanted to learn more about Ganymede, one of Jupiter's moons. Which of the following sources of information would be Christopher's **best** choice?

   (A) his friends
   (B) the local newspaper
   (C) a neighborhood survey
   (D) a university's astronomy web page

2. Taylor made some observations and has a question he would like to answer. What should Taylor do next?

   (F) form an opinion
   (G) analyze evidence
   (H) plan and conduct an investigation
   (I) draw conclusions and communicate results

3. Joseph wonders what kinds of birds live in his neighborhood. What skill will Joseph use to investigate the variety of birds in his neighborhood?

   (A) infer
   (B) observe
   (C) order
   (D) communicate

4. Scientists conduct investigations. What is the **main** reason for scientific investigations?

   (F) to practice doing experiments
   (G) to learn about recent discoveries
   (H) to demonstrate scientific procedures
   (I) to answer questions about the natural world

5. Sometimes scientists repeat the research of other scientists. Which of the following is the **most likely** reason scientists do this?

   (A) to form new theories
   (B) to improve the research
   (C) to win prizes for their work
   (D) to verify that the work is accurate

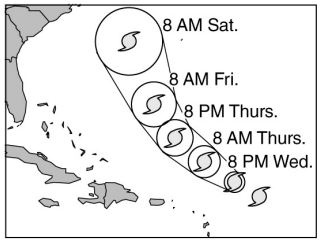
Name _____ Date _____

Unit 1

Lesson 2 Quiz

How Do Scientists Learn About the Natural World?

1 The map below was made on Tuesday.



What are meteorologists doing when they create storm tracks such as this one?

- (A) predicting
- (B) testing their ideas
- (C) explaining how a hurricane develops
- (D) gathering information to determine the strength of a hurricane

2 Researchers at Florida International University surveyed people to find out how many would not evacuate if a hurricane were approaching. In 1992, 18% would not evacuate. In 1995, 34% would not evacuate. In 1999, 46% said they would not evacuate. How can scientists use this information?

- (F) to predict where people go when they evacuate
- (G) to explain why people choose not to evacuate
- (H) to predict how many people will not evacuate
- (I) to predict which route people will use to evacuate

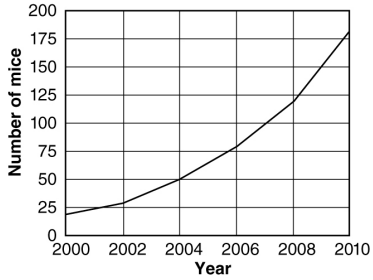
3 Hurricane Donna was one of the most severe hurricanes on record. What evidence supports this claim?

- (A) Donna formed over the Atlantic Ocean.
- (B) Donna caused the sea level to rise.
- (C) Donna caused strong winds in Broward County, Florida.
- (D) Donna produced hurricane-force winds from Florida to New England.

4 What should you do if you want your friends to believe a statement you make?

- (F) Ask a question you can test.
- (G) Gather evidence to support it.
- (H) Make a prediction.
- (I) Collect information about your friends.

5 The following graph shows the estimated number of mice in a field.



What is a reasonable claim to make based on the evidence in this graph?

- (A) The number of mice will drop.
- (B) The number of mice will level off.
- (C) The number of mice will continue to increase.
- (D) The future mouse population cannot be estimated.

Name _____ Date _____

Unit 1

Lesson 3 Quiz

What Are Some Types of Investigations?

1. The chart shows the steps of a scientific method.

A Scientific Method
Form a hypothesis.
Develop a plan.
Test the hypothesis.
Analyze results.
Communicate results.

Which statement is **true** of this scientific method?

(A) It should be considered a flexible guide.
(B) It lists each step according to importance.
(C) It is the only one that scientists use.
(D) The results should not be communicated if you don't like them.

