

Unit 1. Muscles Move Our Bodies



Academic Objective	Learn about how muscles move bones
Vocabulary	stretch, muscle, locomotive, organ, structure, lung, surround, extend
STEAM Project	Bone Ghost Leg Game
	21st Century Skills: Critical Thinking, Creativity, Communication

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: The muscles in my hand make it move.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 8, 4, 2, 5, 6, 1, 7

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

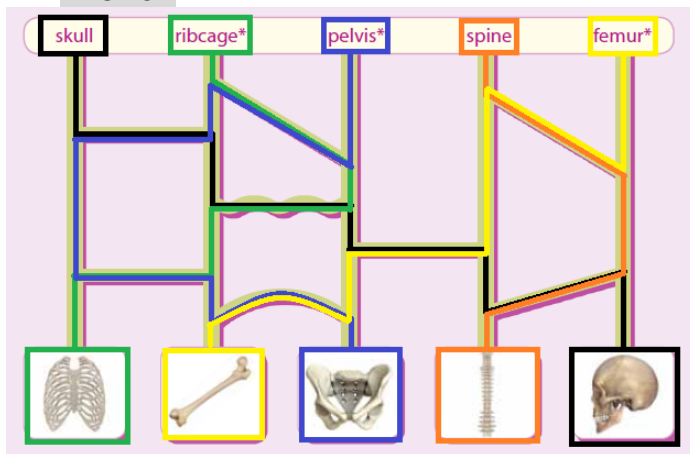
- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. b 2. c

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. b 2. a 3. c
- B. Circle T for true or F for false. Correct the false statements.
1. F; Bones are surrounded by muscles. 2. T
- C. Complete the chart.
1. connected 2. flex 3. Bones 4. longer 5. muscles
- D. Complete the sentences.
1. lung 2. stretched 3. locomotive 4. extended 5. muscles 6. surrounded

[STEAM PROJECT]

- Have students complete the ghost leg to find out each bone's name.
- Have them make their own ghost leg about names of bones and share them with their friend.
- Answer:



Unit 2. Amazing Bones



Academic Objective	Learn about different types of bones
Vocabulary	bravely, skull, rib, bamboo, orthopedic, x-ray, recommend, calcium
STEAM Project	Make the Muscular System of a Hand 21st Century Skills: Critical Thinking

The image shows a worksheet for Unit 2 titled 'Amazing Bones'. It includes a 'Warm-up' section with a question about bones, a 'Reading' section with a story about Jesse and Pete, and a 'Check Your Understanding' section with multiple-choice and true/false questions. To the right is a project titled 'Make the Muscular System of a Hand' which includes a list of materials (paper, pencil, scissors, double-sided tape, string, rubber band) and step-by-step instructions for creating a hand model.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Yes, I have. I broke the radius bone in my arm.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 1, 8, 2, 6, 4, 5, 7, 3

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. b 2. a

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. b 3. c
- B. Circle T for true or F for false. Correct the false statements.
 - 1. F; Bones protect internal organs, and they all look different.
 - 2. F; We have over 200 bones in our bodies.
- C. Label the skeleton with the correct bone names and functions.
 - 1. skull, b 2. ribs, c 3. spine, a
- D. Match the word with its definition.
 - 1. orthopedic 2. x-ray 3. bamboo 4. recommend 5. skull 6. calcium

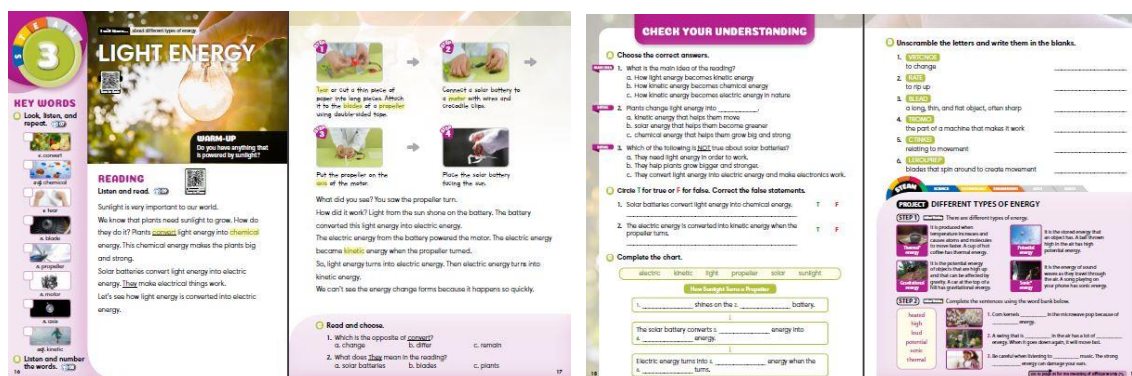
[STEAM PROJECT]

- Have students make a model muscular system referring to step 1.
- Have them show their models to their friends or groups.
- Have them choose the correct words and complete the paragraph.
- Refer to PROJECT REFERENCE at the end of the book for further explanation.
- Give the answer with reasons based on PROJECT REFERENCE.
- Answer:
- This is how your muscles and bones in your hand work. There are three bones in each finger, and two in your thumb. They're connected by long, thin tendons that run into your arm. When you squeeze your hand, the muscles and tendons in your arm and hand pull and close your hand into a ball. Other muscles contract to open your hand again.

Unit 3. Light Energy



Academic Objective	Learn about different types of energy
Vocabulary	convert, chemical, tear, blade, propeller, motor, axis, kinetic
STEAM Project	Different Types of Energy
	21st Century Skills: Critical Thinking



[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Yes, I have a calculator that is powered by sunlight.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 6, 8, 2, 1, 3, 5, 7, 4

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. c 2. a

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. c 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; Solar batteries convert light energy into electric energy. 2. T
- C. Complete the chart.
- 1. Sunlight 2. solar 3. light 4. electric 5. kinetic 6. propeller
- D. Unscramble the letters and write them in the blanks.
- 1. convert 2. tear 3. blade 4. motor 5. kinetic 6. propeller

[STEAM PROJECT]

- Have students read the explanations about different types of energy.
- Ask them to think about more examples of energy in the daily life.
- Have them complete the sentences in step 2 and share the answers with their friends.
- Answer: 1. heated, thermal 2. high, potential 3. loud, sonic

Unit 4. Roller Coaster Cars

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Academic Objective	Learn about potential and kinetic energy
Vocabulary	amusement park, ride, scream, roller coaster, track, potential, all the time, merry-go-round
STEAM Project	Energy Conversion
	21st Century Skills: Critical Thinking, Collaboration, Communication

4 ROLLER COASTER CARS

KEY WORDS
Look, listen, and repeat.

