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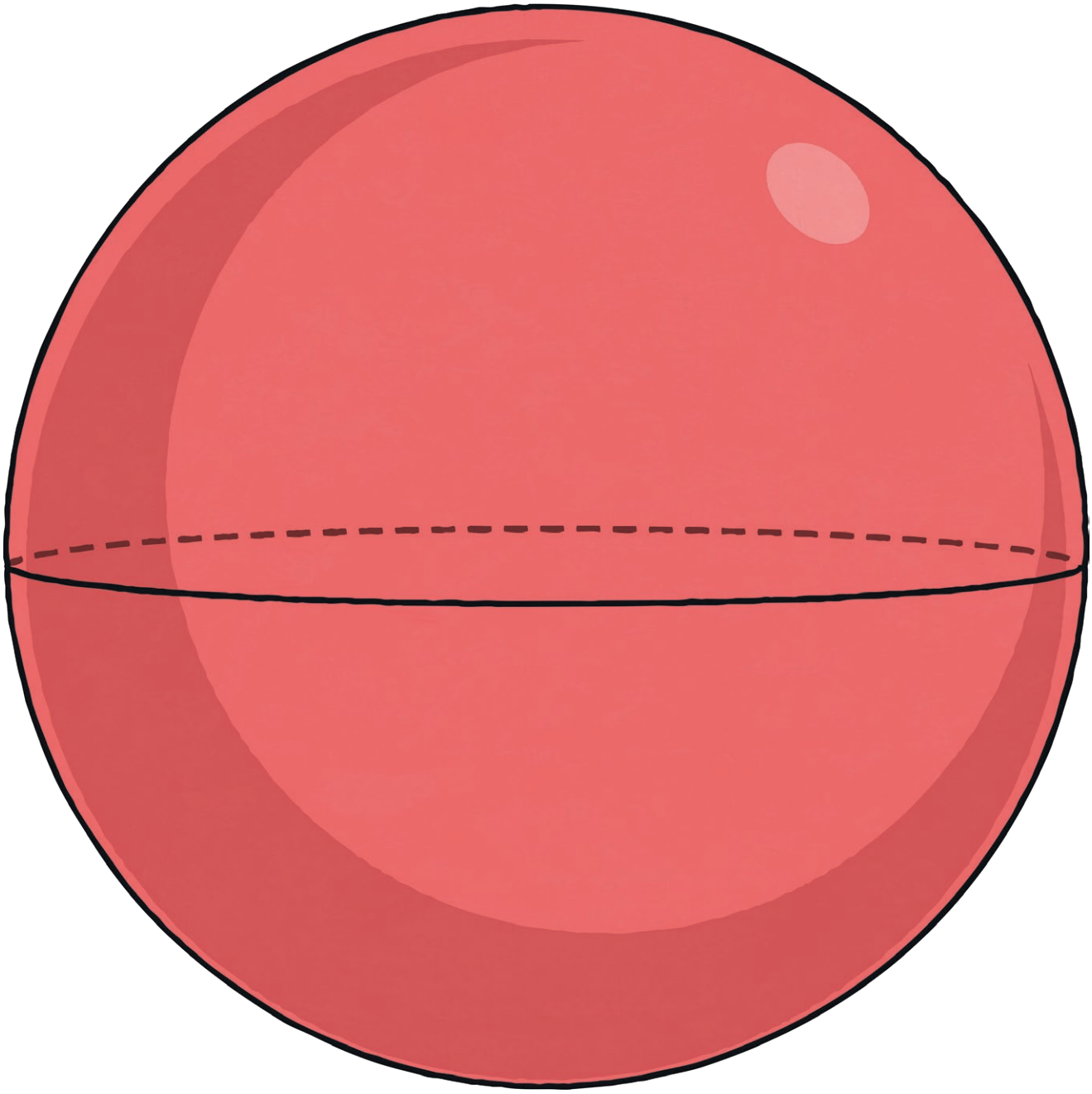
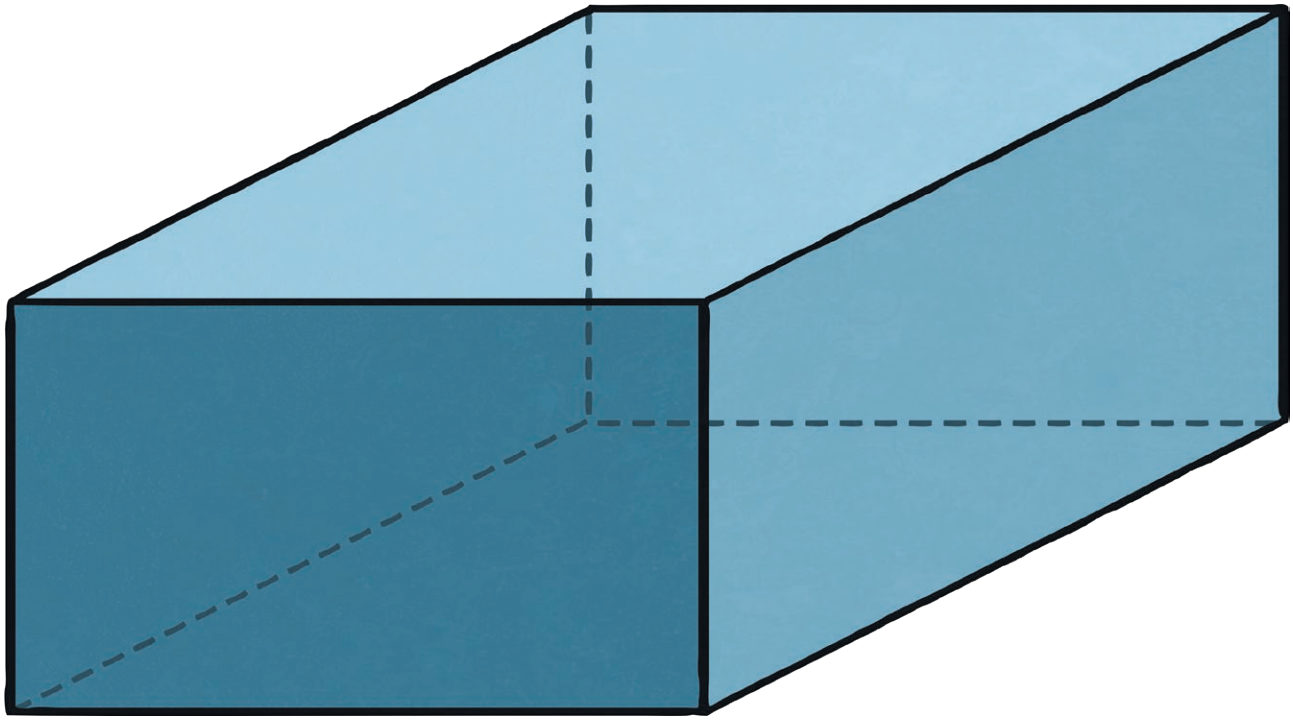
sphere



cuboid



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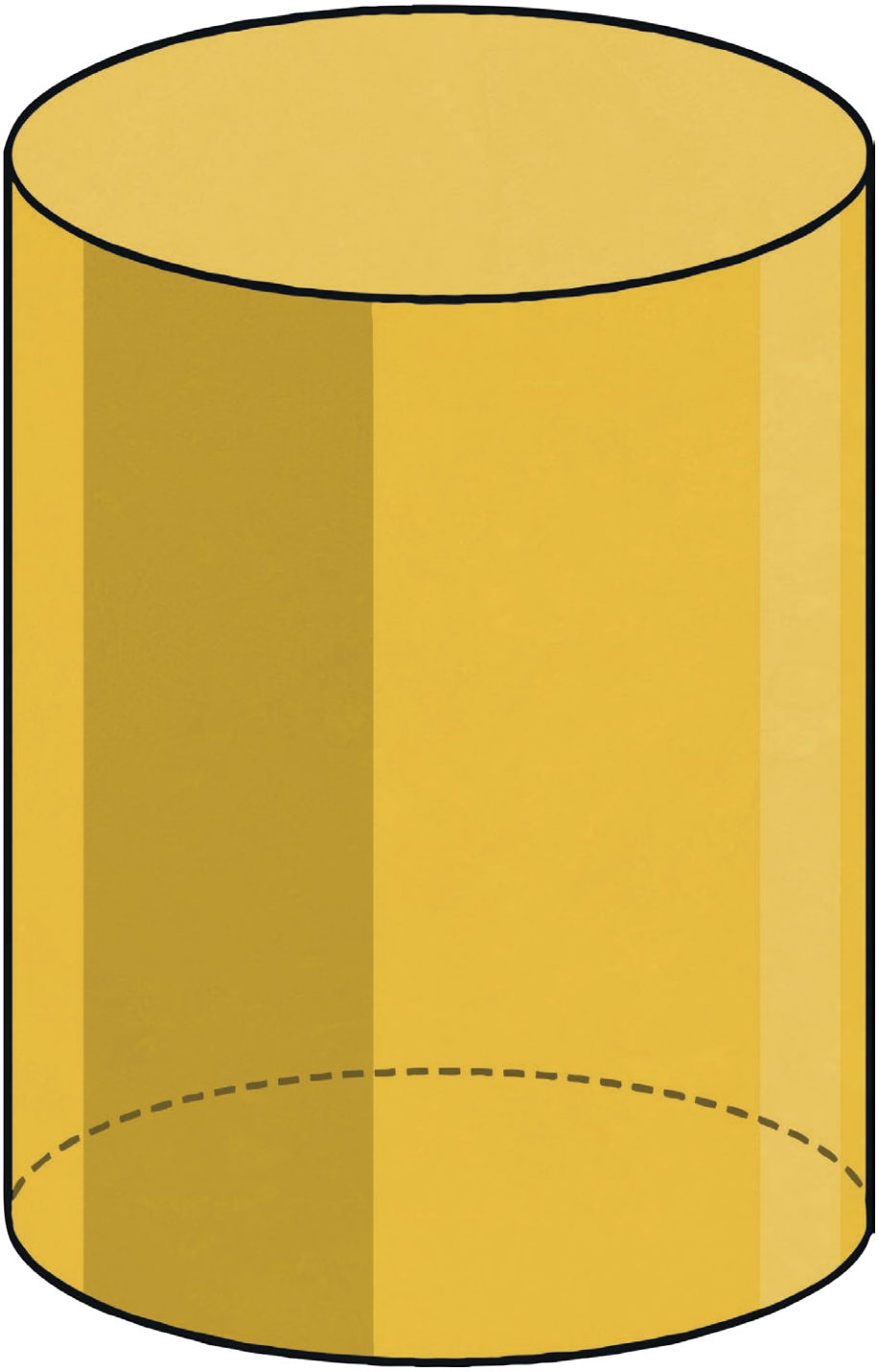
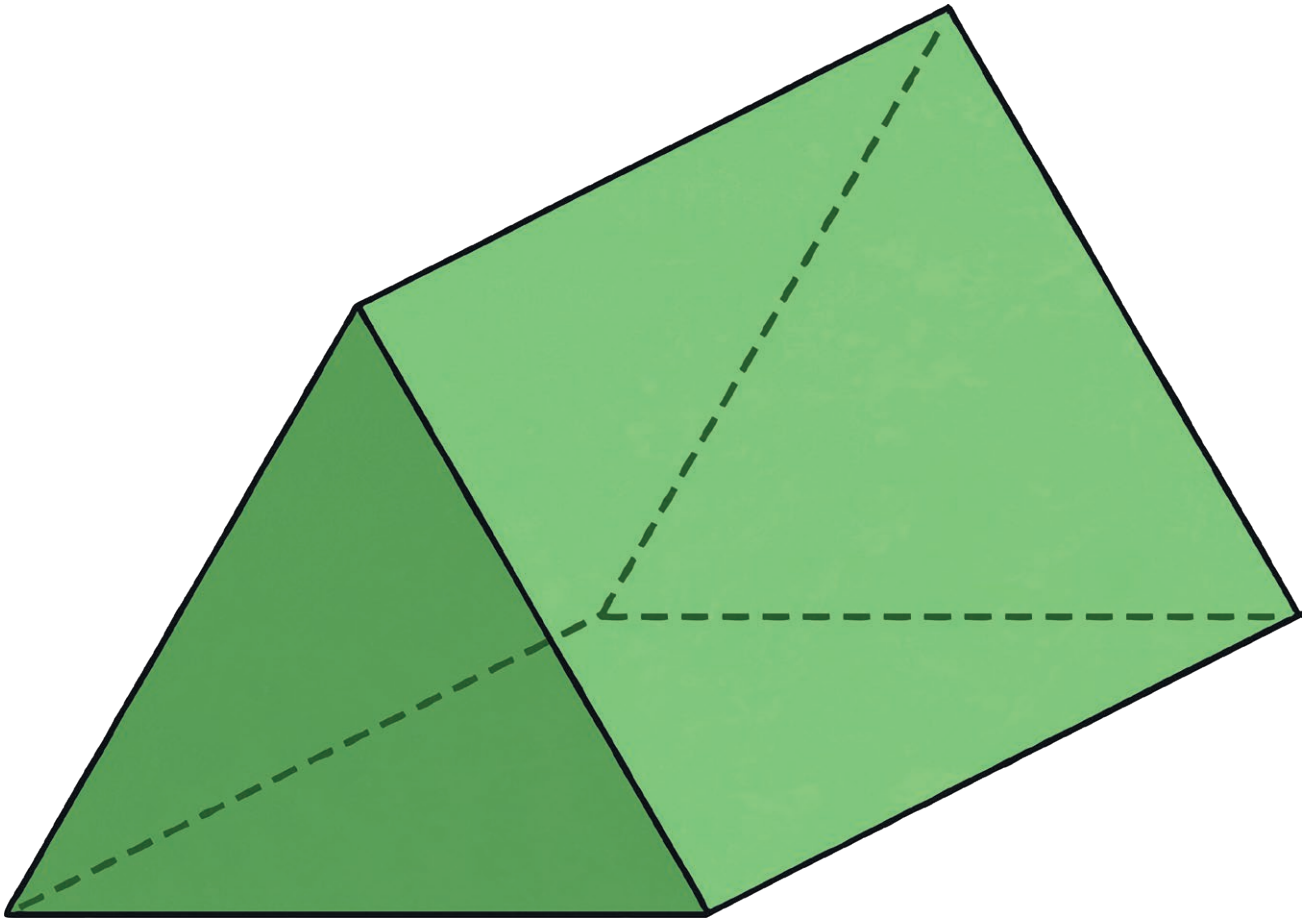
cylinder