2. Rosa conducts an experiment. Her results do not support her hypothesis. What should she do?

(F) Repeat the experiment to check for errors.
(G) Change the results to support the hypothesis.
(H) Discard the data because it does not agree with her hypothesis.
(I) Try to make an experiment that will give her the results she wants.

3. Models allow scientists to test things that might be too expensive or difficult to test using the real item. Which of the following would be an investigation that could use a model?

(A) whether a new spray will repel mosquitoes
(B) how many times per day a robin leaves her nest
(C) how much weight can a new bridge support
(D) how much water a cubic meter of sand can hold

4. A hypothesis must be testable. Which hypothesis is testable?

(F) Blue is the best color.
(G) Summer is nicer than fall.
(H) Dogs are better than cats.
(I) A beagle can jump higher than a Persian cat.

5. A scientific method is a way to investigate a scientific problem. Although the order of steps can vary, the tasks performed during each step often stay the same. During which step of the scientific method would a scientist collect data?

(A) developing a plan
(B) forming a hypothesis
(C) testing the hypothesis
(D) communicating the results

Name _____ Date _____

Unit 1

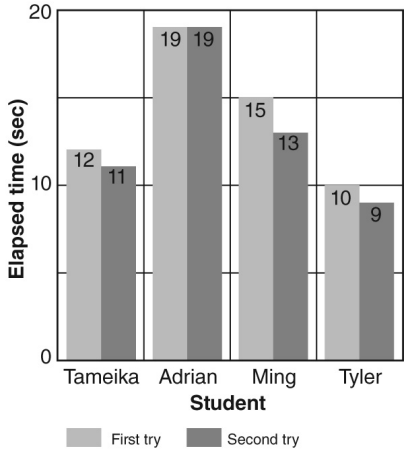
Lesson 4 Quiz

How Do You Perform a Controlled Experiment?

1 You want to know if the mass of a paper airplane or the height from which it is released affects how far the airplane will fly. Which variable should stay the same in the experiment you would conduct?

- (A) the mass of the plane
- (B) the distance traveled
- (C) the height the plane is released from
- (D) the material the plane is made from

2 The graph below shows how long it took students to catch a ball after it was dropped.



Based on evidence in the graph, what claim can you make?

- (F) On both tries, students caught the ball in the same amount of time.
- (G) Students always take less time on their second try.
- (H) Students always take more time on their second try.
- (I) Students averaged one second faster on their second try.

3 Which reasoning explains why it is important to have more than one trial in an experiment?

- (A) The results should differ each time.
- (B) One of the trials will support your hypothesis.
- (C) The conditions in an experiment are very different in every trial.
- (D) Small errors can be averaged when there are multiple trials.

4 Students are placing books under a ramp to change the ramp's height. Then they are measuring how far a car travels when it is released at the top of the ramp. Which data table should they use?

(F)

Number of books	Height of ramp	Speed traveled	Distance traveled
1			
2			

(G)

Number of books	Height of ramp	Distance traveled
1		
2		

(H)

Distance traveled	Speed traveled

(I)

Number of books	Speed traveled
1	
2	

5 Cobie is testing how the amount of fertilizer affects the height of plants. Which variable does not need to be controlled?

- (A) the amount of fertilizer
- (B) the height of the plants
- (C) the amount of water each plant gets
- (D) the location of the plants

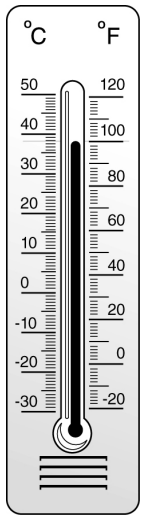
Name _____ Date _____

Unit 1

Lesson 5 Quiz

What Are Some Science Tools?

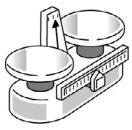
1 Naples, on the Gulf Coast of Florida, is known for its year-round sunshine, warm temperatures, and white sandy beaches. The thermometer on the right shows the temperature on a very hot day in Naples. Which temperature reading is correct?