WARM-UP
What vehicles can move without motors?

READING
Listen and read.
Mike went to an amusement park with his dad. They had fun on some small rides. They sat down to eat some lunch. Mike heard some happy screams. He turned and saw a huge roller coaster.
"Dad, look at that!" he shouted.
The cars on the roller coaster came flying down a hill and went up another.
"How do the roller coaster cars go so fast?" Mike asked.
"Do they have an engine like a bus?"
"No, they don't. The track pulls the cars up a big hill. As they go up, they create potential energy."
"Then they go down the other side. Gravity pulls them downward. The potential energy becomes kinetic energy. This energy pulls the cars fast around the track." "Wow, that's amazing!"
"Yes, potential energy gets converted to kinetic energy all the time. When you drop a ball, it has potential energy. As it hits the ground, that is turned into kinetic energy, and it bounces up. So, would you like to ride the roller coaster?"
"Maybe not, Dad. Let's just go on the merry-go-round again!"

CHECK YOUR UNDERSTANDING

1. Choose the correct answer.
1. What is the main purpose of the reading?
a. To show how roller coasters work.
b. To explain how roller coasters are built.
c. To show how roller coasters stay on the track.
2. Potential energy gets converted into
a. kinetic energy all the time.
b. kinetic energy once a week.
c. chemical energy all the time.
3. Which of the following is **NOT** true about roller coasters?
a. Roller coaster cars run on tracks.
b. Roller coaster cars move because of solar energy.
c. Roller coaster cars don't need a motor in order to move.
4. Circle T for true or F for false. Correct the false statements.
1. Roller coaster cars create kinetic energy as they go up the hill. T F
2. Gravity pulls the roller coaster cars down from the top of the hill. T F
3. Write "P" for examples of potential energy and "K" for examples of kinetic energy.
1. A pulled-back arrow. 2. A ball going down a hill. 3. An apple on a tree.
4. A car on a road in the forest. 5. The track pulling the roller coaster cars up a big hill. 6. A ball hitting the ground.

PROJECT: ENERGY CONVERSION
Energy is being converted all the time. Let's take a look at some examples.
STEP 1 Look at the different types of energy conversion.
chemical → mechanical → electrical → light
potential → kinetic → chemical
STEP 2 Complete the sentences using the word bank below.
An apple and a car both contain chemical energy. When we eat the apple, it gives us energy. We can use that energy to move the wheels of a bike. It's called kinetic energy. When we turn on a light, light energy is given off. The electrical energy is turned into light energy. The chemical energy is turned into electrical energy by a battery. A battery has potential energy. When it's turned on, the energy turns into kinetic energy as it runs.
STEP 3 Write a paragraph about energy. Can you think of any other examples of energy conversion around your town or school?

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Bicycles, sailboats, and roller coasters can move without motors.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 7, 6, 8, 1, 2, 5, 3, 4

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. c 2. b

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. a 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; Roller coaster cars create potential energy as they go up the hill. 2. T
- C. Write "P" for examples of potential energy and "K" for examples of kinetic energy.
- 1. P 2. K 3. P 4. P 5. P 6. K
- D. Match the word with its definition.
- 1. merry-go-round 2. scream 3. ride 4. track 5. amusement park 6. all the time


[STEAM PROJECT]

- Have students understand the different types of energy conversion.
- Have them complete the paragraph and share the answers of step 2 with their partner or group.
- Have them think about other examples of energy conversion and talk with their friends,
- Answer: 1. battery 2. mechanical 3. energy 4. heat 5. potential

Unit 5. Our Hearts Pump Blood

S T E A M

Academic Objective	Learn about how blood moves through my body
Vocabulary	extract, oxygen, stomach, intestine, pump, vessel, circulatory, beat
STEAM Project	Valves in the Heart
	21st Century Skills: Critical Thinking



OUR HEARTS PUMP BLOOD


KEY WORDS

- Look, listen, and repeat.
- a nutrient
- a trigger
- a stomach
- a reflexive
- a pump
- a nutrient
- a nutrient
- a nutrient

5 Listen and number the pictures.

Task 1 **Look and listen to the video about the heart.**

Watch it!



Watch it!

Put your hand to your chest and feel your heartbeat. How many times does it beat in 1 minute?

In this experiment, the pump is the heart. The pipe is a blood vessel, and the red water is **blood**. First, blood flows fast. More blood can move around the body. When the heart beats slowly, blood flows slowly. Only a small amount of blood can move.

Look after your heart. A healthy heart moves faster.

It moves blood from the heart all through the body and back again. Blood keeps flowing round and round.

Your blood is flowing as you read this!

READING

Listen and read.

We breathe air into our lungs. Our lungs **oxygen**.

We swallow food. The **stomach** breaks it down and our **intestines** turn it into nutrients.

We need oxygen and nutrients to live. They need to move around our body. Blood delivers nutrients and oxygen to all cells in the body.

The heart pumps blood through the body. If the heart stops, the body can't get the oxygen and nutrients it needs.

The heart and blood **vessels** are called "**circulatory**" organs." Let's see how they work.

