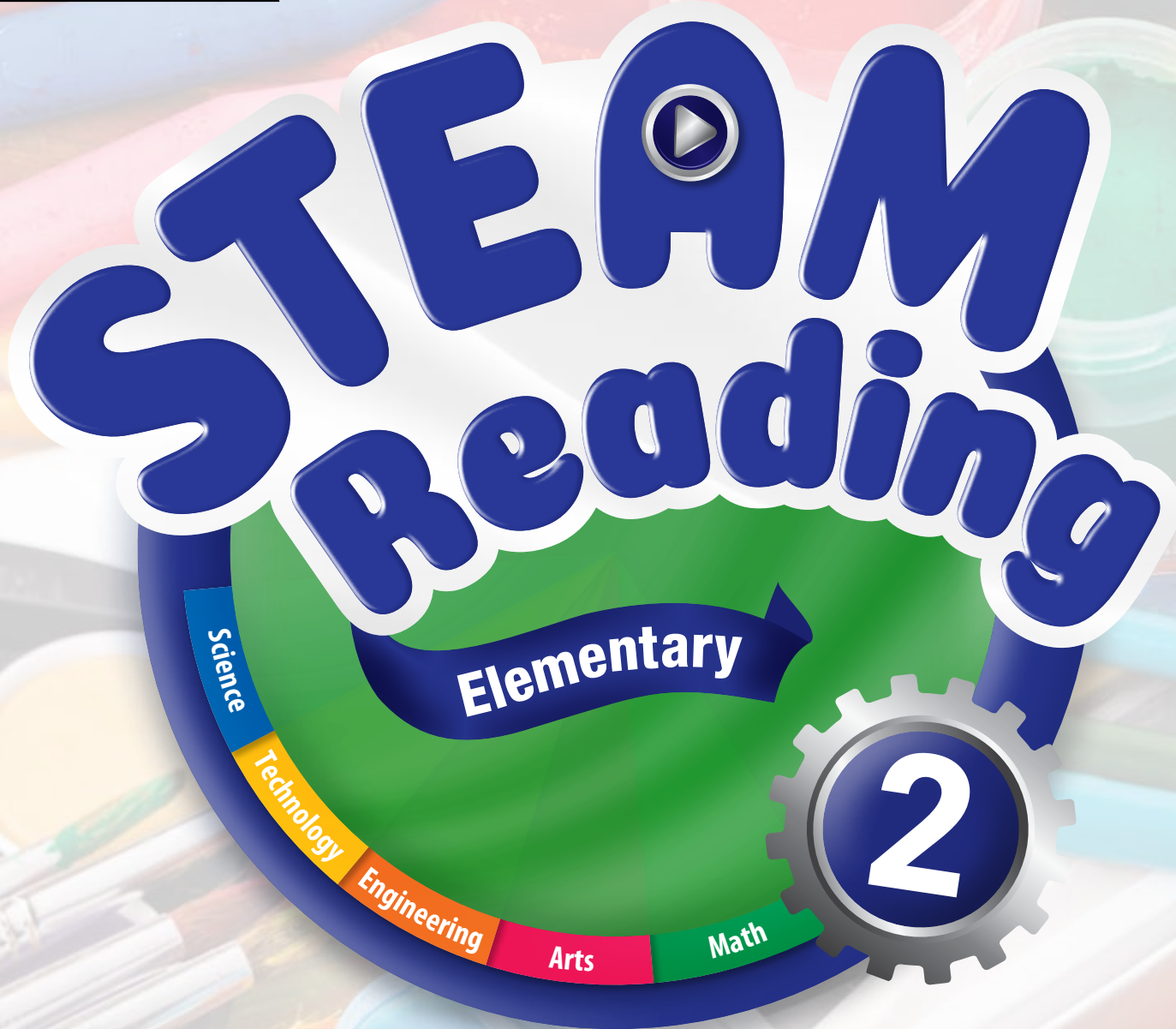


STEAM Reading

Elementary

Science
Technology
Engineering
Arts
Math

2

The book cover features a large, stylized title 'STEAM Reading' in blue with a white outline. The word 'STEAM' is in a bold, blocky font, while 'Reading' is in a more rounded, cursive-like font. Below the title is a green circular graphic with a blue border. Inside the circle, a blue banner with the word 'Elementary' is curved across the top. The bottom of the circle is divided into five colored segments: Science (blue), Technology (yellow), Engineering (orange), Arts (red), and Math (green). To the right of the circle is a large, dark blue gear with the number '2' in white. The background is a collage of various art and craft supplies, including paint pots in various colors (pink, yellow, green, blue, orange), brushes, and markers.

Matthew Broadhurst
Virginia Marconi

1

2

3

4

5

KEY WORDS

A Look, listen, and repeat. 04



phr. get on



adj. crowded



phr. get off



n. rearview mirror



n. front



n. stop

B Listen and number the words. 05

12

I will learn... more about reflection.

THE BUS DRIVER



WARM-UP

What can bus drivers see in their mirrors?

READING

Listen and read. 06

Tom and Jenny **got on** the bus. It was 7 p.m. and the bus was full of people.

Tom said, "Wow, this bus is **crowded!**"

"Yes, it is," said Jenny.

After a while, Tom said, "Jenny, do you think we can **get off**? I don't think the bus driver can see us! There're too many people!"

Then Jenny said, "Don't worry. The bus driver can see everything. There's a **rearview mirror** at the

1 STEAM

Units are grouped together in pairs. Each pair of units has lessons on the same subject. Every unit focuses on one or more aspects of STEAM (Science, Technology, Engineering, Arts, Math).

2 I WILL LEARN...

The academic objective of the unit is introduced to get students thinking.