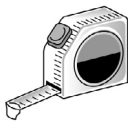


Ⓐ 100 ºC
Ⓑ 48 ºC
Ⓒ 40 ºC
Ⓓ 38 ºC

2 You can use many different tools to make measurements. Which of these tools can be used to measure the mass of an object?

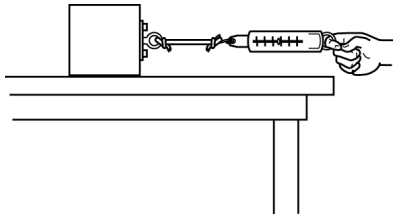
Ⓕ 

Ⓗ 

Ⓖ 

Ⓘ 

3 Patrick used a spring scale like this in an experiment he was conducting.



What did Patrick measure with the spring scale?

Ⓐ force
Ⓑ mass
Ⓒ volume
Ⓓ weight

4 Some scientific tools are used for making observations, and others are used for making measurements. Which of these tools would be **most** useful for observing the behavior of ants?

Ⓕ hand lens
Ⓖ metric ruler
Ⓗ electronic balance
Ⓘ graduated cylinder

5 When you perform an experiment, it is important that measurements are accurate. What determines the accuracy of a measurement?

Ⓐ how close it is to the actual value
Ⓑ the number of times that it is repeated
Ⓒ the ability of other people to reproduce the measurement
Ⓓ whether the results of an experiment match the predicted results

Name _____ Date _____

How Can Scientists Learn from Observations?

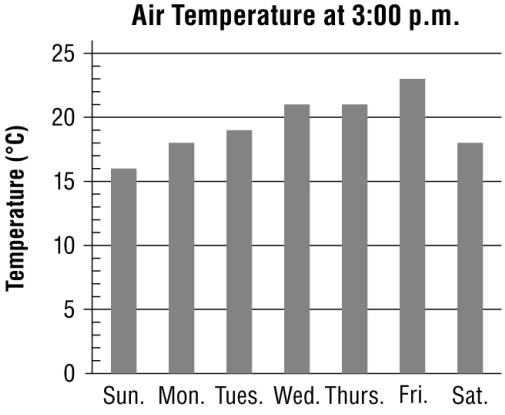
1 Students look out a window for 5 min. They record the number, the type, and the color of the vehicles that pass. Which claim describes what the students are doing?

- (A) They are drawing conclusions.
- (B) They are doing an experiment.
- (C) They are hypothesizing.
- (D) They are making observations.

2 Which of these is an example of a scientific observation?

- (F) "The rock is smooth and gray."
- (G) "What is the best brand of soap?"
- (H) "Most people drive black cars."
- (I) "The sun's light helps plants grow."

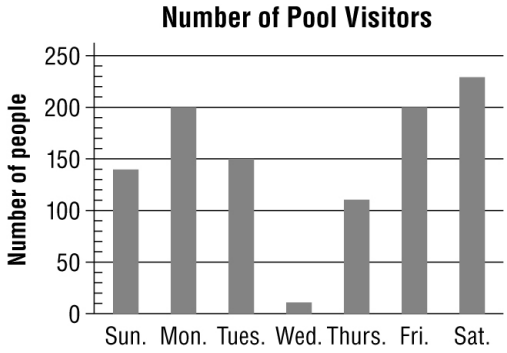
3 Luisa recorded the following data.



What was the difference between the lowest and highest temperatures?

- (A) 3 °C
- (B) 5 °C
- (C) 7 °C
- (D) 9 °C

4 Martina counts the number of people who visit the pool each day for 1 week. She displays her findings on a bar graph.



Based on evidence in the graph, on which day did the pool have the **most** visitors?

- (F) Sunday
- (G) Monday
- (H) Friday
- (I) Saturday

5 Although scientific experiments and other kinds of investigations can be very different, they all start the same way. Which of these would you do first in any scientific investigation?

