

















# Forces: Fabulous Forces

<p><b>Aim:</b> To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by identifying forces acting on objects.</p> <p>To identify the effects of air resistance, water resistance and friction by identifying forces acting on objects.</p> <p>To identify forces acting on objects.</p>	<p><b>Success Criteria:</b> I can identify forces as pushes and pulls.  I can identify and explain the different forces acting on objects.</p>	<p><b>Resources:</b> <a href="#">Lesson Pack</a>  Highlighters or crayons</p>
	<p><b>Key/New Words:</b> Force, push, pull, gravity, air resistance, water resistance, friction.</p>	<p><b>Preparation:</b> <a href="#">Identifying Forces Bingo Board</a> - one per child  <a href="#">Talk about Forces Activity Sheet</a> - one per pair  <a href="#">Forces in Action Activity Sheet</a> - one per child  <a href="#">Force Cards</a> - cut up and shuffled  <a href="#">Forces Word Mat</a> - as required</p>

**Prior Learning:** It will be helpful if children have studied forces in year 3.

## Learning Sequence

	<p><b>What Are Forces?</b> Children identify the pictures on the <a href="#">Lesson Presentation</a> as pushes or pulls. Discuss their ideas. Explain how forces affect the movement of an object and discuss the different types of force as shown on the <a href="#">Lesson Presentation</a>. <i>Can children identify forces as pushes and pulls?</i></p>	
	<p><b>Identifying Forces:</b> Children use one of the differentiated <a href="#">Identifying Forces Bingo Boards</a> to play a form of bingo as described on the <a href="#">Lesson Presentation</a>. Read out a <a href="#">Force Card</a> for children to fill in on their bingo board. <i>Can children identify the different forces at work in the images?</i></p> <p>  Children use the initial letters of forces provided.              Children refer to the opposing forces provided as a prompt.              Children complete the blank labels on the diagrams.         </p>	
	<p><b>Talk about Forces:</b> Ask pairs to read the story on the <a href="#">Talk about Forces Activity Sheet</a> together and to highlight or underline examples of forces in the story. In the next column, they should then briefly explain the forces that are being applied in each example. <i>Can children identify and explain together the different forces acting on objects?</i></p>	
	<p><b>Forces in Action:</b> Children complete the <a href="#">Forces in Action Activity Sheet</a> by identifying the forces and drawing arrows to show the direction in which they apply a force. <i>Can children identify and explain the different forces acting on objects?</i></p> <p>  Children use the initial letters of forces provided.              Children refer to the opposing forces provided as a prompt.              Children complete the blank labels on the diagrams.         </p>	
	<p><b>Force Examples:</b> Children share their own examples of forces acting on objects and discuss with a partner. <i>Can children reflect on whether they can identify and explain the different forces acting on objects?</i></p>	

## Taskit

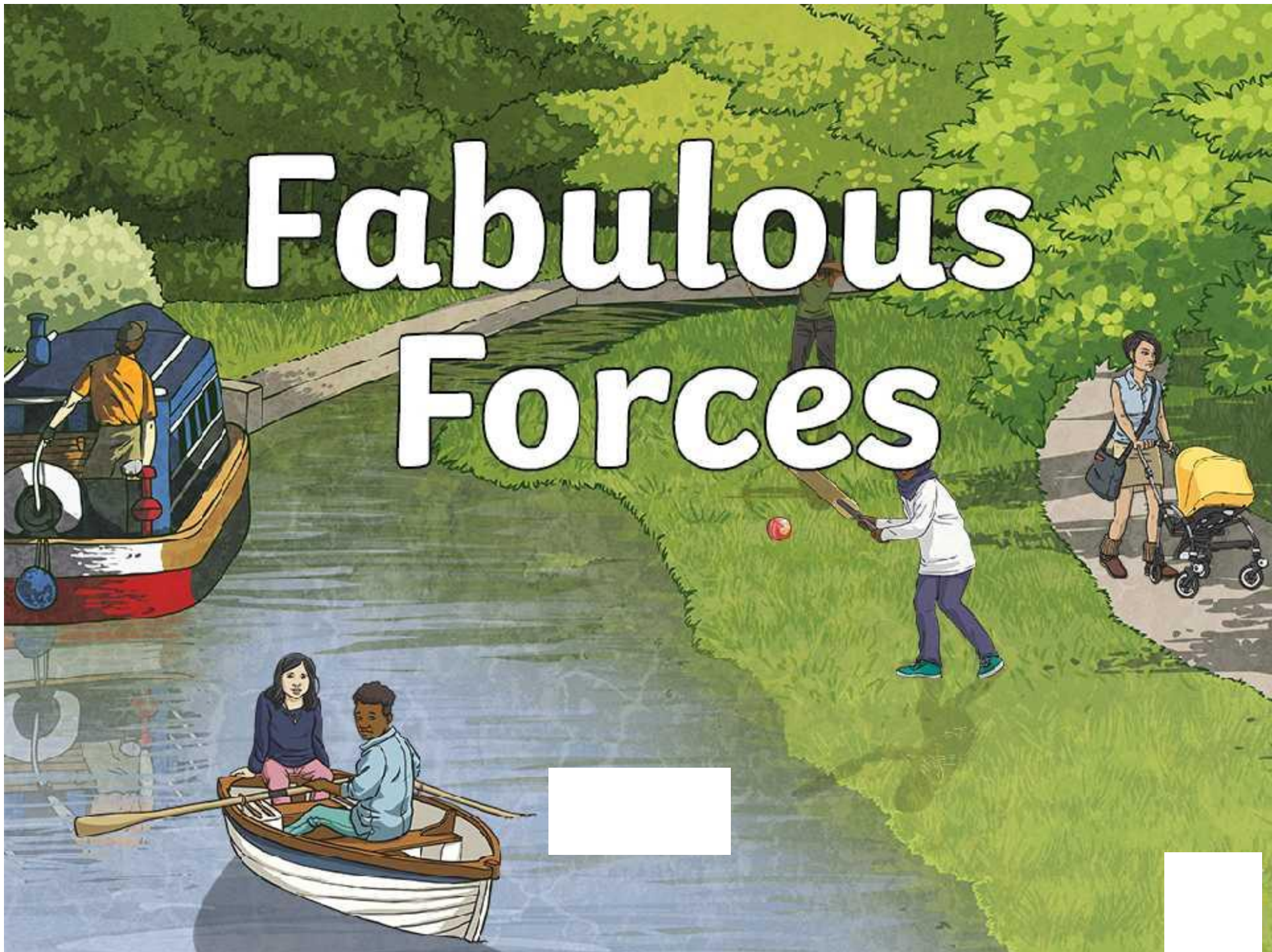
- Displayit:** Use props to act out an example of forces acting on an object. Take photos and print them out. Draw arrows on the photos and add captions to explain the forces. Use the photos and captions to make an eye-catching forces display!
- Posterit:** Make a poster showing the different types of forces explored in the lesson.
- Writeit:** Write a story like the one in the \_\_\_\_\_ in this lesson, including different forces acting on objects.



# Science

## Fabulous Forces

# Fabulous Forces



# Aim

- To identify forces acting on objects.

# Success Criteria

- I can identify forces as pushes and pulls.
- I can identify and explain the different forces acting on objects.

# What Are Forces?



Forces are often referred to as **pushes** and **pulls**.

Look at the pictures below and talk to your partner about whether each picture shows an example of a pushing or pulling force.



# What Are Forces?



Forces affect the movement or shape of an object. They can make an object start to move, stop moving, move faster or move more slowly. They could also make an object change its shape or cause a moving object to change direction.

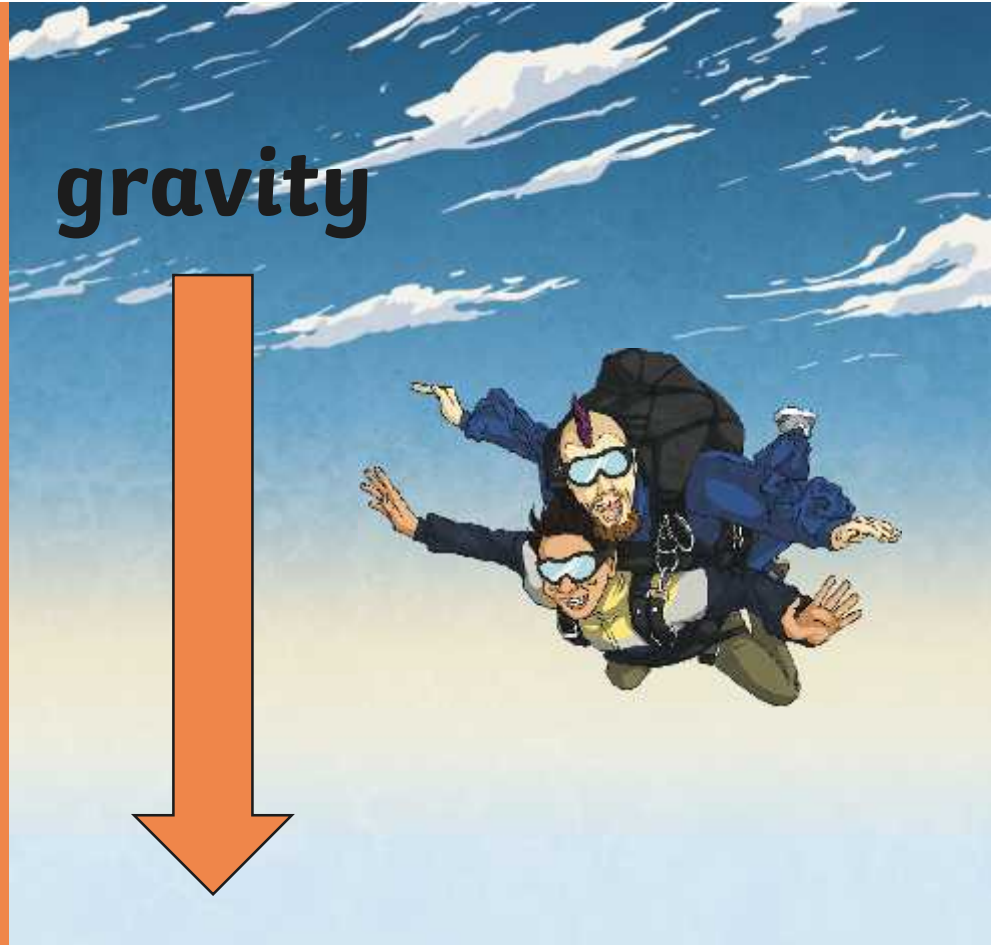


What is the name of the force pulling the skydivers down?

# What Are Forces?



**Gravity** is a **pulling** force exerted by the Earth. The gravitational force from the Earth pulls in a direction towards the centre of the Earth. Gravity is pulling the skydivers towards the Earth.



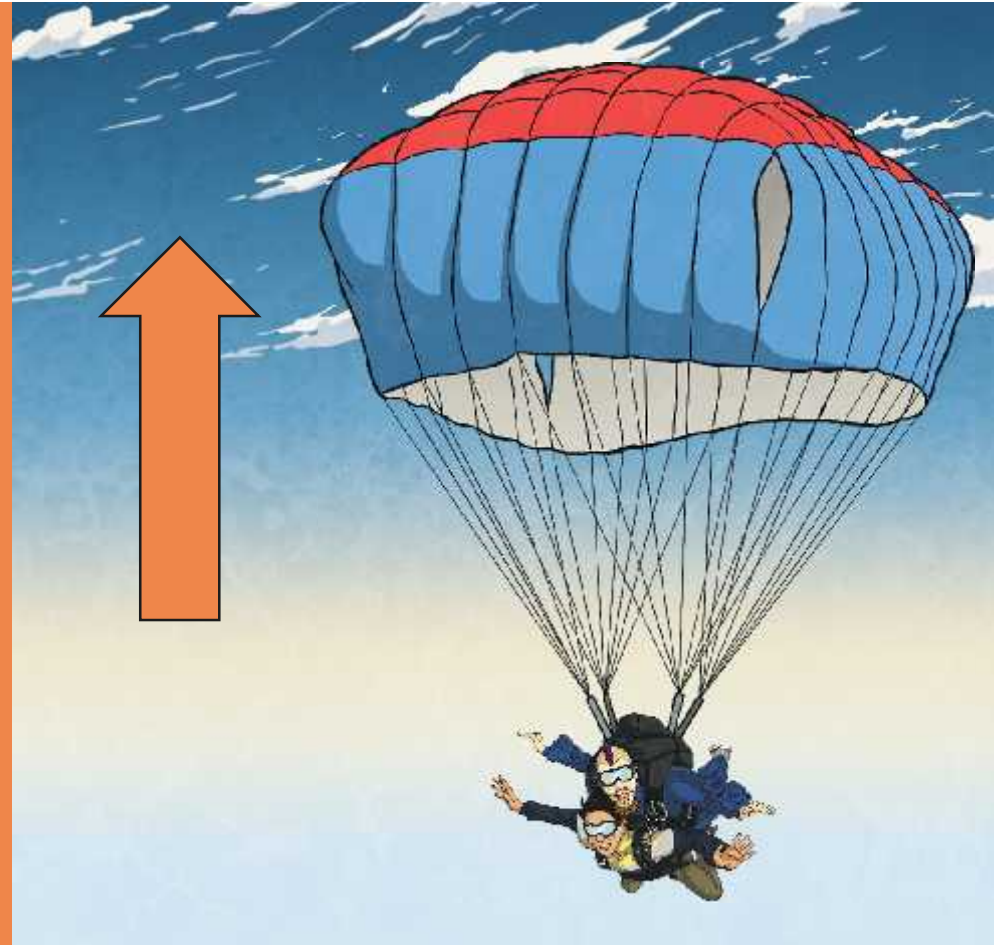
# What Are Forces?



In this image, you can see that a force is slowing the skydivers down.

This force is pushing in the opposite direction to gravity.

Talk to your partner about what is happening in this picture.





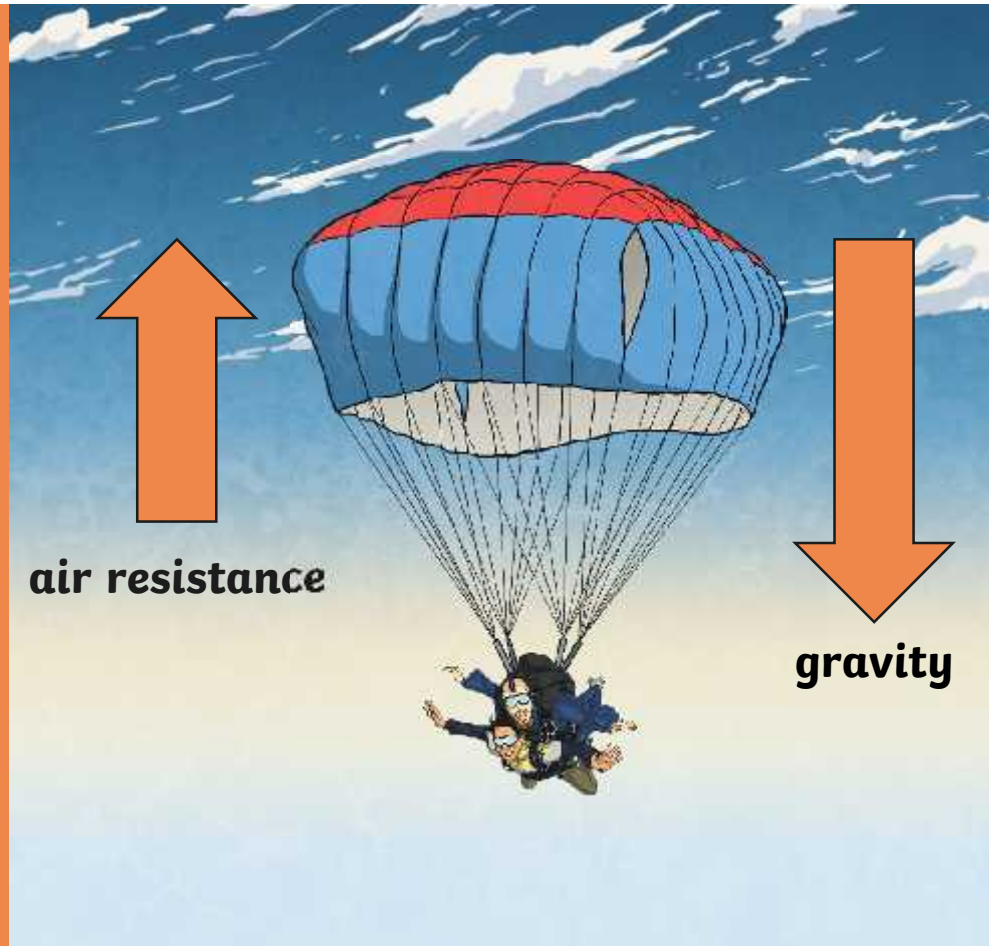
# What Are Forces?



Air resistance is the name of the force that is pushing up against the parachute.

Gravity is pulling the skydivers towards the ground. However, they are slowed down because a force (air resistance) pushes against the inside of the parachute and they descend more slowly.

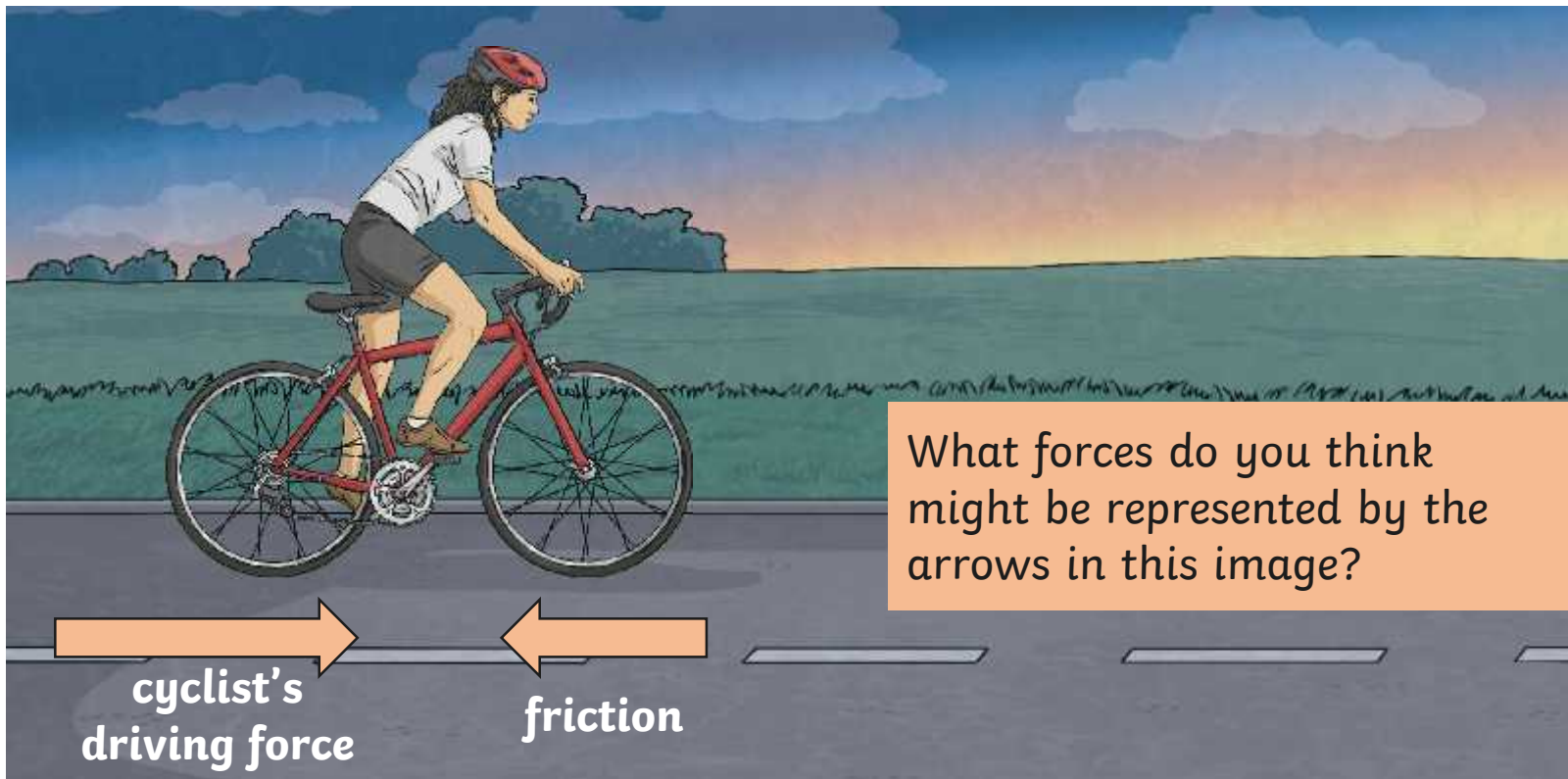
Gravity and air resistance are **opposing** forces in this situation.