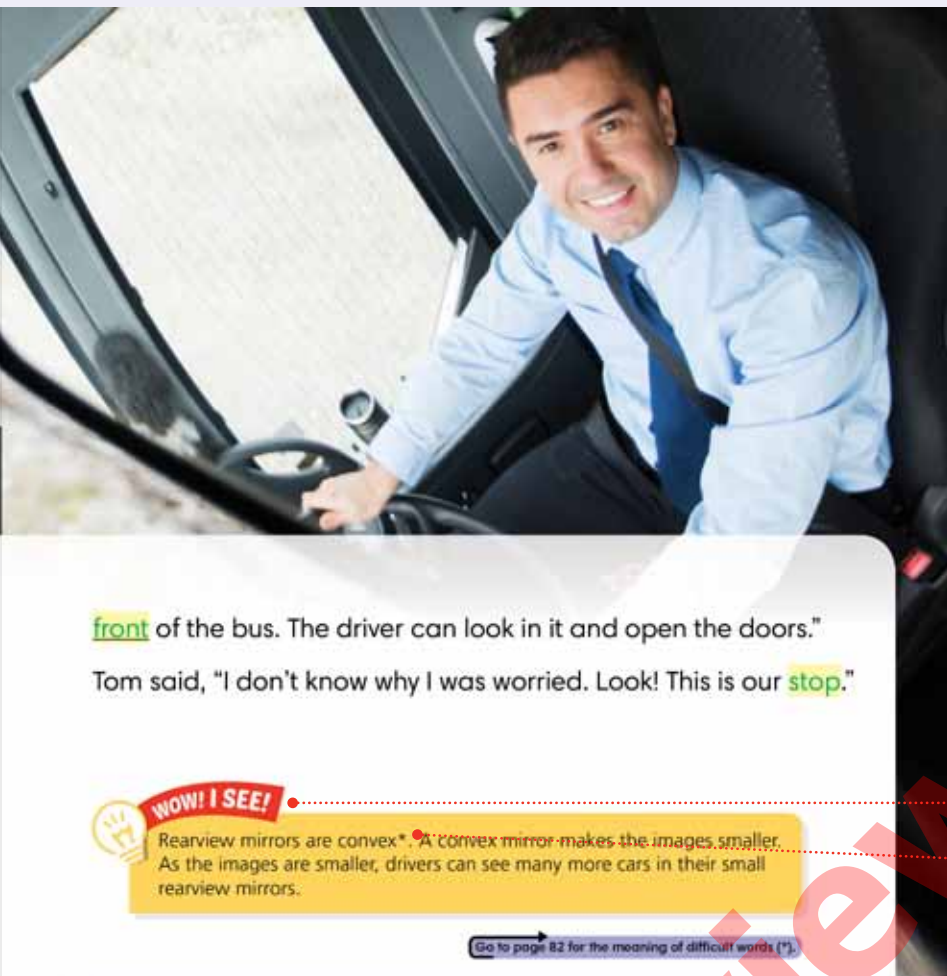
3 QR CODES

Scan the audio QR CODE to listen to the key words and reading passages. In the experiment units, scan the video QR CODE to watch a video of a real experiment.

Video Experiments

Live-action videos take students step-by-step through all science experiments. This visual aid enhances their learning experience and makes the topic come alive.





front of the bus. The driver can look in it and open the doors."

Tom said, "I don't know why I was worried. Look! This is our **stop**."



Rearview mirrors are convex*. A convex mirror makes the images smaller. As the images are smaller, drivers can see many more cars in their small rearview mirrors.

(Go to page 82 for the meaning of difficult words (*).)

C Circle the key words in the reading.

D Read and choose.

1. Which is the opposite of crowded?
a. full b. clear c. empty
2. What does front mean in the reading?
a. straight b. forward c. behind

13

4 KEY WORDS

Every unit introduces new KEY WORDS that are necessary to understand the unit's topic. All key words are found in the READING and are illustrated with a photograph.

5 READING

Each READING is an introduction to the topic of the unit. The first unit in a pair introduces the subject through an experiment. The experiment is illustrated and easy to follow. The second unit features an engaging short story on the same topic.

6 WOW! I SEE!

This section goes into further detail on the concepts introduced in the READING.

7 WORDS WITH AN ASTERISK (*)

Difficult words in the unit are marked with an asterisk (*) and are explained in a word list at the back of the book.

8 SHORT ACTIVITIES

Short activities focus attention on the KEY WORDS and check understanding.

CHECK YOUR UNDERSTANDING