triangular prism



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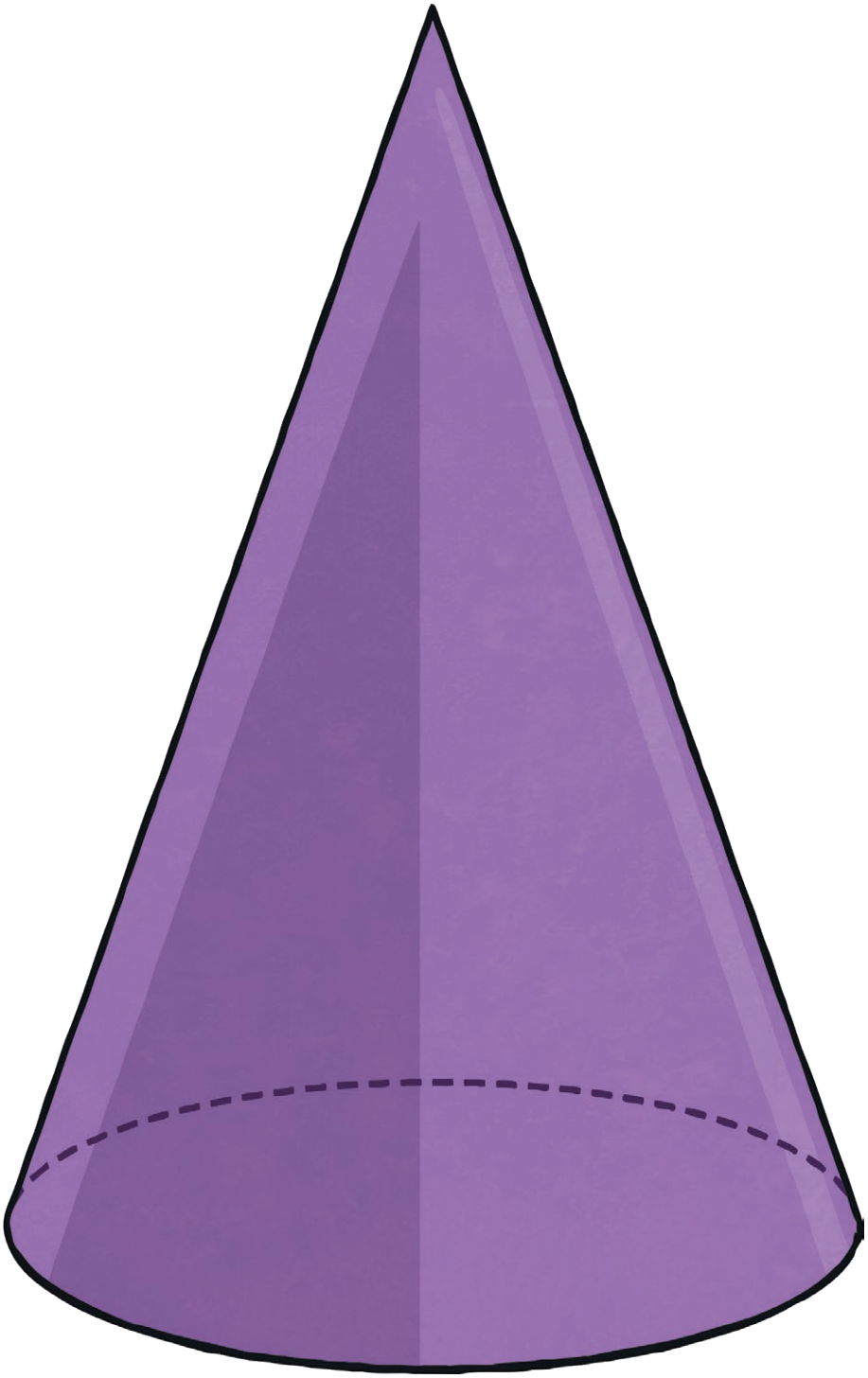
cone



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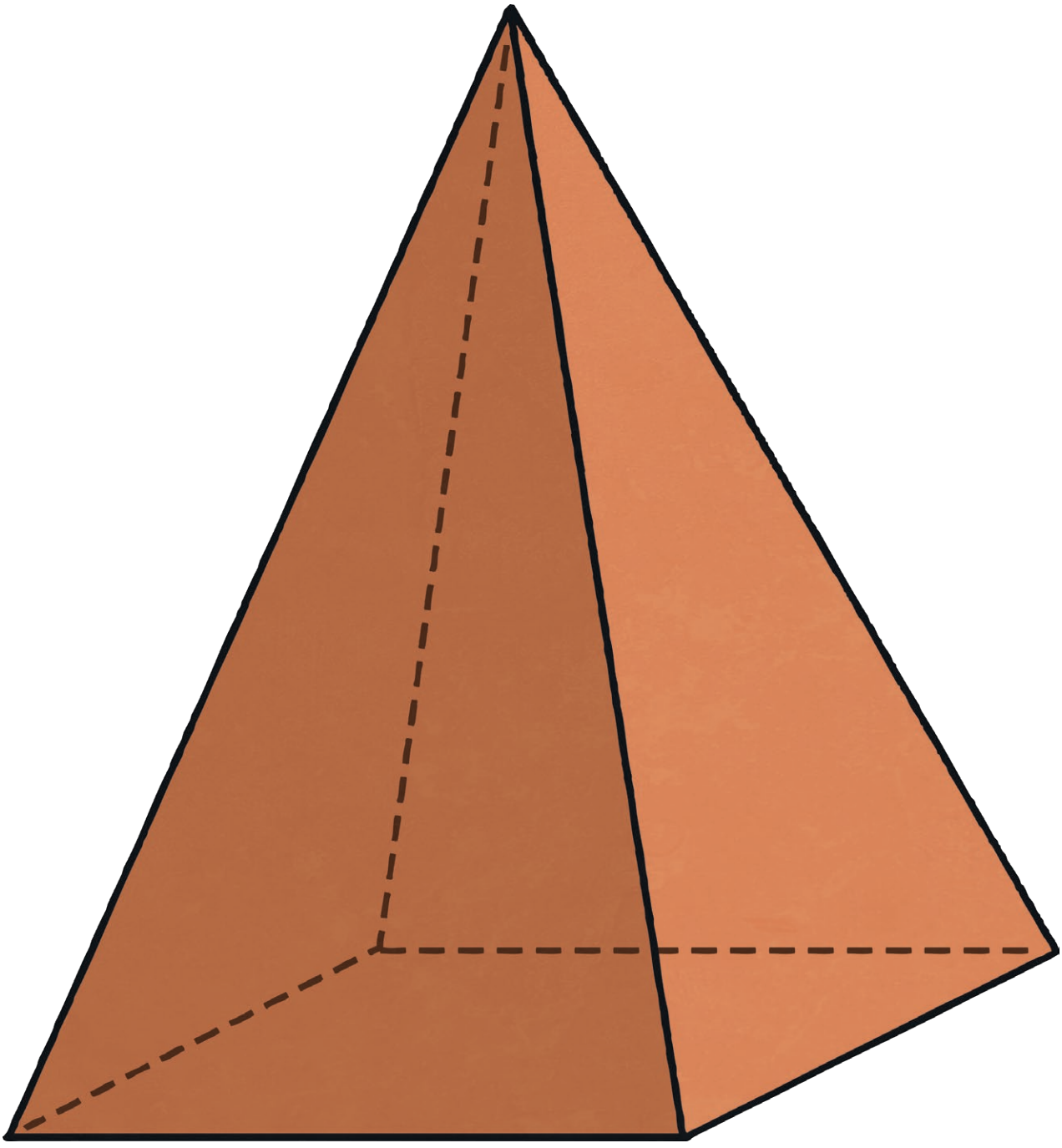
pyramid



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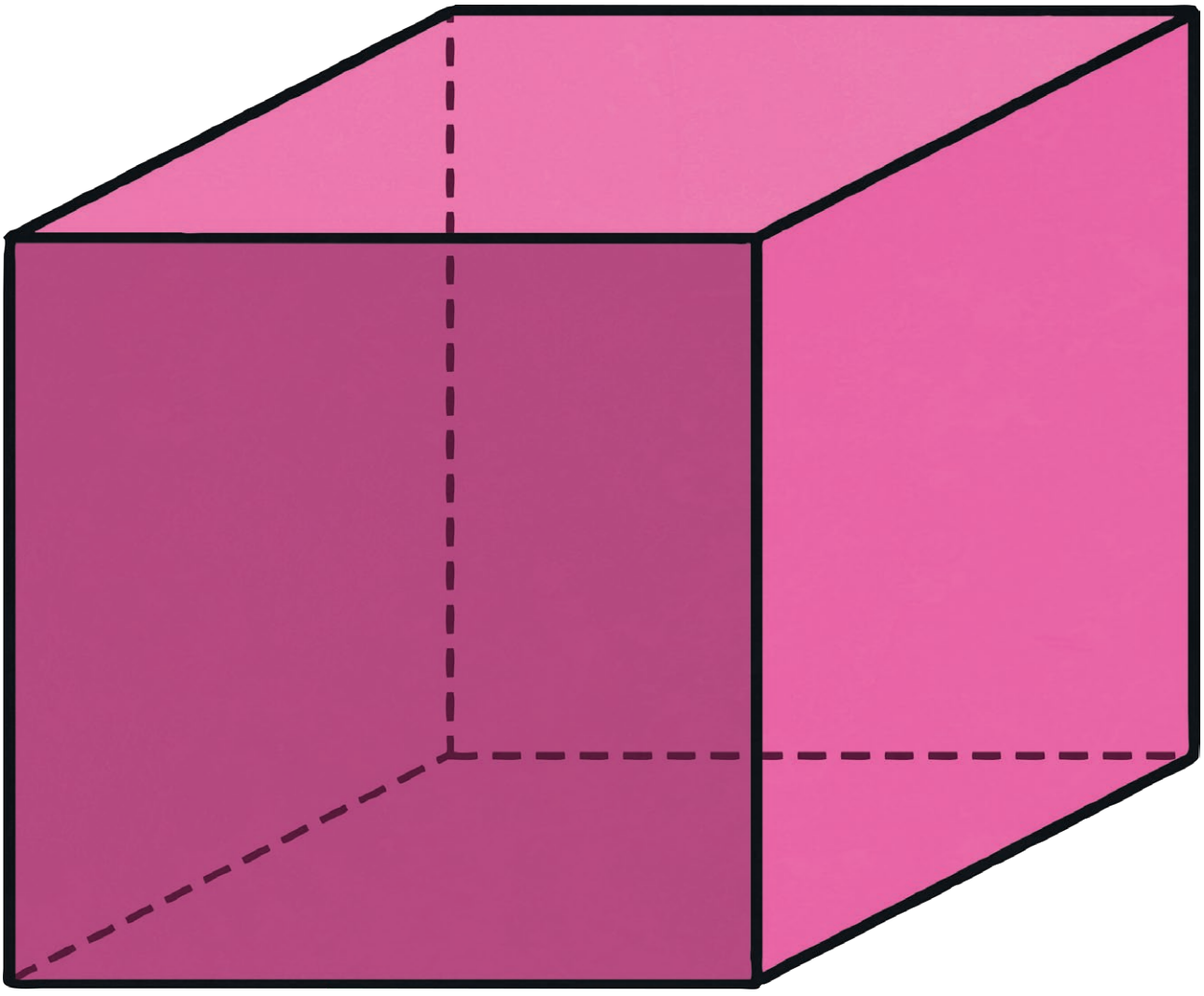
cube



Boat Race

Draw and label your boat here.

Do you think your boat will move through the water easily and quickly? Why/why not?

How long did it take your boat to cross the water tray?