# What Are Forces?



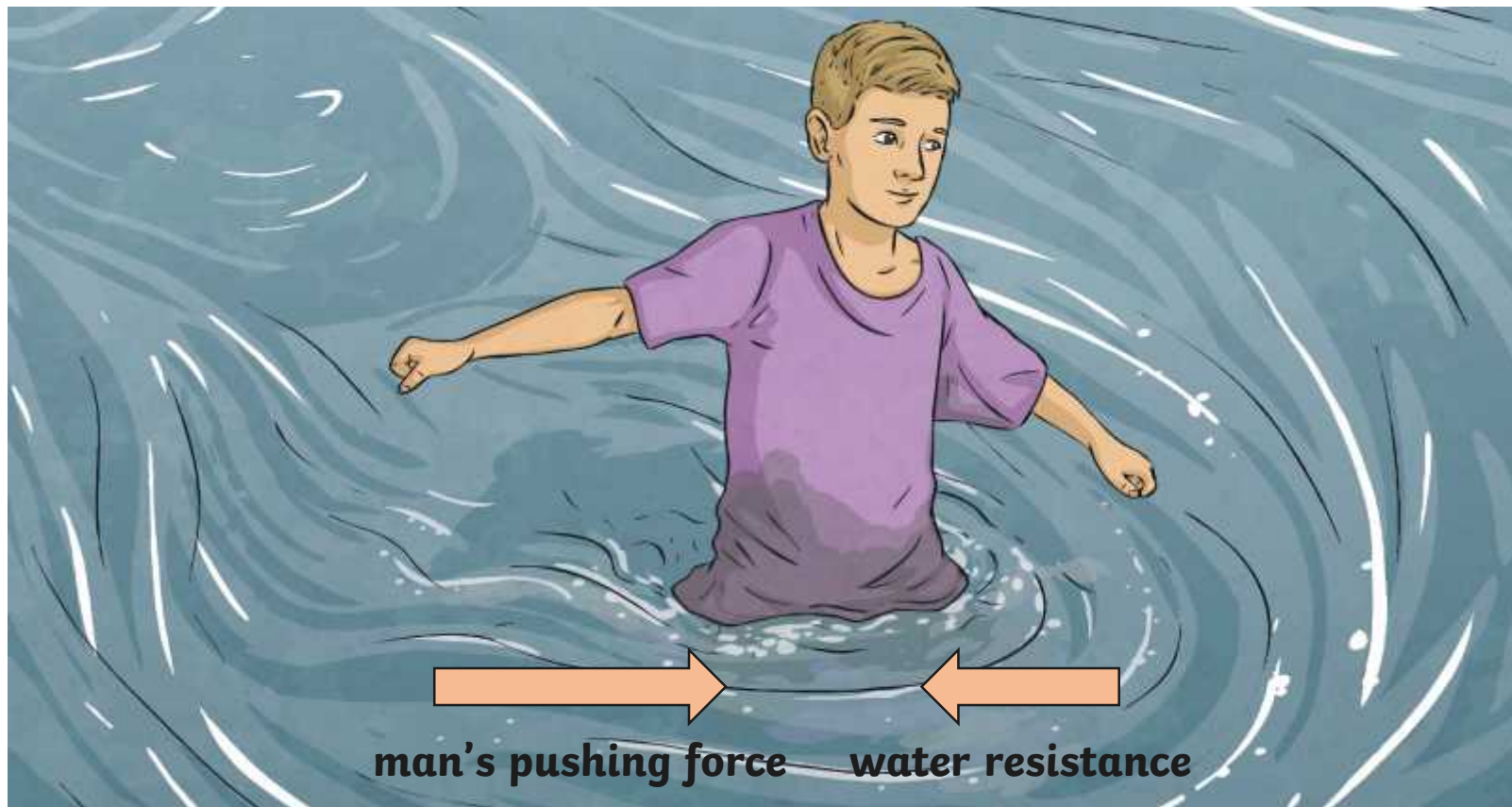
As well as gravity and air resistance, there are other forces that can act on objects.



# What Are Forces?



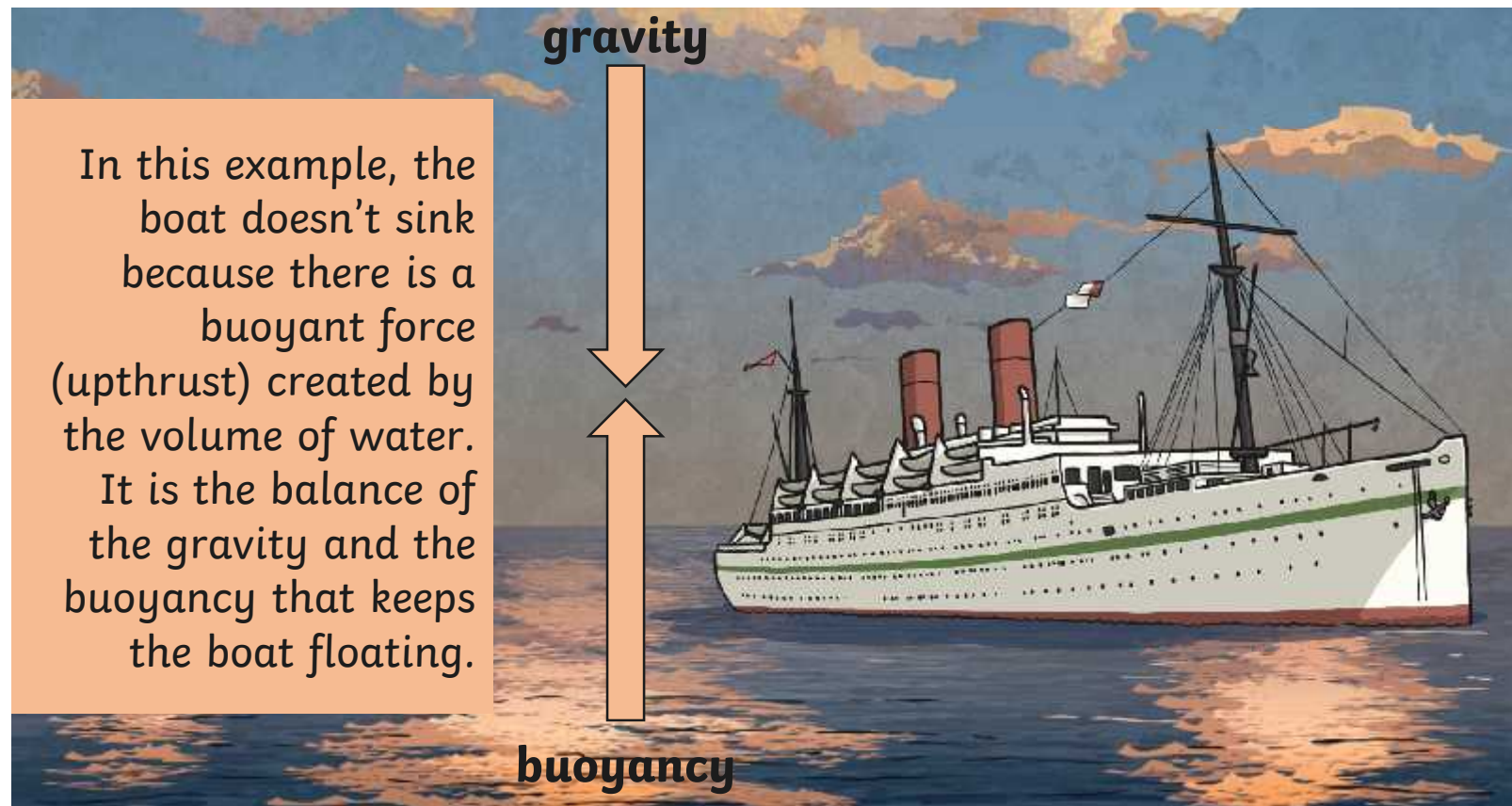
What forces do you think might be represented by the arrows in this image?



# What Are Forces?



What forces do you think might be represented by the arrows in this image?

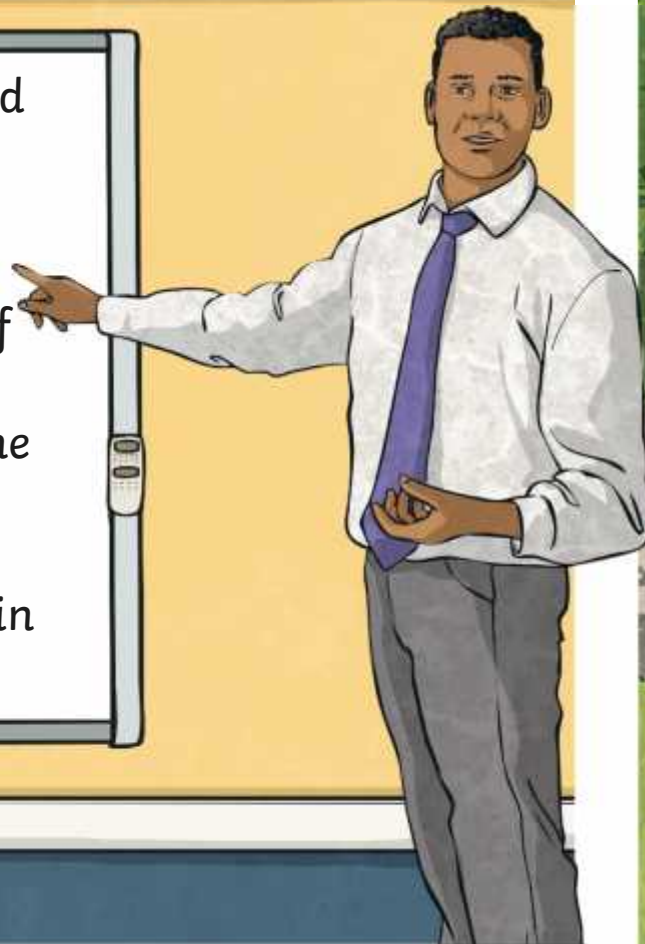


# Identifying Forces



Your teacher will choose a Force Card and  
You are going to play a game to  
say the name of a force.  
identify different types of forces!

If you have this force missing on one of  
Each person has an Identifying Forces  
your pictures, you can write the name of  
Bingo Board with pictures of different  
the force next to the correct arrow. You  
actions on.  
may be able to choose from more than one  
picture when writing the missing force.  
The actions have arrows to show the  
forces acting on the object pictured  
When you have completed three pictures in  
but some names of forces are missing.  
a row, you should shout Bingo!.



# Identifying Forces



<p>★</p>	<p>★ ★</p>	<p>★ ★ ★</p>			
	<p>★ ★</p>				

Which forces did you identify in the game?

# Talk about Forces



## Talk about Forces

To identify forces acting on objects.

Read the story together. Highlight or underline examples of forces in the story. Then, in the second column, briefly explain the forces that are being applied in each example. The first one has been done for you.

The magician reached inside her magic box and lifted up a gigantic magic wand high into the air.

**The magician's force is lifting it up and gravity is pulling it down to Earth.**

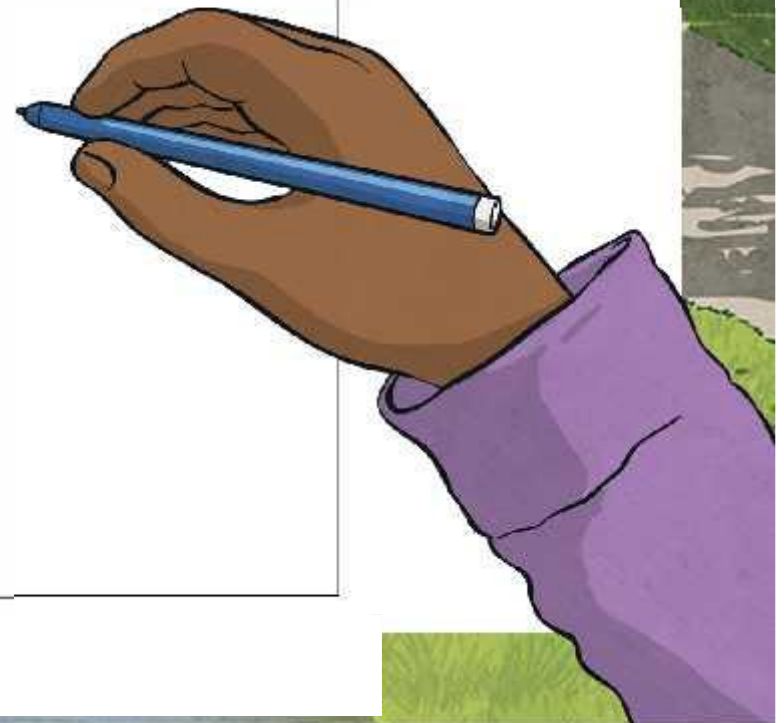
She pushed her very heavy magic box along the wooden floor so that it was by the side of the stage.

Next, she juggled with silk handkerchiefs. After she threw them into the air, they fell gently downwards for her to catch.

After, she lifted a robot penguin out of the box. She held it high in the air.

There was a screen behind the magician and she pushed the screen to one side. Behind the screen was a paddling pool. The magician placed the penguin into the water and it started to swim a length of the pool.

The children laughed and cheered, although they weren't sure what was magical about the robot swimming in the pool! The magician ended her show by popping a big party popper. The popper shot long strips of colourful paper into the air, which then fell softly to the ground.

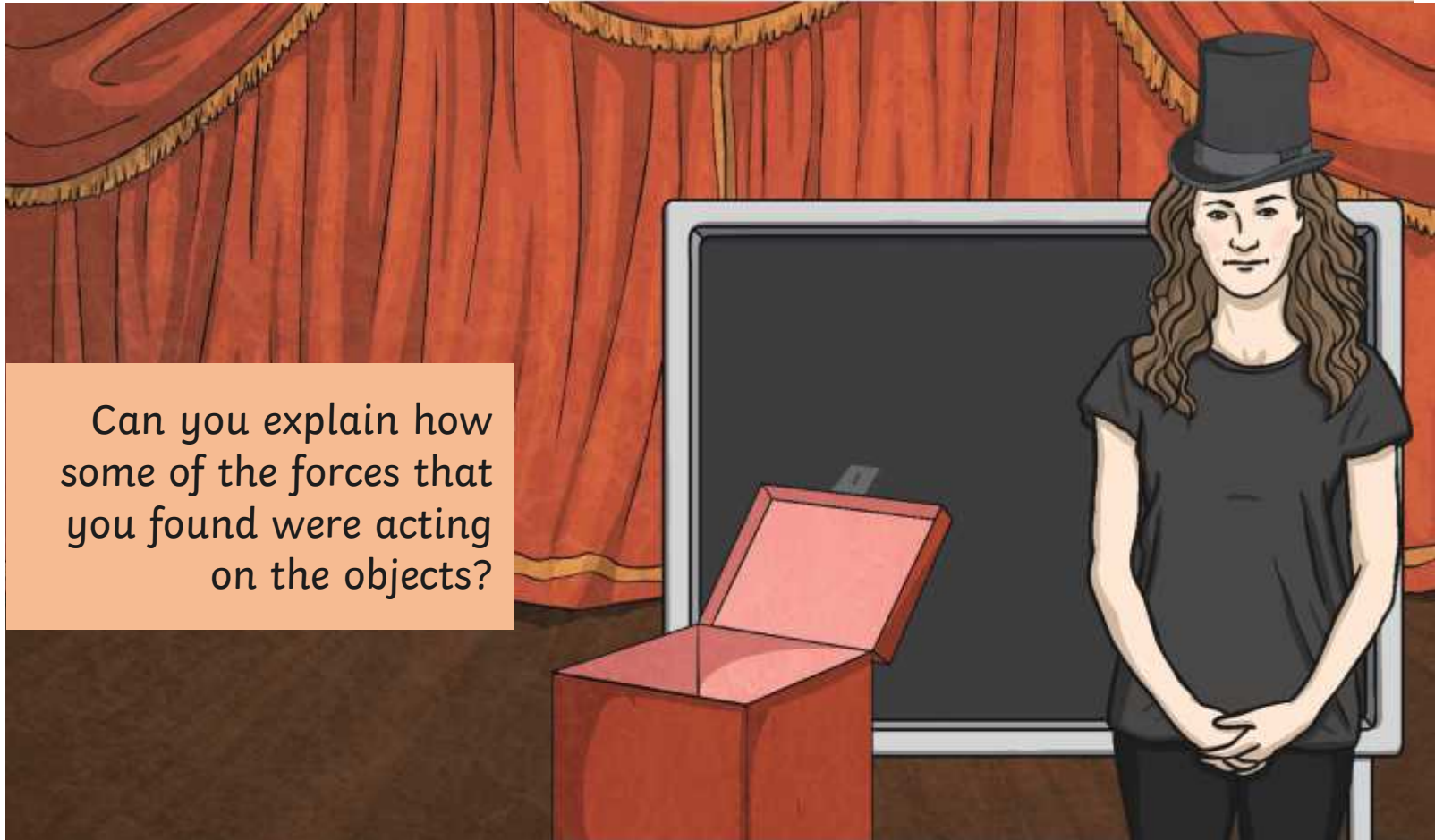


In the second column, briefly explain the forces that are being applied in each example.

# Talk about Forces



Can you explain how some of the forces that you found were acting on the objects?





# Forces in Action



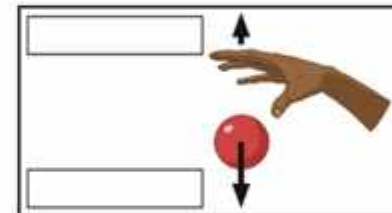
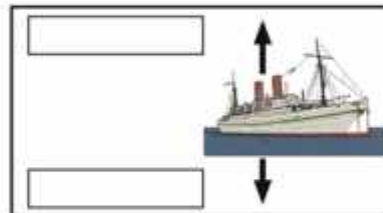
Complete the **Forces in Action Activity Sheet**. For each picture, name the forces acting on the objects and draw an arrow for each force to show the direction it is acting in. Then, draw your own examples of forces acting on objects, drawing arrows and labelling the forces.