Task 2 **Check your understanding**

1. Choose the correct answers.

- a. What is the purpose of the reading?
 - a. to explain how nutrients help our bodies
 - b. to explain how our circulatory organs work
 - c. to explain how our lungs exchange oxygen from the air we breathe in
2. Blood flows slowly through the body when
 - a. the heart beats fast
 - b. the heart beats slowly
 - c. we breathe air through our lungs
3. Which of the following is **NOT** about the heart's function?
 - a. the heart pumps blood throughout the body
 - b. if the heart stops, we get the oxygen and nutrients we need
 - c. the blood in the heart delivers oxygen and nutrients to your body

Circle T for true or F for false. Correct the false statements.

1. The stomach turns the food we eat into nutrients. T F
2. A healthy heart moves slower than an unhealthy heart. T F

3. Complete the chart.

	nutrients	stomach	vessels
What do we need to live?	the "blood-carrying tool"	our intestine	nutrients

The heart pumps blood through the body through the blood's _____.

Oxygen and _____ go into our blood.

Task 3 **Check the sentences.**

Complete the sentences.

_____ beats. circulatory subtracted oxygen pump stomach

1. Jenny ate too much candy after dinner and had a _____ heart.
2. It is necessary for people to survive.
3. Our _____ organs pass blood around the body.
4. Many need to have a blood bath.
5. A normal heart _____ 60 to 100 times in a minute.
6. Every morning, people _____ fresh water out of the wall.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: My heart beats 65 times in a minute.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 5, 8, 4, 1, 6, 2, 7

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. b 2. a

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. b 2. b 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; The intestines turn the food we eat into nutrients.
- 2. F; A healthy heart moves faster than an unhealthy heart.
- C. Complete the chart.
- 1. stomach 2. extract 3. nutrients 4. vessels
- D. Complete the sentences.
- 1. stomach 2. Oxygen 3. circulatory 4. extracted 5. beats 6. pump

[STEAM PROJECT]

- Have students do the experiment following the instruction on step 1.
- Have them complete the paragraph and share the answers with their partner of group.
- Refer to PROJECT REFERENCE at the end of the book for further explanation.
- Explain how the heart and valves work and give answers based on PROJECT REFERENCE.
- Answer: 1. flow 2. pumping 3. valves 4. closing

Unit 6. Blood Moves All Around

S T E A M

Academic Objective	Learn about different types of blood vessels
Vocabulary	bandage, wound, treat, contain, powerful, artery, vein, capillary
STEAM Project	Heart-Related Diseases 21st Century Skills: Critical Thinking, Creativity, Communication

BLOOD MOVES ALL AROUND

WARM-UP
Have you ever cut yourself?
How do you stop the bleeding?

READING
Listen and read.
Oh, no! Alex accidentally cuts himself with his scissors. Mom comes and puts a bandage on the wound. As she treats it, Alex asks where blood comes from. "Blood comes from the heart. It moves all around inside your body."
"Even my fingers and toes?"
"Everywhere! There's blood under the skin all over your body. Blood carries essential nutrients and oxygen. The heart is a powerful pump that moves blood around inside the body through our blood vessels."
"Are all blood vessels the same?"

KEY WORDS
Look, listen, and repeat.
a bandage
a wound
a treat
a contain
a powerful
a artery
a vein
a capillary
Listen and number the words.

CHECK YOUR UNDERSTANDING

1. Choose the correct answers.
a. To explain the three types of blood vessels.
b. To explain the functions of blood in our body.
c. To explain that the heart is a very powerful muscle.

2. Humans have 100,000 km of arteries around the heart.
a. of arteries around the heart
b. of blood vessels in that bodies
c. of mistakes in the digestive system.

3. Which of the following is NOT true about capillaries?
a. They connect veins and arteries.
b. They are very large blood vessels.
c. You have them in your fingers and your toes.

4. Circle T for true or F for false. Correct the false statements.
1. There is blood in most of your body, but not in your toes. T F
2. Blood comes from the heart and moves all around. T F

5. Complete the chart.
arteries capillaries heart lungs veins
a. The main part of the respiratory system.
b. Usually look blue, return blood to the heart.
c. Usually look red, carry blood away from the heart.
d. Work as a pump, squeezing oxygen to various parts of the body.
e. The smallest blood vessels in the body.

HEART-RELATED DISEASES
There are some heart-related diseases. As we get older, problems can occur.
It occurs when fat and other things build up on the inside of your arteries and block blood flow.
It happens when blood can't flow properly through the arteries in the heart. You feel chest pain, get short of breath, and sweat a lot.
It happens when blood can't reach the heart properly.
STEP 1 Complete the sentences using the word bank below.
artery blood clot heart attack stroke
1. Artery can happen if artery reaches the brain.
2. Coronary disease happens when arteries get blocked and blood can't flow.
3. Artery happens when blood can't reach the heart properly.
STEP 2 Make a poster explaining the various types of heart-related diseases. Share it with the class.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Yes, I have. I stopped the bleeding by putting pressure on the cut.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 5, 7, 8, 4, 6, 1, 2

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. c

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. b 3. b
- B. Circle T for true or F for false. Correct the false statements.
1. F; There is blood everywhere in your body. 2. T
- C. Complete the chart.
1. lungs, a 2. veins, b 3. capillaries, e 4. arteries, c 5. heart, d
- D. Complete the sentences.
1. bandages 2. contains 3. powerful 4. Arteries 5. capillary 6. wound

[STEAM PROJECT]

- Have students read the explanations about some heart-related diseases.
- Have them complete the sentences and share the answers of step 2 with their partner or group.
- Have them make a poster explaining different kinds of heart-related diseases and represent it to the class.
- Answer: 1. stroke, blood clot 2. artery 3. heart attack

Unit 7. Making Magnetic Fields

S T E A M

Academic Objective	Learn about how to create magnetism with electricity
Vocabulary	magnetism, take a look, compass, needle, the other way around, giant, magnetic field, anymore
STEAM Project	Make Your Own Compass 21st Century Skills: Critical Thinking, Communication

KEY WORDS
Look, listen, and repeat. 30

READING
Understand and read. 31

CHECK YOUR UNDERSTANDING
Choose the correct answers. 32

PROJECT: MAKE YOUR OWN COMPASS
To do this project, you will need: 33

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Compasses usually point north.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 8, 1, 3, 5, 2, 6, 7, 4

