



# Elementary Science



## 2020 - Grade 4 Readiness Resource



Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

Floridastudents.org tutorial Response Form

## SC.4.N.1.3 How Science Works



Derived from: <https://floridastudents.org/PreviewResource/StudentResource/177553>

**Practice 1:** Write yes in front of the statements that are characteristics of science.

- \_\_\_\_\_ Science is creative.
- \_\_\_\_\_ Science is useful.
- \_\_\_\_\_ Science is exciting.
- \_\_\_\_\_ Science never stops discovering.

**Practice 2:** Write yes in front of statements that are key parts of the methods of science.

- \_\_\_\_\_ Observations
- \_\_\_\_\_ Peer review
- \_\_\_\_\_ Hypothesis and experimentation
- \_\_\_\_\_ Steps that always stay in the same order

**Practice 3:** Write true or false before the statements about the history of penicillin's discovery.

- \_\_\_\_\_ Fleming's bacteria plates became contaminated with mold.
- \_\_\_\_\_ Observation: a type of *Penicillium* mold stopped bacteria from growing.
- \_\_\_\_\_ Fleming's findings were shared and experimented on by other scientists.
- \_\_\_\_\_ Flemings had a hypothesis before he went on vacation.

**Practice 4:** Write yes in front of the statements that describe the history of how sticky notes were created.

- \_\_\_\_\_ An experiment produced unwanted results.
- \_\_\_\_\_ A problem was present.
- \_\_\_\_\_ Scientists collaborated and shared information.
- \_\_\_\_\_ Silver set out to produce removable glue.

**Practice 5a:** Write yes in front of the items that describe why the discovery of saccharin didn't follow traditional methods of science.

- \_\_\_\_\_ No hypothesis was formed.
- \_\_\_\_\_ No observations were made.
- \_\_\_\_\_ Experiments were not conducted to produce saccharin.
- \_\_\_\_\_ There was no impact on society.

**Practice 5b:** Circle all of the characteristics of science that belong in the target box..

- |  |          |                                  |
|--|----------|----------------------------------|
| Experimentation                          | Useful   | Never accidental, always planned |
| Observations and evidence                | Creative | Collaboration between scientists |
| Always in a specific step-by-step method |          | Always occurs in a lab           |

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

SC.3.L.14.1

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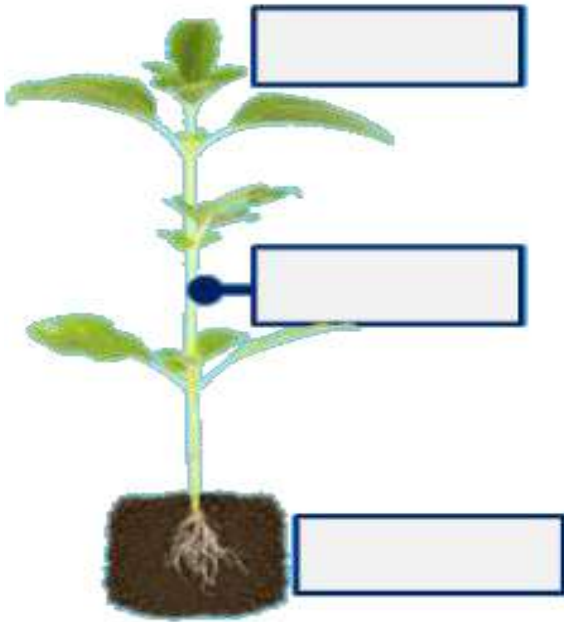
## Plant Parts

Derived from: <https://floridastudents.org/PreviewResource/StudentResource/176111>



**Practice 1: Write the correct plant part in the appropriate space.**

**Roots   Stem   Leaves**



**Practice 2: Circle all the statements that are functions of plant roots.**

Absorbs water and nutrients

Anchors the plant

Produces Flowers

**Practice 3:** Circle all the statements that are functions of leaves.

Collect sunlight	Release excess water and oxygen gas
Take in gas called carbon dioxide	Anchor the plant

**Practice 4:** Circle the **ONE** statement that is **NOT** a function of a stem.

Absorb water	Transports water from the roots to the leaves	Can store extra food made by the leaves
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**Practice 5:** Circle the part or parts of the plant that are directly involved in seed production.