How did your boat do compared to the other boats?

Why do you think your boat performed this way? Use the key words below to explain your ideas.

Key Words

water resistance streamlined pointed flat curved low high smooth surface push

Boat Race

Draw and label your boat here.

Why have you designed your boat this way?

Do you think your boat will move through the water easily and quickly? Why/why not?

How long did it take your boat to cross the water tray?

How did your boat do compared to the other boats?

Why do you think your boat performed this way? Refer to water resistance and streamlined shapes.

Boat Race

Draw and label your boat here.

Why have you designed your boat this way?

Do you think your boat will move through the water easily and quickly? Why/why not?

How long did it take your boat to cross the water tray?

How did your boat do compared to the other boats?

Why do you think your boat performed this way? Refer to water resistance and streamlined shapes.

How would you adapt your boat to make it more streamlined if you were to race it again?

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air resistance	cyclist's force
gravity	friction
friction	gravity
gravity	air resistance
man's force	gravity
water resistance	buoyancy

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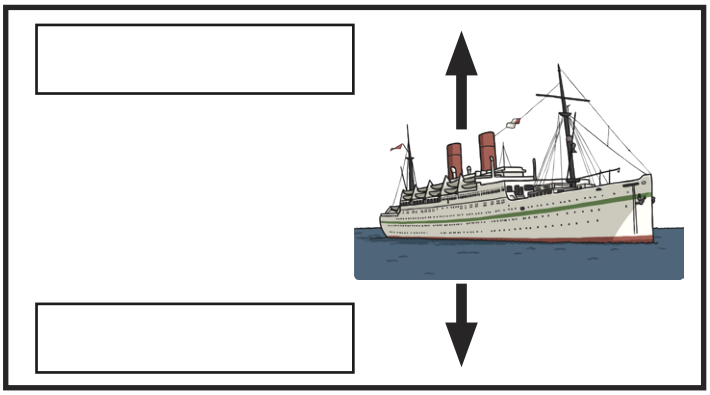
air resistance	cyclist's force
gravity	friction
friction	gravity
gravity	air resistance
man's force	gravity
water resistance	buoyancy

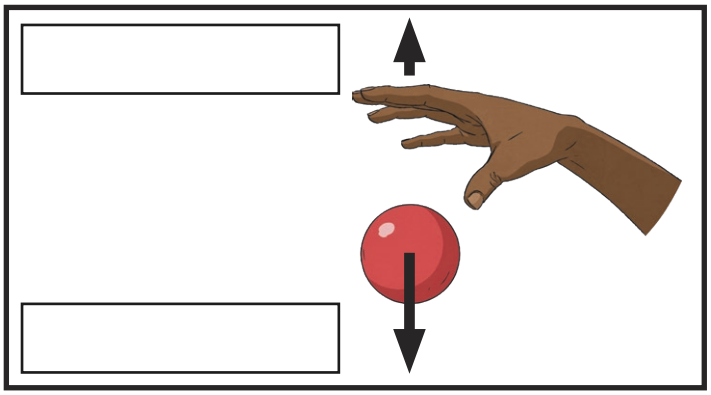
Forces in Action

To identify forces acting on objects.

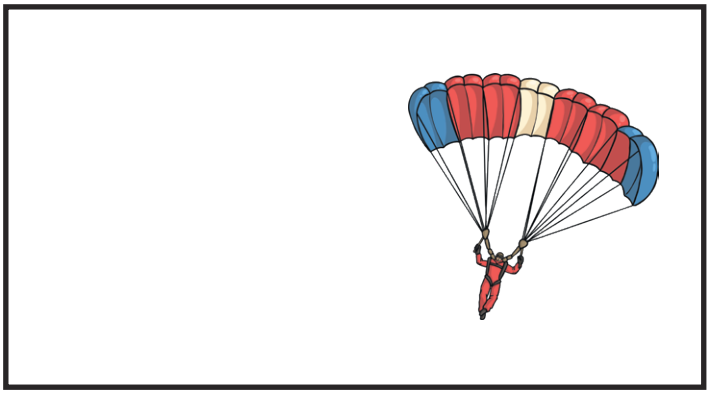
In the two pictures below, the arrows represent forces acting.

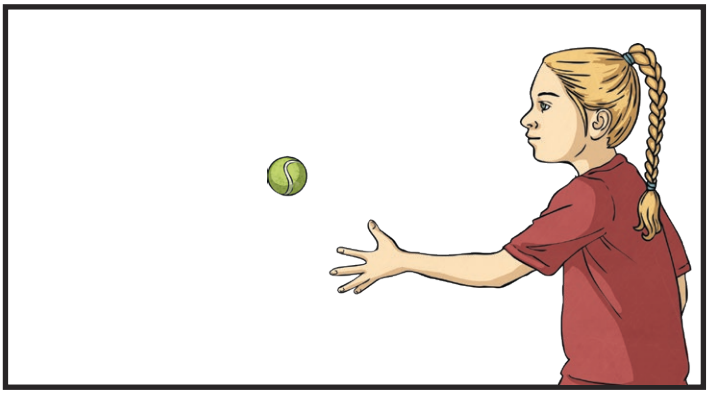
Write the names of the forces in the boxes.





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



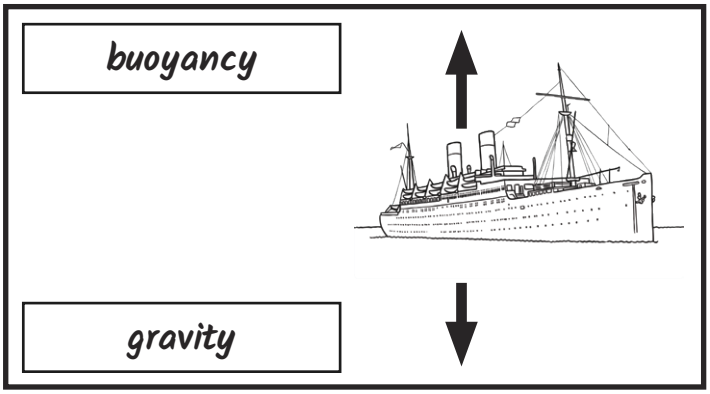


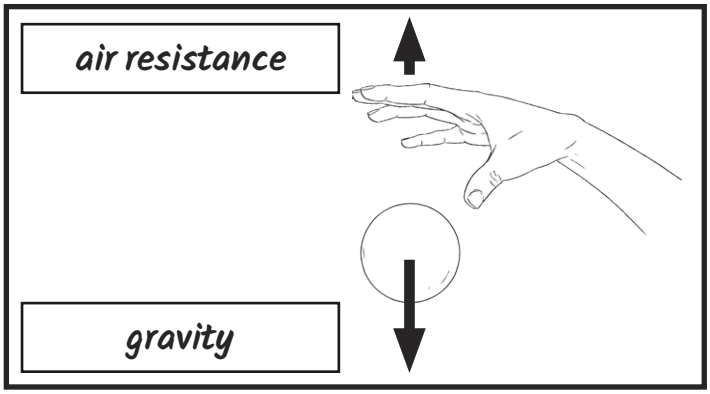
Draw your own pictures in the boxes below. Then label and draw your own arrows to show the forces acting.

Forces in Action **Answers**

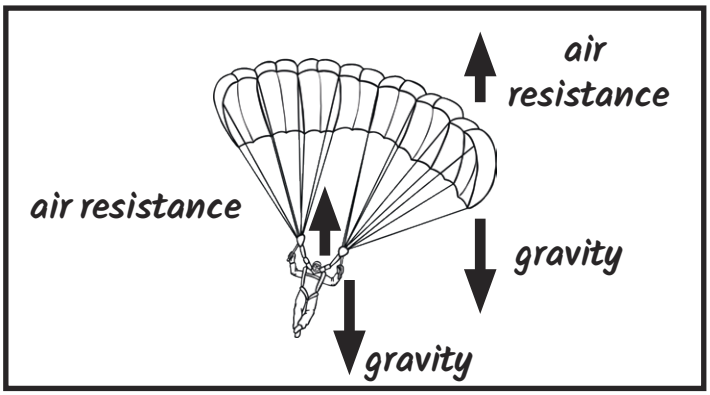
In the two pictures below, the arrows represent forces acting.

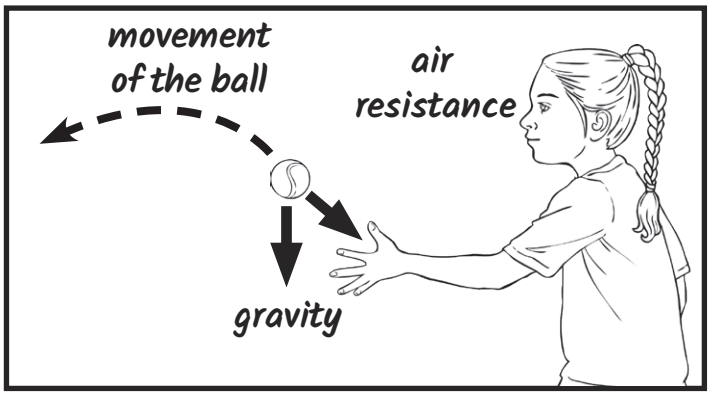
Write the names of the forces in the boxes.



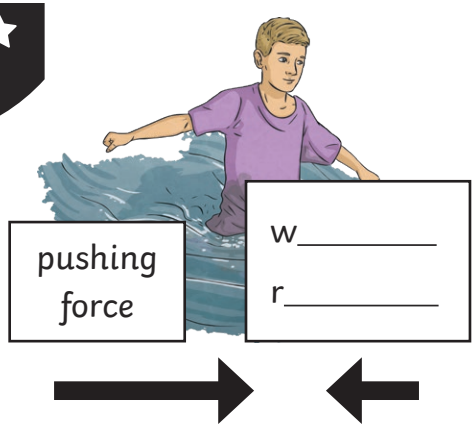


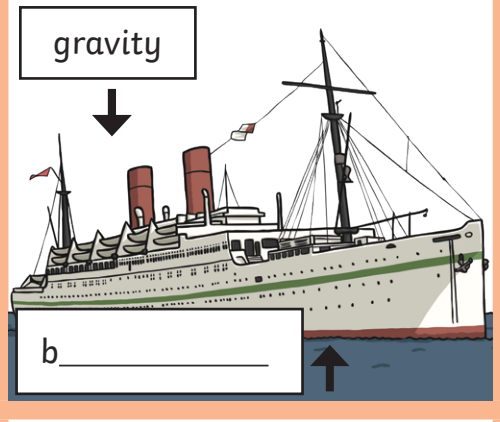
Draw your own arrows and label them to show the forces acting.

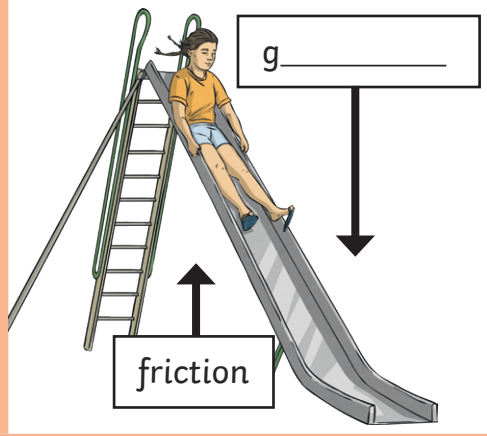


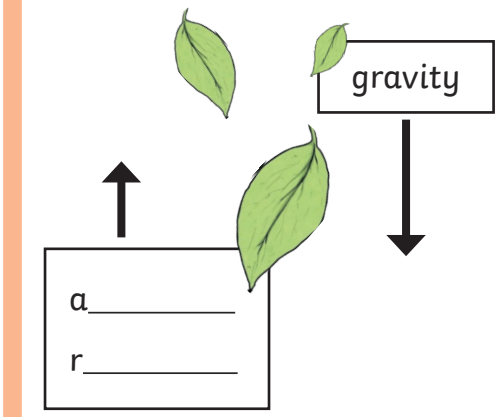


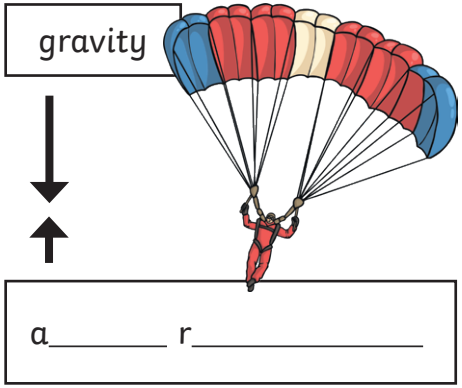
The arrows have been drawn here with different lengths to show which force is bigger but it is not a requirement for children at KS2 to show the relative strengths of forces by drawing arrows with different lengths. They only need to show the correct direction of the forces.