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

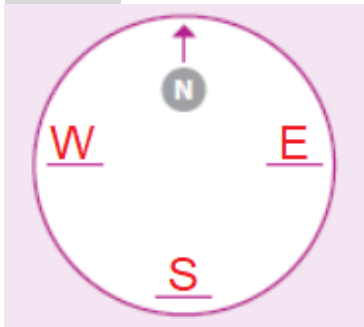
- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. b 2. a

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. c 2. c 3. b
- B. Circle T for true or F for false. Correct the false statements.
1. T 2. F; We can use electricity to create magnetism.
- C. Complete the chart.
1. compass 2. switch 3. points 4. magnetism
- D Unscramble the letters and write them in the blanks.
1. giant 2. needle 3. anymore 4. compass 5. magnetism 6. take a look

[STEAM PROJECT]

- Have students fill in the blanks and make their own compass following the instruction on step 2.
- Have them show their compasses to their partner or group.
- Refer to PROJECT REFERENCE at the end of the book for further explanation.
- Give the answer with reasons based on PROJECT REFERENCE.
- Answer:



Unit 8. Earth Is a Magnet

S T E A M

Academic Objective	Learn how a compass works
Vocabulary	squirrel, realize, campsite, repel, attract, enormous, guess, explorer
STEAM Project	Earth's Magnetic Field Protects Us 21st Century Skills: Critical Thinking, Communication

CHECK YOUR UNDERSTANDING

1. Choose the correct answers.

1. What is the purpose of the reading?
a. to explain how Earth differs from a magnet
b. to explain how a compass works and when we can use it
c. to explain how explorers used compasses to travel around the world

2. Earth is like _____
a. a tiny magnet with a north pole
b. a giant magnet with a north and south pole
c. a giant compass which is used at the campsite

3. Which of the following is **NOT** true about magnets?
a. The same poles of magnets repel.
b. Opposite poles of magnets attract.
c. They always point to the south pole of Earth.

4. Circle T for true or F for false. Correct the false statements.

1. The south pole of a magnet always points to the south pole of Earth. T F
2. Bella followed the compass west back to her campsite. T F

5. Look at the magnets and choose whether they attract or repel.

1. attract repel
2. attract repel
3. attract repel
4. attract repel
5. attract repel

Match the word with its definition.

1. a person who explores an area that is not known
2. to put toward
3. to try and answer questions when you're not sure of the answer
4. to push away from
5. a small animal with a long tail
6. an area where people can put up tents

• repel
• squirrel
• attract
• compass
• guess
• explorer

STEP 2: EARTH'S MAGNETIC FIELD PROTECTS US

Read the observation about Earth's magnetic field.

Earth's strong magnetic field protects us from solar winds. Solar winds are high-energy particles that come from the sun. They could damage Earth's atmosphere and melt the oceans. Earth's magnetic field keeps the Moon and Venus both from being magnetized. Because of this, they have a weak atmosphere and can't support life like Earth.

Write T for true or F for false.

1. Solar winds come from Earth. T F
2. The Earth's magnetic field protects us from solar winds. T F
3. Magnet fields could melt life on Earth. T F
4. Mercury and Venus both have strong magnetic fields. T F
5. Solar winds have damaged the atmosphere of Mercury and Venus. T F

Share your answers with a friend.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: I used a magnet on my pencil case today.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 7, 2, 8, 5, 4, 1, 6

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. c 2. c

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. b 2. b 3. c
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; The south pole of a magnet always points to the north pole of Earth.
- 2. F; Bella followed the compass north back to her campsite.
- C. Look at the magnets and choose whether they attract or repel.
- 1. repel 2. repel 3. attract 4. repel 5. attract 6. repel
- D. Match the word with its definition.
- 1. explorer 2. attract 3. guess 4. repel 5. squirrel 6. campsite

[STEAM PROJECT]

- Have students read the information about Earth's magnetic field.
- Have them fill in the blanks and share the reasons about why the sentence is true or false.
- Give answers after reading the explanation once more.
- Answer: 1. F 2. T 3. F 4. F 5. T

Unit 9. Bacteria vs. Fungi

Academic Objective	Learn about the differences between bacteria and fungi
Vocabulary	bacterium (bacteria), lactic acid, fermentation, bare, properly, moldy, produce, cell
STEAM Project	Sugar and Yeast Balloons 21st Century Skills: Critical Thinking

9 BACTERIA VS. FUNGI

KEY WORDS
Look, listen, repeat.

WARM-UP
What happens if you leave fruit for too long?

READING
Listen and read.

Bacteria and fungi are living things that are all around us. You probably have yogurt made by bacteria, and mushrooms, a type of fungi, in your fridge at home. Yogurt is made from milk. Bacteria in the milk create **lactic acid**. They turn the liquid milk into thick yogurt. Mushrooms are a type of fungi. Of course, we know we can eat some kinds of mushrooms. Mold is another type of fungi. Like bacteria, mold can make new foods. This process of making new foods is called **fermentation**. Milk turns to yogurt because of fermentation. Other fermented foods include kimchi, cheese, and soy sauce.

Check Your Understanding

1. Choose the correct answers.

1. What is the main purpose of the reading?
a. to explain that bacteria have only a single cell
b. to explain why bacteria are better for you than fungi
c. to explain the difference between bacteria and fungi and how to grow mold

2. Fermentation is a process by which...
a. plants grow very large when the sun shines
b. new foods are made by bacteria and mold
c. food gets moldy and smells while it gets old

3. Which of the following is **NOT** true about fungi?
a. Mold and mushrooms are both types of fungi.
b. Fungi need somewhere really dry and warm so they can grow.
c. Fungi can't get nutrients alone, so they need to get them from elsewhere.