This section features a range of activities to check both reading comprehension and understanding of the unit vocabulary.

STEAM PROJECT

The STEAM PROJECT ends the unit with a fun and interactive project that encourages individual creativity as well as collaboration. Project types include experiments, math problems, and arts & crafts. Experimental projects have a video available via QR code. Further explanation for certain projects can be found in the PROJECT REFERENCE at the end of the book.

CHECK YOUR UNDERSTANDING

A Choose the correct answers.

- What is the main purpose of the reading?
 - To explain why some things float and others sink
 - To explain why we need to draw a blueprint of a raft
 - To explain what happens when you make a raft with coins
- When you put a lot of coins on the straw raft, it sinks because
 - a straw raft is light and has high buoyancy
 - the coins are too heavy, and they sink the raft
 - the coins have high buoyancy, and they sink anyway
- Which of the following is **NOT** true about buoyancy?
 - It pushes things up.
 - It is a force in water.
 - It makes things sink.

B Check true (T) or false (F) for each sentence.

- When an object has high buoyancy, it always sinks. T F
- Buoyancy makes coins float and straws sink. T F

C Complete the chart.

	buoyancy	floats	high	low	sinks
Topic	_____ is a force in water. It pushes things upward.				
Detail 1	A straw has _____ buoyancy, so it floats in water.				
Detail 2	A coin has _____ buoyancy, so it sinks in water.				
Detail 3	Make a straw raft. Then, put one coin on it. It _____ . Put a lot of coins on it. The raft is now too heavy, and it _____ .				

STEAM PROJECT

Read and match.

- We can swim because _____ stops _____ .
- A boy is floating on a _____ .
- Paul is an architect. He _____ buildings _____ .
- How many _____ do you have to put on a straw raft to sink it? _____ .