## Forces in Action

To identify forces acting on objects.

In the two pictures below, the arrows represent forces acting.

Write the names of the forces in the boxes.



Draw your own arrows and label them to show the forces acting.



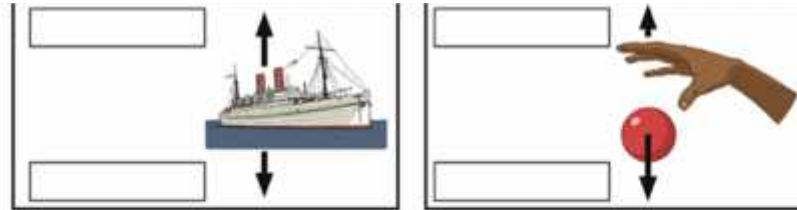
Draw your own pictures in the boxes below. Then label and draw your own arrows to show the forces acting.

# Forces Examples

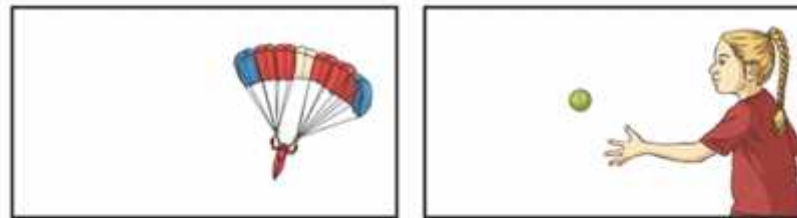


Share your own examples of forces acting on objects with a partner.

Can you identify some different kinds of forces and talk about how these forces act on objects?



Draw your own arrows and label them to show the forces acting.



Draw your own pictures in the boxes below. Then label and draw your own arrows to show the forces acting.



Science Year 5 | Forces (Push/Pull Forces) | Lesson 1

# Aim



- To identify forces acting on objects.

# Success Criteria

- I can identify forces as pushes and pulls.
- I can identify and explain the different forces acting on objects.



Aim: To identify forces acting on objects.				Date:					
				Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	T	PPA	S	I	AL	GP
I can identify forces as pushes and pulls.				Notes/Evidence					
I can identify and explain the different forces acting on objects.									
Next Steps									
) _____									
) _____									

<b>T</b>	Teacher	<b>I</b>	Independent
<b>PPA</b>	Planning, Preparation and Assessment	<b>AL</b>	Adult Led
<b>S</b>	Supply	<b>GP</b>	Guided Practice

Aim: To identify forces acting on objects.				Date:					
				Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	T	PPA	S	I	AL	GP
I can identify forces as pushes and pulls.				Notes/Evidence					
I can identify and explain the different forces acting on objects.									
Next Steps									
) _____									
) _____									

<b>T</b>	Teacher	<b>I</b>	Independent
<b>PPA</b>	Planning, Preparation and Assessment	<b>AL</b>	Adult Led
<b>S</b>	Supply	<b>GP</b>	Guided Practice

**air resistance**

**cyclist's force**

**gravity**

**friction**

**friction**

**gravity**

**gravity**

**air resistance**

**man's force**

**gravity**

**water resistance**

**buoyancy**

**air resistance**

**cyclist's force**

**gravity**

**friction**

**friction**

**gravity**

**gravity**

**air resistance**

**man's force**

**gravity**

**water resistance**

**buoyancy**

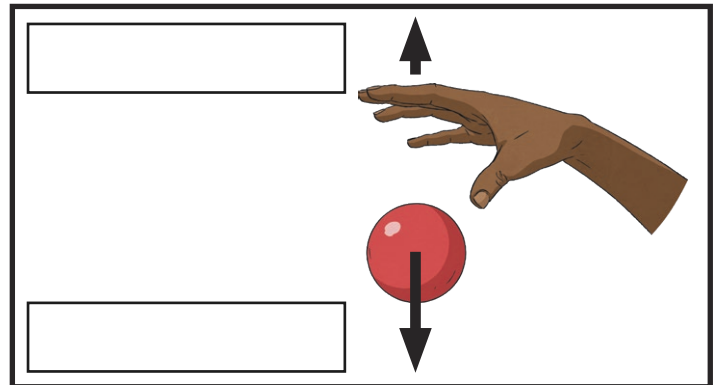
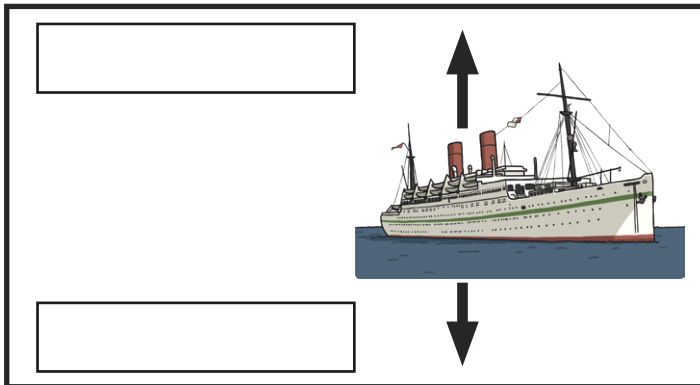
# Forces in Action

To identify forces acting on objects.

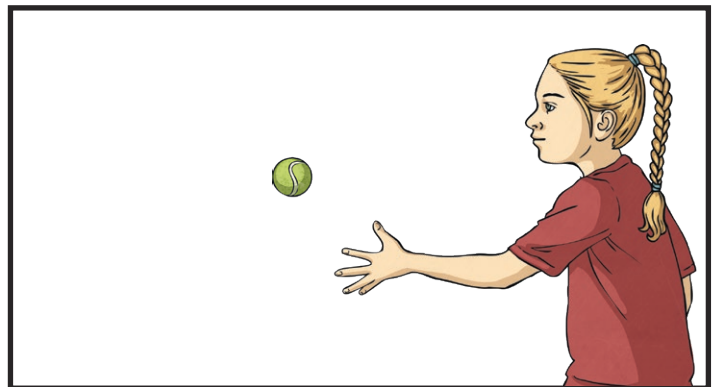
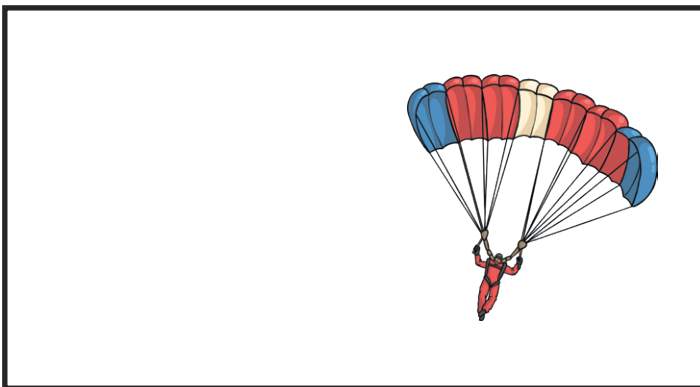


In the two pictures below, the arrows represent forces acting.

Write the names of the forces in the boxes.



Draw your own arrows and label them to show the forces acting.



Draw your own pictures in the boxes below. Then label and draw your own arrows to show the forces acting.

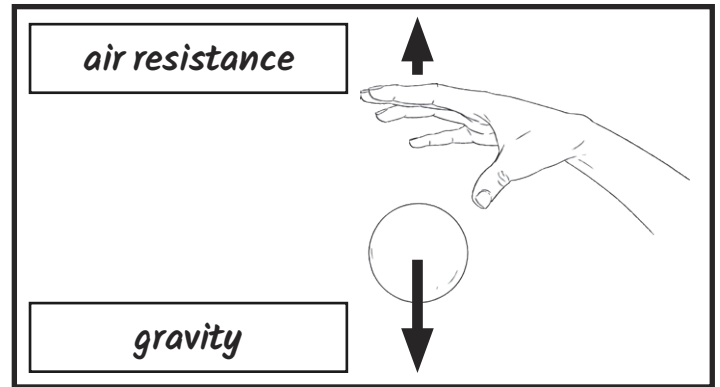
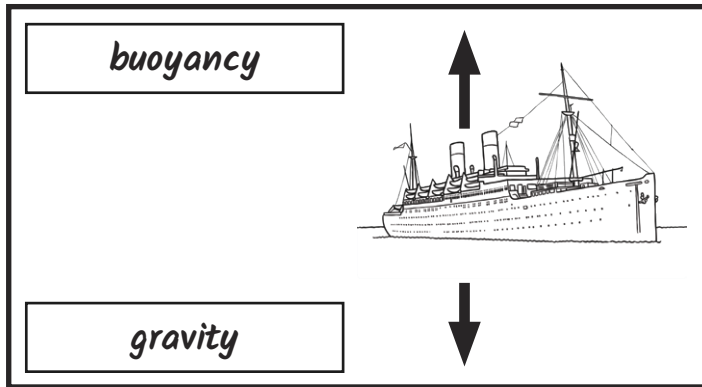




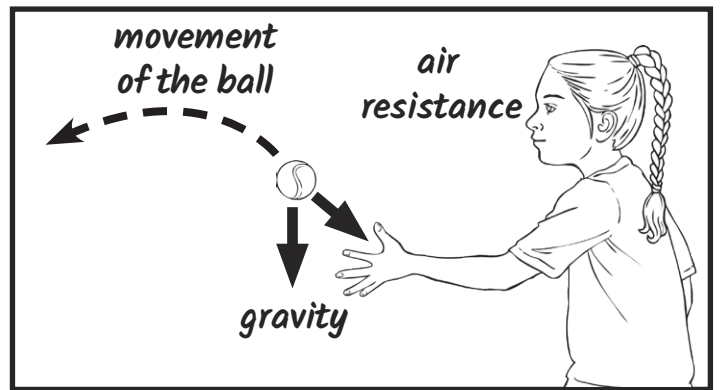
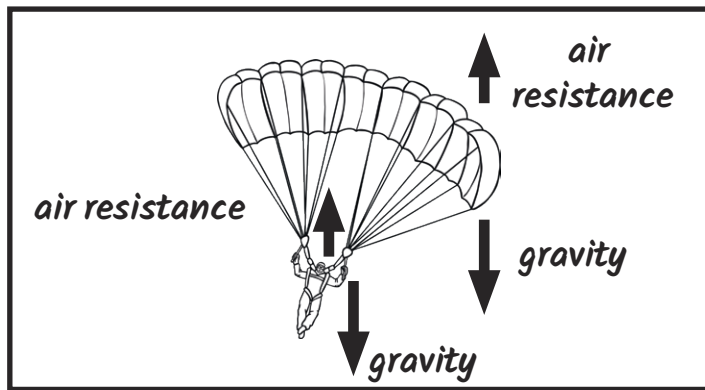
# Forces in Action Answers

In the two pictures below, the arrows represent forces acting.

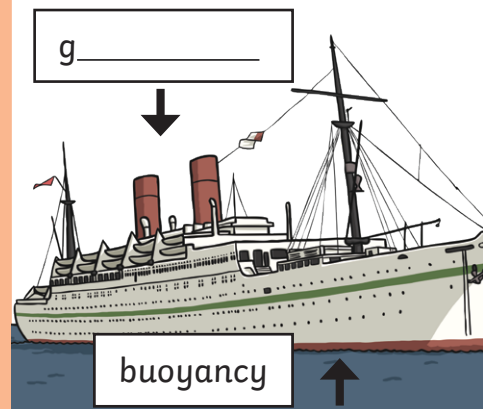
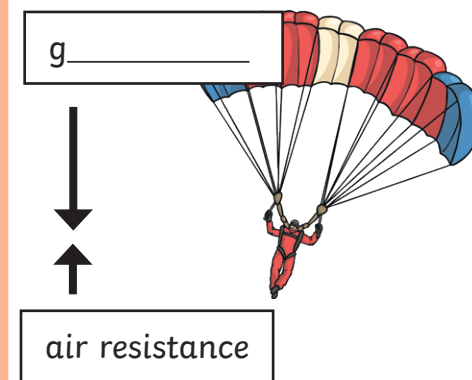
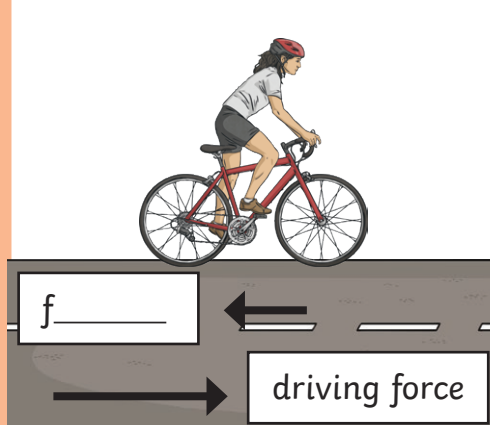
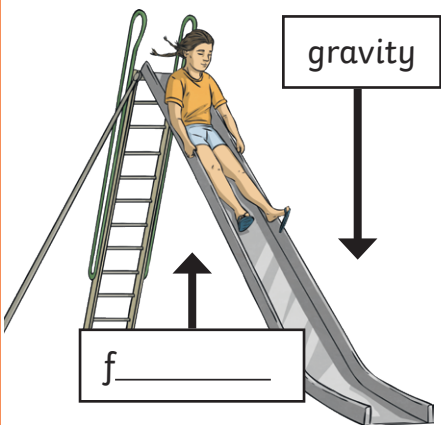
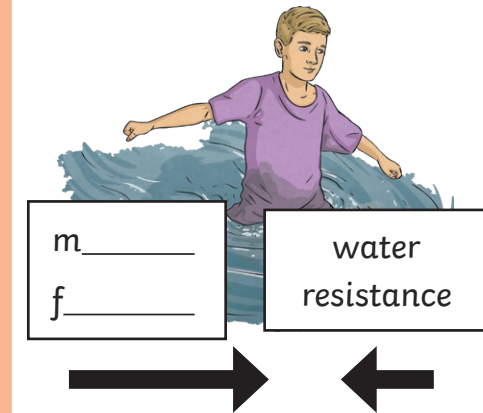
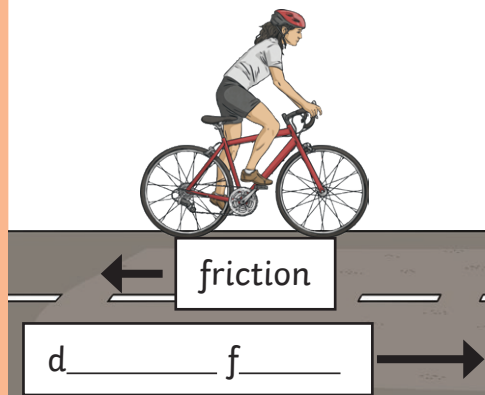
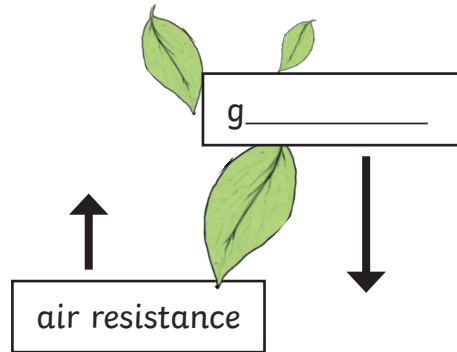
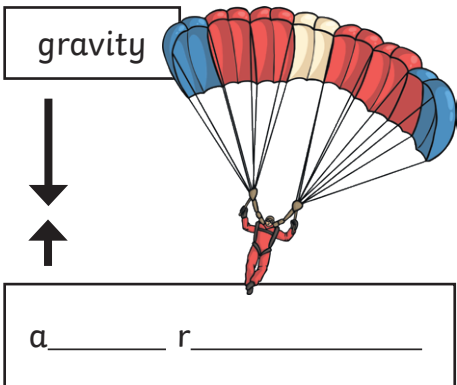
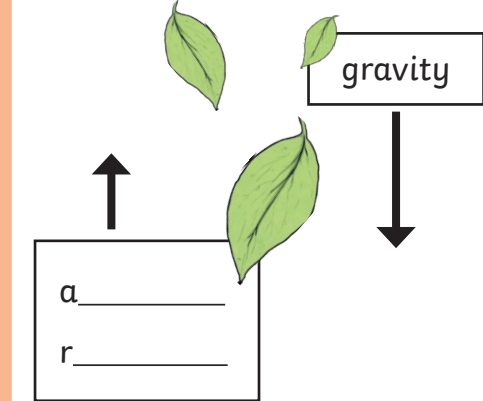
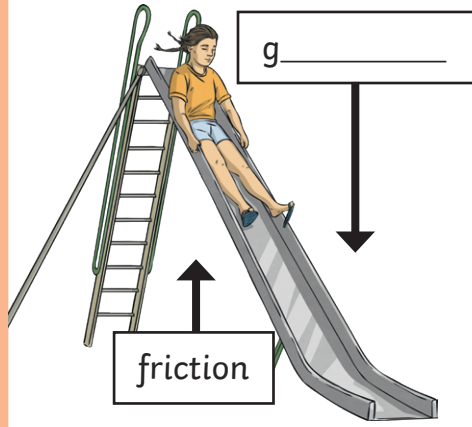
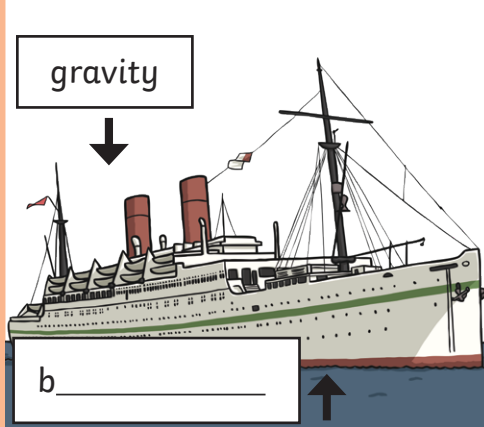
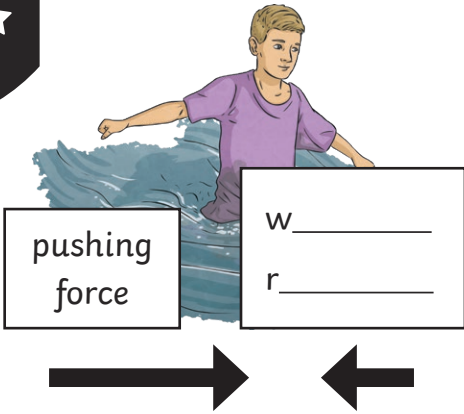
Write the names of the forces in the boxes.