4. Circle T for true or F for false. Correct the false statements.

1. Lactic acid in milk causes milk to thicken when it ferments. T F
2. Fungi are tiny, so we need to use a microscope to see them. T F

5. Draw lines to the correct word.

1. Can't produce their own nutrients
2. Have only one cell
3. Can't be seen with bare eyes
4. Can be seen with bare eyes
5. Some can produce their own nutrients
6. Have multiple cells

Science: SUGAR AND YEAST* BALLOONS

Let's see what happens when sugar and yeast ferment* in a bottle. To do this experiment, you will need:

STEP 1 a. Fill each bottle with the same amount of water (at about 40 degrees Celsius).
b. Use the funnel to pour a pack of yeast into each bottle.
c. Use the first bottle as a control. Add one spoon of sugar in the second, put two spoon of sugar in the third, and put three spoon of sugar in the fourth.
d. Close the lids and shake the bottles. Put a balloon on top of each bottle and wait a few hours.

STEP 2 Complete the sentences using the word bank below.

balloons fermented gases sugar yeast

Three of the four balloons that we put on top of the bottles, but one did not. Why did this happen?
1. _____ and sugar 2. _____ in these of the bottles. As they fermented, they created gases. This caused the 3. _____ to fill with air.
The more sugar that was in the bottle, the more 4. _____ that were produced.
The balloons on the bottle with 1. _____ did not fill with air at all because no fermentation took place inside it.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: The fruit begins to rot and turn brown.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 8, 2, 4, 6, 1, 5, 3, 7

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. b

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. c 2. b 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. T 2. F; Bacteria are tiny, so we need to use a microscope to see them. / Fungi grow large enough to see with our bare eyes.
- C. Draw lines to the correct word.
- 1. Fungi 2. Bacteria 3. Bacteria 4. Fungi 5. Bacteria 6. Fungi
- D. Complete the sentences.
- 1. fermentation 2. mold 3. bar 4. properly 5. produce 6. bacteria

[STEAM PROJECT]

- Have students do the experiment following the instruction on step 1.
- Have them share the results of step 1 with their partner or group. Ask different pairs of groups to represent their results to the class.
- Have them complete the sentences with given words.
- Refer to PROJECT REFERENCE at the end of the book for further explanation.
- Give the answer with reasons based on PROJECT REFERENCE.
- Answer:
- 1. Yeast 2. fermented 3. balloons 4. gases 5. sugar

Unit 10. Strange Smells



Academic Objective	Learn more about bacteria and mold
Vocabulary	smell, athlete's foot, embarrassed, illness, scary, paste, strengthen, exist
STEAM Project	What Mold Needs in Order to Grow
	21st Century Skills: Critical Thinking

Unit 10. STRANGE SMELLS

KEY WORDS
Look, listen, and repeat.

READING
Listen and read.

CHECK YOUR UNDERSTANDING
Choose the correct answers.

STEAM PROJECT
WHAT MOLD NEEDS IN ORDER TO GROW

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Yes, I do. My feet get sweaty which helps bacteria grow between my toes and makes them stink.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 2, 3, 8, 4, 7, 1, 5, 6

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. c 2. a

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. c 3. b
- B. Circle T for true or F for false. Correct the false statements.
1. F; Bacteria and mold both cause fermentation. 2. T
- C. Complete the chart.
1. a 2. d 3. b 4. c
- D. Unscramble the letters and write them in the blanks.
1. scary 2. strengthen 3. paste 4. exist 5. embarrassed 6. smell

[STEAM PROJECT]

- Have students do the experiment about how mold grow.
- Have them share the results of the experiment with their partner or group. Ask different pairs of groups to represent their results to the class.
- Have them fill in the blanks and share the answers with their friends.
- Refer to PROJECT REFERENCE at the end of the book for further explanation.
- Give the answer with reasons based on PROJECT REFERENCE.
- Answer:
- Step 1
Slowest→Quickest
toast→bread→baked beans→tomato
- Step 2
1. tomatoes 2. moisture 3. quickly 4. bread 5. growing

Unit 11. 62 Degrees in the Morning?



Academic Objective	Learn about measuring temperature with Fahrenheit
Vocabulary	latest, condition, Fahrenheit, chart, describe, formula, subtract, multiply
STEAM Project	Celsius or Fahrenheit? 21st Century Skills: Critical Thinking, Creativity

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: It is 24 degrees Celsius today. It is warm, but not hot.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 8, 6, 2, 4, 5, 1, 7

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. b 2. a

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. c 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; Fahrenheit can be used to measure hot and cold temperatures. 2. T
- C. Look at the formula and convert them.
- 1. 59°F 2. 20°C 3. 95°F 4. 14°F 5. -30°C
- D. Complete the sentences.
- 1. conditions 2. described 3. charts 4. formula 5. multiply 6. Fahrenheit

[STEAM PROJECT]

- Have students describe the temperature as Celsius or Fahrenheit.
- Have them convert Celsius into Fahrenheit or Fahrenheit into Celsius.
- Have them share the results of step 1 with their partner or group. Ask different pairs of groups to represent their results to the class.
- Have them research the temperatures of different items and draw a poster about them.
- Ask them to convert the temperature on the poster into other units.
- Answer:
- a freezer: -18°C → 0.4°F
- a fridge: 40°F → 4.4°C
- tap water: 68°F → 20°C
- human body: 37°C → 98.6°F
- boiling water: 100°C → 212°F
- an oven: 400°F → 204.4°C

Unit 12. Different Temperatures

S

T

E

A

M

Academic Objective	Learn more about Fahrenheit and Celsius
Vocabulary	go on a trip, accommodations, watch, difference, propose, adopt, unit, except
STEAM Project	Temperature Chart 21st Century Skills: Critical Thinking

WARM-UP

12 DIFFERENT TEMPERATURES

KEY WORDS

Look, listen, and repeat.

READING

Listen and read.

Emma goes on a trip to the U.S. with her family. After a day of fun, they come back to their accommodations. Dad watches the weather forecast on television. "What is it? 77 degrees tomorrow?" "Dad, how can it be so hot?" asks Emma. "Don't worry, Emma. That's the temperature in Fahrenheit. 77°F is 25°C." "What's the difference, Dad?" "Fahrenheit measures temperature a bit differently. 0°F is the freezing point of salt water." "Why not water?" "Because that was the coldest thing a human could make at that time. 32°F is the freezing point of pure water. 212°F is the boiling point of water." "Then what is Celsius?" asks Emma. "Another scientist proposed Celsius temperature in 1742. He adopted the unit of °C. He set the freezing point of water as 0°C and the boiling point of water as 100°C. Except for the U.S. and a few other countries, most places in the world use Celsius." Why don't you find an American weather forecast and see what degrees look like in Fahrenheit?