PROJECT MAKE A PLASTIC BOTTLE RAFT

To do this experiment, you will need:

- two plastic bottles (500 ml)
- a piece of cardboard
- a triangle of cardboard
- duct tape
- a large plastic bucket full of water

STEP 1

- Cover the piece of cardboard in duct tape.
- Tape the two water bottles together to the bottom of the cardboard.
- Cover the triangle with tape, too. You can use duct tape of a different color.
- Tape the triangle to the top of the raft.

STEP 2

Fill a large bucket with water and float your raft. How many coins can you put on your raft before it sinks? Share your results with a friend.

PROJECT REFERENCE

UNIT 8 AN ICE-MELTING EXPERIMENT

How long will it take to melt the ice with different substances in it? Here is an experiment to test it out.

Materials:

- four plastic cups
- one teaspoon of salt
- one teaspoon of sugar
- one teaspoon of flour
- water
- a marker
- a pen and paper
- a stopwatch

STEP

- Put a teaspoon of salt in one cup, sugar in another, and flour in a third. Write the name of the substance on the cup.
- Fill the four cups with water to the top. Stir the water until the substances dissolve.
- Place the four cups in the freezer for 2 hours.
- Remove the four cups from the freezer and place them in the sun.
- When the ice begins to melt, press "start" on your stopwatch. Check how long each ice takes to melt.

You will see the ice with salt melts the fastest, and the ice with flour melts the slowest. Salt and sugar both lower the freezing point and make the ice melt fast. However, salt lowers it more than sugar, so the salty ice melts first. In addition, flour has about the same melting point as pure water, so it doesn't cause the ice to melt faster.

UNIT 12 GOOD AND BAD THINGS ABOUT VOLCANOES

Here are some more examples of the positive and negative effects of volcanoes.

Positive	Natural	Negative
 Make islands or widen the size of lands	 Use volcanic deposits as building materials	 Make traditions for natives Maori's traditional food, Hangi
 Ash blocks the sun's heat and lowers the temperature of Earth's atmosphere	 Ash and gases cause breathing problems	 Cause earthquakes or tsunamis after the eruption

PROJECT REFERENCE

PROJECT REFERENCE pages go into further detail of the concepts behind the project.

WORKBOOK

VOCABULARY PRACTICE

This checks students' understanding of the key words introduced in the Student Book unit.

SENTENCE PRACTICE

This is a sentence match activity featuring sentences taken from the unit reading.

11 A VOLCANIC ERUPTION

VOCABULARY PRACTICE

6 Circle the correct word. Then write it.



magma
mixture
liquid



lava
lake
volcano



lava
liquid
mountain



water
vinegar
lava



water
clay
detergent



erupt
shake
die

7 Complete the sentences with the words from the box. One word is not used.

detergent erupted lava vinegar volcano

- When the people saw the ash cloud coming out of the _____, they left their homes in a hurry.
- Lava and ash came out of the top of the volcano when it _____.
- The red, hot _____ was flowing out of the volcano like a river.
- Mix the oil with the _____ and pour it on the salad.

SENTENCE PRACTICE

Match the sentences and write.

- There are _____
- When volcanoes erupt, _____
- Let's make a mini _____
- Close the bottle and _____
- Pour vinegar in the volcano crater _____

- the molten rock comes out.
- shake it to mix the contents well.
- and observe what happens.
- rocks deep inside Earth.
- volcano and watch it erupt.

1. _____
2. _____
3. _____
4. _____
5. _____

SUMMARY

Complete the summary. One word is not used.

clay deep detergent erupts islands lava magma

1. _____ inside Earth, it's so hot that rocks melt. Molten rock is called magma. When it _____ comes out of the volcano, we call it _____.

2. _____ Lava is dangerous because it's very hot, but it can also make new _____ when it cools down. To make a mini volcano, we need a plastic bottle, baking soda, some drops of red food coloring, and some kitchen _____.

3. _____ We close and shake the bottle to mix the ingredients. Then, we place the bottle on a plate and make a volcano around it using _____.