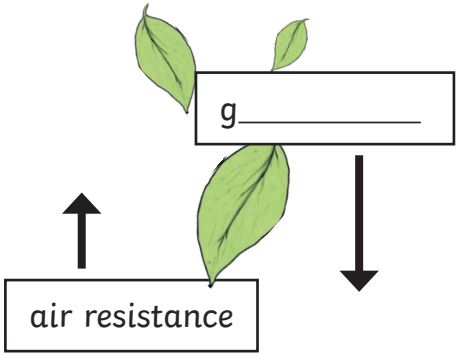

pushing force
w_____
r_____

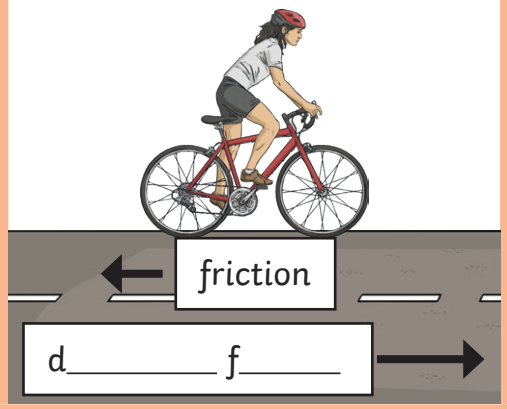

gravity
b_____

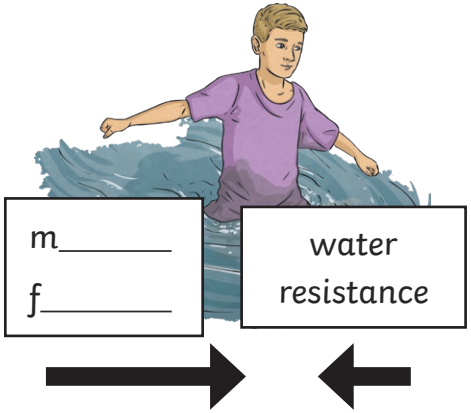

g_____
friction

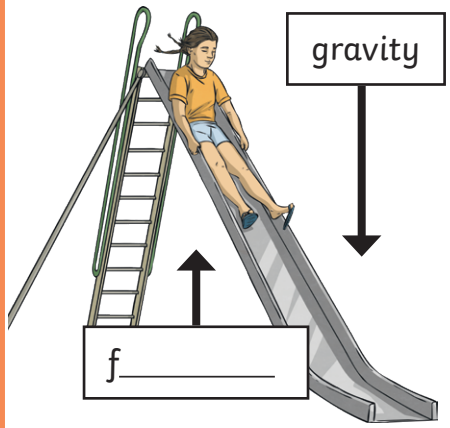

gravity
a_____
r_____

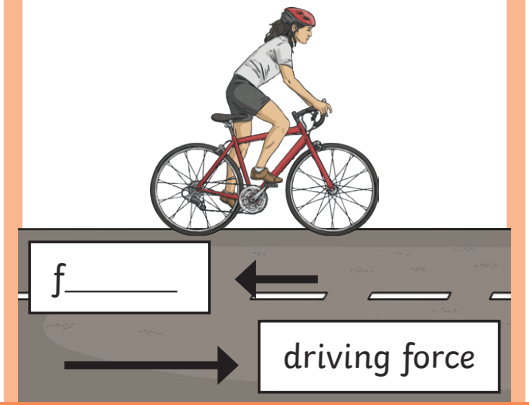

gravity
a_____ r_____

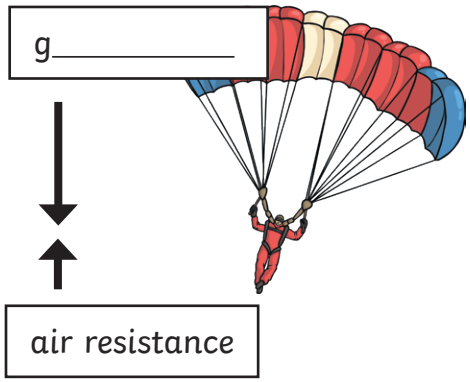

g_____
air resistance

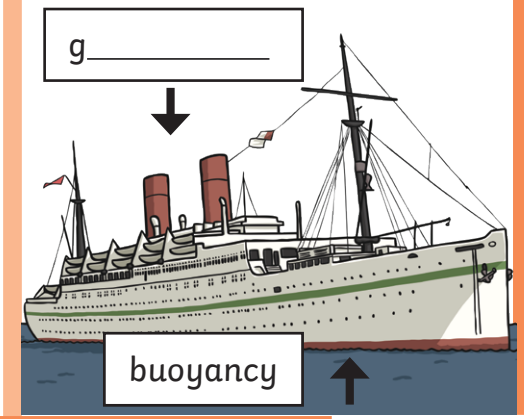

friction
d_____ f_____

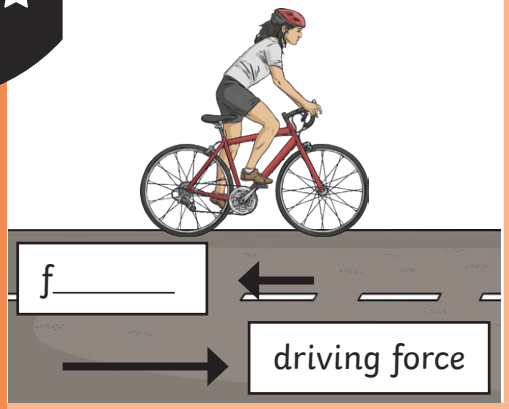

m_____
f_____
water resistance

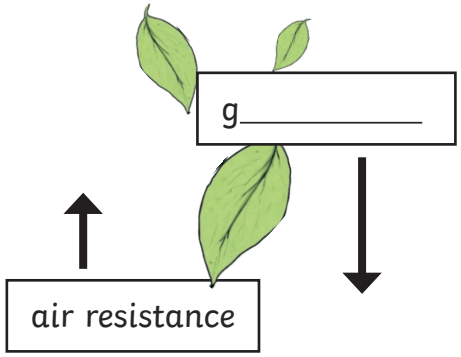

gravity
f_____

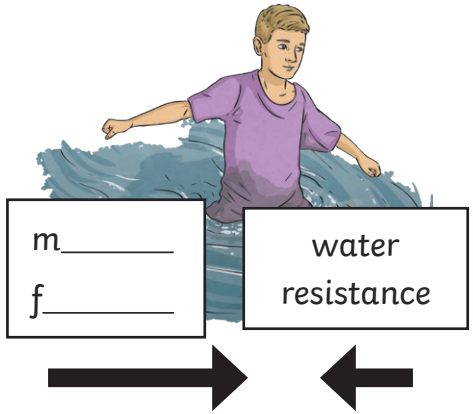

f_____
driving force

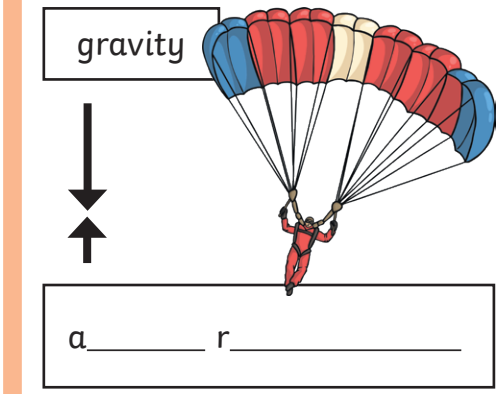

g_____
air resistance

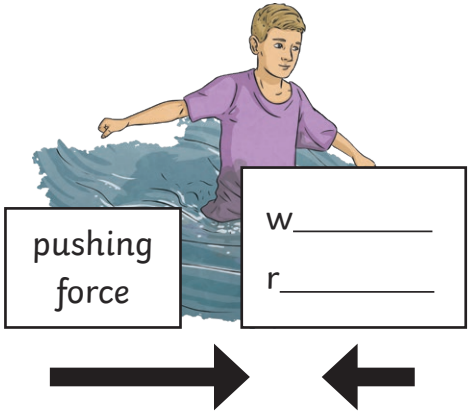

g_____
buoyancy

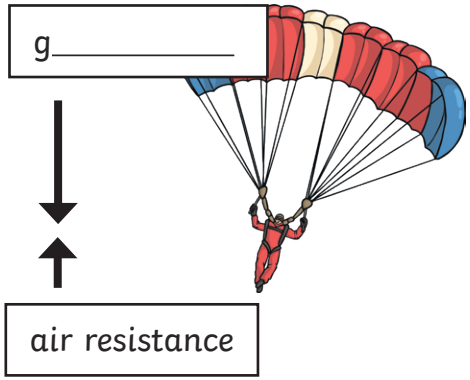

f_____
driving force

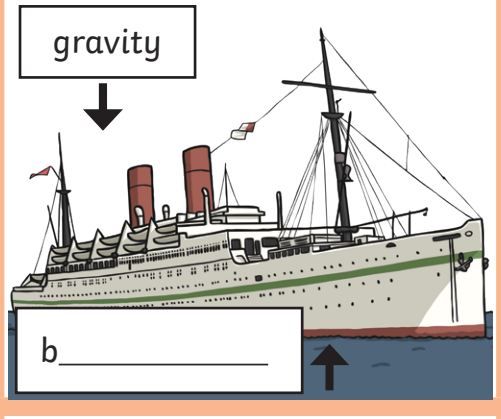

g_____
air resistance

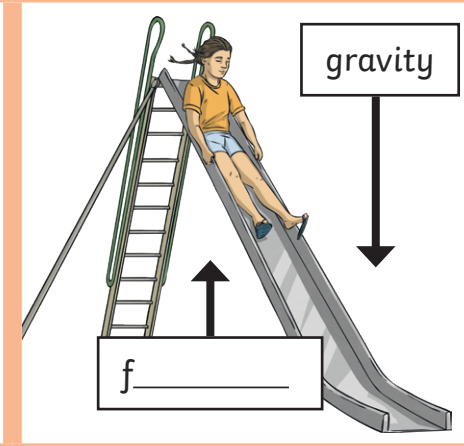

m_____
f_____
water resistance


gravity
a_____ r_____


pushing force
w_____
r_____


g_____
air resistance


gravity
b_____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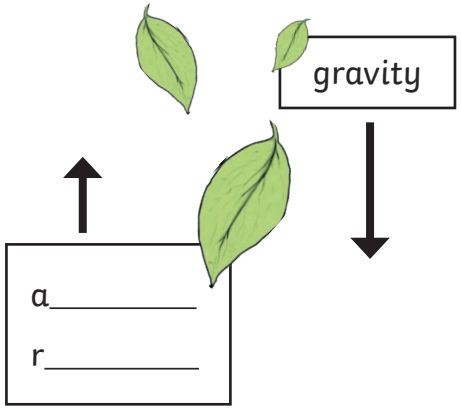
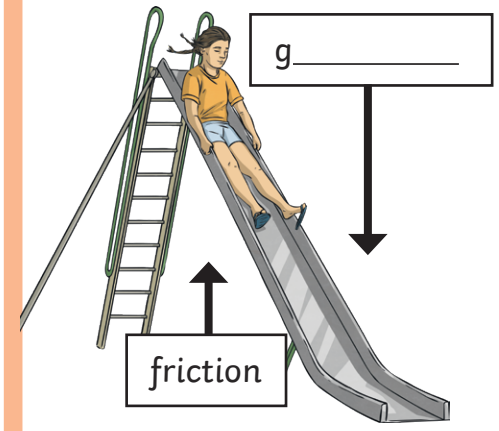
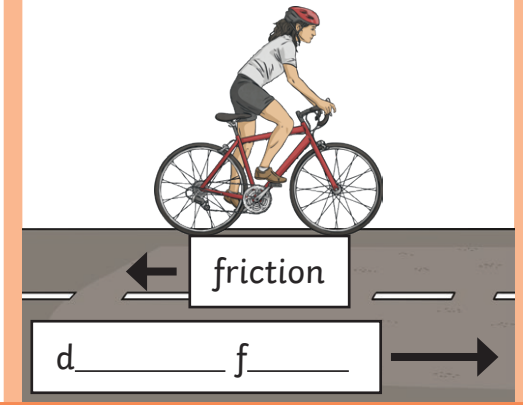
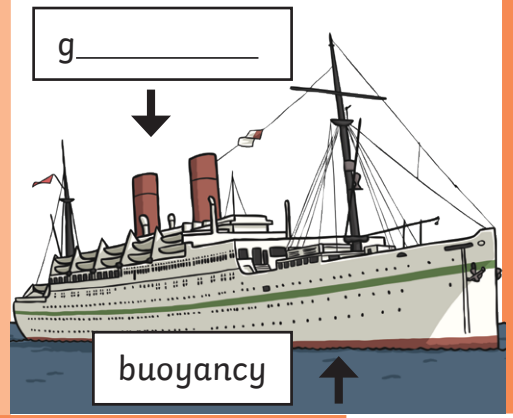
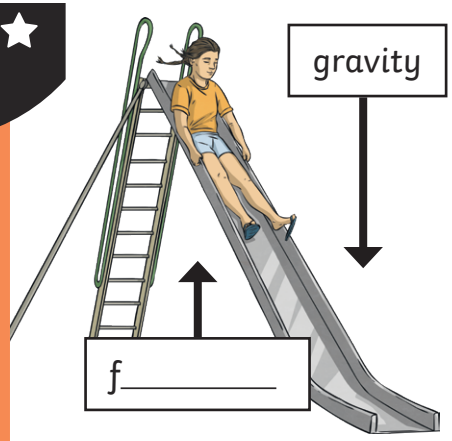
f_____