CHECK YOUR UNDERSTANDING

Choose the correct answers.

1. What is the main purpose of the reading?
a. To explain how to convert Fahrenheit to Celsius.
b. To explain why Celsius was proposed after Fahrenheit.
c. To show the differences between Fahrenheit and Celsius scales.

2. A scientist set the freezing point of water at 0°C, but didn't set the boiling point for water.
a. and the boiling point of water at 100°C.
b. and set the boiling point of water at 32°F.

3. Which of the following is true about Celsius?
a. The freezing point of pure water is 32 degrees Celsius.
b. The U.S. does not use Celsius to measure temperature.
c. Most countries in the world use Celsius rather than Fahrenheit.

Circle T for true or F for false. Correct the false statements.

1. Celsius was proposed as a temperature scale in 1742. T F

2. Except for the U.S. and a few other countries, most places in the world use Fahrenheit. T F

Complete the chart.

	0	32	100	most countries	the U.S.
Freezing point	1724				
Boiling point of water	32°F				
Boiling point of water			100°C		
Celsius used to					

PROJECT: TEMPERATURE CHART

Use the calculations you have learned to complete the temperature chart.

	°C	°F
Average temperature of Mexico in July	25	77
Freezing point of cow's milk	30	86
Melting point of butter	4	35
Popping point of popcorn	135	275
Temperature of chicken pizza oven	4	375
Melting point of wax	2,000	3,600
Temperature of the surface of the sun	6,000	10,800

READING

Listen and read.

There are two main ways of measuring temperature: Celsius and Fahrenheit. Celsius was proposed first, but Fahrenheit became more popular. This is why because Celsius uses a unit that is easier to remember as everyday life. Water freezes at 0 degrees Celsius, and boils at 100. Celsius. There is another way to measure temperature that is used only by the U.S. It's called the Fahrenheit scale, and was proposed by the Northern Irish engineer William Fahrenheit in 1724.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Last weekend, the temperature was 18°C, and it was 65°F.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 7, 5, 4, 8, 2, 6, 1

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. b

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. c 2. b 3. a
- B. Circle T for true or F for false. Correct the false statements.
- 1. T 2. F; Except for the U.S. and a few other countries, most places in the world use Celsius.
- C. Complete the chart.
- 1. 1742 2. 0 3. 212 4. the U.S. 5. most countries
- D. Match the word with its definition.
- 1. go on a trip 2. watch 3. propose 4. accommodations 5. except 6. unit

[STEAM PROJECT]

- Have students calculate and complete the chart. Make sure they use the exact formula.
- Have them complete the sentences using given words.
- Have them share the answers of steps 1 and 2 with their partner or group. Ask different pairs of groups to represent their results to the class.
- Answer:
- Step 1
- 1. -63°C 2. -76°F 3. -1.1°C 4. 95°F 5. 179.4°C 6. 698°F 7. $1,371.1^{\circ}\text{C}$ 8. $10,292^{\circ}\text{F}$
- Step 2
- 1. temperature 2. Fahrenheit 3. Celsius 4. units 5. degrees 6. measure 7. scientists

Unit 13. The Wonder of Rainbows

S T E A M

Academic Objective	Learn about reflection and refraction
Vocabulary	far away, over, rainbow, wall, control, come back, split, droplet
STEAM Project	Rainbow Prism 21st Century Skills: Critical Thinking, Creativity, Collaboration

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: Rainbows are created when sunlight shines on water droplets in the air.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 3, 6, 8, 4, 5, 1, 7, 2

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)
- Scan the QR code to view the experiment.

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. b

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. c 2. b 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; In nature, we see rainbows when the sun shines after rain.
- 2. F; Rainbows are made by sunlight hitting water droplets in the air.
- C. Complete the chart.
- 1. Changes the speed of light 2. surface of water 3. binoculars 4. enters and exits a raindrop
- D. Complete the sentences.
- 1. rainbow 2. came back 3. over 4. control 5. wall 6. far away

[STEAM PROJECT]

- Have them do the experiment and see the rainbow from the prism.
- Have students read about the colors in a rainbow and fill in the blanks of a short phrase.
- Have them share the answers of step 3 with their partner or group. Ask different pairs of groups to represent their results to the class.
- Refer to PROJECT REFERENCE at the end of the book for further explanation.
- Answer: Remember Our Yogurt Getting Brown In Vinegar

Unit 14. All the Colors of the Rainbow



Academic Objective	Learn more about how rainbows are formed
Vocabulary	shower, order, rain, come out, end, raindrop, exit, wavelength
STEAM Project	Refraction and Reflection
	21st Century Skills: Critical Thinking

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: I saw a rainbow yesterday after a rainstorm passed my house.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 1, 7, 3, 8, 5, 2, 4, 6

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. b

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. c 2. c 3. a
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; Rainbows happen because of light refraction and reflection.
- 2. F; Light is reflected as it hits the back of a raindrop. / Light is refracted as it enters a raindrop.
- C. Number the pictures in the correct order. 3, 6, 5, 2, 1, 4
- D. Unscramble the letters and write them in the blanks.
- 1. order 2. wavelength 3. exit 4. come out 5. raindrop 6. shower

[STEAM PROJECT]

- Have students distinguish refraction and reflection and complete the chart.
- Have them complete the sentences using the given words.
- Have them share the answers of steps 1 and 2 with their partner or group. Ask different pairs of groups to represent their results to the class.
- Answer:
- Step 1
- Refraction: glasses, contact lenses
- Both: microscope, telescope, digital camera, convex mirror
- Reflection: high-visibility jacket, hand mirror
- Step 2
- 1. Refraction 2. focus 3. Reflection 4. light 5. mirror 6. lenses

Unit 15. Creating Organs and Limbs

S T E A M

Academic Objective	Learn about artificial organs
Vocabulary	consist, limb, accident, replace, damaged, inner, copy, over and over
STEAM Project	Design an Artificial Body Part
	21st Century Skills: Critical Thinking, Creativity, Communication

15 KEY WORDS

Look, listen, and repeat.