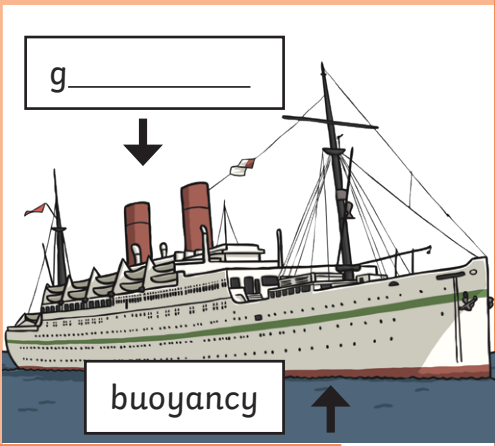
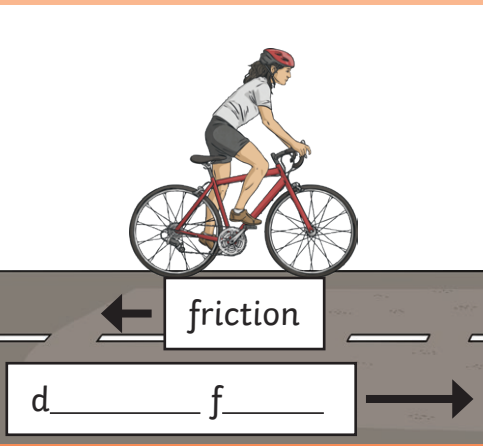
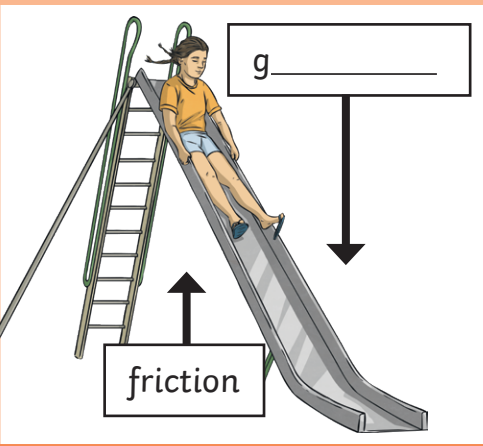
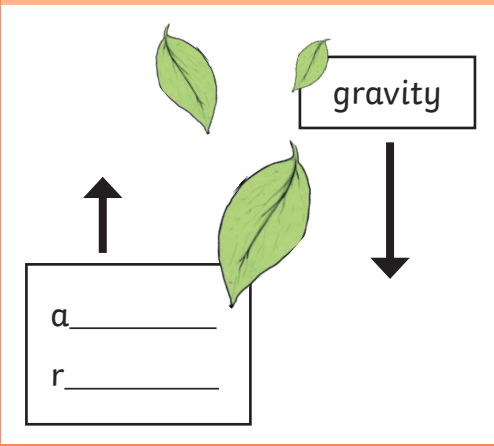
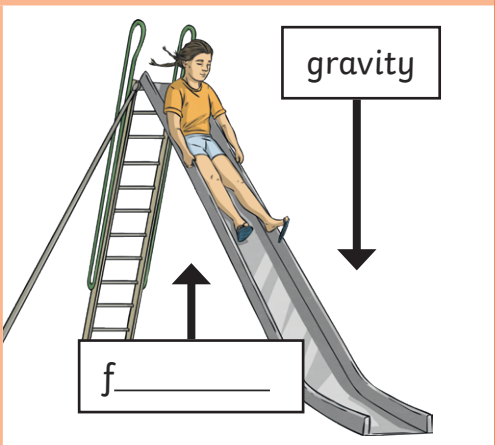
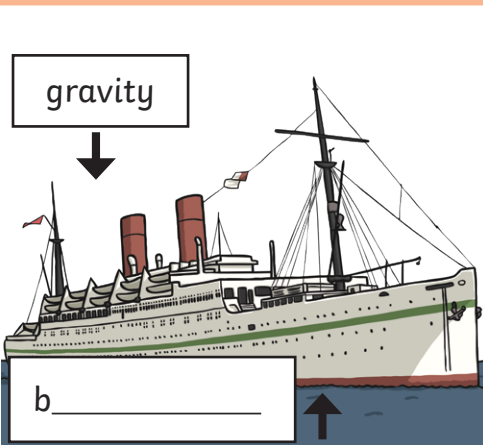
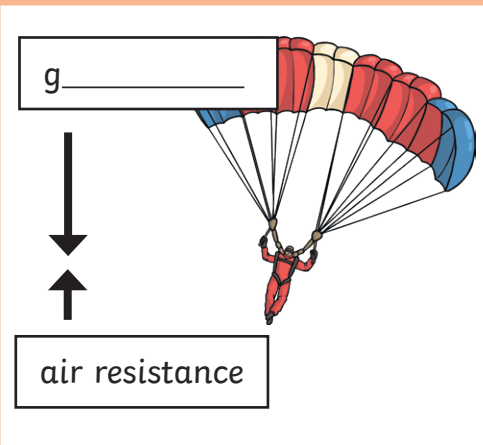
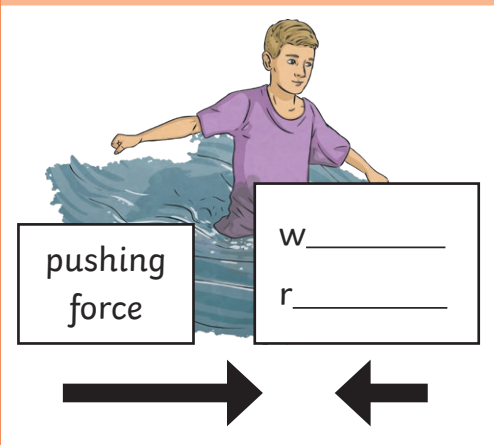
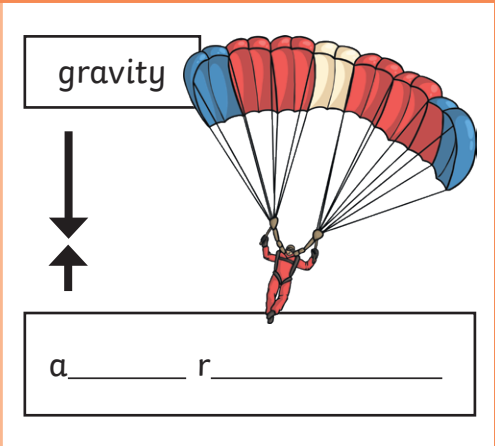
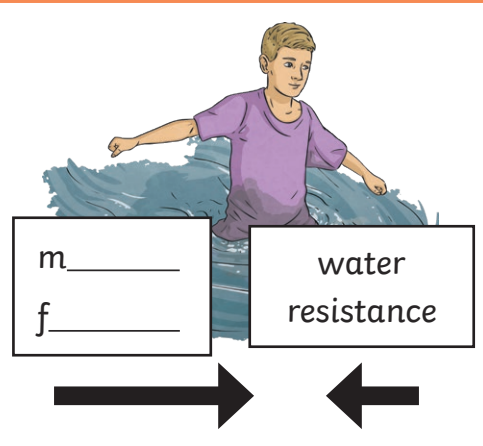
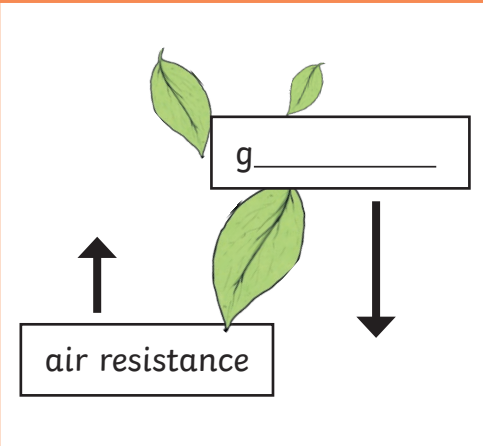
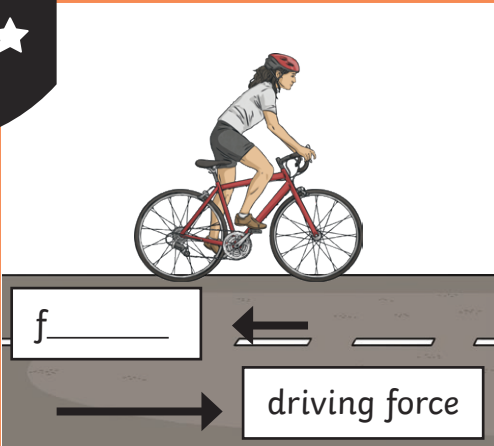


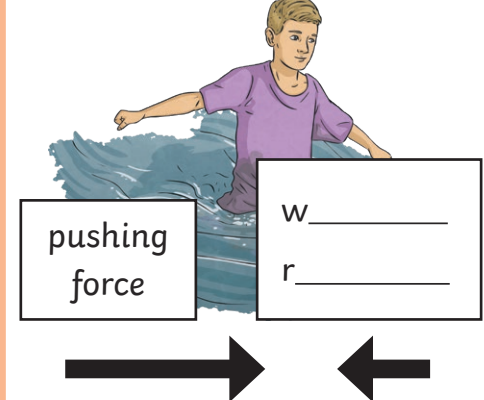
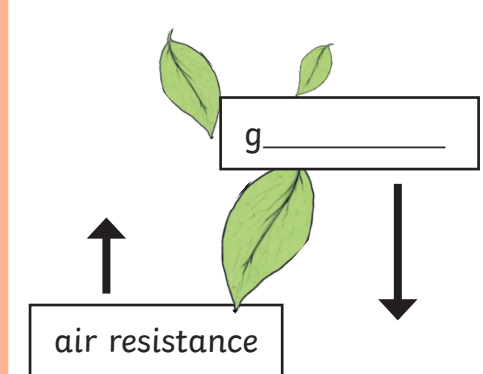
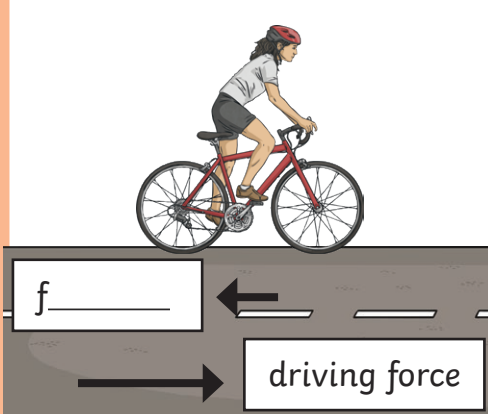
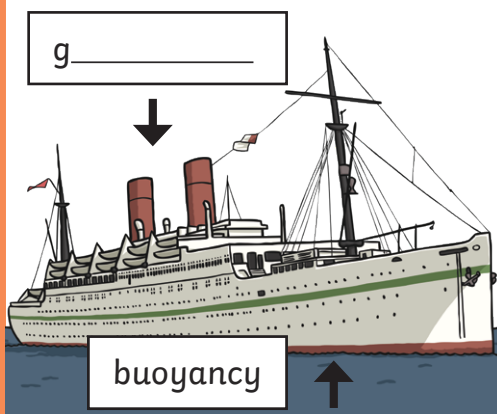
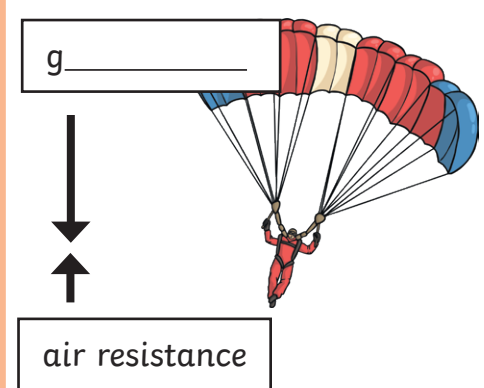
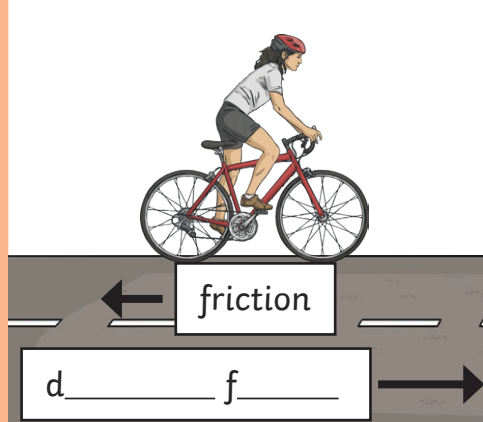
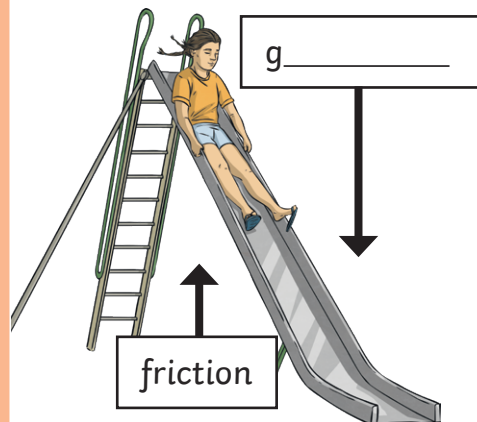
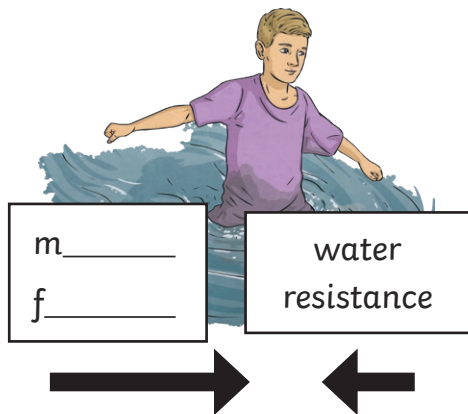
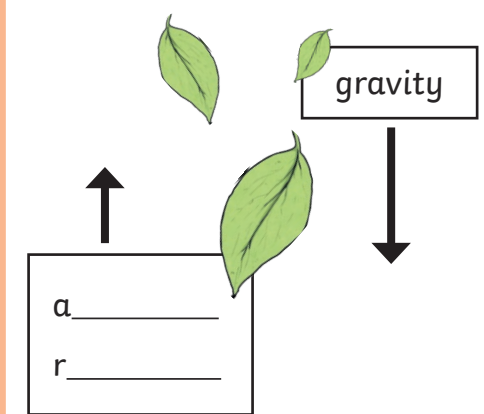
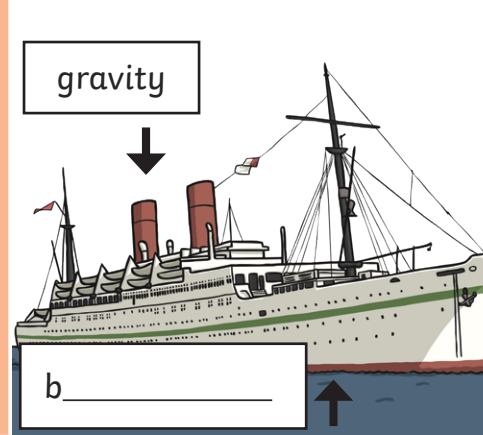
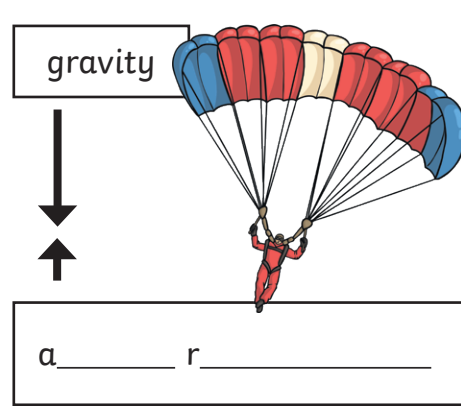
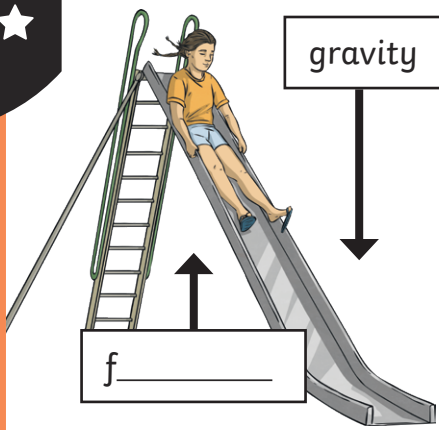
Draw your own arrows and label them to show the forces acting.