Stem	Flowers
Cone	Leaves

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

Floridastudents.org tutorial Response Form

## SC.3.L.14.2 Plants Respond!



Derived from: <https://floridastudents.org/PreviewResource/StudentResource/177548>

**Practice 1:** Circle all of the things plants need to survive.

Carbon Dioxide	Sunlight
Water	Humans

**Practice 2:** Circle all the choices that are examples of a stimulus and its actual response.

You are hot and you sweat.	The final bell rings at school and you leave to go home.
It's dark and the pupils in your eyes change.	The Sun is in the sky.

**Practice 3:** Write **Yes** or **No** on the line next to each statement based on if it is or is not a response to the stimulus of light.

_____	Plants grow upward
_____	Vines grow on the dark side of a tree.
_____	Leaves point up



**Practice 4:** Above each picture, write **True** if the picture shows a response to gravity or **False** if it does not show a response to gravity.



**Practice 5:** Circle one answer that describes the response a plant has to no water.

Roots grow towards water.

The leaves drop into the water.

Flowers always open underwater.

Plants don't need water.

**Final Practice:** Above each response, write **water**, **light** or **gravity** as the correct stimulus.

\_\_\_\_\_

Roots to grow in a downward direction.

\_\_\_\_\_

Seeds respond by absorbing it and roots grow towards it.

\_\_\_\_\_

Leaves grow towards this to increase food production.

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

## SC.3.L.15.2

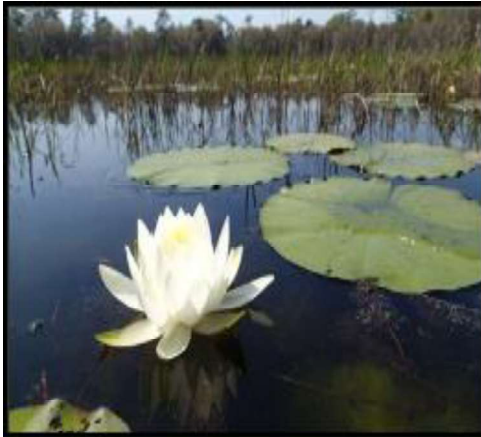
Floridastudents.org Tutorial Response Form

Let's Classify Plants Part 1: Vascular or Non-vascular

Derived from: <https://www.floridastudents.org/PreviewResource/StudentResource/184564>



**Practice 1:** Circle the statement that is the way to classify these two plants into two groups.



vs.



Has spines versus no spines

Can grow really tall versus stays low to the ground

Grows in water versus grows on land

Grows in salt water versus fresh water

**Practice 2:** Circle the statement that is the way to classify these two plants into two groups.



vs.



Has spines versus no spines

Can grow really tall versus stays low to the ground

Grows in water versus grows on land

Grows in salt water versus fresh water



**Practice 3:** Circle whether each question is true or false.

Vascular tissue helps move materials like food and water around the plant.

TRUE

FALSE

All plants have vascular tissue.

TRUE

FALSE

**Practice 4:** Draw lines to match the name to the correct plant shown.



Hornwort



Moss



Liverwort

**Practice 5:** Mark an X on all the images that are vascular plants.



**Practice 6:** Circle vascular or non-vascular after each image to identify its proper classification.



Vascular

Non-Vascular



Vascular

Non-Vascular



Vascular

Non-Vascular



Vascular

Non-Vascular

**Practice 7:** Circle vascular or non-vascular after each image to identify its proper classification.



Vascular

Non-Vascular



Vascular

Non-Vascular



Vascular

Non-Vascular



Vascular

Non-Vascular



# Miss Johnson's Plant Experiment

by ReadWorks



Miss Johnson, a second grade teacher, reached deep into her canvas bag and pulled out two plants. She placed the plants on a table at the front of the room. She asked her class to gather around the table to look at the plants and describe what they saw.

"They look the same," Helena said.

"The leaves are green," Aaron added.

"They're standing straight up," Lee noted.

Miss Johnson asked them to touch the soil and tell her about it.

"The soil is moist, and it's dark brown," Mia observed.

"The soil is getting stuck under my fingernails," Teresa said.

Miss Johnson placed one plant in a sunny spot on the windowsill and the other on the floor in a dark corner of the classroom. She asked for four volunteers. Each volunteer was

responsible for watering the plant on the windowsill once a week. Miss Johnson promised her class the plants would be part of an important lesson the following month.

\* \* \*

Four weeks later, Miss Johnson brought the plants back to the table and invited the class to describe them again.

