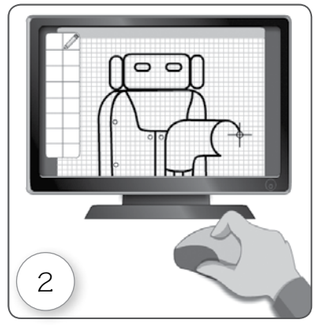
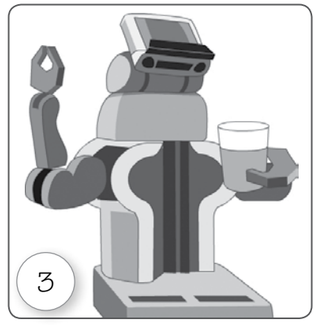
Unit 3

Robots and Us

1 Look at the pictures. Complete each sentence with words from the box.

controls	doctor	hold	mouse	movable	online	pain





1. The doctor gave the boy some pills for the pain in his leg.
2. The mouse controls the pencil on the screen.
3. The robot has movable arms. It can hold things in its "hands."

2 Look at the words on the left. Cross out the phrase on the right which *doesn't* make sense.

1. control	the temperature	~~the instructions~~	the car
2. design	~~an ocean~~	a building	a robot
3. follow	the rules	the instructions	~~the keyboard~~
4. send	a letter	an email	~~a mouse~~
5. help	~~a chore~~	someone	your mom
6. improve	the conditions	the design	~~the doctor~~
7. bring	a coat	~~a mistake~~	a towel
8. hold	hands	~~a hospital~~	the door

3 Listen. David is a robotics engineer. Circle the correct word. **TR: 23**

1. I **hold** / **help** to build robots.
2. I **send** / **design** the plans.
3. We decide which parts will be **move** / **movable**.
4. We **follow** / **improve** the plans.
5. We **control** / **follow** this with *prototype testing*.
6. We **hold** / **control** how we make the robot better.

4 Listen again. Number the sentences in the sequence you hear them. **TR: 24**

1. He designs the plans needed to build a robot. 3
2. He works with a lot of other people. 2
3. He does *prototype testing*. 6
4. He goes back and improves plans. 5
5. David helps to build robots. 1
6 They decide which parts will be movable. 4

5 Design and draw a robot. Then write a description. Use the words from the box.

bring	control	follow	help	hold	improve

Answers will vary.

GRAMMAR

***Can* and *can't*: Talking about ability**

I **can** walk.
You **can** sing.
He **can** read.
We **can't** understand the instructions.
They **can't** design new equipment.

Questions
Can you pass me the book, please?
Can it run? Yes, it can.

You use *can* to say what you're able to do:
*I **can** speak three languages. = I'**m able to speak** three languages.*

You don't use *to* with *can*: *I can ~~to~~ speak three languages.*
Can and *can't* don't change form: ***I can** control the robot, and **he can** control it, too.*

To form the negative, add *'t*:
*They **can't** get the robot to walk. = They **aren't able to** get the robot to walk.*
To ask a question, change the word order: ***Can you** help me? **Can it** speak? **Can't it** fly?*

6 Rewrite these sentences using *can* or *can't*.

1. The robot isn't able to communicate with other robots.
The robot can't communicate with other robots.

2. Today, doctors are able to use robots for operations.
Today, doctors can use robots for operations.

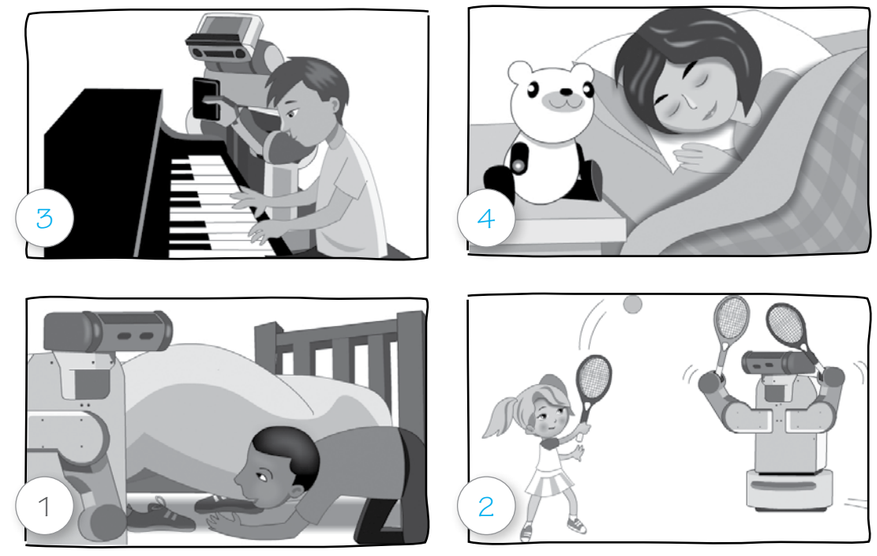
3. Engineers are able to design movable body parts.
Engineers can design movable body parts.