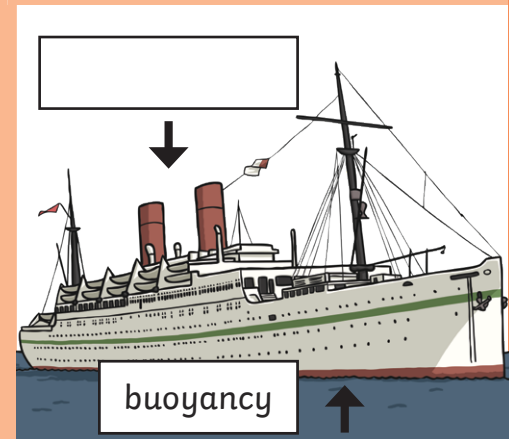
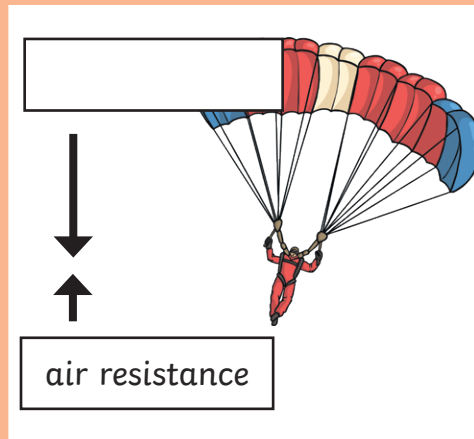
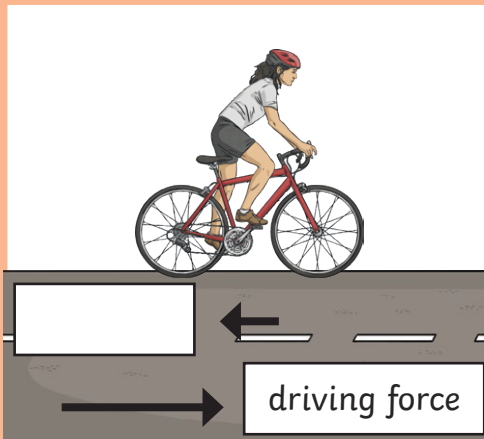
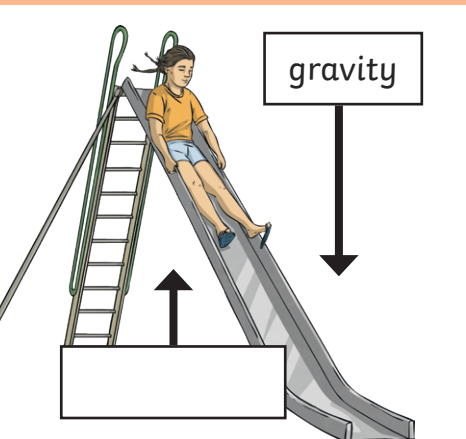
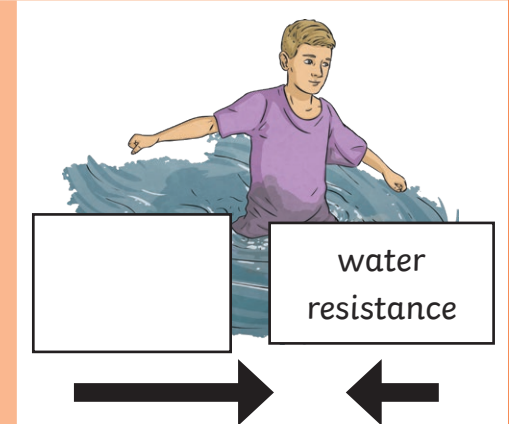
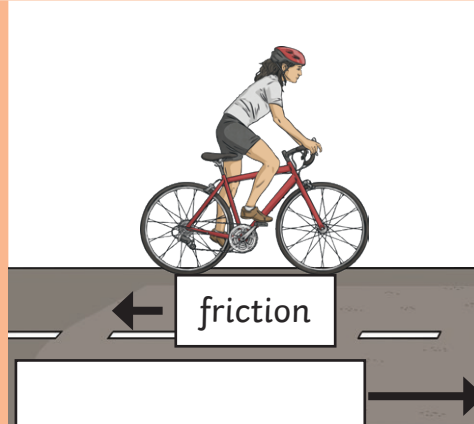
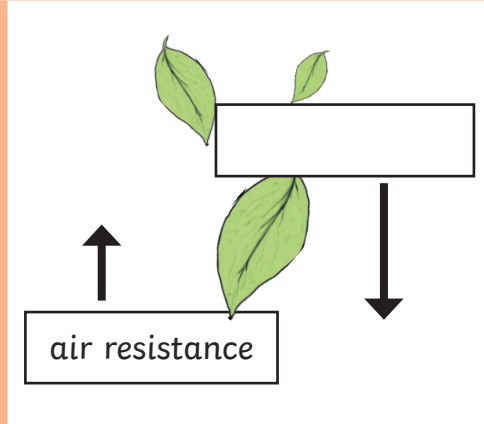
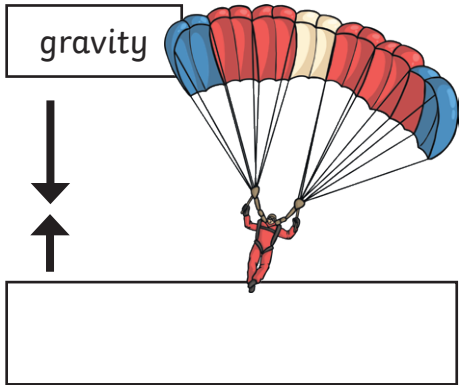
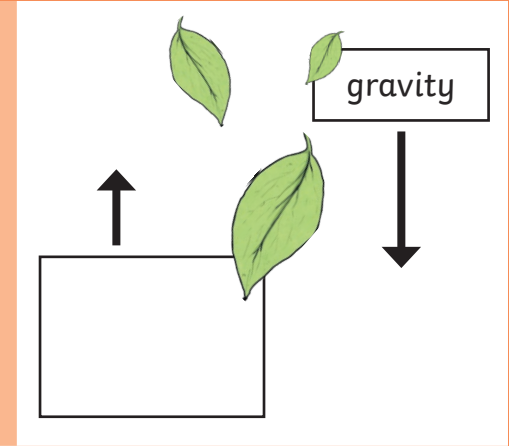
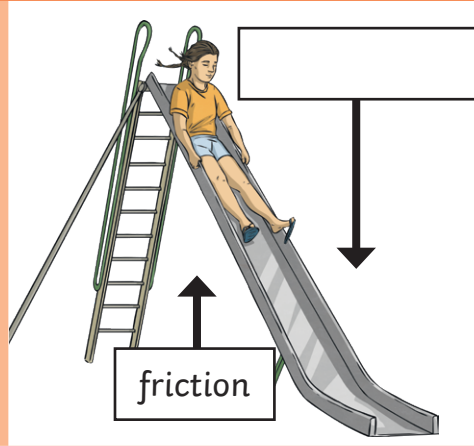
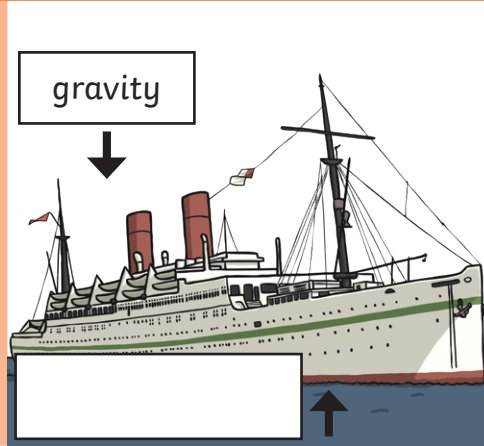
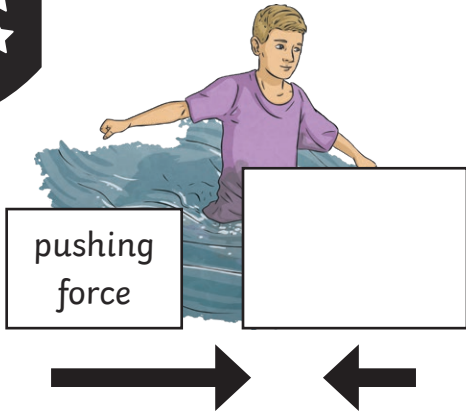


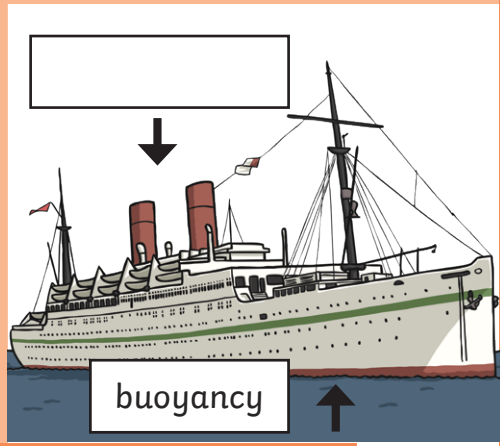
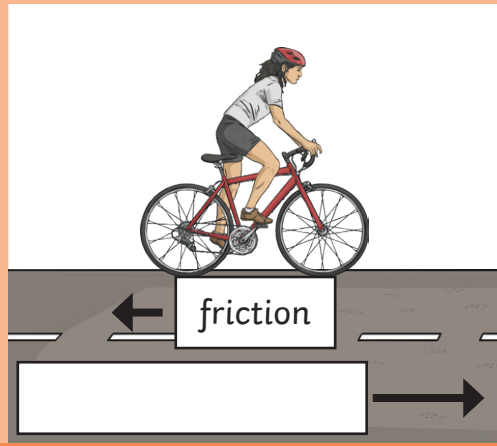
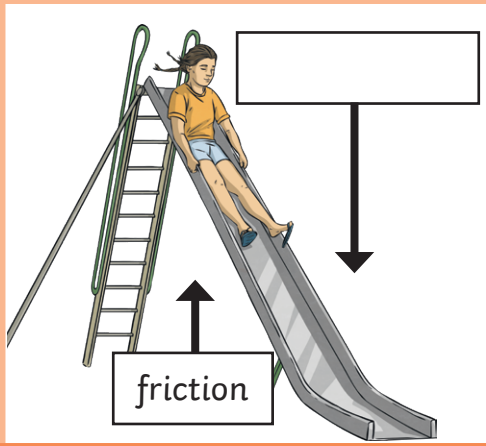
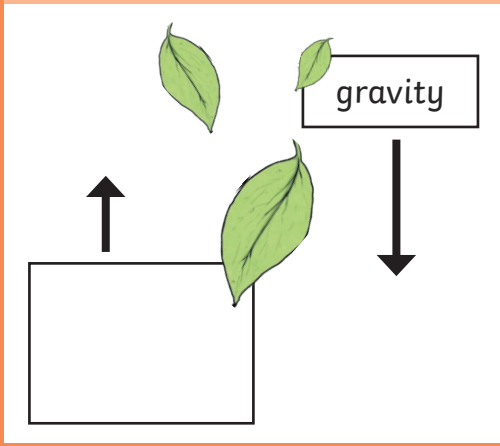
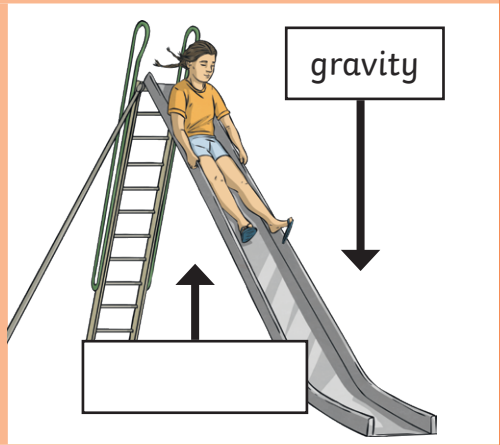
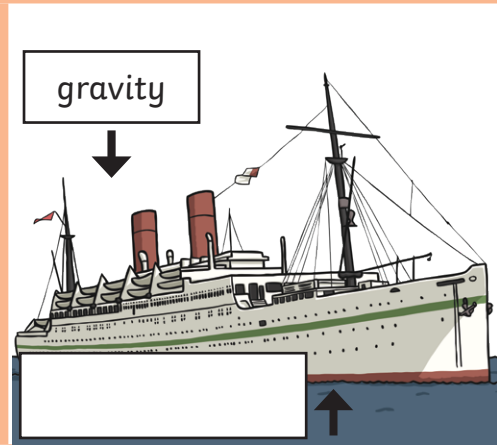
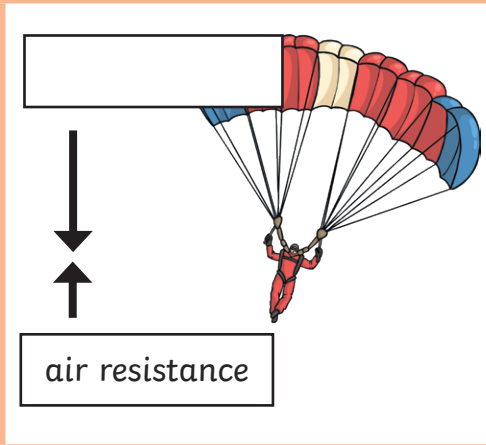
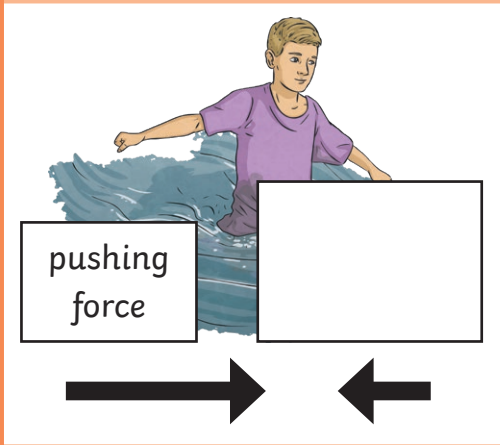
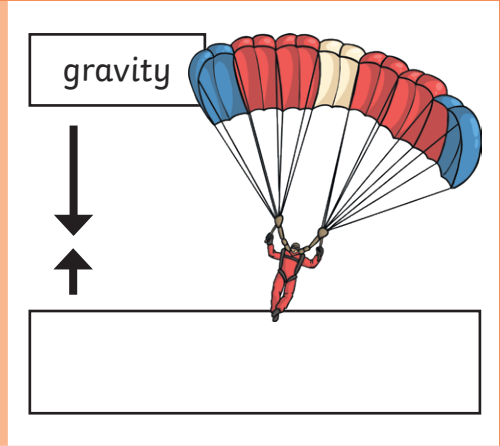
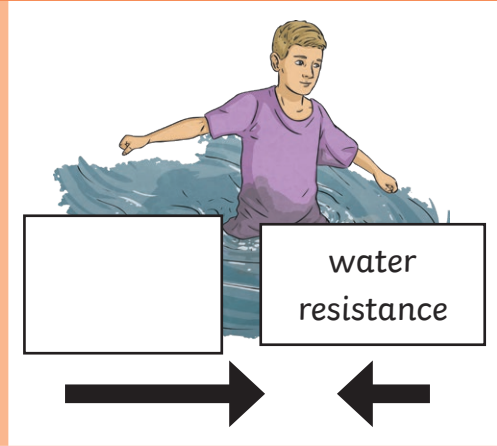
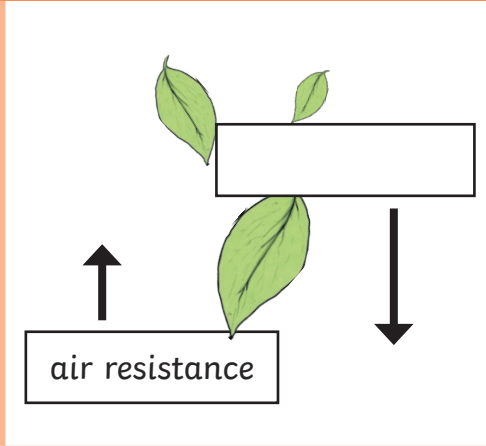
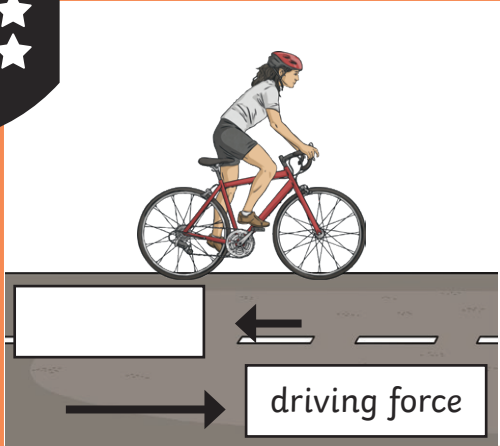
The arrows have been drawn here with different lengths to show which force is bigger but it is not a requirement for children at KS2 to show the relative strengths of forces by drawing arrows with different lengths. They only need to show the correct direction of the forces.

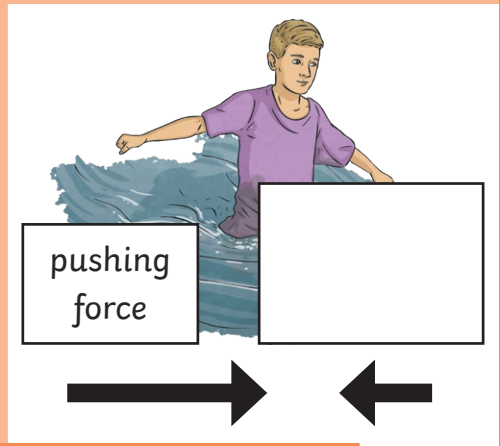
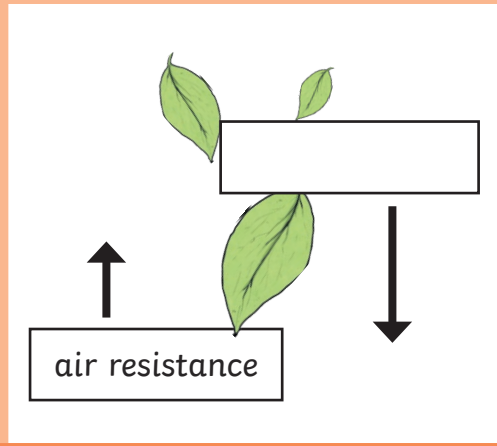
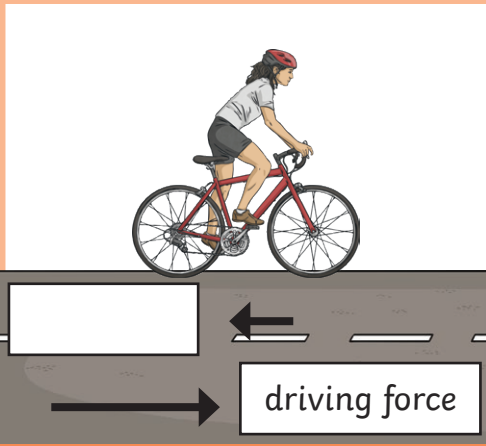
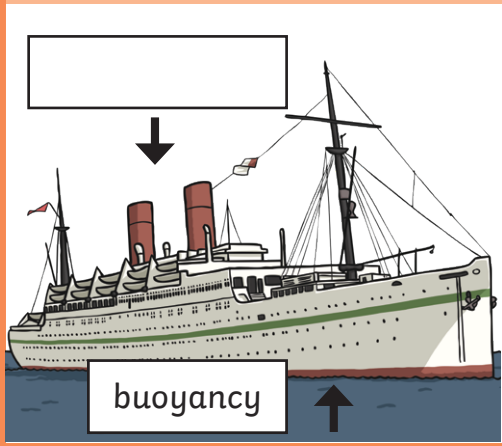
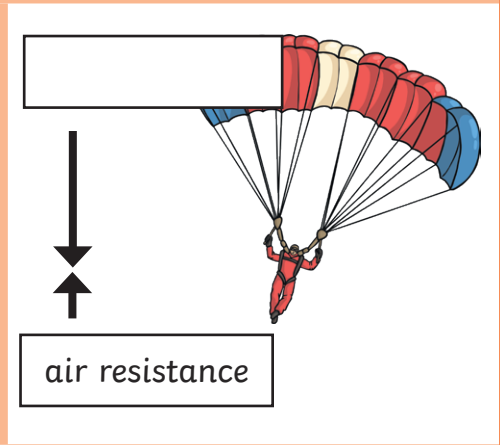
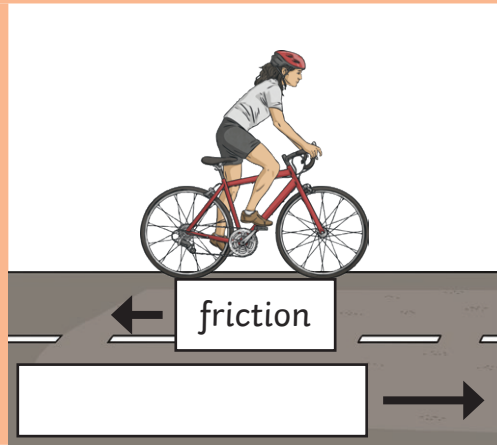
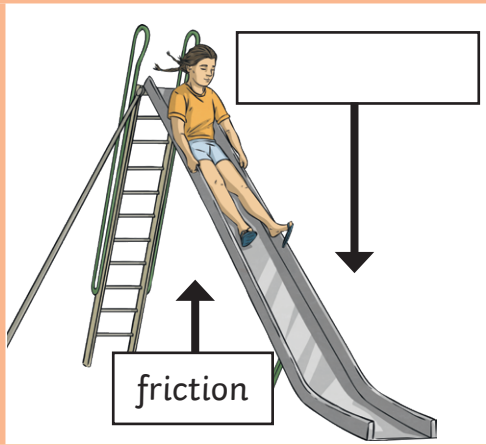
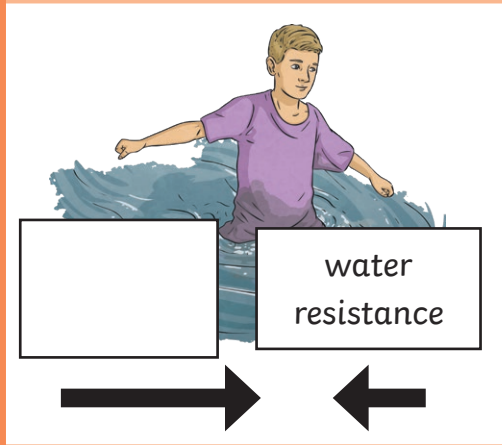
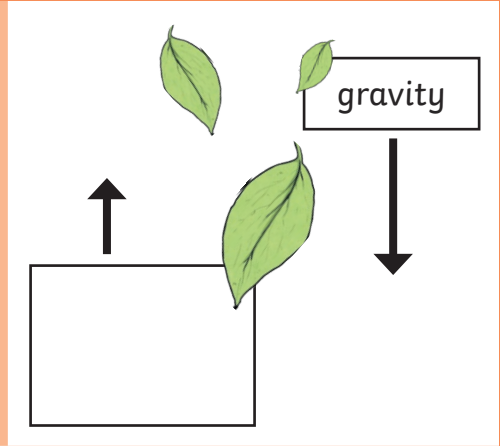
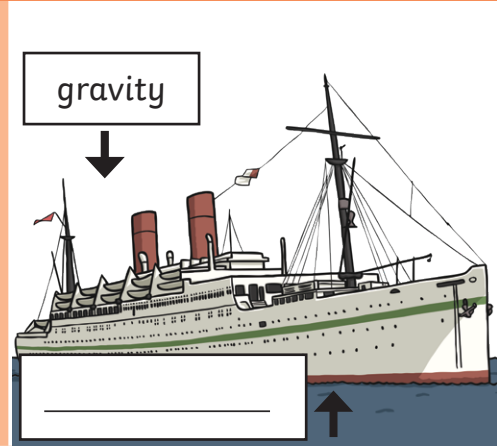
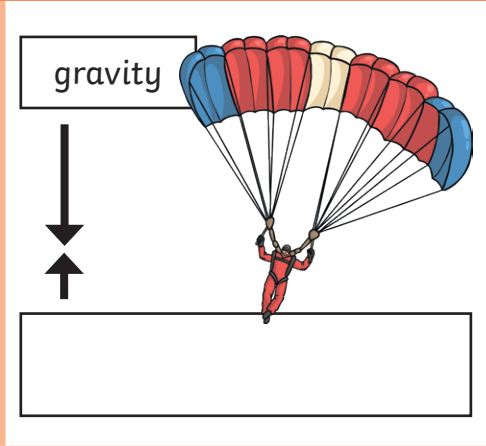
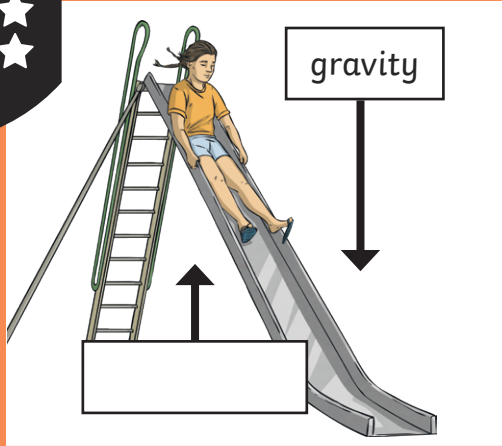