"They don't look like each other anymore!" Helena said excitedly.

"One plant is green and has some new bright green leaves, and the other plant has more yellow and brown leaves than green leaves," Nina explained.

"One plant is standing straight up, and the other one is bent over," Lenny added.

Miss Johnson then asked the students to touch the soil and tell her about it.

"It's moist and dark brown around this plant," Grace said.

"It's very dry and light brown around this plant," Max described.

Miss Johnson explained, "Plants are alive. They respond to where they live. What are the differences between where I put the plants and how we cared for them?"

"You put one in a dark corner and the other one on the windowsill where there's a lot of light," Ellie replied.

"We watered the plant on the windowsill, but we didn't water the plant in the corner of the room," Aaron said.

"That's right. Which plant is growing and healthy?" Miss Johnson asked. Several students replied that the plant on the windowsill they watered was the one which was growing and healthy.

"You're right!" Miss Johnson exclaimed, proud of her students. Then she continued, "I wanted you to see for yourselves that plants depend on light and water to grow and to be healthy. Did you know that plants breathe? They have little openings on their leaves that look like tiny mouths, but they are too small to see without a microscope. When we breathe, we breathe in oxygen. Plants breathe in carbon dioxide.

"Plants take in carbon dioxide from the air and use it to build their leaves, stems and roots. Plants also take in water. This is why we need to water plants-so they will grow. They use



their roots to suck water up into their bodies, and the little openings on their leaves to breathe in carbon dioxide.

"Once they have water and carbon dioxide, plants need light. Leaves are made up of a bunch of tiny cells. Inside the cells are very little things called chloroplasts. Chloroplasts are what make leaves green, and they are also what turn the carbon dioxide, water, and light into sugar and oxygen. The sugar is food for the plants. The plants release the oxygen into the air, which humans and many animals breathe in."

"What do plants need to grow and be healthy?" Miss Johnson asked her class.

"They need light and water!" the class replied.

"Let's place both plants on the windowsill where they will get lots of light and grow. Who would like to volunteer to water the plants?"

All of Miss Johnson's students raised their hands.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What does Miss Johnson ask her class to look at and describe?
  - A. two plants
  - B. three plants
  - C. four plants
  - D. five plants
  
2. What is compared and contrasted with the plant on the windowsill?
  - A. the plant on Miss Johnson's desk
  - B. the plant in a dark corner
  - C. another plant on the windowsill
  - D. a plant that one of Miss Johnson's students has at home
  
3. Plants need light and water to be healthy.

What evidence from the story supports this statement?

- A. Miss Johnson asks for four volunteers to water the plant on the windowsill.
  - B. When Miss Johnson takes two plants out of her canvas bag, they both have green leaves.
  - C. When Miss Johnson takes two plants out of her canvas bag, they are both standing straight up.
  - D. The plant on the windowsill that Miss Johnson's students watered is healthy.
  
4. What happens to the plant in the dark corner?
  - A. The plant in the dark corner grows poorly and does not stay healthy.
  - B. The plant in the dark corner stands straight up and has only green leaves.
  - C. The plant in the dark corner grows bright green and red leaves.
  - D. The plant in the dark corner is watered once a week by Miss Johnson's students.
  
5. What is this passage mainly about?
  - A. different types of trees and where they grow
  - B. what plants need to grow and be healthy
  - C. what second graders do for fun after school
  - D. what working in a science lab is like

6. Read the following sentences: "Miss Johnson then asked the students to touch the **soil** and tell her about it.

Grace: It's moist and dark brown around this plant.

Max: It's very dry and light brown around this plant."

What is the meaning of the word "**soil**" above?

- A. tree
- B. flower
- C. dirt
- D. water

7. Choose the answer that best completes the sentence below.

The plant on the windowsill has bright green leaves; \_\_\_\_\_, the plant in the dark corner has brown and yellow leaves.

- A. in contrast
- B. in conclusion
- C. in particular
- D. as a result

8. Which plant gets water and a lot of light?

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**9.** Which plant does not get water and a lot of light?

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**10.** What will probably happen to the plant in the dark corner after it is moved to the windowsill and gets water? Support your answer with evidence from the passage.

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# A Plant Puzzle

by Josh Adler



Living things like plants, animals, and people need energy to survive and grow. People eat food for energy, but most plants use energy that they get from sunlight.

When you look at plants such as a tree, flower, or grass, what do you see?