gravity
a_____
r_____


g_____
friction


friction
d_____ f_____


g_____
buoyancy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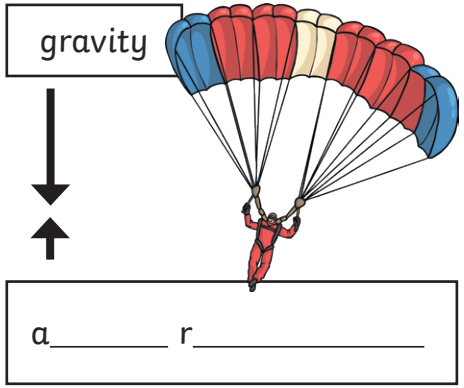
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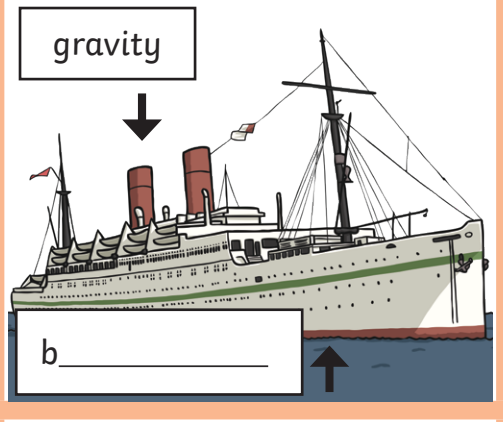
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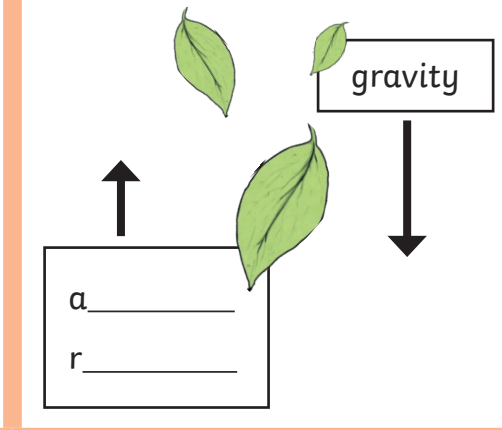
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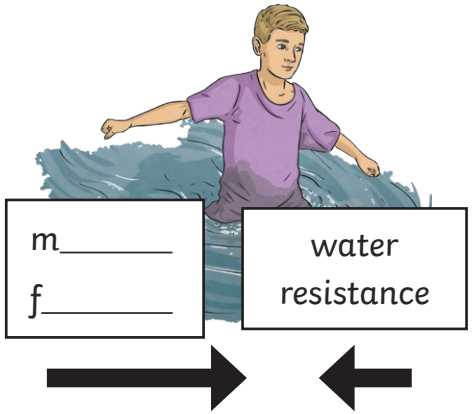
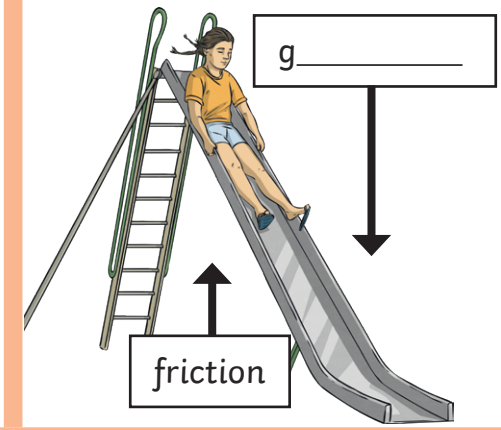
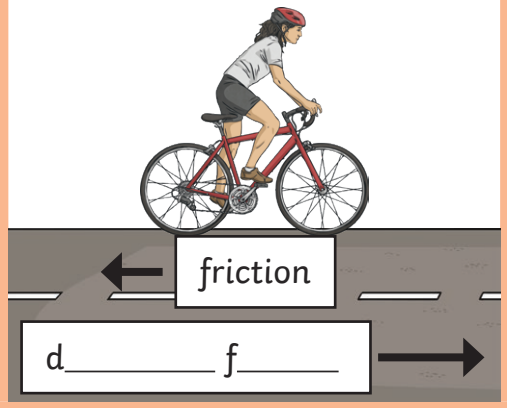
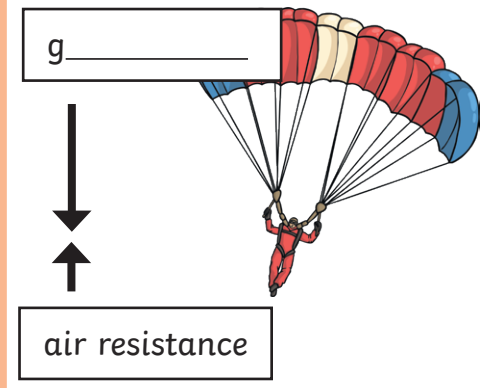
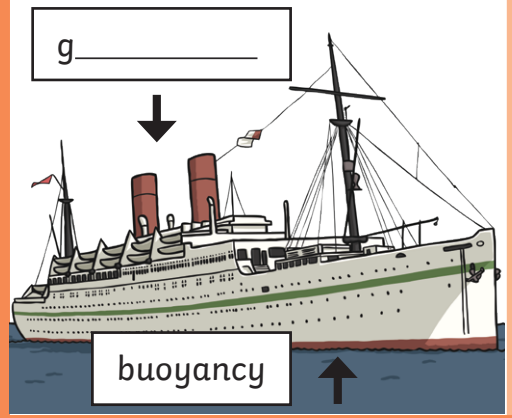
a_____
r_____