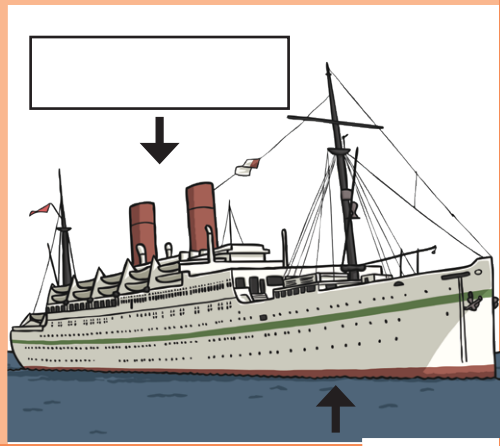
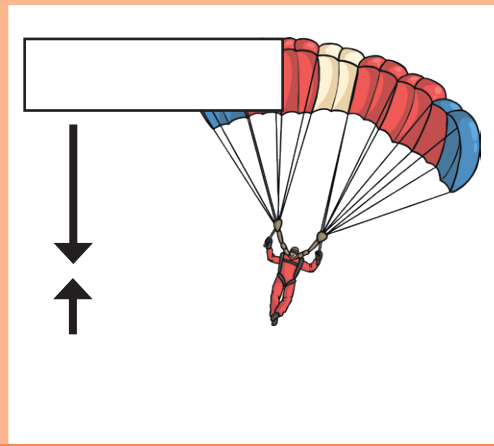
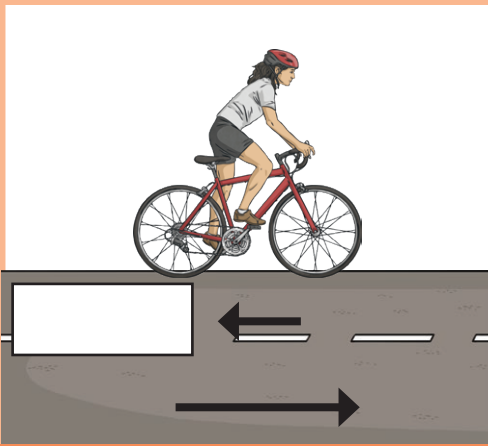
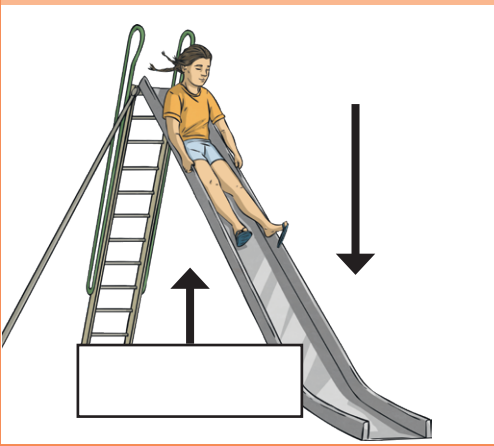
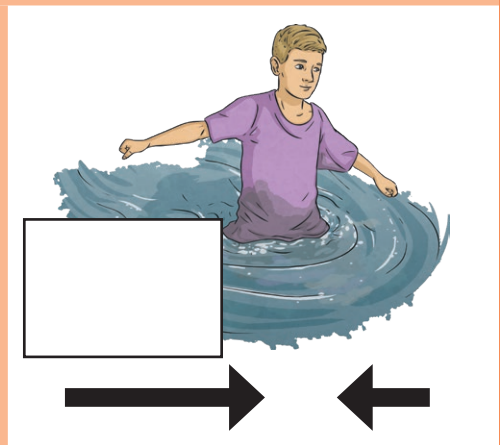
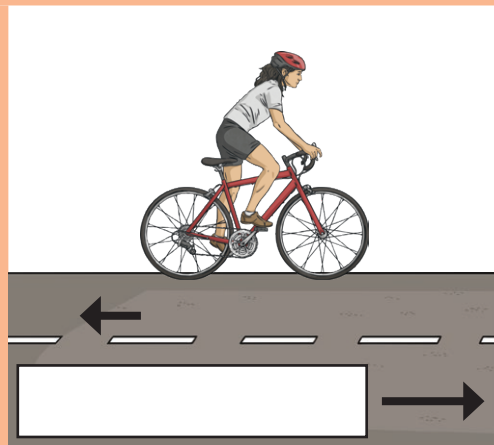
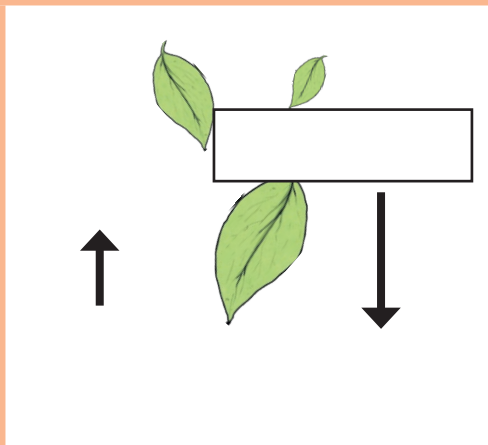
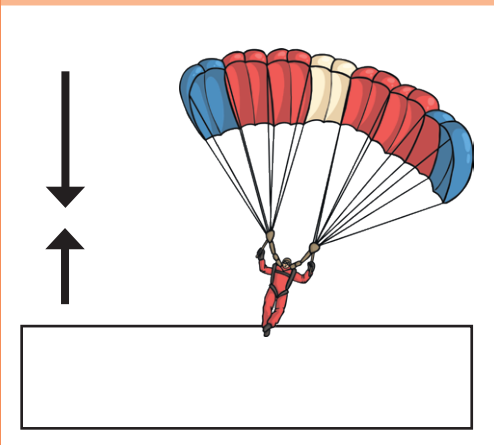
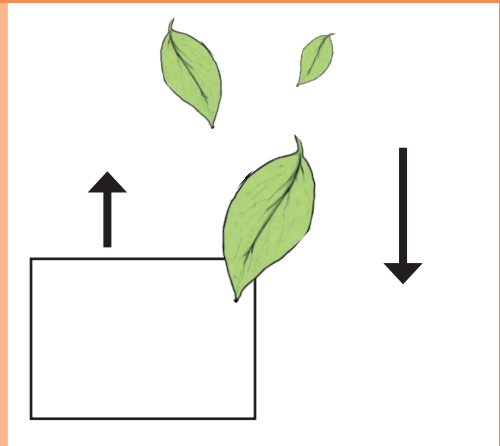
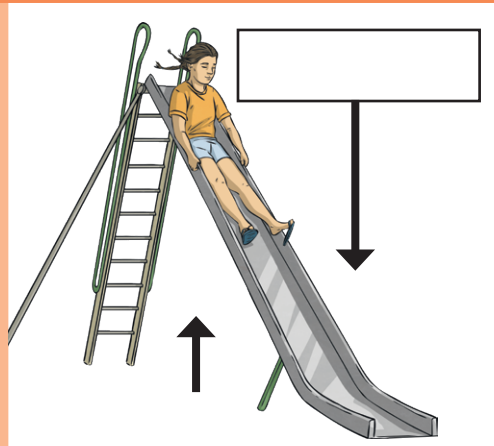
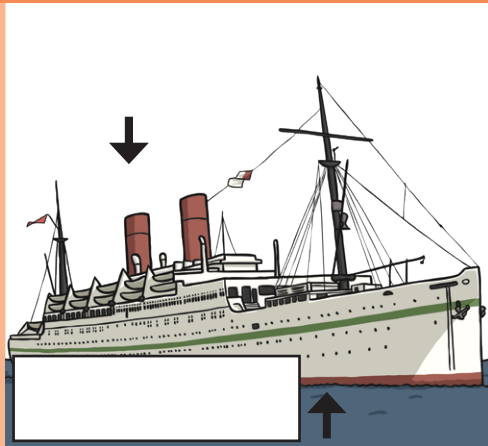
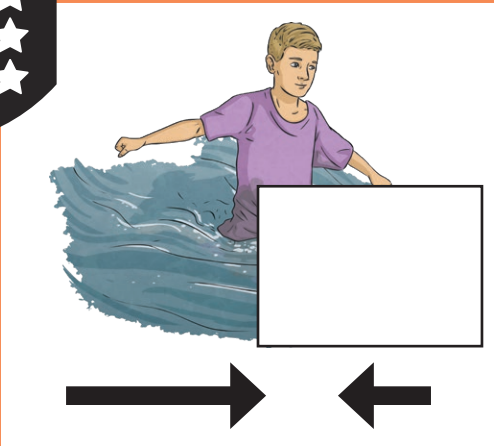




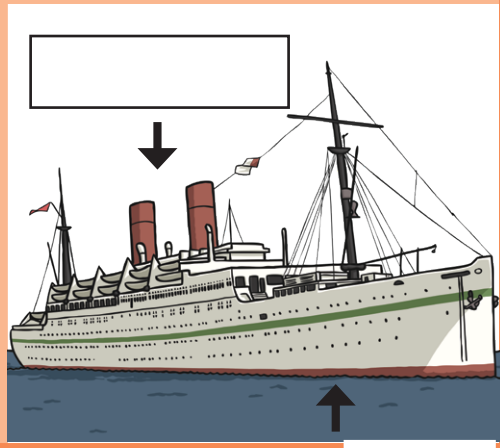
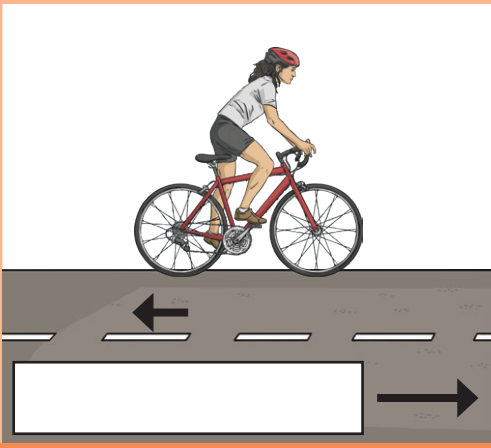
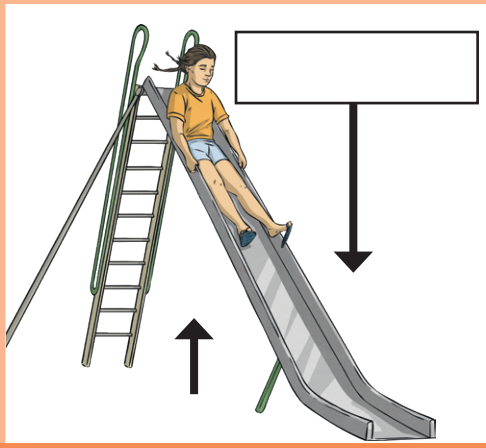
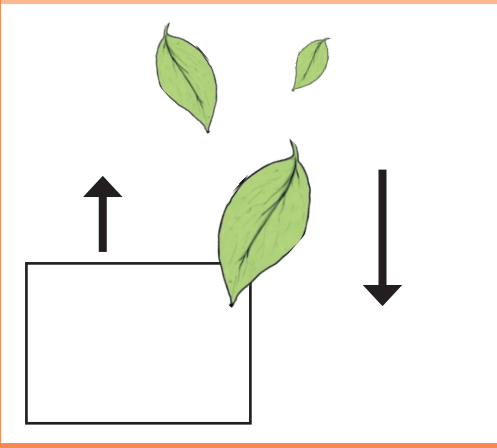
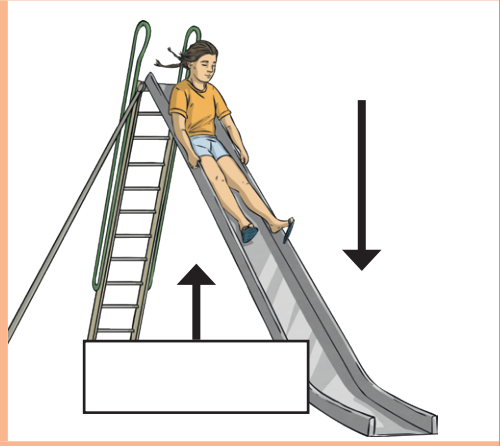
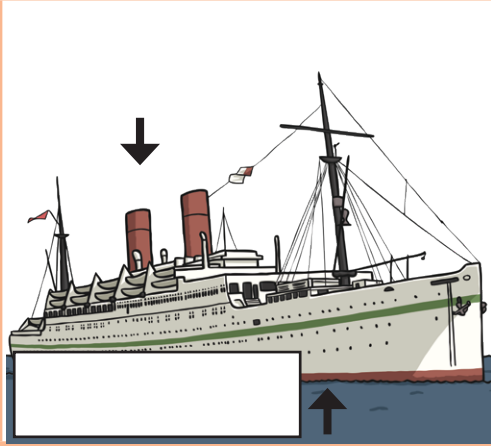
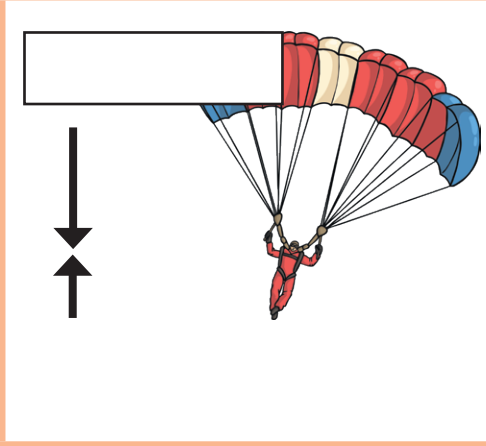
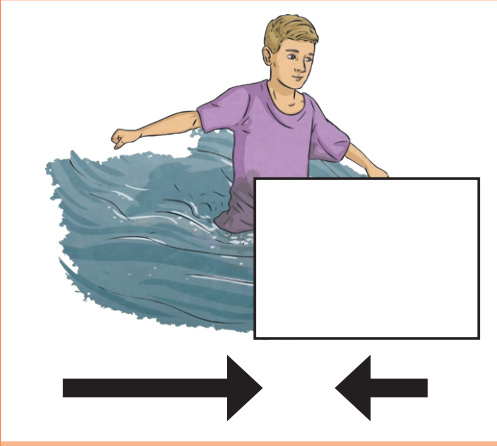
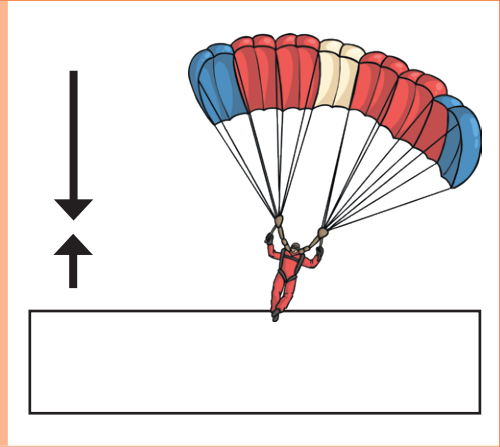
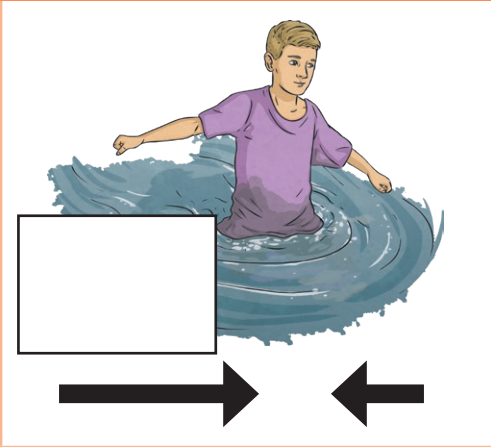
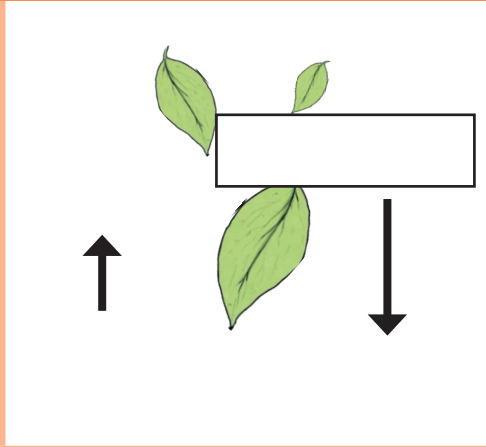
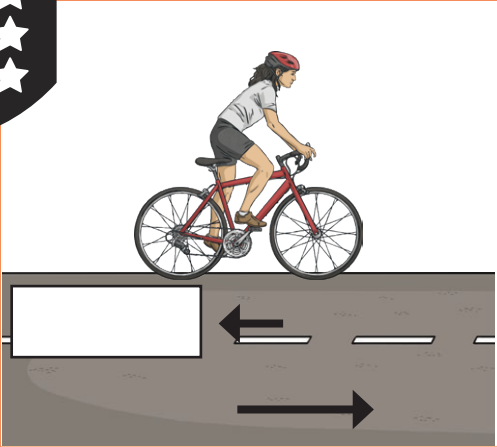