You might notice their stems, trunks, branches, leaves, roots, or flowers, but how do they grow? What are they made from? How did the plant make those parts?

Life is a puzzle in many ways. People don't all agree on how life started or why it exists. Yet a simple way of thinking about how plants grow is to think of the plant itself as a piece of a larger puzzle.

Each plant is a part of its unique environment. Different environments could be oceans, forests, deserts, or cities. Each environment also has its own climate, which is partially based on how much sun and rain an area receives every year.

Since only certain plants grow in hot, cool, wet, or dry climates, each environment is made up

of different types of plant life. A desert may grow palm trees and cacti, while a forest may grow tall pines or oak trees.

In order for a plant to grow, it needs three very important puzzle pieces: water, carbon dioxide, and light. Plants use their roots to take in water from the ground. They use their leaves to take in sunlight and carbon dioxide from the air.

Plants use these three puzzle pieces to make their own food in a process called photosynthesis. Using the energy from the sun, plants convert water and carbon dioxide into sugar. This sugar feeds the plant's growth from a seedling into an adult. In the process, the plant releases oxygen into the air.

Another important piece to the growth of many plants is soil. Using their roots, plants take in nutrients from the soil that help them grow. Giving a plant a spot in clean soil is important to make sure it doesn't absorb anything harmful from the dirt.

Plants make their food from carbon dioxide, water and light. They use this food to grow stems, trunks, roots, branches, leaves, and flowers. Now when you look at a tree, flower, or even a blade of grass, you can see all the pieces of the plant and how the entire puzzle fits together.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Where do plants get their energy from?

- A. the moon
- B. sunlight
- C. their stem
- D. their roots

2. What does the passage describe?

- A. how plants make food using light, water, and carbon dioxide
- B. how plants make food using *only* water and light
- C. how plants make food using oxygen, sugar, and soil
- D. how plants make food using sugar, light, and water

3. The climate determines which plants can grow in a particular environment.

What evidence from the passage best supports this conclusion?

- A. "Each plant is a part of its unique environment. Different environments could be oceans, forests, deserts, or cities."
- B. "Each environment also has its own climate, which is partially based on how much sun and rain an area receives every year."
- C. "A desert may grow palm trees and cacti, while a forest may grow tall pines or oak trees."
- D. "Since only certain plants grow in hot, cool, wet, or dry climates, each environment is made up of different types of plant life."

4. What would happen to a plant if it grew in polluted soil?

- A. The plant would grow faster than in clean soil.
- B. The plant would grow the same as in clean soil.
- C. The plant would not be healthy and could die.
- D. The plant would absorb more nutrients from the soil.

5. What is this passage mostly about?

- A. how plants grow
- B. sunlight and water
- C. energy sources
- D. nutrients in soil

6. Read the following sentences: "Using their roots, plants take in nutrients from the soil that help them grow. Giving a plant a spot in clean soil is important to make sure it doesn't **absorb** anything harmful from the dirt."

As used in the passage, what does "**absorb**" most nearly mean?

- A. use something
- B. take something in
- C. go under something
- D. put something out

7. Choose the answer that best completes the sentence below.

Different environments have different plants. \_\_\_\_\_, deserts have cacti and rainforests have ferns.

- A. However
- B. Finally
- C. Meanwhile
- D. For example

8. With what process does a plant make its own food?

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**9.** What are the three puzzle pieces that a plant needs to grow?

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**10.** Explain whether plants could make their own food without sunlight.

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Name \_\_\_\_\_

Date \_\_\_\_\_

## VIRTUAL LAB

### How Does Your Garden Grow?

#### Student Planning Sheet

**LEVEL 1**

Variables (List the things that can change to grow the tomatoes.):

\_\_\_\_\_

Variable I will change: \_\_\_\_\_

Testable question:

\_\_\_\_\_  
\_\_\_\_\_

This a fair test because \_\_\_\_\_

\_\_\_\_\_

Hypothesis (What I think will happen and why I think so.)

\_\_\_\_\_  
\_\_\_\_\_

Procedure:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# The Importance of Light

This text is adapted from an original work of the Core Knowledge Foundation.

Light is important for many reasons. Light and heat energy from the sun warms Earth. Without the light and heat energy from the sun, Earth would be freezing cold. In addition, the sun's light is needed for plants to grow. Also, without light, there would be no colors. Can you think of another reason that light is important?