1. **artificial**

2. **limb**

3. **plastic**

4. **replace**

5. **work properly**

6. **limb**

7. **replace**

8. **limb**

9. **limb**

10. **limb**

11. **limb**

12. **limb**

13. **limb**

14. **limb**

15. **limb**

16. **limb**

17. **limb**

18. **limb**

19. **limb**

20. **limb**

21. **limb**

22. **limb**

23. **limb**

24. **limb**

25. **limb**

26. **limb**


27. **limb**

28. **limb**

29. **limb**

30. **limb**

CREATING ARTIFICIAL ORGANS AND LIMBS



UNDERLINE What artificial organs or body parts do you know?

READING Listen and read.

Your body **consists** of many organs all working together. It is like a wonderful and complicated machine.

However, they don't always work properly. Hearing can become very bad. Hearts stop working properly. **Limbs** can be lost in an **accident**.

What can people do? They might be able to get an artificial organ to do the work of their real organs. Doctors can give you an artificial limb. It might be an arm with fingers that can really move.

Doctors can **replace** a **damaged** heart with an

CHECK YOUR UNDERSTANDING

1. Choose the correct answers.

a. What is the main purpose of the video?
 a. What artificial organs producers do.
 b. What organs can be artificially made.
 c. The machines that artificial organs are made of.

b. There are some artificial organs.
 a. that are more expensive to make than others.
 b. that artificial organs producers are not able to create.
 c. that are tested over and over by people who have had an accident.

c. Which of the following is **NOT** true about artificial organs?
 a. They are expensive to make and to buy.
 b. They are copies of the real organs in our body.
 c. They can replace limbs that have been lost in an accident.

2. Circle T for true or F for false. Correct the false statements.

1. Artificial organ producers design artificial organs without looking at real ones. T F

2. Artificial organs can do the work of the real organs in our body. T F

3. Complete the chart.

Organ	Artificial Organs
Heart	1. _____
Hand / Limbs	1. _____
Heart / Limbs	1. _____
Heart / Limbs	1. _____
Heart / Limbs	1. _____

a. Our body is a complicated machine that can become damaged.
 b. Artificial organ producers help people who need artificial organs and limbs.
 c. Artificial organs are expensive and take a long time to make or test well.
 d. Artificial hearts and limbs can replace real ones that are damaged.

KEY WORDS

Look, listen, and repeat.

1. **artificial**

2. **limb**

3. **plastic**

4. **replace**

5. **work properly**

6. **limb**

7. **replace**

8. **limb**

9. **limb**

10. **limb**

11. **limb**

12. **limb**

13. **limb**

14. **limb**

15. **limb**

16. **limb**

17. **limb**

18. **limb**

19. **limb**

20. **limb**

21. **limb**

22. **limb**

23. **limb**

24. **limb**

25. **limb**

26. **limb**

27. **limb**

28. **limb**

29. **limb**

30. **limb**

READING Listen and read.

Your body **consists** of many organs all working together. It is like a wonderful and complicated machine.

However, they don't always work properly. Hearing can become very bad. Hearts stop working properly. **Limbs** can be lost in an **accident**.

What can people do? They might be able to get an artificial organ to do the work of their real organs. Doctors can give you an artificial limb. It might be an arm with fingers that can really move.

Doctors can **replace** a **damaged** heart with an

1. Choose the correct answers.

a. What is the main purpose of the video?
 a. What artificial organs producers do.
 b. What organs can be artificially made.
 c. The machines that artificial organs are made of.

b. There are some artificial organs.
 a. that are more expensive to make than others.
 b. that artificial organs producers are not able to create.
 c. that are tested over and over by people who have had an accident.

c. Which of the following is **NOT** true about artificial organs?
 a. They are expensive to make and to buy.
 b. They are copies of the real organs in our body.
 c. They can replace limbs that have been lost in an accident.

2. Circle T for true or F for false. Correct the false statements.

1. Artificial organ producers design artificial organs without looking at real ones. T F

2. Artificial organs can do the work of the real organs in our body. T F

3. Complete the chart.

Organ	Artificial Organs
Heart	1. _____
Hand / Limbs	1. _____
Heart / Limbs	1. _____
Heart / Limbs	1. _____
Heart / Limbs	1. _____

a. Our body is a complicated machine that can become damaged.
 b. Artificial organ producers help people who need artificial organs and limbs.
 c. Artificial organs are expensive and take a long time to make or test well.
 d. Artificial hearts and limbs can replace real ones that are damaged.

KEY WORDS

Look, listen, and repeat.

1. **artificial**

2. **limb**

3. **plastic**

4. **replace**

5. **work properly**

6. **limb**

7. **replace**

8. **limb**

9. **limb**

10. **limb**

11. **limb**

12. **limb**

13. **limb**

14. **limb**

15. **limb**

16. **limb**

17. **limb**

18. **limb**

19. **limb**

20. **limb**

21. **limb**

22. **limb**

23. **limb**

24. **limb**

25. **limb**

26. **limb**

27. **limb**

28. **limb**

29. **limb**

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However, they don't always work properly. Hearing can become very bad. Hearts stop working properly. **Limbs** can be lost in an **accident**.

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 d. Artificial hearts and limbs can replace real ones that are damaged.

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: I know of artificial hearts, arms, and legs.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 8, 4, 1, 7, 3, 5, 6, 2

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. b

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. a 2. b 3. a
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; Artificial organ producers design artificial organs by looking at real ones. 2. T
- C. Complete the chart. 1. a 2. d 3. c 4. b
- D. Match the word with its definition.
- 1. over and over 2. accident 3. damaged 4. consist 5. limb 6. copy

[STEAM PROJECT]

- Explain about different kinds of artificial body parts to students.
- Have them design their own artificial limb or organ.
- Have them share their designs with their partner or group and represent them to the class.

