A World Built on Ideas

Name: _____

Scientists study our world. They look at the smallest things, like the cells in our bodies and the tiny viruses that make us sick. They also study the largest things, like outer space. They study everything in between. Without scientists, we wouldn't know why we get sick or why the sun rises and sets each day.

Inventors create new things. Some inventors are scientists. They have invented new medicines and new materials to make our lives easier and more comfortable. They have created new technology to entertain us and help us visit faraway lands.

Not all inventors are scientists, though. Some have just been regular people who have had good ideas and have worked hard to make their ideas come to life. We use their inventions every day.

Many older inventions have made newer inventions possible. Scientists and inventors use the idea of those who came before them. They improve older inventions and discoveries. They make them even better.

What Did You Learn ?

1. Scientists and inventors study the world. This gives them ideas. What did the inventors of airplanes probably study?

Ⓐ the way fish swim
Ⓑ the way birds fly
Ⓒ the way horses run
Ⓓ the way snakes crawl

2. Scientists and inventors learn from the work of others. Which event probably happened first?

Ⓐ A tiny virus was discovered in a sick person's cells.
Ⓑ A medicine was created to help people with the tiny virus.
Ⓒ A microscope for looking at tiny things was invented.

3. Name an invention that makes your life better. Explain why it does. (There are no right or wrong answers to this question!)