4. _____ We open the lid of the bottle and pour in vinegar. Fake lava comes out of our model volcano.

SUMMARY

This is a recap of the unit's reading passage. Students are able to check their understanding of the ideas introduced in the unit.

TABLE OF CONTENTS

UNIT / PAGE	STEAM	DETAILS	
1 Page 8	S T E A M	Title	LIGHT TRAVELS / WC: 114 ▶
		Academic Objective	Learn about how light moves
		Vocabulary	straight, flashlight, direction, target, toward, reflection
		STEAM Project	Reflecting Light ▶ 21st Century Skills: Critical Thinking, Creativity, Collaboration
2 Page 12	S T E A M	Title	THE BUS DRIVER / WC: 101
		Academic Objective	Learn more about reflection
		Vocabulary	get on, crowded, get off, rearview mirror, front, stop
		STEAM Project	Concave and Convex Mirrors 21st Century Skills: Critical Thinking
3 Page 16	S T E A M	Title	THE WATER CYCLE / WC: 106 ▶
		Academic Objective	Learn about the water cycle
		Vocabulary	evaporate, condense, cycle, seal, decrease, increase
		STEAM Project	The Water Cycle in a Bottle ▶ 21st Century Skills: Creativity, Critical Thinking
4 Page 20	S T E A M	Title	DISAPPEARED WATER / WC: 127
		Academic Objective	Learn more about the water cycle
		Vocabulary	vacation, forget, become, cloud, high, again
		STEAM Project	Why It Is Important to Save Water 21st Century Skills: Critical Thinking, Creativity, Communication
5 Page 24	S T E A M	Title	A RAFT OF STRAWS / WC: 124 ▶
		Academic Objective	Learn why things float or sink
		Vocabulary	coin, raft, design, blueprint, buoyancy, upward
		STEAM Project	Make a Plastic Bottle Raft ▶ 21st Century Skills: Creativity, Critical Thinking, Collaboration, Communication
6 Page 28	S T E A M	Title	HOW DOES A SHIP FLOAT? / WC: 114
		Academic Objective	Learn more about buoyancy
		Vocabulary	ship, Internet, search, force, be made of, huge
		STEAM Project	Build a Better Vehicle 21st Century Skills: Critical Thinking, Collaboration, Creativity
7 Page 32	S T E A M	Title	ICE FISHING / WC: 96 ▶
		Academic Objective	Learn about salt and ice
		Vocabulary	spray, stairs, ingredient, ice cube, make sure, degree
		STEAM Project	How to Make Ice Cream in a Bag ▶ 21st Century Skills: Critical Thinking
8 Page 36	S T E A M	Title	FROZEN / WC: 126
		Academic Objective	Learn more about the freezing point of water
		Vocabulary	aunt, even, reply, ask, because, lower
		STEAM Project	An Ice-Melting Experiment ▶ 21st Century Skills: Critical Thinking, Collaboration