- (A) Draw a conclusion.
- (B) Write a hypothesis.
- (C) Form a question or problem.
- (D) Organize data in tables and charts.

Name _____ Date _____

Unit Benchmark Test

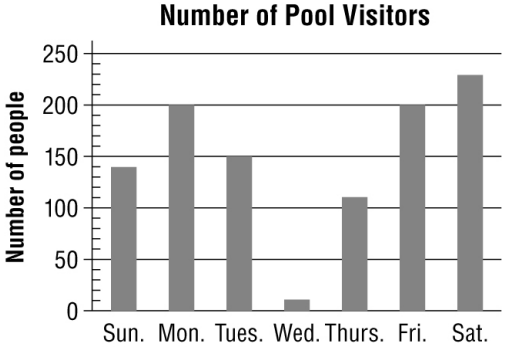
Scientists at Work

1 In science, we often gather information with our senses by watching, listening, smelling, and touching. For example, you may record how the color of a flower changes. What is this process called?

Ⓐ stating hypotheses
Ⓑ forming conclusions
Ⓒ making observations
Ⓓ performing experiments

SC.5.N.1.5

2 Tristan counts the number of people who visit the pool each day for 1 week. He displays his findings on a bar graph.



Between which two days did the number of visitors change the **most**?

Ⓕ Tuesday and Wednesday
Ⓖ Wednesday and Thursday
Ⓗ Thursday and Friday
Ⓘ Friday and Saturday

SC.5.N.1.1

3 Mr. Bryant wants his class to observe and measure baby mice and record the data in their science journals. One student's journal looks like this:

	Mass (g)	Length (mm)	Color	Activity level
baby mouse 1	6	16	black	moderate
baby mouse 2	5	14	black	moderate
baby mouse 3	5	15	white	moderate
baby mouse 4	4	11	brown	low
baby mouse 5	5	17	white	high

What claim can the student make based on the evidence in the table?

Ⓐ A mouse will never weigh more than 6g.
Ⓑ Baby mice can vary in size, color, and activity level.
Ⓒ Baby mice will never be less than 11 mm in length when they are born.
Ⓓ Brown baby mice are bigger than white baby mice.

SC.5.N.1.5

4 Imagine that a scientist suggests that the size of an insect population depends on the temperature. What observations must this scientist use in order to provide evidence to support his or her claim?

Ⓕ The scientist must observe the insect population only in winter.
Ⓖ The scientist must observe the insect population in the laboratory.
Ⓗ The scientist must observe the insect population in different areas.
Ⓘ The scientist must observe the insect population throughout the year.

SC.5.N.2.1

5 Scientists always develop a plan when they try to learn something about our natural world. Which sequence correctly shows the steps scientists follow in their plan?

Ⓐ make observations → develop an idea → obtain evidence → suggest an explanation

Ⓑ obtain evidence → suggest an explanation → develop an idea → make observations

Ⓒ suggest an explanation → obtain evidence → make observations → develop an idea

Ⓓ develop an idea → suggest an explanation → obtain evidence → make observations

SC.5.N.2.1

6 Kyle is wondering what he is getting for his birthday. He decides to shake the box that contains his present. Kyle did not realize it, but he was acting like a scientist. What was the first step Kyle took in this situation that a scientist also takes?

Ⓕ asking a question

Ⓖ collecting evidence

Ⓗ drawing a conclusion

Ⓘ developing an explanation

SC.5.N.2.1

7 Scientists communicate their results by publishing their work. What reasoning explains why this is important?

Ⓐ to learn from each other

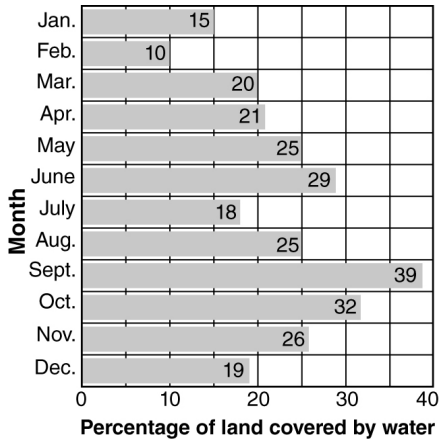
Ⓑ to keep their work secret

Ⓒ to compete with other scientists

Ⓓ so the experiments are not repeated

SC.5.N.2.2

8 The amount of land covered by water in a wetland can vary. The following chart shows the average percentage of the land in one wetland that is covered by water each month.