Invention: _____

Why it makes your life better: _____

_____

_____

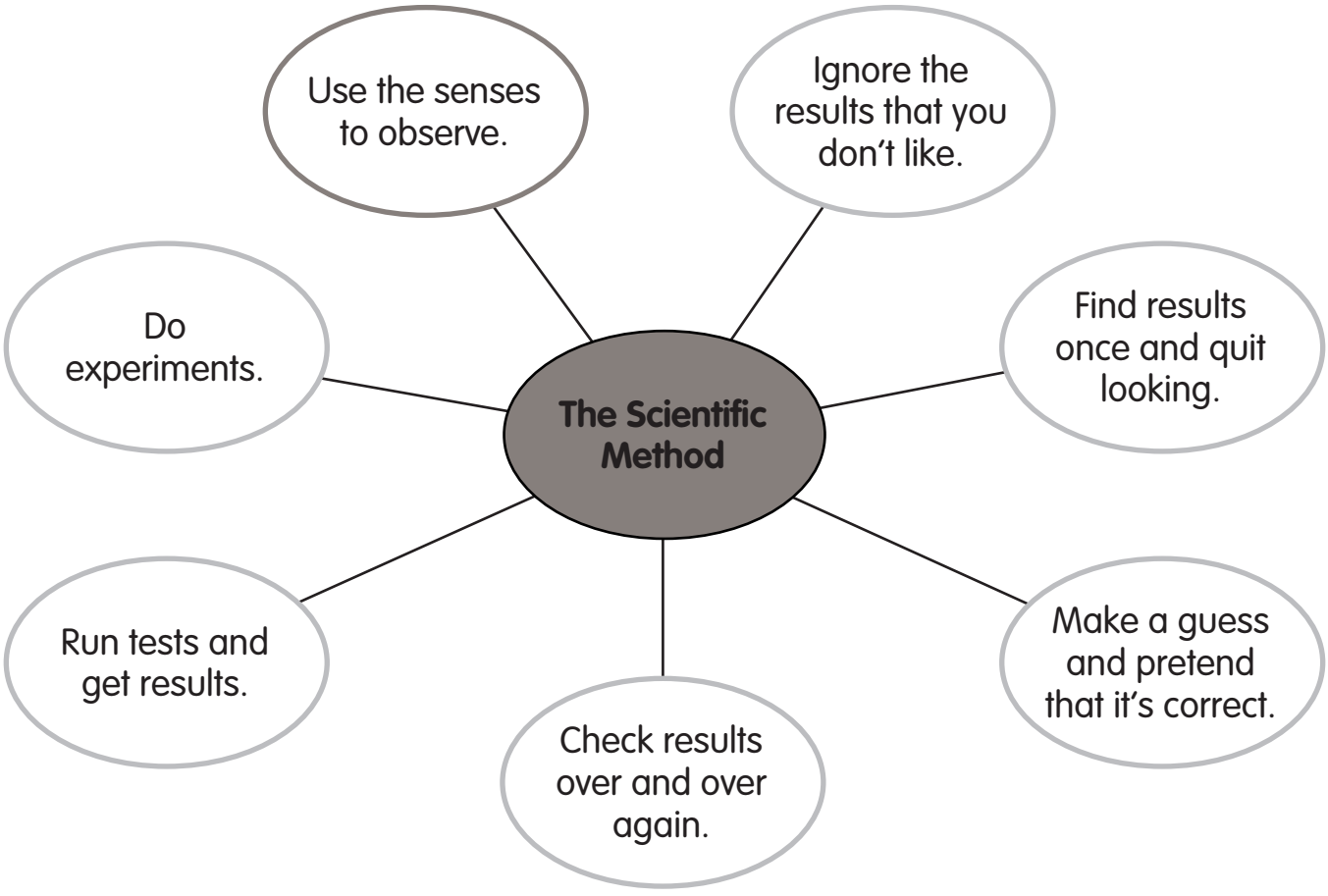
How Scientists Must Think

Name: _____

Scientists are curious. They like to solve puzzles, and they like to learn about new things. They have to be like detectives searching for clues in the world. By doing this, they can learn how the world works.

Scientists use something called the **scientific method**. This method is the way that scientists learn. They begin by asking a question about the world. The question may be something like, "Why is the sky blue?" or "Why are cheetahs so fast?" The scientist may have an idea what the answer is to this question. They cannot just guess at the answer, however. They must use the scientific method to find facts that help answer the question. They must be able to prove that their facts are true. How do they do this? They do experiments. They use their senses (seeing, hearing, smelling, touching, and tasting) to observe. When they find answers, they have to do more tests. They check their answers again and again. Scientists must be sure that their findings are correct.

Directions: Look at the web below. Color in the bubbles that show ways scientists learn more about things. Draw an **X** through the bubbles that do not show the scientific method being used.



Making Some Observations

Name: _____

Scientists are great learners. They have to be! In order for scientists to learn how things work and find solutions to problems, they have to learn everything they can. They have to ask themselves questions and find reasons for the answers.

Directions: Practice being a scientist. Find an object nearby. It can be a pencil, an eraser, your desk, or the bottle your water comes in. Study that one object very closely. Take a few minutes to learn everything you can about it. Use your discoveries to fill in the lines below.

Name of the Object _____

What is its shape? _____

What is its color? _____

What is it made out of? _____

Does it feel hard or soft? _____

Does it bend or move easily? _____

Does it have any taste or smell? _____

Does it make any sound? _____

What does it do? _____

Think about the way the object looks and feels. Then think about what it does. Why do you think an object that does that would look and feel that way? Give two or three reasons.

_____

_____

_____

_____

_____

Answer Key

Unit 11

The Importance of Good Health (page 98)

1. C
2. A
3. A

What Am I?: doctor

Nature's Perfect Drink (page 99)

1. *circled:* person running, sick person
2. *circled:* apple, celery

Burning Calories (page 101)

1. B **2.** B **3.** C

How Much Sleep Do You Need? (page 102)

1. 14
2. 8
3. Answers may vary.
4. B
5. We need more sleep when we are younger. (Accept reasonable responses.)

An Army on the Inside (page 103)

Part 1: The neck, armpits, and knees should be circled.
Part 2: Line 1: immune system; Line 2: white

Word Study (page 105)

1. audiologist — ears and hearing
2. cardiologist — heart
3. dentist — teeth
4. dermatologist — skin
5. gastroenterologist — stomach
6. podiatrist — feet and ankles
7. immunologist — immune system

Unit 12

A World Built on Ideas (page 106)

1. B **2.** C

How Scientists Must Think (page 107)

Colored bubbles:
Use the senses to observe.
Do experiments.
Run tests and get results.
Check results over and over again.

Bubbles with an X:
Find results once and quit looking.
Ignore the results that you don't like.
Make a guess and pretend that it's correct.

A Light That Keeps Glowing (page 109)

carbon

Who Invented What? (page 110)

Tim Berners-Lee – Internet
Philo Farnsworth – television
Guglielmo Marconi – radio
Charles Strite – pop-up toaster
Lester Wire – electric traffic light

Failures That Became Successes (page 111)

The following should be crossed out.

1. became successful right away
2. invented by Ruth Fry
3. discovered by an American scientist

Word Study (page 112)

1. botanist
2. zoologist
3. geologist
4. physicist
5. linguist
6. cytologist

Unit 13

What's the Matter? (page 113)

1. A
2. C
3. B
4. The ice has shape because it is a solid.

As a Matter of Fact (page 115)

1. solid
2. solid
3. liquid
4. liquid
5. gas
6. gas
7. solid
8. gas

Liquids and Solids (page 116)

1. the milk — liquid; the carton — solid
2. the bottle — solid; the juice — liquid
3. the cup — solid; the water — liquid
4. the oil — liquid; the can — solid
5. the bowl — solid; the water — liquid; the fish — solid

Getting Back in Shape (page 117)

1. yes
2. no
3. no
4. yes
5. no

All Shook Up and Nowhere to Go (page 118)

1. solid
2. The juice does not have carbon dioxide in it.