4. These robots aren't able to understand voice instructions.
These robots can't understand voice instructions.

5. This robot isn't able to do chores.
This robot can't do chores.

6. Scientists are able to use robots for exploration.
Scientists can use robots for exploration.

7 Listen to the descriptions. Number the pictures. **TR: 25**



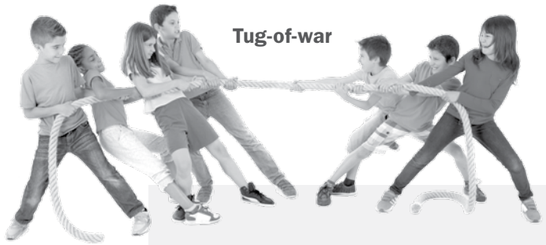
8 Listen again. Complete the sentences using *can* or *can't*. **TR: 26**

1. Tobor ___can___ see what's behind it.
2. Tobor ___can___ understand the boy's voice.
3. The girl's brother ___can't___ play tennis very well.
4. The girl ___can't___ always hit the ball back to Ballboy.
5. Elgar ___can___ sing and play the piano.
6. Elgar and the boy ___can___ improve a song together.
7. The girl ___can't___ always remember her dreams.
8. Sylvie ___can___ tell the girl her dreams.

9 Answer the questions. Answers will vary.

1. What can you make? _____
2. What can't you do? _____
3. What can you improve? _____
4. What can't you change? _____

10 **Listen and read.** As you read, think about the main point of each paragraph. What new information does each paragraph give you? **TR: 27**



Tug-of-war

Tiny Robot, BIG PLANS

A gecko

Tiny robots can carry 2,000 times their own weight!

1 Question: What do a tug-of-war and geckos have in common? Answer: Sticky feet! In tug-of-war, you use your arms, but you also push your feet into the ground. And geckos can walk up most things—even across ceilings. Put the two together, add some engineering, and meet MicroTug, the world's smallest robot.

2 MicroTug is small but strong. A 9 g (0.3 oz.) MicroTug can pull a 1 kg (2 lb.) object up a glass wall. The engineers say this is similar to a person climbing a tall building . . . while carrying an elephant!

3 So, how do you design a robot to carry such heavy weights? First, think about how ants can carry big leaves. Then, look at how geckos can walk up walls. They can do this because of the thousands of tiny *hairs* on their feet.

4 The design of the robot is simple, but underneath it has tiny, *sticky* feet like the gecko does. Scientists use code to program the robot. Then, when the MicroTug pulls something heavy, it *sticks* its feet to the ground and uses a movable part to pull the object.

5 Scientists want MicroTug to help people. It might deliver equipment to people trapped in buildings. Or, it might just bring you a drink while you're studying!

11 **Match each paragraph with a description.** Write the number.

1. 5 Suggestions about the ways the MicroTug might be used in the future.
2. 2 An explanation of what the MicroTug can do.
3. 4 An explanation of how the MicroTug works.
4. 3 An explanation of where the idea behind MicroTug came from.
5. 1 An introduction to the topic.

12 **Complete the paragraph with the words from the box.**

code	design	engineering	movable	program	project

Put sticky feet and (1) engineering together, and meet MicroTug. The tiny robot can carry very heavy weights by using its *sticky feet* and a (2) movable part. Scientists use (3) code to (4) program the robot. The scientists on the MicroTug (5) project want the robot to help people: it might help people trapped in a building, or it might just bring you something to drink!

13 **Imagine you are on the MicroTug team.** Write a sentence for each stage of the development. Use some of the words from the box.

code	design	engineer	help	improve	program	project	study

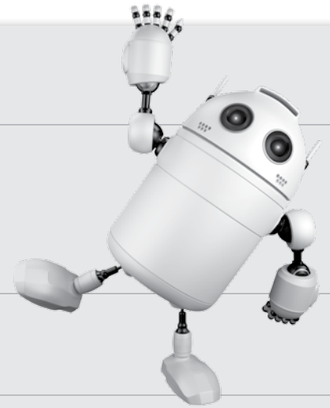
MicroTug		
	Research	Study how ants can carry things and how geckos can stick to things.
	Design	
	Development	
	Testing	
	Use	

GRAMMAR

***Should* and *shouldn't*: Giving advice**

I **should** read more books in English.
You **should** take your phone with you.
She **should** follow the instructions.
We **shouldn't** bring our pet robots to school.
You **shouldn't** post mean things online.

Questions
Should I learn how to code?
Should they take a computer science course?