If a scientist wanted to explore the wetland when the **most** land was above water, during which of the following seasons should the scientist visit this wetland?

Ⓕ fall

Ⓖ spring

Ⓗ winter

Ⓘ summer

SC.5.N.1.1

9 Each measuring tool is designed to measure a specific property of an object or material. Which of these tools can be used to measure the volume of a material?

Ⓐ measuring cup

Ⓑ spring scale

Ⓒ balance

Ⓓ thermometer

SC.5.N.1.1

10 Which of the following is always an important part of an experiment?

Ⓕ making a working model

Ⓖ observing things in nature

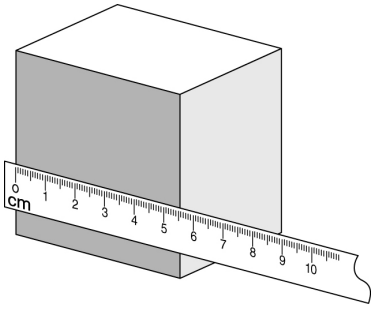
Ⓗ making drawings of things observed

Ⓘ identifying and controlling variables

SC.5.N.1.2

Name _____ Date _____

11 Angela measured the length of a block.

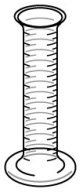


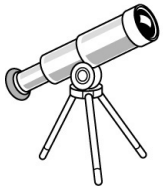
How long is the block?

Ⓐ 5 cm
Ⓑ 5 in.
Ⓒ 5.5 cm
Ⓓ 6.5 in.

SC.5.N.1.1

12 A science class went on a field trip to study the organisms that live in a stream near the school. Which of these tools would be **most** useful for making observations about the animals living in the stream?

Ⓕ 

Ⓗ 

Ⓖ 

Ⓘ 

SC.5.N.1.1

13 Which of these is the metric unit for measuring mass?

Ⓐ kilogram
Ⓑ liter
Ⓒ millimeter
Ⓓ pound

SC.5.N.1.1

14 Which of the following is **not** a scientific investigation?

Ⓕ performing a controlled experiment
Ⓖ using a model to test a hypothesis
Ⓗ observing how five caterpillars change into butterflies
Ⓘ writing a letter about why it's important to protect plants and animals

SC.5.N.1.1

15 Which of the following would be **best** done using repeated observation rather than an experiment?

Ⓐ Determine the average number of times during a week in May that a group of bees visits flowers.
Ⓑ Determine whether a diet that includes honey every day will reduce allergies.
Ⓒ Determine which type of flower gives out the strongest scent.
Ⓓ Determine whether a bee hive is stronger than a wasp nest.

SC.5.N.1.2

16 Sanjay inferred that a train was approaching rapidly based on the way the noise from the train sounded. Which other skill is Sanjay using?

Ⓕ classifying
Ⓖ communicating results
Ⓗ planning an investigation
Ⓘ using time/space relationships

SC.5.N.1.1, SC.5.N.1.6

17 Jose tests the effects of fertilizers on four seeds of the same kind of plant. He gives each plant the same amount of water and sun. The table below shows his results.

Height of Plants (centimeters)				
Week	Fertilizer 1	Fertilizer 2	Fertilizer 3	Control (no fertilizer)
1	0	0	0	0
2	3	4	2	2
3	8	12	6	5

What can Jose claim about the fertilizers based on evidence in the table?