UNIT / PAGE	STEAM	DETAILS	
9 Page 40	S T E A M	Title	THE POWER OF PULLEYS / WC: 98 🎧
		Academic Objective	Learn about pulleys and how to lift things easily
		Vocabulary	lift, pulley, wheel, loose, wrap, distribute
		STEAM Project	How Pulleys Make Life Easier
			21st Century Skills: Critical Thinking, Communication
10 Page 44	S T E A M	Title	INVENTIONS OF THE PAST / WC: 103
		Academic Objective	Learn more about pulleys
		Vocabulary	fortress, electricity, easily, work, carry, need
		STEAM Project	More About Pulleys
			21st Century Skills: Critical Thinking
11 Page 48	S T E A M	Title	A VOLCANIC ERUPTION / WC: 100 🎧
		Academic Objective	Learn about volcanoes and volcanic eruptions
		Vocabulary	magma, volcano, erupt, lava, detergent, vinegar
		STEAM Project	Learn About Volcanoes
			21st Century Skills: Critical Thinking
12 Page 52	S T E A M	Title	VOLCANOES: GOOD OR BAD? / WC: 113
		Academic Objective	Learn more about volcanoes
		Vocabulary	worried, danger, cause, ash, surface, hot spring
		STEAM Project	Good and Bad Things About Volcanoes
			21st Century Skills: Critical Thinking, Collaboration, Communication
13 Page 56	S T E A M	Title	THE FAULTS IN OUR EARTH / WC: 89 🎧
		Academic Objective	Learn about earthquakes
		Vocabulary	crust, puzzle, crack, fault, spine, relax
		STEAM Project	Earthquake Experiment 🎧
			21st Century Skills: Critical Thinking, Collaboration
14 Page 60	S T E A M	Title	EARTHQUAKE SAFETY / WC: 127
		Academic Objective	Learn more about earthquakes
		Vocabulary	grab, news report, fall down, turn off, power, elevator
		STEAM Project	Do During an Earthquake
			21st Century Skills: Critical Thinking, Communication
15 Page 64	S T E A M	Title	MACHINES ALL AROUND / WC: 104
		Academic Objective	Learn about machines and mechanical engineers
		Vocabulary	complicated, mechanical, industry, turn on, switch, fridge
		STEAM Project	Let's Make Our Own Lift 🎧
			21st Century Skills: Critical Thinking, Collaboration
16 Page 68	S T E A M	Title	UNDERWATER EXPLORERS / WC: 100
		Academic Objective	Learn about archaeology and underwater archaeologists
		Vocabulary	important, archaeologist, dig, percent, item, underwater
		STEAM Project	Are You a Good Archaeologist?
			21st Century Skills: Critical Thinking, Creativity, Communication



I will learn... about how light moves.

LIGHT TRAVELS



Scan for Audio

KEY WORDS

A Look, listen, and repeat.  01



adj. straight



n. flashlight



n. direction



n. target



prep. toward



n. reflection

B Listen and number the words.  02

WARM-UP

What do you see when you put an object in front of a mirror?

READING

Listen and read.  03



Scan for Video

Light travels in a **straight** line. How do we know this? Turn on a **flashlight**. The light moves away from the flashlight. It moves in a straight line.

When light hits a mirror, what happens to it?

Does it keep going? Does it change **direction**?

Let's find out.

You need a mirror, a flashlight, and a **target**.



Put the target on the wall and shine the flashlight at it.



Use the mirror to change the direction of the light. Make the light go toward the target.

When light hits a mirror, it changes direction. This is called reflection.

We can change the direction of the light by moving the mirror.
Look around you.

A bus driver uses her rearview mirror to see who is getting off the bus. She doesn't need to turn her head.

Where else can you see reflections every day?



C Circle the key words in the reading.

D Read and choose.

1. What does target mean in the reading?
a. goal b. mirror c. block
2. Which is the opposite of toward?
a. into b. near c. away from

CHECK YOUR UNDERSTANDING

A Choose the correct answers.

MAIN IDEA

1. What is the main purpose of the reading?
- a. Light moves in a straight line through a mirror.
 - b. Light changes direction when it hits a flashlight.
 - c. Light changes direction when it bounces off a mirror.

DETAIL

2. Bus drivers use _____ to see people getting off the bus.
- a. target
 - b. flashlight
 - c. reflection

DETAIL

3. Which of the following does light NOT do according to the reading?
- a. Move in a straight line
 - b. Change shape
 - c. Bounce off

B Check true (T) or false (F) for each sentence.

1. Light moves in a straight line when it comes out of a flashlight.
2. The bus driver uses a rearview mirror to turn her head.

T
☐

F
☐

☐

☐

C Complete the chart.

Topic

Reflection happens when light hits a mirror and changes direction.

Detail 1

Light travels in 1. _____.

Detail 2

A mirror can change 2. _____.

Detail 3

Bus drivers use 3. _____.

- a. the direction of light and we call this reflection
- b. reflection to see people getting off the bus
- c. a straight line from the flashlight to the target

D Choose the correct word.