Try to imagine a world in which there is no light- no sun, no stars, no candles, and no light bulbs. What would be different? If you just said that it would be dark, you are only partly right. What else would change? Without light, you would not be able to see anything! A world without light is almost impossible to imagine.



*Here is a scene with lots of light.*





*Here is the same scene without any light.*

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**1.** Without the light and heat energy from the sun, how would Earth feel?

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**2.** Without light, how would plants be affected?

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**3.** Without light, how would what you see be affected?

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**4.** What is the main idea of this text?

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5. Look closely at the text. Which sentence from the text that most closely states the main idea of the text?

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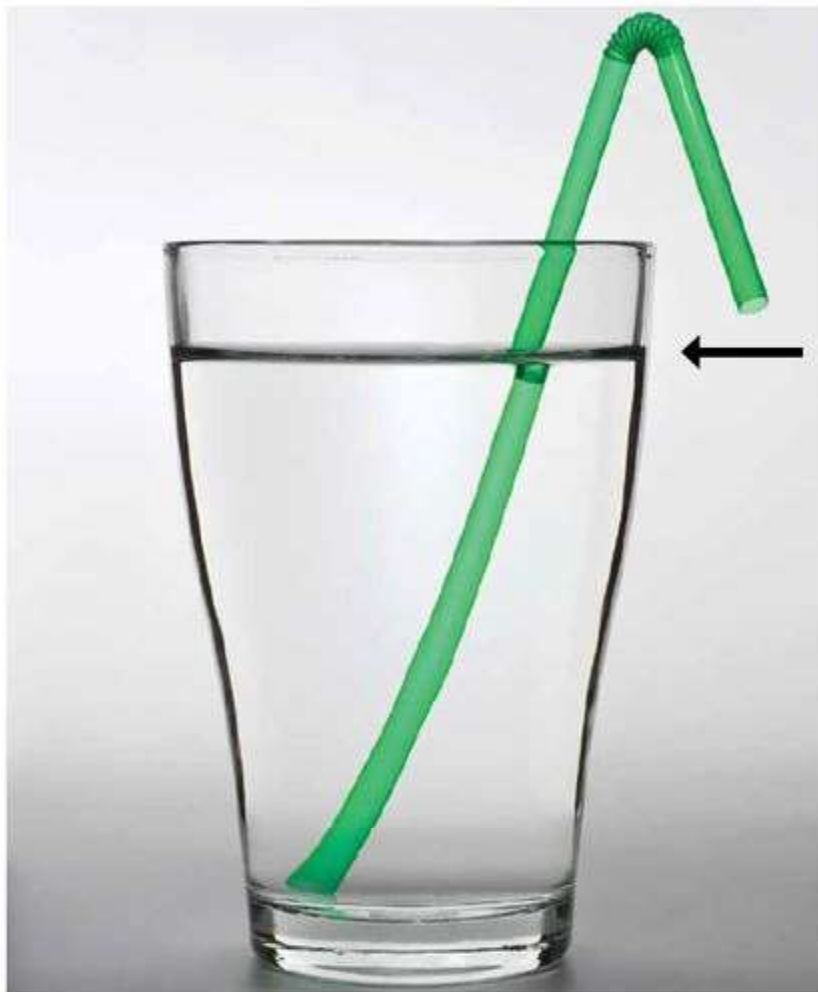
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# Refracting Light

This text is adapted from an original work of the Core Knowledge Foundation.

The speed of light is very, very fast. However, the speed of light can change.

Take a straw and put it in a glass of water. Now, look at the straw where it enters the water. Can you see that it appears to be at a different angle? That is called refraction. It's caused by the slowing down of light as it moves from air to water. As the light enters the water, it changes angle direction because it slows down. It seems like magic, but it's really just how light travels-no trick.



*Why does the angle of the straw look different after it enters the water?*

You may be surprised to learn that there are many ways that we use light refraction every day. Do you or any of your classmates wear eyeglasses? The lenses in eyeglasses correct

different kinds of vision problems by refracting light. Transparent glass or plastic lenses are made to refract light in different ways. Like mirrors, these lenses can be convex lenses or concave lenses. Mirrors and lenses that are concave or convex have curved surfaces.



*Lenses can be used to refract light to correct vision problems.*

# Light Bounces!

by ReadWorks



Take a look around. What do you see? All of the objects that surround you—a book, a plant, a pen, a door and even your own body—can only be seen thanks to light. Light is a type of energy that helps us see the world we live in. When it's completely dark, it is impossible to see anything. Light comes from different places. The sun, stars, lightning and fire all give off light. So do light bulbs, flashlights and candles. Most living things need light in order to survive.