(A) Fertilizer 2 helps plants grow the tallest.
(B) Plants grow taller without the fertilizers.
(C) Fertilizer 3 does not help plants grow taller.
(D) Plants grow taller with Fertilizer 1 than they do with Fertilizer 2.

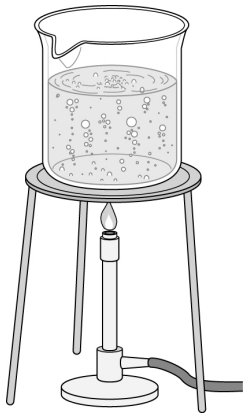
SC.5.N.1.1

18 Scientists usually write reports about their investigations. What reasoning explains why they do this?

(F) to classify results
(G) to ask questions
(H) to perform experimental trials
(I) to communicate their work to other scientists

SC.5.N.2.2

19 Study the following picture.



Which statement demonstrates the **most** scientific observation?

(A) The water is changing.
(B) The flame is causing a change.
(C) Bubbles are forming and rising.
(D) Steam forms when water gets hot.

SC.5.N.2.1

20 The following picture shows two students.

What are they doing?

(F) asking a question
(G) planning an investigation
(H) recording an observation
(I) communicating results

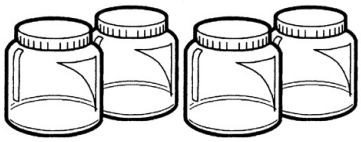
SC.5.N.2.1, SC.5.N.2.2

Name _____ Date _____

Student Task

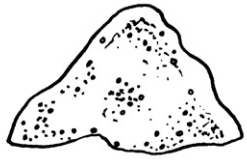
Mix It Like a Scientist

Materials

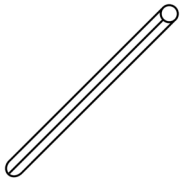

4 clear jars

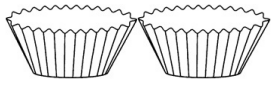

water

salt


sand


measuring spoon


stirring rod


2 coffee filters


2 rubber bands

Procedure

1. Half-fill two jars with water.
2. Put ½ teaspoon of salt into the first jar of water. Stir the mixture. Put ½ teaspoon of sand into the second jar of water, and stir.
3. Put a coffee filter in the top of each of the empty jars, and hold the filters in place with the rubber bands.
4. Pour each mixture into a different filter and jar.
5. Complete the following data table:

Jar Number	Substance Added	Did substance dissolve?	Did substance go through or stay in filter?
1			
2			

6. Compare your results with those of your classmates.

Teacher's Directions

Mix It Like a Scientist

Materials Performance Task sheet, 4 clear jars, water, salt, sand, measuring spoon, stirring rod, 2 coffee filters, 2 rubber bands

Time 30 minutes

Suggested Grouping groups of two to four students

Inquiry Skills measure, observe, record data

Preparation Hints Assemble the coffee filters and rubber bands into sets of two. Pour salt and sand into small paper cups for student use. Have students label the jars 1 and 2 before adding water and 1a and 2a before securing the filters on the second set of jars.

Introduce the Task Tell students that they will work like scientists by performing a controlled experiment. Ask students to think about whether all substances dissolve in water. Have them brainstorm experiments that will answer the question. Inform students that they can do this experiment to find out if all substances can dissolve in water and if dissolved substances can be removed from water by filtering. Model the filtering setup.

Promote Discussion Ask students to compare their data. If time allows, repeat the experiment. You may also want to have students test the solubility of other materials. Then discuss with students what can be learned from these repeated observations.

Scoring Rubric

Performance Indicators

_____ Uses materials effectively and works cooperatively with other group members.

_____ Follows written and oral instructions in order to conduct the investigation

_____ Completes the data table.

_____ Concludes that not all materials are soluble and that soluble materials cannot be separated from a solution by filtration.

Observations and Rubric Score

3 2 1 0