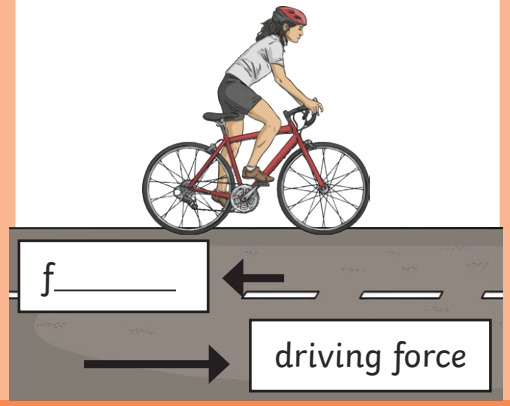

m_____
f_____
water resistance

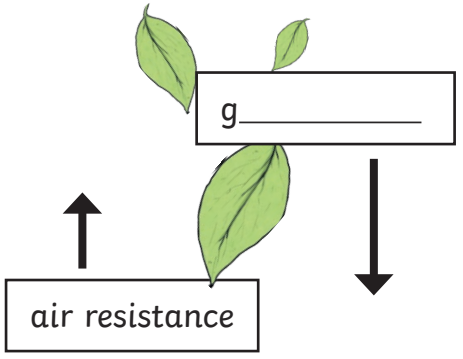

g_____
friction

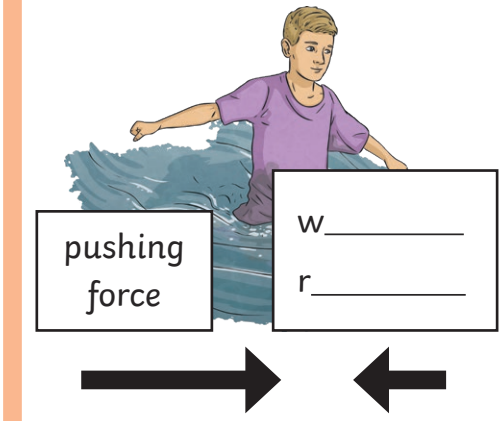

friction
d_____ f_____

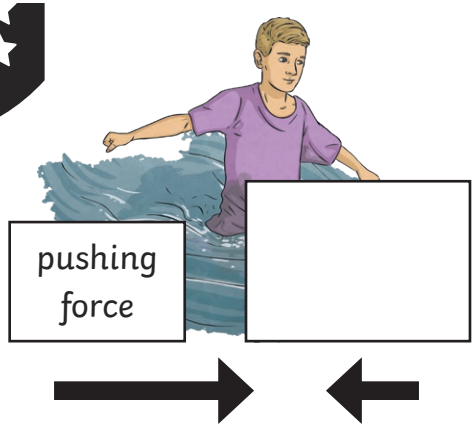

g_____
air resistance

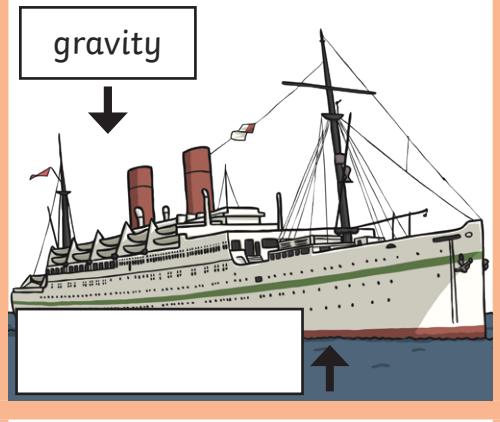

g_____
buoyancy

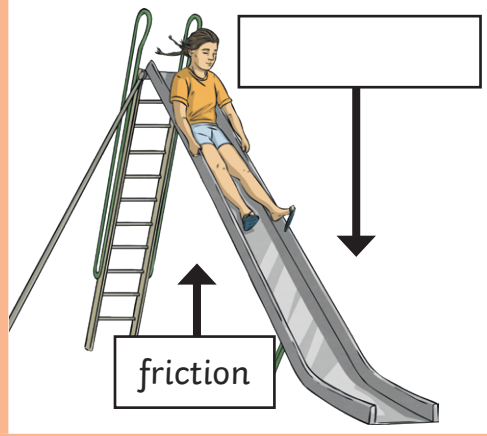

f_____
driving force

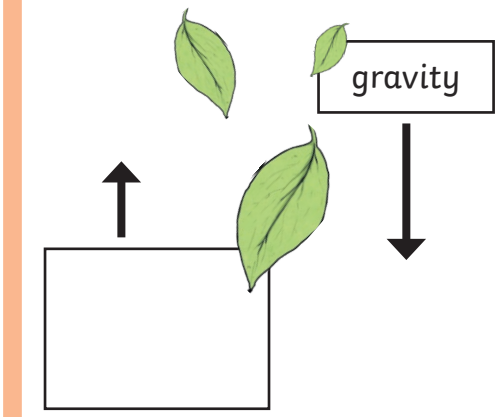

g_____
air resistance


pushing force
w_____
r_____


pushing force


gravity


friction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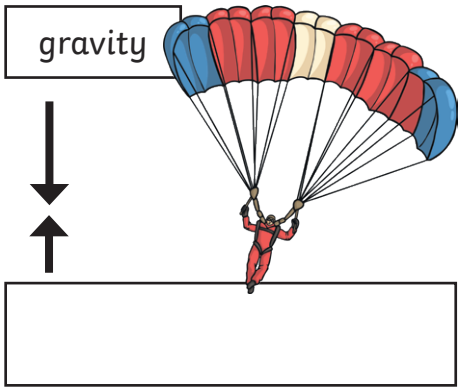
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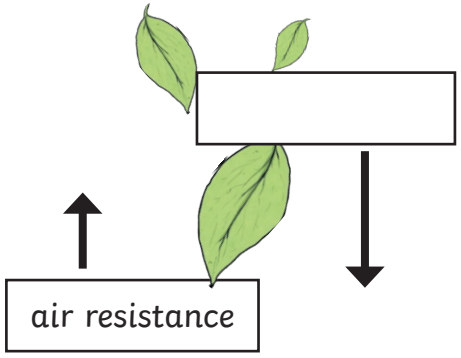
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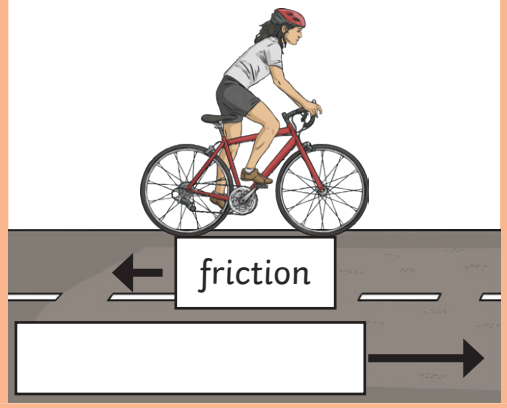
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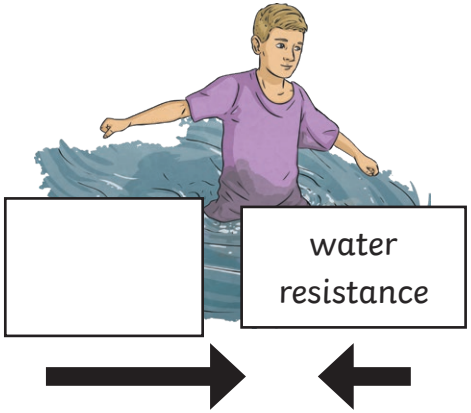
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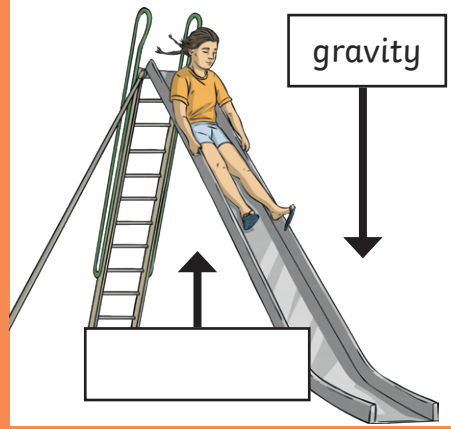
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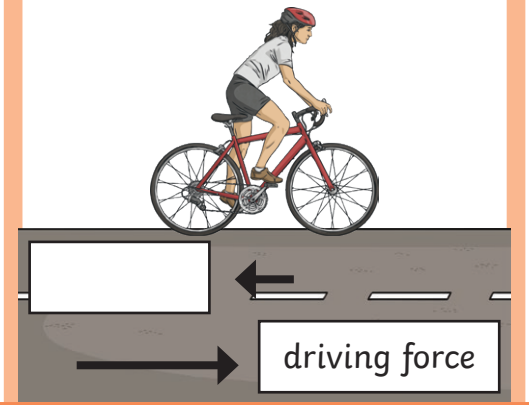
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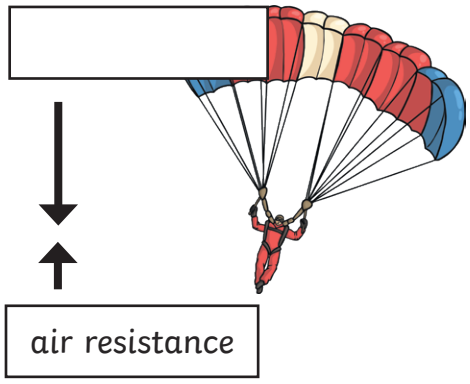
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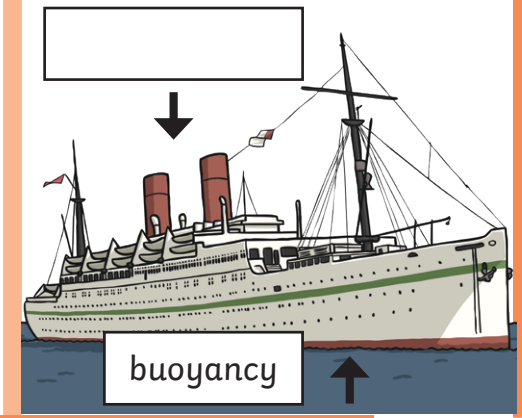
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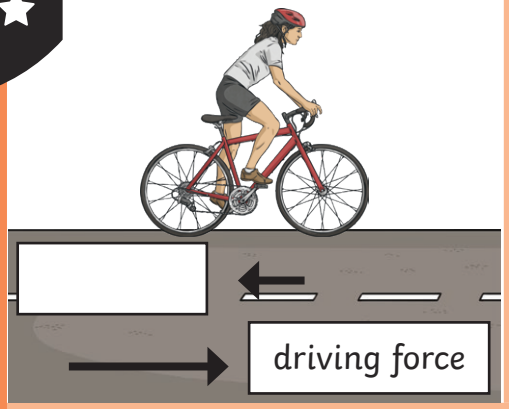
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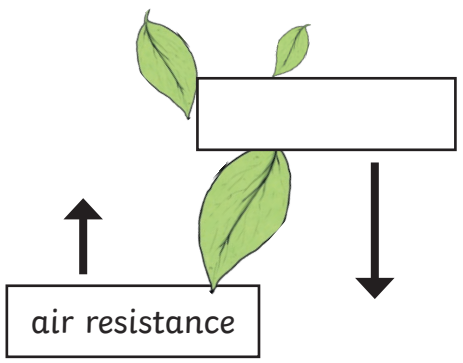
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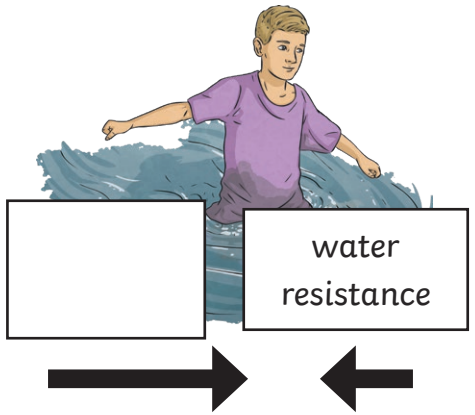
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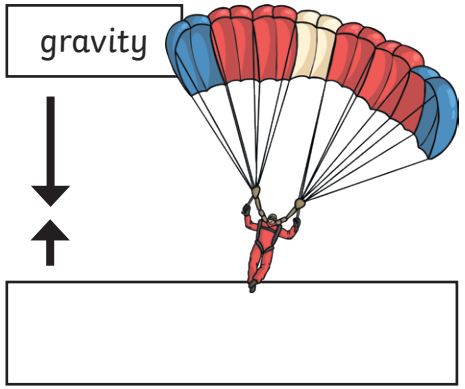
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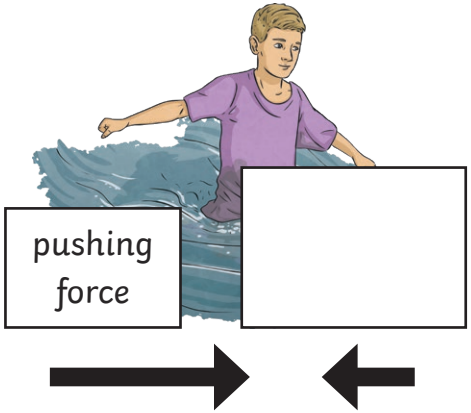
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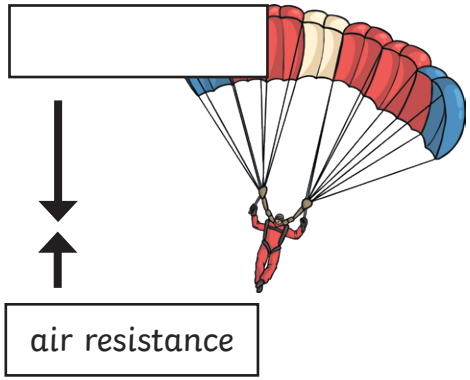
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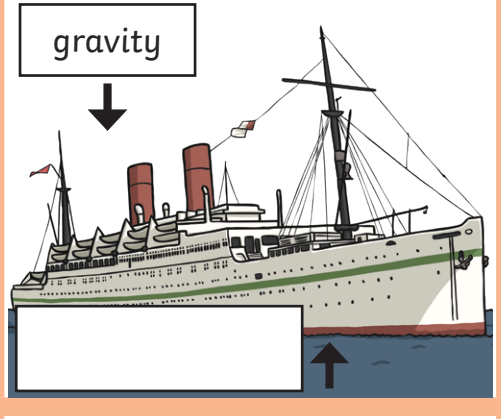