1. You need a _____ when you find your keys under the bed.
a. telephone b. flashlight c. plate
2. When we look in a mirror, we can see our _____.
a. reflection b. bouncer c. direction
3. Are we walking in the right _____? There are no stores on this road.
a. toward b. direction c. reflection
4. This line isn't _____. Why don't you use a ruler to draw it?
a. straight b. bent c. thin



SCIENCE

TECHNOLOGY

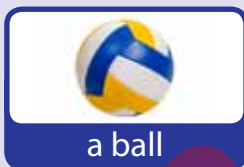
ENGINEERING

ARTS

MATH

PROJECT REFLECTING LIGHT

To do this experiment, you will need:



a ball



a mirror



a flashlight



STEP 1

Critical Thinking

- a. Turn off the light so the room is dark. Turn on the flashlight and put it on a table. Where does the light go?
- b. Hold a mirror in front of the flashlight. Does the light go to the same place? Where does it go?

STEP 2

Critical Thinking

Creativity

- a. Place the ball close to the flashlight. Move the mirror so you can get the light to reach the ball.
- b. Keep moving the mirror so the light hits different objects in the room.

STEP 3

Critical Thinking

Collaboration

Complete the sentences using the word bank below.

direction light reflection straight targets toward

Light always moves in a 1. _____ line. When 2. _____ hits the mirror, it bounces off in a different 3. _____. We call this 4. _____. We can use it to make the light go 5. _____ different 6. _____.

STEAM Reading

Elementary

Science

Technology

Engineering

Arts

Math

2

Workbook

Matthew Broadhurst
Virginia Marconi

TABLE OF CONTENTS

UNIT 1 LIGHT TRAVELS 4

UNIT 2 THE BUS DRIVER 6

UNIT 3 THE WATER CYCLE 8

UNIT 4 DISAPPEARED WATER 10

UNIT 5 A RAFT OF STRAWS 12

UNIT 6 HOW DOES A SHIP FLOAT? 14

UNIT 7 ICE FISHING 16

UNIT 8 FROZEN 18

UNIT 9 THE POWER OF PULLEYS 20

UNIT 10 INVENTIONS OF THE PAST 22

UNIT 11 A VOLCANIC ERUPTION 24

UNIT 12 VOLCANOES: GOOD OR BAD? 26

UNIT 13 THE FAULTS IN OUR EARTH 28

UNIT 14 EARTHQUAKE SAFETY 30

UNIT 15 MACHINES ALL AROUND 32

UNIT 16 UNDERWATER EXPLORERS 34

VOCABULARY PRACTICE

A Circle the correct word. Then write it.

1.



flashlight
light
target

2.



reflection
transfer
direction

3.



away
toward
far

4.



straight
thick
mirror

5.



straight
spot
target

6.



reflection
sound
mirror

B Complete the sentences with the words from the box. One word is not used.

direction flashlight reflection target toward

- Sally's brilliant. All her arrows hit the _____.
- We have to drive _____ the bridge to find the road.
- I'm afraid we're walking in the wrong _____. I can't see any buildings.
- Do you have a _____? There is no light in the room, and I need to find my keys.

SENTENCE PRACTICE

Match the sentences and write.

- | | | |
|---------------------------------------|---|-----------------------------------|
| 1. When light hits a mirror, | • | • away from the flashlight. |
| 2. The light moves | • | • light by moving the mirror. |
| 3. Put the target on the wall | • | • what happens to it? |
| 4. We can change the direction of the | • | • see reflections every day? |
| 5. Where else can you | • | • and shine the flashlight at it. |

1. _____
2. _____
3. _____
4. _____
5. _____

SUMMARY

Complete the summary. One word is not used.

direction flashlight head reflection straight target toward

We know light usually travels in a 1. _____ line. When you turn on a 2. _____, the light moves 3. _____ whatever is in front of it. When you put a mirror in front of the flashlight, the light bounces off and changes 4. _____. This is what we call 5. _____. A bus driver uses this to see who is getting off the bus without turning her 6. _____.