You use *should* to talk about the right thing to do: *I **should** do my homework as soon as I get home.*
You don't use *to* with *should*: *We should ~~to~~ find the exit now.*
To form the negative, add *n't* to *should*: *We **shouldn't** stay up too late.*
To ask a question, change the word order: ***Should** we cross the bridge?*

14 Match the sentences. Write the letter on the line.

d 1. I want to learn how to code.	a. She shouldn't go to bed so late.
a 2. Mary is so tired every day.	b. You should see a doctor.
e 3. They can't go in the water because it's too deep.	c. You should click this icon, here.
b 4. I want to get rid of this pain in my leg.	d. You should join a coding club.
f 5. My phone sometimes rings at the movies.	e. They should send a robot there instead.
c 6. I want to send this email.	f. You should turn your phone off.

15 Listen. Write *should* or *shouldn't*. **TR: 28**

1. Jasmine should study math.
2. She should study design and technology.
3. She shouldn't listen to her brother's advice.
4. She shouldn't give up taking art classes.
5. She should take a creative subject.
6. She should do some online research.

16 Read Anna's blog. Use the ideas in the article or your own ideas to write six pieces of advice using *should* and *shouldn't*.

Jobs for the girls!

OK, boys! Get ready for the girls!

It's true that right now, more men than women have STEM (science, technology, engineering, and math) jobs. But don't think that this will always be true. If teachers in schools get girls interested in studying math and computer-based subjects, there's no reason why girls shouldn't play a big part in this type of work. So, what should you girls do? First, don't think that this should be work just for men. Study hard, learn how to code, join a club, play a lot of computer games, watch science fiction movies, and do online research. If you want to build a robot that changes the world, you should believe that you can! Remember, girls, these jobs aren't just for the boys!

Answers will vary.

Boys	Girls	Teachers
Boys should get ready for the girls.	Girls should study hard and learn how to code.	Teachers should encourage girls to take STEM subjects.
Boys shouldn't think STEM subjects are only for boys.	Girls shouldn't think STEM jobs are only for boys.	Teachers shouldn't think STEM subjects are only for boys.

17 Choose one of the situations. Write a list of advice for your friend. Use *should* and *shouldn't*.

1. Your friend wants to start a coding club.
2. Your friend spends six hours every night playing computer games.
3. Your friend isn't very good at math, but she wants to become an engineer.
4. Your friend loves making robots but doesn't think she should do this as a job.

Answers will vary.

WRITING

Use words like *but* and *however* when you want to contrast, or show the difference between, two things.

We usually use *but* to join two pieces of contrasting information to make one sentence.
I should learn to code, but there's no coding club at school.

We usually use *however* at the beginning of a sentence.
The robots are the same size. However, they do very different things.

18 Organize.

1. Compare two different gadgets in your house. Before you start, walk around your house and write down a list of gadgets that you can see. Decide which two gadgets you want to compare. Think about what each gadget is like and what you can and can't do with it. Make notes in the chart.

	Smartphone	Computer
Size		
Features		
What you can do with it	play games, make phone calls	do homework

2. Plan your writing. Look at the information about each gadget and write a topic sentence.

   Topic sentence: Answers will vary.

   _____ and _____ are both gadgets in my home. They're both _____, but they are very different.

3. Now, use the information to plan your paragraphs. Think about each gadget's size and features. Think about what each gadget can do and what each gadget can't do. Include information on how useful each gadget is. Remember to use contrasing words such as *but* and *however*.

19 Write.

1. Go to p. 73 in your book. Reread the model text.
2. Write your first draft. Check for organization, content, punctuation, capitalization, and spelling.
3. Write your final draft. Share it with your teacher and classmates.

Now I Can . . .

· talk about robots, STEM subjects, and gadgets.

☐ Yes, I can!
☐ I think I can.
☐ I need more practice.

Write two sentences about one of the robots in this unit.

Answers will vary.

Write two sentences about STEM subjects.

Answers will vary.

· use *can* and *can't* to talk about ability.

☐ Yes, I can!
☐ I think I can.
☐ I need more practice.

Complete the sentences with things you *can* and *can't* do.

Answers will vary.

Imagine you have a robot. Complete the sentences about your robot.

Answers will vary.

· use *should* and *shouldn't* to give advice.

☐ Yes, I can!
☐ I think I can.
☐ I need more practice.

Write four sentences using the prompts and *should* or *shouldn't*.

girls / study / coding Girls should study coding.

children / play / a lot of computer games Children should / shouldn't play a lot of computer games.

passengers / use / cell phones / airplane Passengers shouldn't use cell phones on an airplane.

engineers / study / science Engineers should study science.

· contrast two things using the words *but* and *however*.

☐ Yes, I can!
☐ I think I can.
☐ I need more practice.

Write two sentences contrasting robots with real animals. Choose either MicroTug and a real gecko, or Parobot and a real baby seal. Use *but* and *however*.

Answers will vary.

Choose an activity. Go to p. 106.