Unit 16. Online Doctors



Academic Objective	Learn about online doctors
Vocabulary	telemedicine, allow, without, medical, prescribe, prefer, face-to-face, disabled
STEAM Project	Be an Online Doctor
	21st Century Skills: Critical Thinking

16 ONLINE DOCTORS

KEY WORDS
Look, listen, and repeat.

WARM-UP
Read the text and answer the questions.

READING
Listen and read.
You start to feel sick. You don't know what's wrong. You need to speak to a doctor. But the doctor's office is too far away. Or maybe there's a bad storm outside. How can you speak to a doctor? You can try **telemedicine**. Telemedicine **allows** people to speak to their doctor **without** leaving the house. You may have used video software for school or to speak with family. But you can use it with your doctor, too. Talk to an online doctor on the computer or the phone. The doctor can check your **medical** records. They can see what's wrong with you. They can **prescribe** medicine and tell you what to do next.

Not everyone likes online doctors, however. Some people **prefer** to see doctors **face-to-face**. Others think online doctors could miss something important. However, it can help many people. **Disabled** people or people in the countryside might prefer online doctors. People can even speak to an online doctor from another country. Telemedicine can make many lives easier. Online doctors can change people's lives.

Read and choose.
1. Which is the opposite of **allow**?
a. prevent b. install c. let
2. What does **it** mean in the reading?
a. a doctor b. medicine c. video software

CHECK YOUR UNDERSTANDING
1. Choose the correct answer.
1. What is the main purpose of the reading?
a. to show how telemedicine doesn't work
b. to explain how telemedicine can help people
c. to show that meeting your doctor in person is better
2. Online doctors can...
a. talk to you when you are sleeping
b. come to your house during a telemedicine call
c. check your medical records and prescribe medicine over the phone
3. Which of the following is **NOT** true about telemedicine?
a. You can talk to a doctor from home.
b. People in the countryside can't use telemedicine.
c. Some people still prefer face-to-face meetings over telemedicine.
4. Circle T for true or F for false. Correct the false statements.
1. Telemedicine allows people to speak to doctors face-to-face. T F
2. Doctors can check medical records and prescribe medicine with telemedicine. T F
5. Complete the chart.
Type: 1. _____ allows people to speak to doctors online.
Task 1: Online doctors can check your _____ and prescribe medicine.
Task 2: Some people think online doctors could miss something important.
Task 3: _____ people and people in the _____ might prefer online doctors.
Conclusion: Telemedicine is not perfect, but it makes a _____.

PROJECT BE AN ONLINE DOCTOR
STEP 1: Read what patients say and write the name of the illness.
1. I feel down the stairs and I can't get up. _____
2. I have a bad cold and I can't breathe. _____
3. I have a bad cold and I can't breathe. _____
4. I have a bad cold and I can't breathe. _____
5. I have a bad cold and I can't breathe. _____
6. I have a bad cold and I can't breathe. _____
7. I have a bad cold and I can't breathe. _____
8. I have a bad cold and I can't breathe. _____
9. I have a bad cold and I can't breathe. _____
10. I have a bad cold and I can't breathe. _____
STEP 2: Write the number for each health problem next to the correct treatment.
1. Apply some cream? _____
2. Take an aspirin? _____
3. Get the bandage changed? _____
4. Get an X-ray? _____
5. Get an X-ray? _____
6. Get an X-ray? _____
7. Get an X-ray? _____
8. Get an X-ray? _____
9. Get an X-ray? _____
10. Get an X-ray? _____

[WARM-UP]

- Discuss the warm-up question to see how much background information students possess about the topic.
- Sample Answer: I went to see the doctor two weeks ago. My friend threw a stick, and it hit me in the eye.

[KEY WORDS]

- Have students look at the picture and play the audio. Have them repeat each word while looking at the picture to match the photograph and sound. Give simple explanations and examples when necessary.
- After practicing each word, play the audio again.
- Give students time to complete the exercise. Then have them check their answers in pairs or as a class.
- Answer: 4, 7, 1, 5, 3, 2, 8, 6

[READING]

- Play the audio once. After playing the audio, do choral reading and ask the students to repeat after you. Ask the students to point at each word as they read it.
- If necessary, have them read the text one more time by doing popcorn reading. (Have students take turns reading one line from the story. After they read one line, they call on another classmate to read the next line.)

[SHORT ACTIVITIES]

- Have them individually answer question C. Check the answer as a class and give a simple explanation if necessary.
- Answer: 1. a 2. c

[CHECK YOUR UNDERSTANDING]

- Give students 5-10 minutes to write their answers. Remind them to not refer to the reading or previous pages to check their understanding.
- Elicit answers from students. If there are any disagreements between students on the answers, have them cite the lines in the text that support their choices. For purpose, inference, or topic questions, elicit reasons why distractors are incorrect choices (ex. not in text, inaccurate, minor detail, etc.).
- Answer:
- A. Choose the correct answers. 1. b 2. c 3. b
- B. Circle T for true or F for false. Correct the false statements.
- 1. F; Telemedicine allows people to speak to doctors online. 2. T
- C. Complete the chart.
- 1. Telemedicine 2. medical records 3. miss 4. Disabled 5. countryside 6. (many) lives easier
- D. Unscramble the letters and write them in the blanks.
- 1. telemedicine 2. face-to-face 3. prescribe 4. without 5. medical 6. allow

[STEAM PROJECT]

- Have students read about the illness and fill in the blanks.
- Have them write the correct numbers based on the correct treatment.
- Have them share the answers of steps 1 and 2 with their partner or group.
- Have them share the advantages and disadvantages of the telemedicine.
- Answer:
- Step 1
- 1. broken bone 2. poor eyesight 3. muscle strain 4. athlete's foot 5. heart failure
- Step 2
- a. 4 b. 1 c. 5 d. 3 e. 2