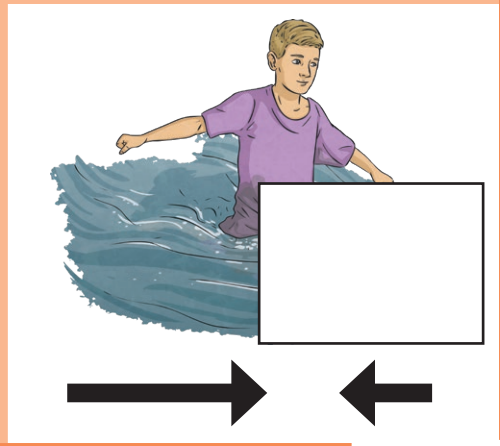
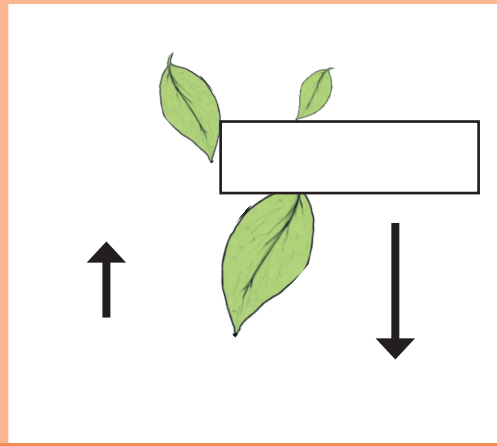
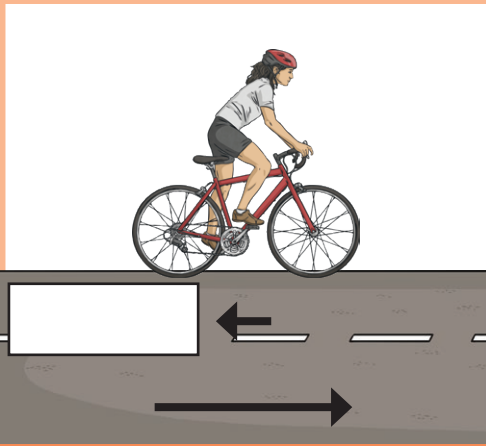
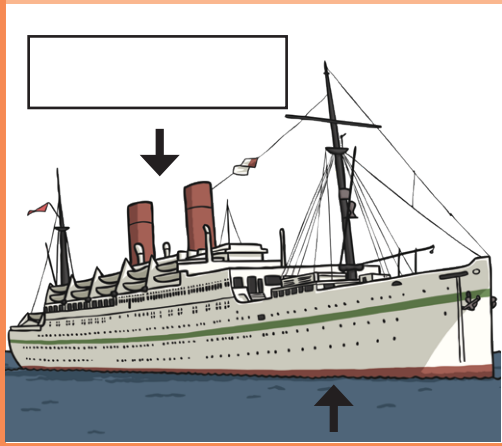
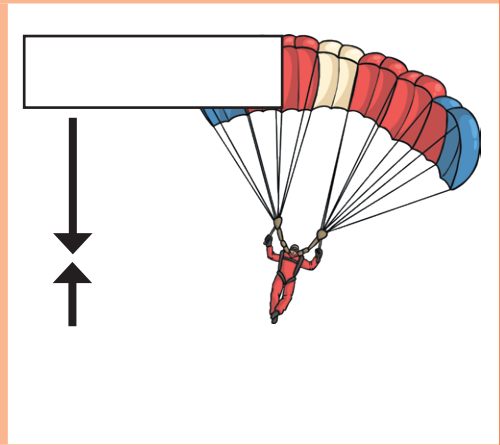
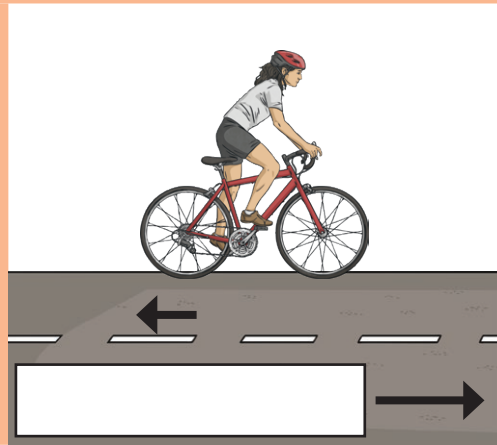
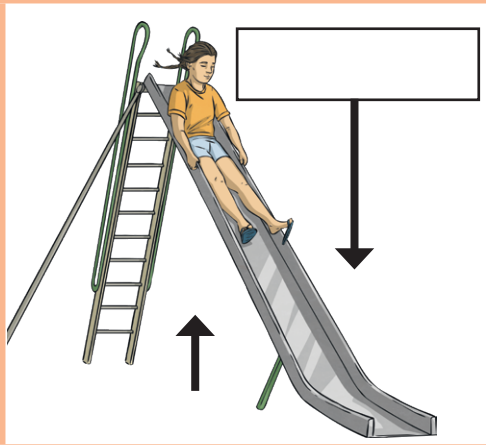
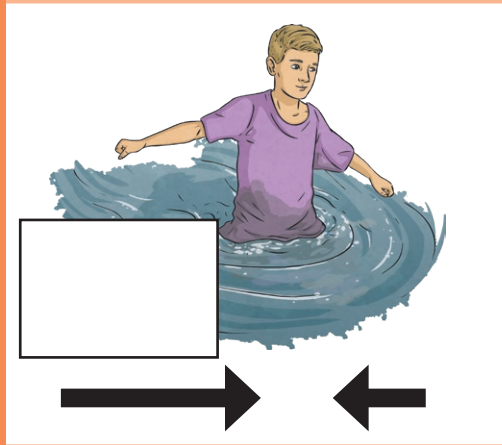
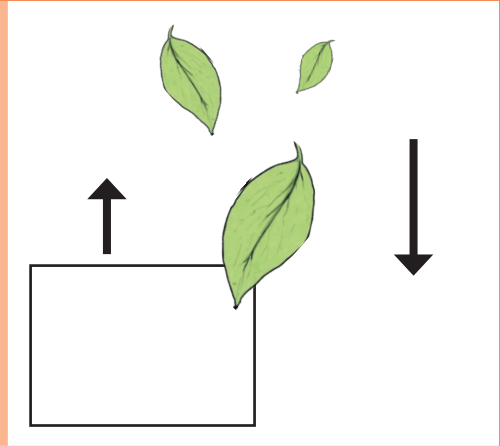
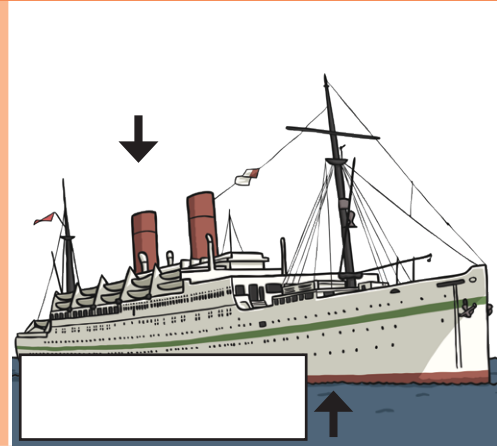
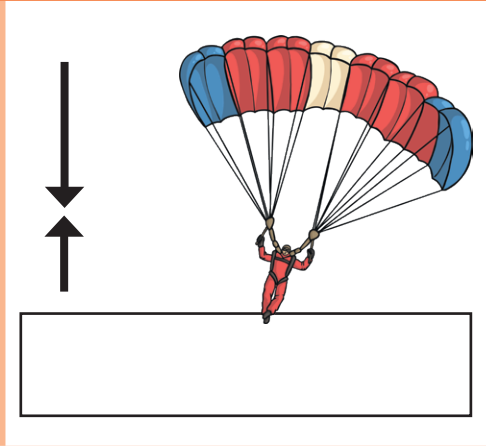
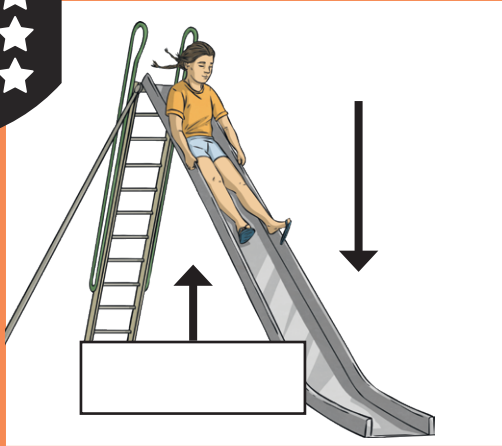


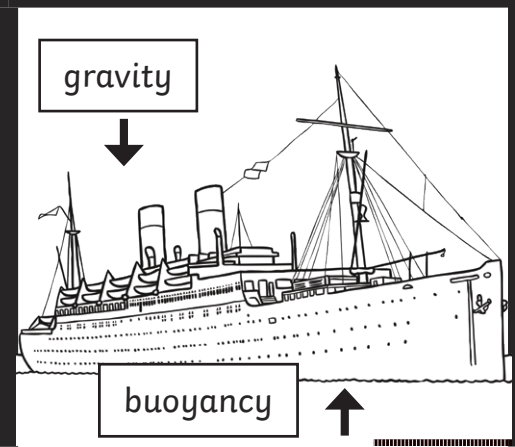
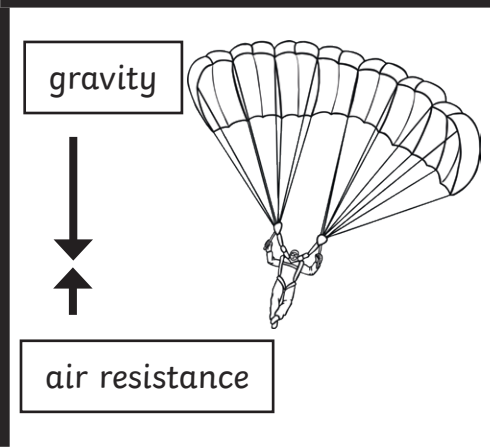
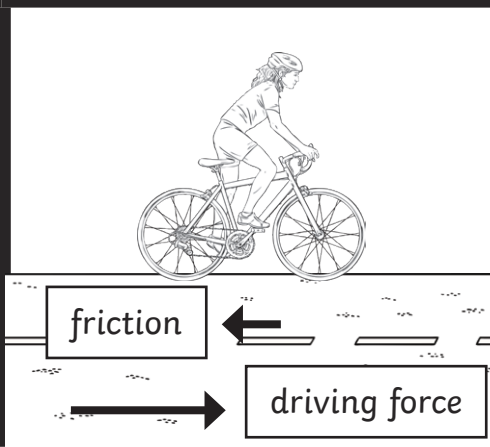
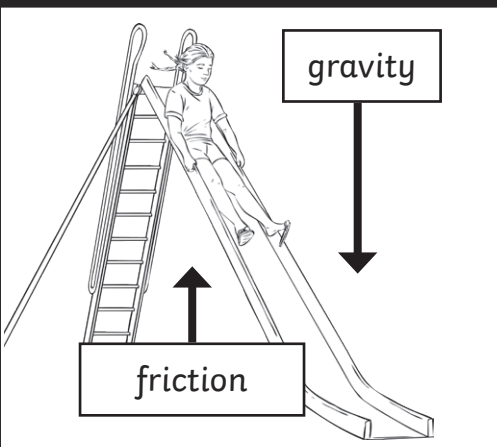
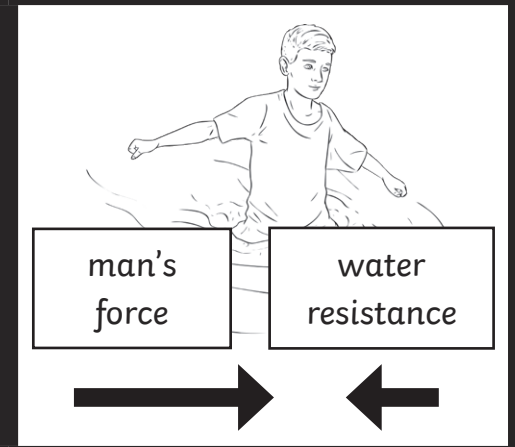
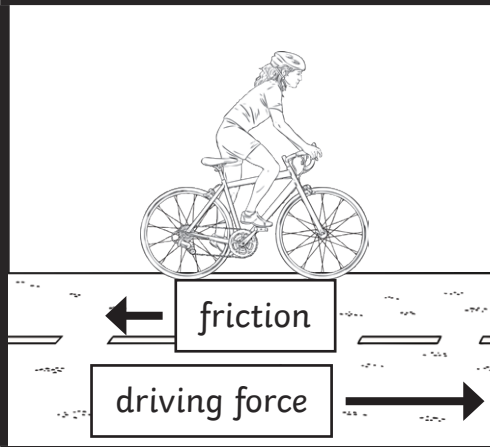
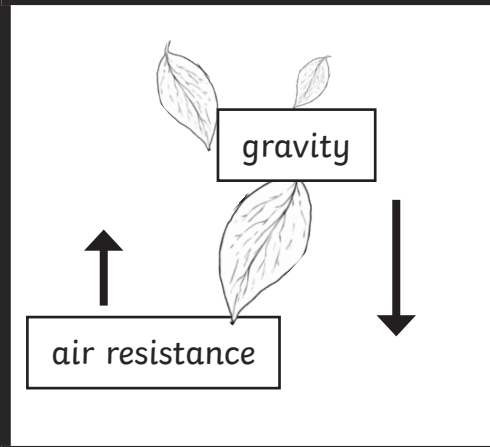
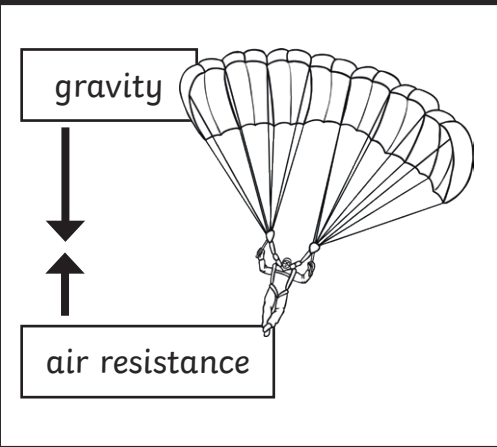
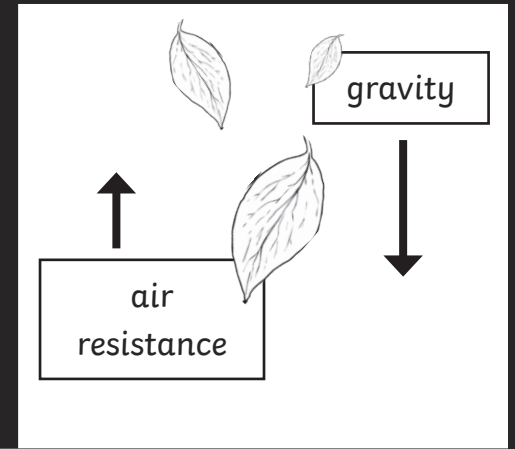
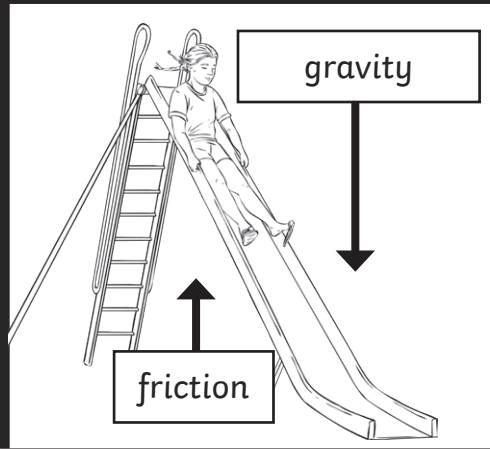
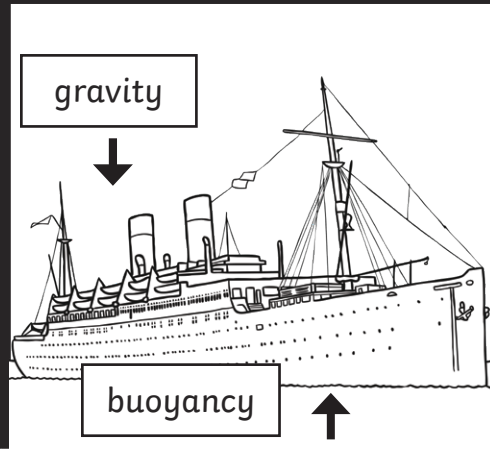
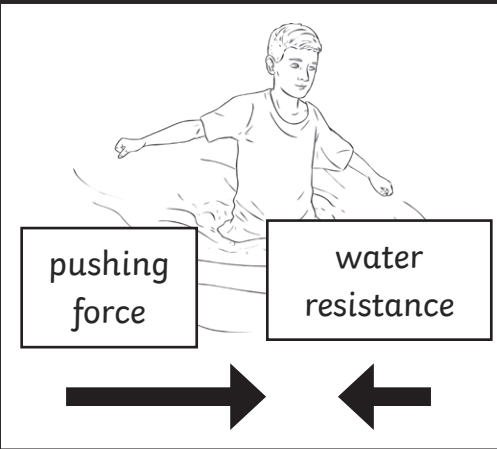