Some objects produce their own light, but most do not. The walls in the room you are in do not give off their own light. The light coming down from the ceiling lights above your head bounces right off the walls. If it didn't, we would not be able to see the walls at all. How do we see things? When light from any source bounces off an object and into our eyes, we are able

to see that object. Take a look at your pencil. You can see the pencil because light is bouncing off it and entering your eyes. This "bouncing off" is called "reflection."

Transparent, or see-through, objects let the light pass right through them. Light can shine through glass and clear plastic. It can also move through water and air. When light travels, it travels in a straight line.

Some objects block the light, like trees, buildings, and even you! When an object blocks the light, light cannot pass through to the other side. This is how shadows are made. When the sun shines on a tree, it cannot shine right through the tree. The tree blocks the light beams. On the other side of the tree, you will see a dark spot that is shaped like the tree. That is its shadow, the place where the sun cannot reach.

Try standing in front of a wall that is all lit up by a flashlight. Your body does not allow light to pass through it, so it will create a shadow on the wall. You can use all kinds of objects to block the light and make shadows. Try forks and spoons from your kitchen, your shoes or a stuffed animal. Try moving your body or one of these objects around to change the shape of the shadow! The closer the object moves to the flashlight, the bigger and fuzzier its shadow will be. The further the object moves away from the flashlight, the smaller and sharper its shadow will be.

Using a mirror, you can take light from one place and make it travel to another. Point your flashlight at the mirror. Now tilt the mirror. By moving the mirror around, you can make the light beam bounce off its shiny surface and fall on different objects in the room. Have you ever wondered why you can see your own face in a mirror? Light shines on your face, then bounces off it and hits the mirror you are looking into. Then, the light bounces, or reflects, off the mirror and right into your eyes.

Light bounces around! If it didn't, we'd be left in the dark.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What important kind of energy helps us to see the world that we live in?

- A. chemical energy
- B. light energy
- C. heat energy
- D. potential energy

2. What does the author mainly describe in the passage?

- A. how electricity helps to power our light bulbs
- B. how the movement of light helps us to view objects
- C. how some objects produce their own light
- D. how the energy of light helps plants to grow

3. Read the following sentences: "When the sun shines on a tree, it cannot shine right through the tree. The tree blocks the light beams. On the other side of the tree, you will see a dark spot that is shaped like the tree. That is its shadow, the place where the sun cannot reach."

Based on this evidence, what conclusion can be made?

- A. When an object blocks the light, light can pass through to the other side.
- B. When an object blocks the light, light cannot pass through to the other side.
- C. Sunlight has the ability to pass directly through trees.
- D. The dark spots behind the trees are places where other trees can't grow.

4. Read the following sentences: "Try standing in front of a wall that is all lit up by a flashlight. Your body does not allow light to pass through it, so it will create a shadow on the wall. You can use all kinds of objects to block the light and make shadows. The closer the object moves to the flashlight, the bigger and fuzzier its shadow will be. The further the object moves away from the flashlight, the smaller and sharper its shadow will be.

Based on this evidence, what will you see if you shine a flashlight on a wall, then place a fork very close to the flashlight?

- A. a big and fuzzy shadow shaped like a fork
- B. a small and sharp shadow shaped like a fork
- C. a big and fuzzy shadow shaped like a flashlight
- D. a small and sharp shadow shaped like a flashlight

5. What is this passage *mostly* about?

- A. the way flashlights work
- B. the way our eyes work
- C. the way light moves
- D. the way trees grow

6. Read the following sentences: "**Transparent**, or see-through, objects let the light pass right through them. Light can shine through glass and clear plastic."

As used in the passage, "**transparent**" can be understood to have the same meaning as what word?

- A. objects
- B. pass
- C. shine
- D. clear

7. Choose the answer that best completes the sentence below.

We are able to see objects \_\_\_\_\_ when light moves, it bounces off of the objects and into our eyes.

- A. until
- B. because
- C. thus
- D. even

8. What is created when the movement of light is blocked by an object and cannot pass through to the other side?

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9. Why can you see your own face in a mirror?

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**10.** At the end of the passage, the author writes, "Light bounces around! If it didn't, we'd be left in the dark." What does the author mean by this?

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