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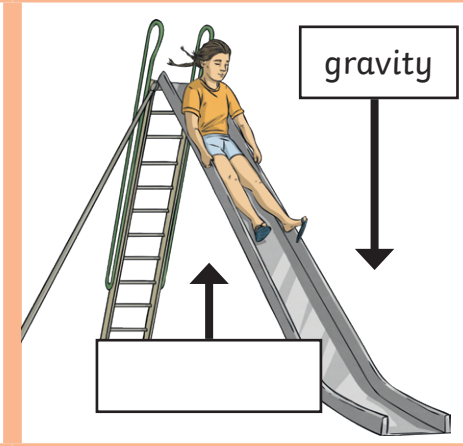
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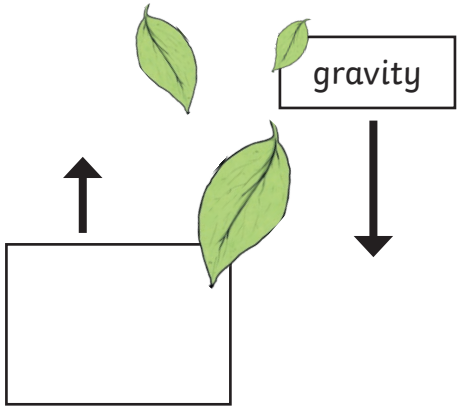
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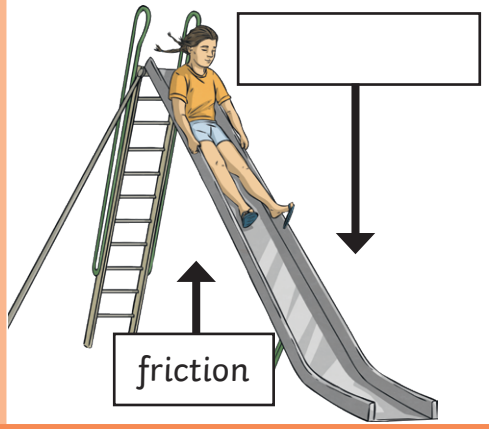
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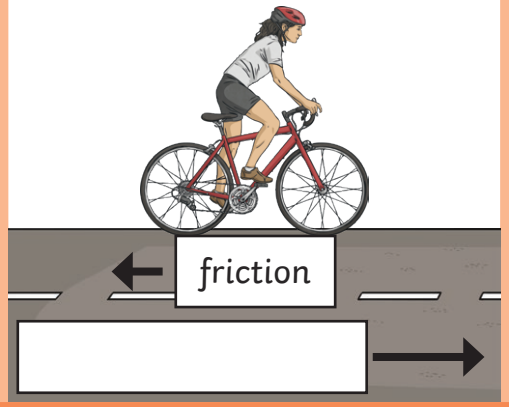
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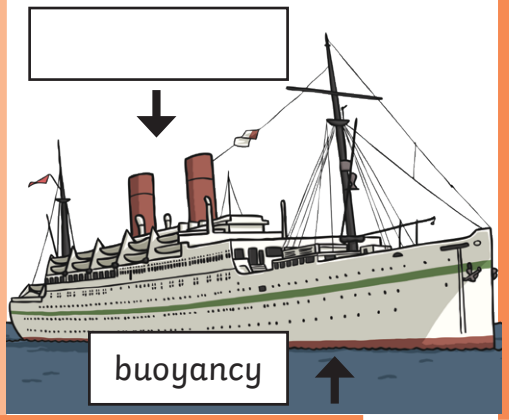
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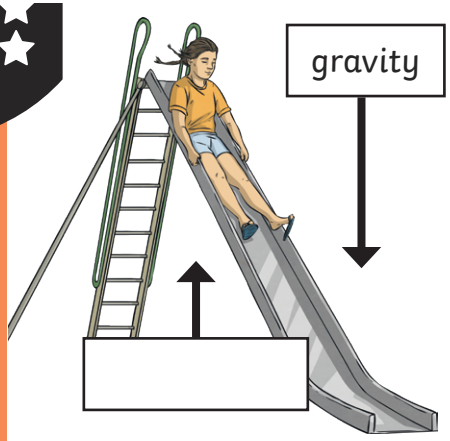
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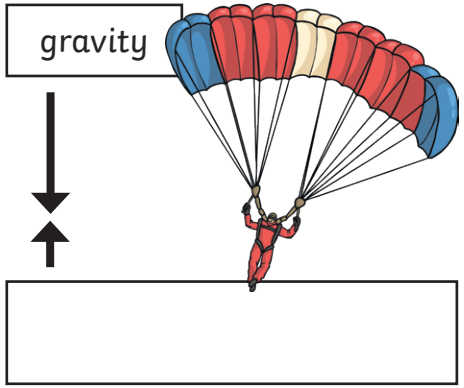
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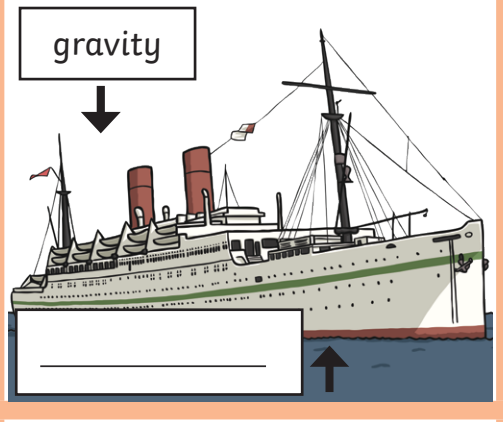
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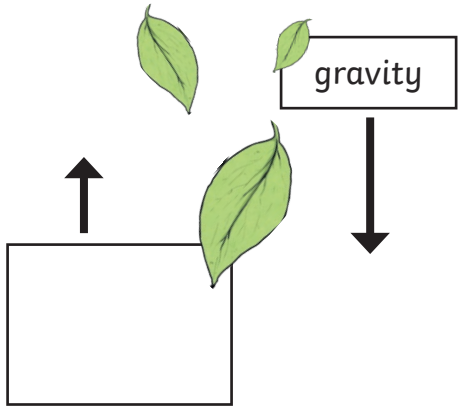
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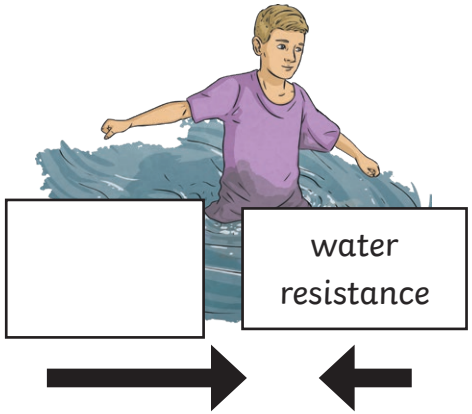
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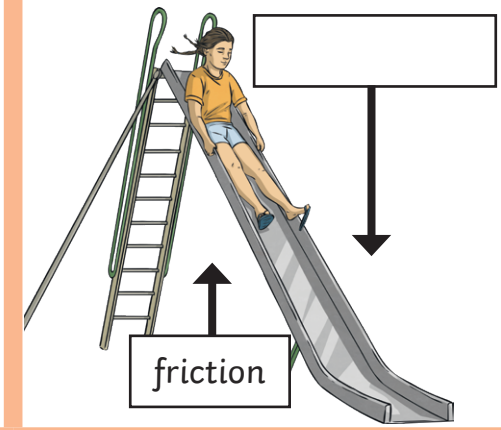
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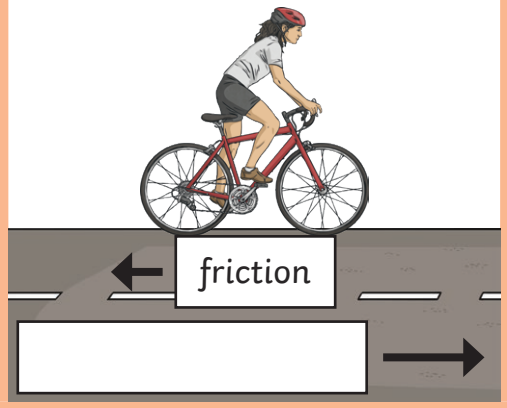
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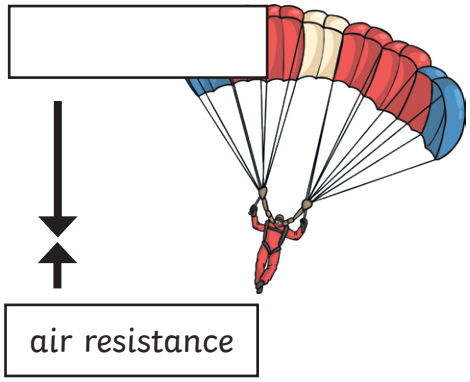
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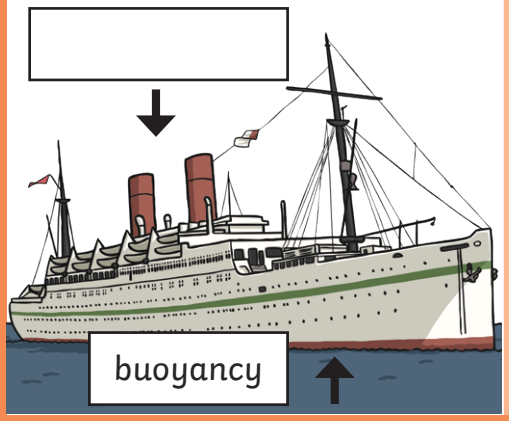
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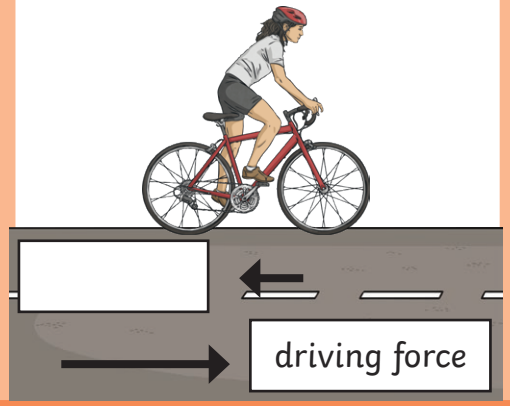
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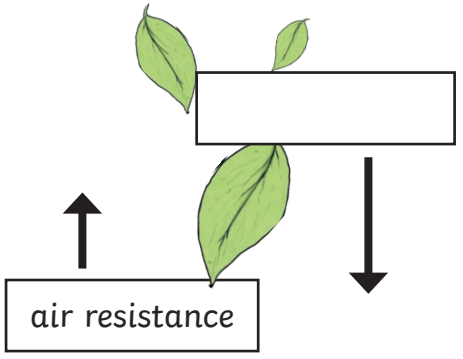
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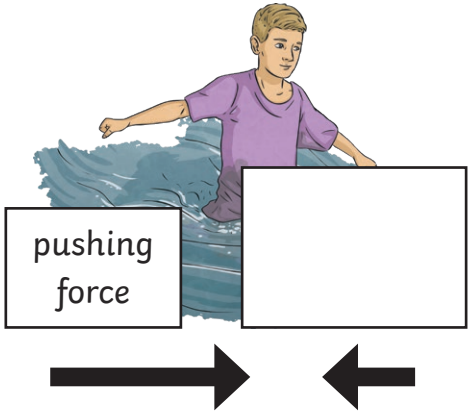
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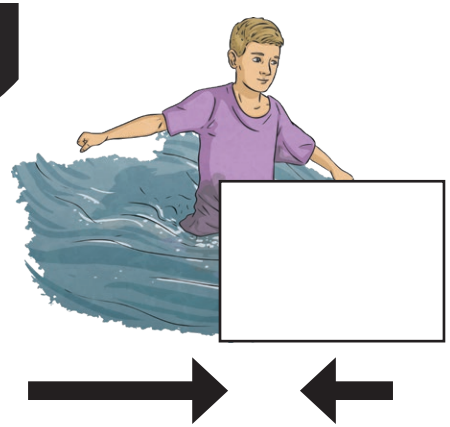
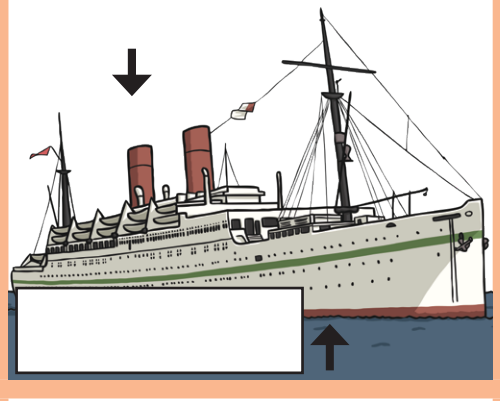
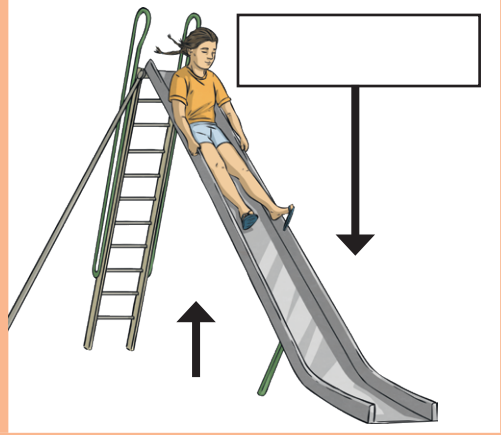
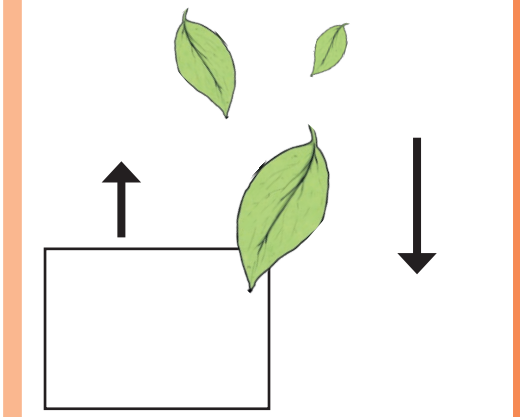
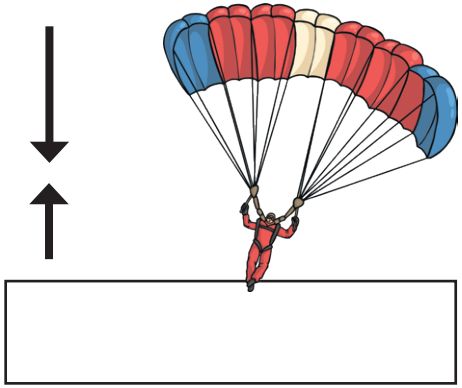
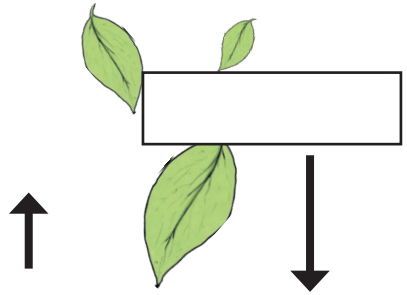