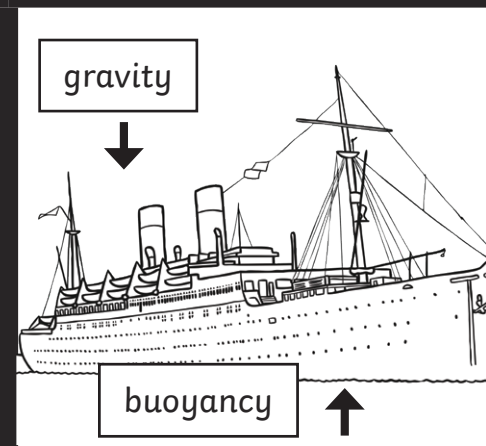
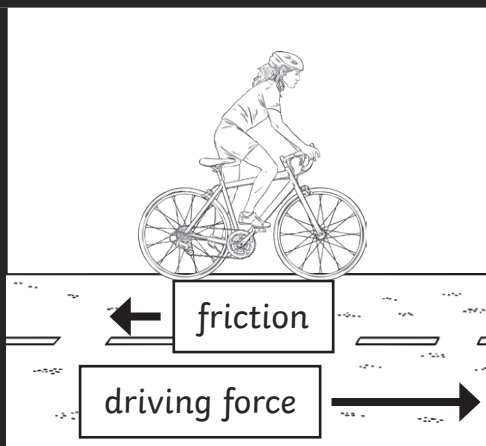
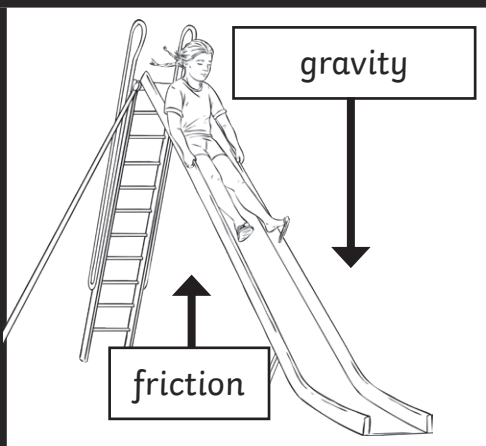
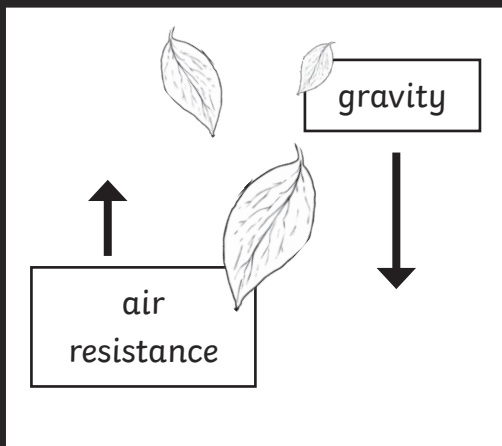
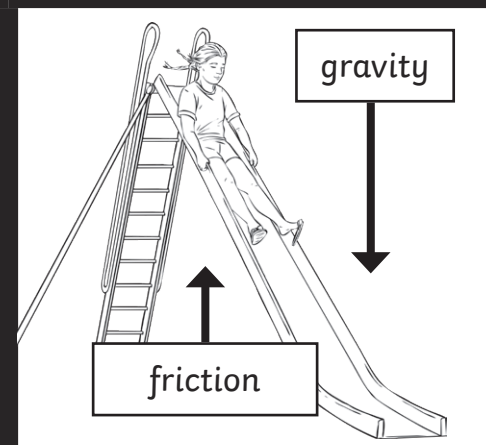
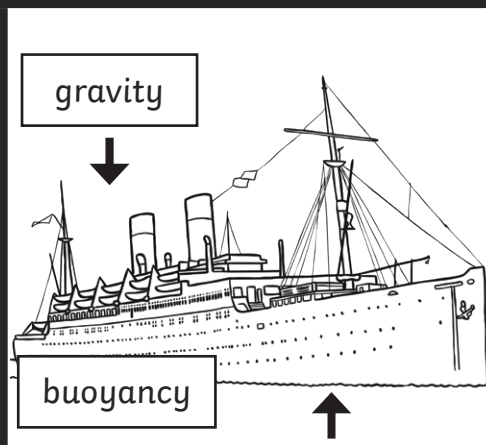
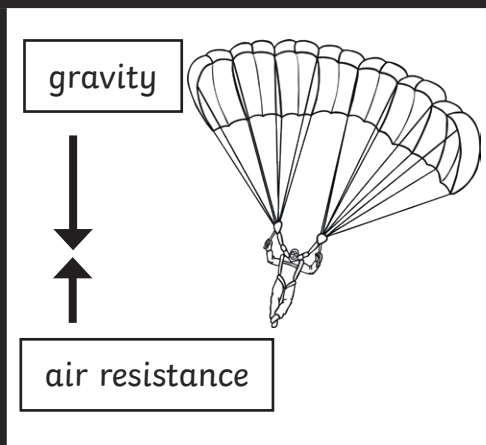
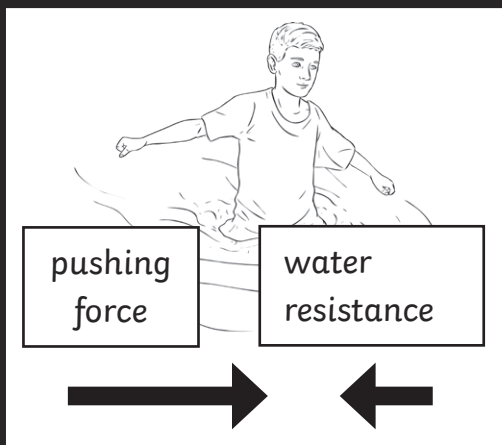
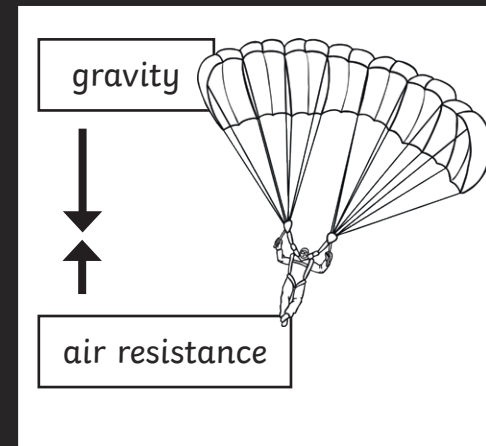
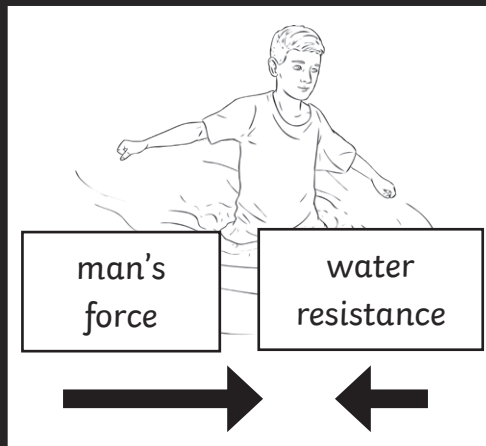
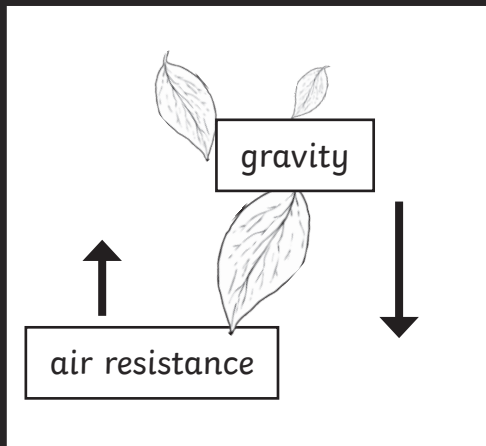
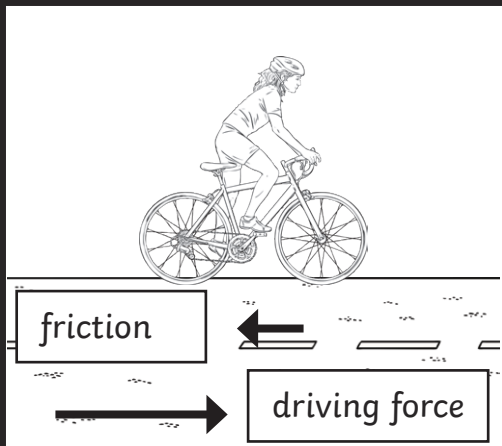


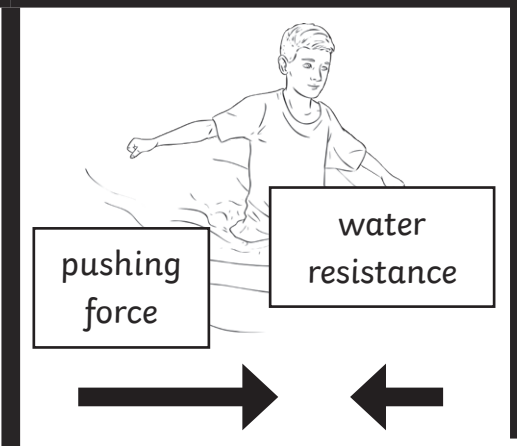
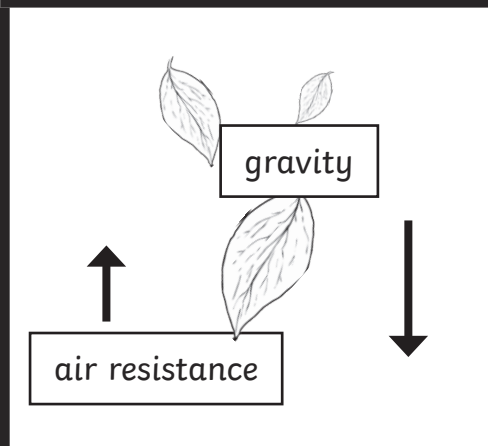
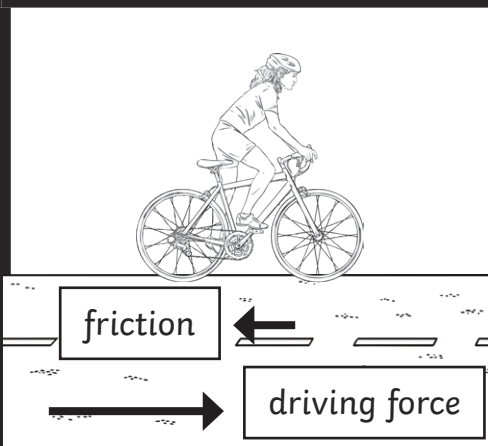
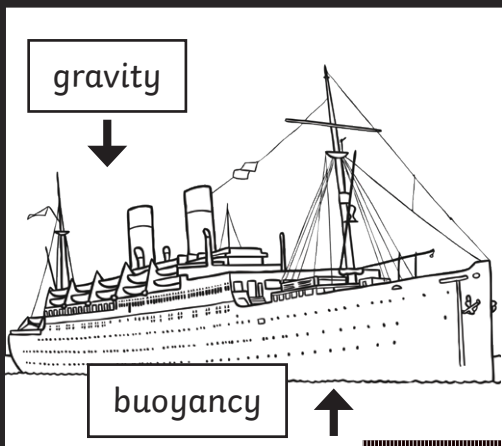
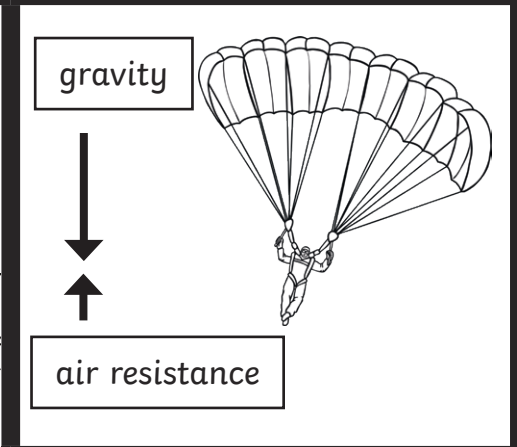
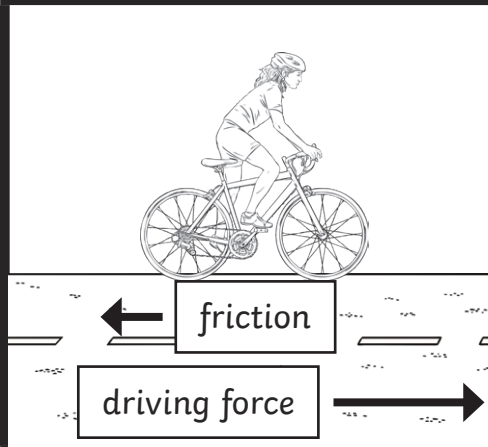
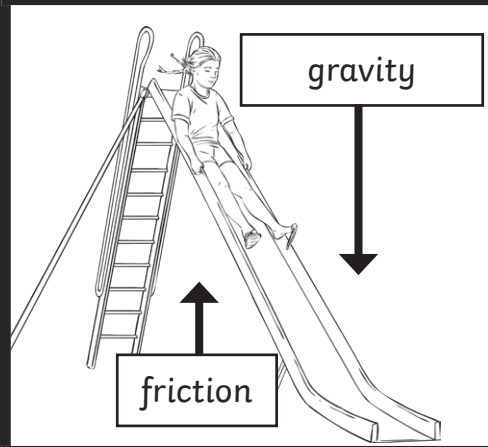
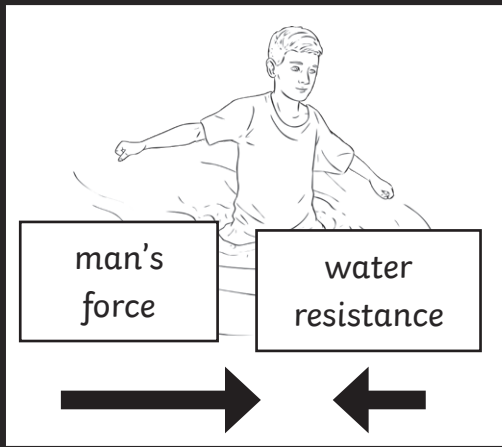
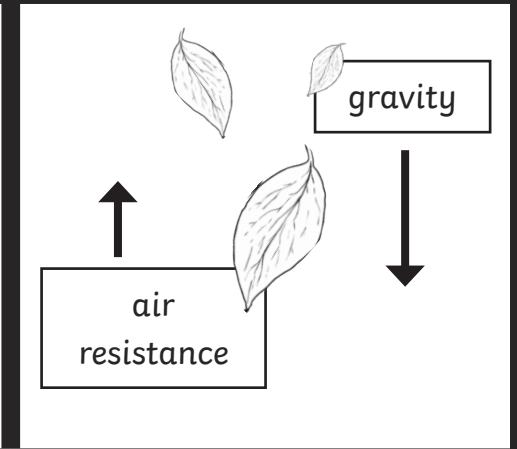
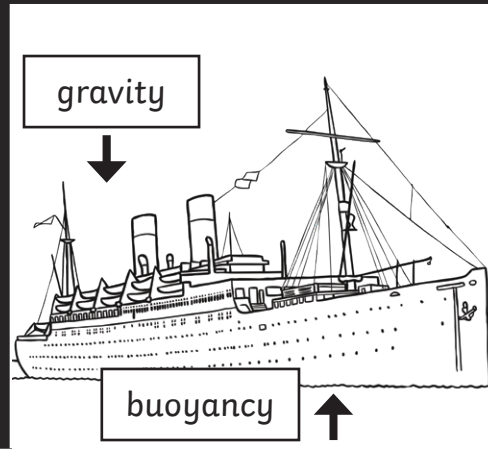
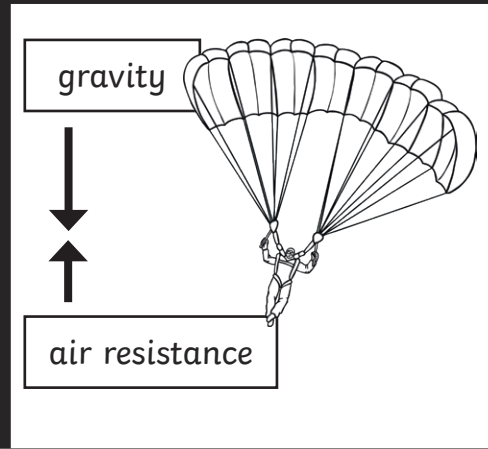
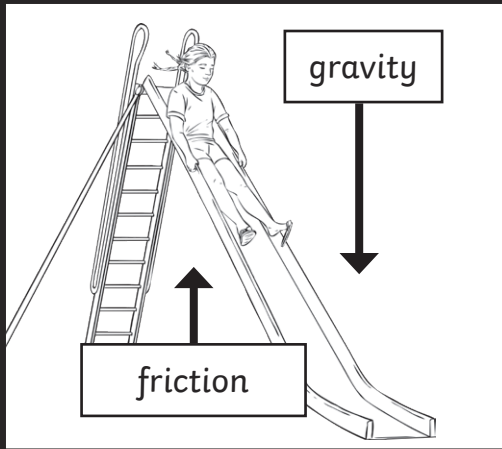












# Talk about Forces

To identify forces acting on objects.



Read the story together. Highlight or underline examples of forces in the story. Then, in the second column, briefly explain the forces that are being applied in each example. The first one has been done for you.

The magician reached inside her magic box and lifted up a gigantic magic wand high into the air.

She pushed her very heavy magic box along the wooden floor so that it was by the side of the stage.

Next, she juggled with silk handkerchiefs. After she threw them into the air, they fell gently downwards for her to catch.

After, she lifted a robot penguin out of the box. She held it high in the air.

There was a screen behind the magician and she pushed the screen to one side. Behind the screen was a paddling pool. The magician placed the penguin into the water and it started to swim a length of the pool.

The children laughed and cheered, although they weren't sure what was magical about the robot swimming in the pool! The magician ended her show by popping a big party popper. The popper shot long strips of colourful paper into the air, which then fell softly to the ground.

**The magician's force is lifting it up and gravity is pulling it down to Earth.**

# Talk about Forces Answers

To identify forces acting on objects.



Read the story together. Highlight or underline examples of forces in the story. Then, in the second column, briefly explain the forces that are being applied in each example. The first one has been done for you.

The magician reached inside her magic box and lifted up a gigantic magic wand high into the air.

She pushed her very heavy magic box along the wooden floor so that it was by the side of the stage.

Next, she juggled with silk handkerchiefs. After she threw them into the air, they fell gently downwards for her to catch.

After, she lifted a robot penguin out of the box. She held it high in the air.

There was a screen behind the magician and she pushed the screen to one side. Behind the screen was a paddling pool. The magician placed the penguin into the water and it started to swim a length of the pool.

The children laughed and cheered, although they weren't sure what was magical about the robot swimming in the pool! The magician ended her show by poppping a big party popper. The popper shot long strips of colourful paper into the air, which then fell softly to the ground.

**The magician's force is lifting it up and gravity is pulling it down to Earth.**

*The magician's force is pushing the magic box and friction is pushing against the box where the floor and the box make contact, slowing down the movement.*

*The magician's force is throwing them into the air. Gravity is pulling the silk scarves down and air resistance is pushing them upwards and slowing them down.*

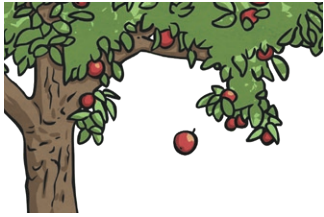
*The magician's force is lifting it up and gravity is pulling it down to Earth.*

*The magician's force is pushing the screen and friction is pushing against the screen where the floor and the screen make contact, slowing down the movement.*

*The penguin's force is pushing it forwards and water resistance is pushing against it.*

*The force of the party popper shoots the pieces of paper into the air and then gravity pulls them down. They go down slowly because air resistance pushes up against them.*

# Forces



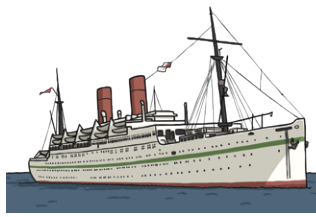
gravity



friction



air resistance



buoyancy



compress



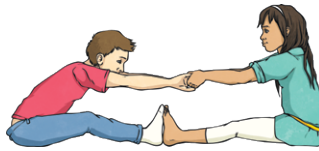
extend



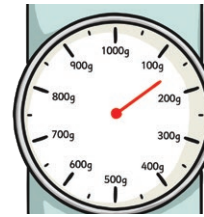
exert/apply



repel/attract



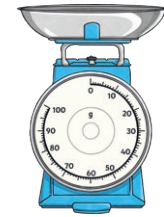
resist/resistance



unit



weight



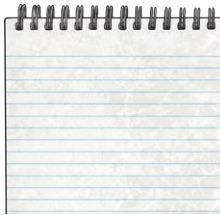
mass



force meter



newton (N)



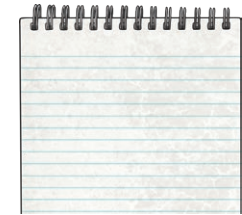
explanation



average



mean



median



water resistance



Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		

Forces | Fabulous Forces

To identify forces acting on objects.		
I can identify forces as pushes and pulls.		
I can identify and explain the different forces acting on objects.		