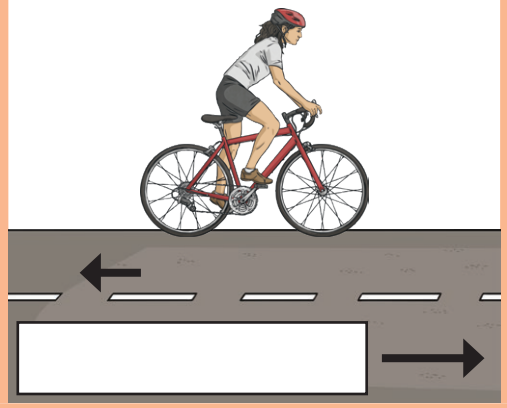


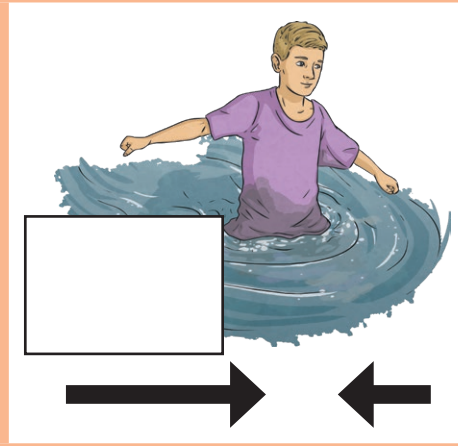


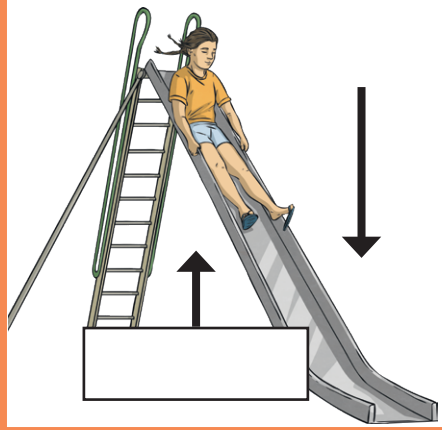


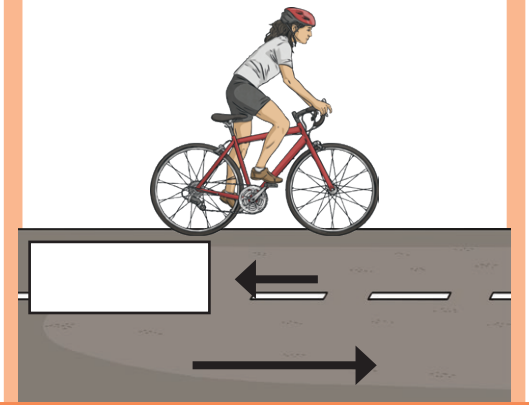


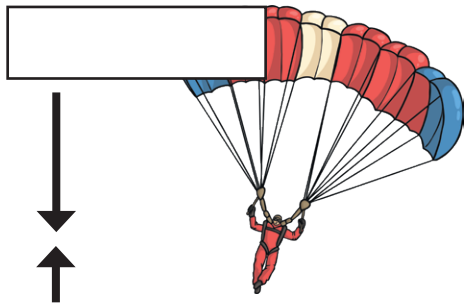


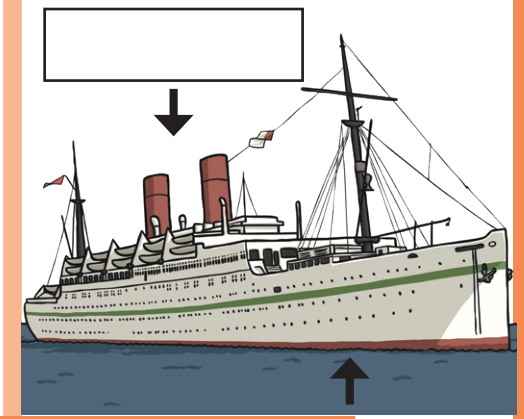


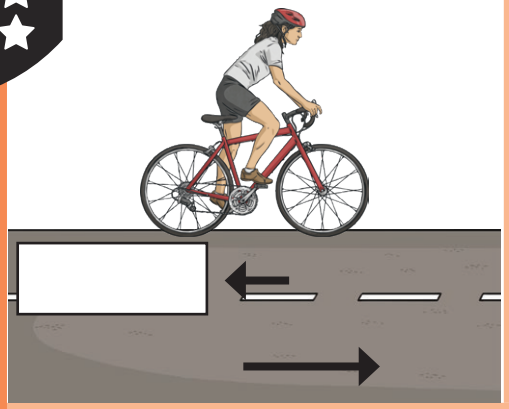


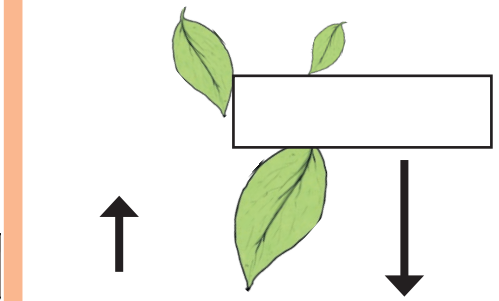


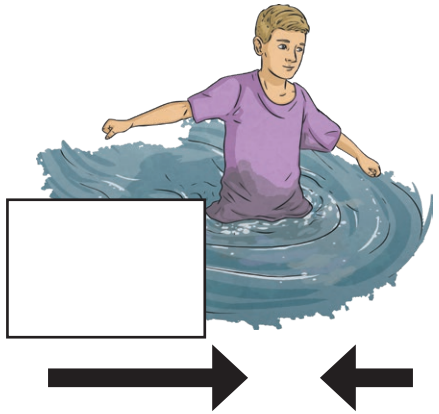


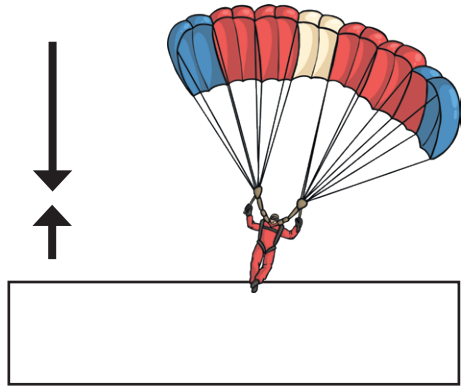


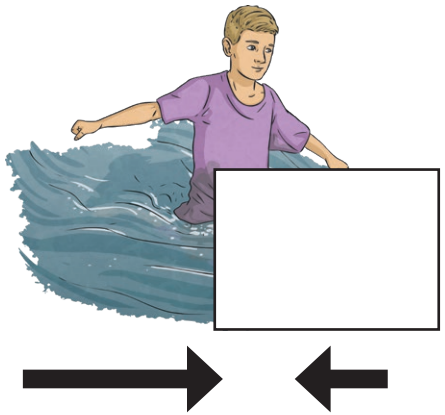


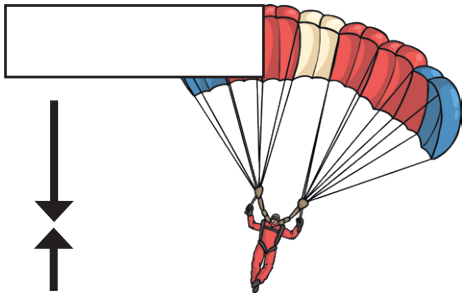


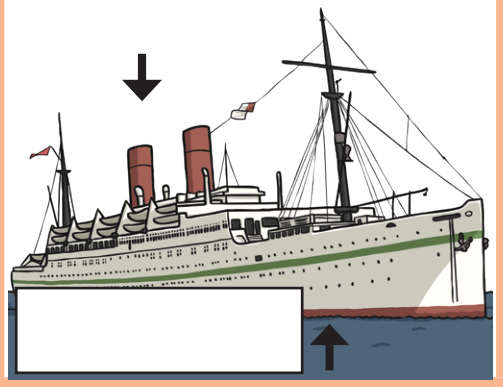


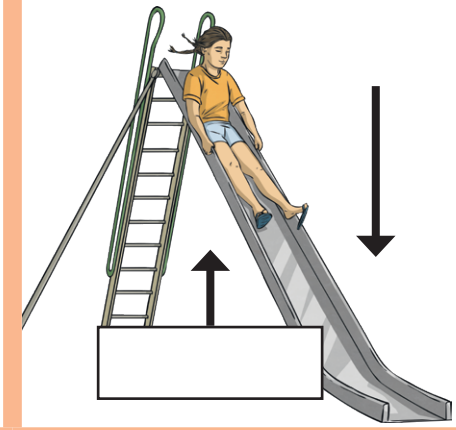


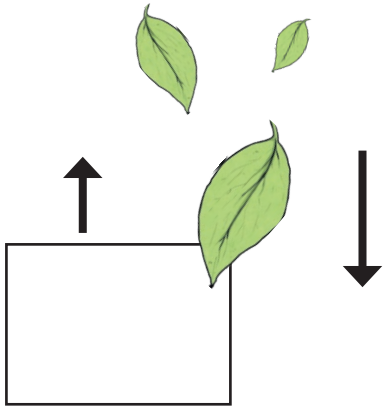


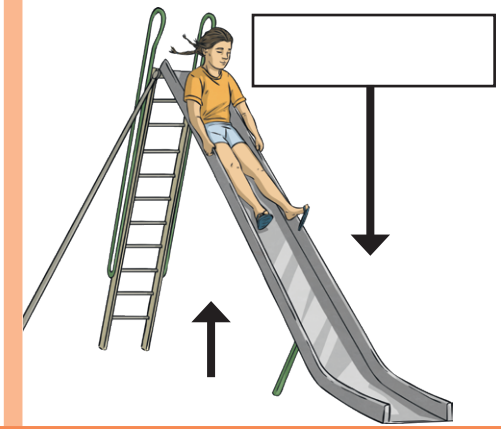


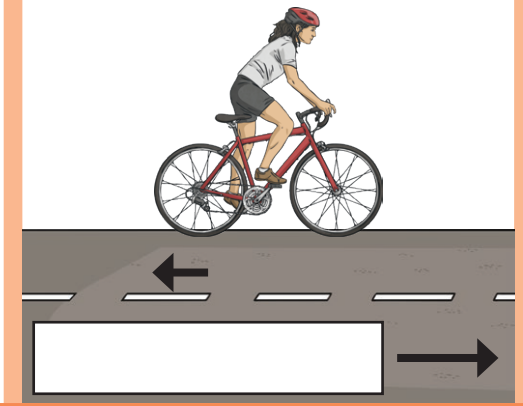


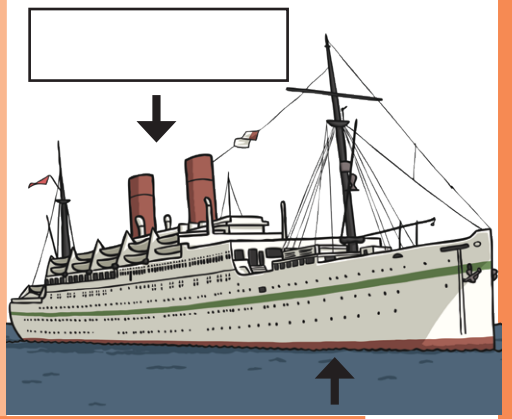


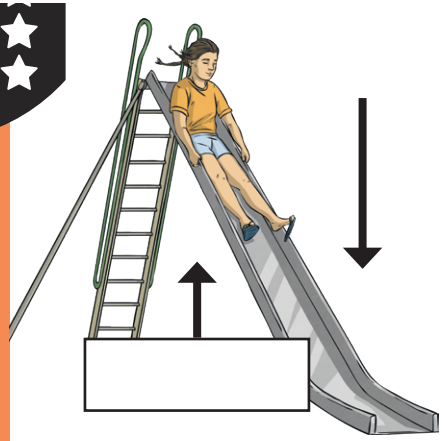


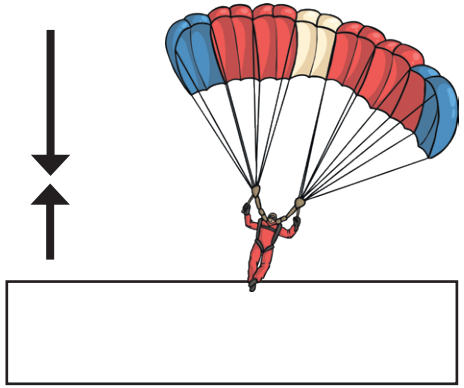


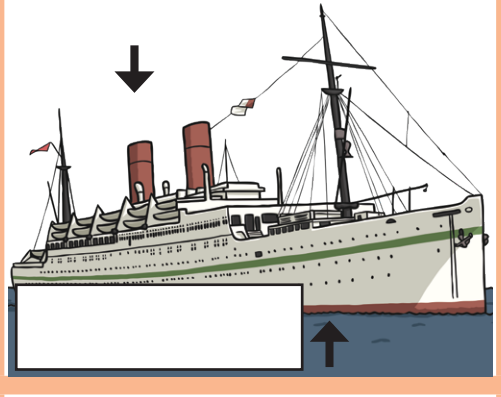


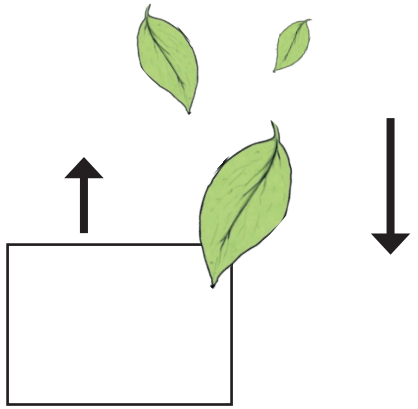


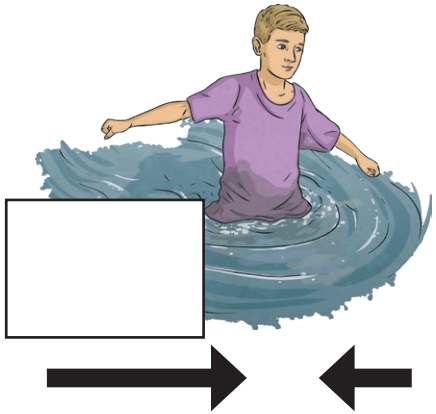


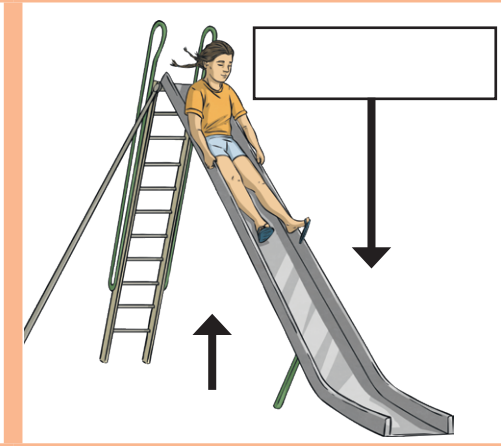


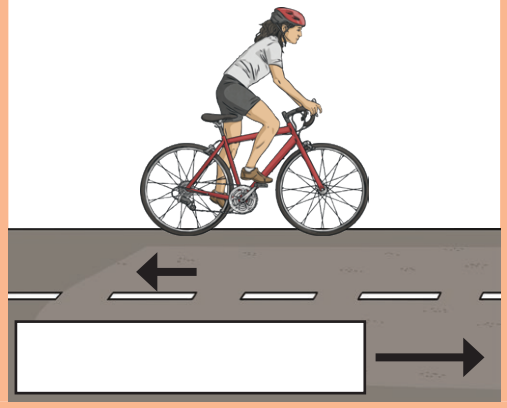


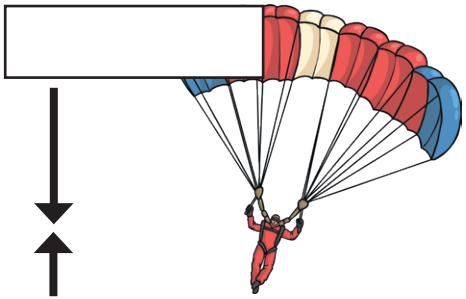


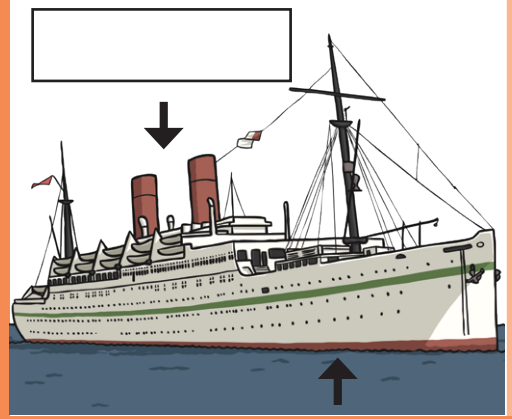


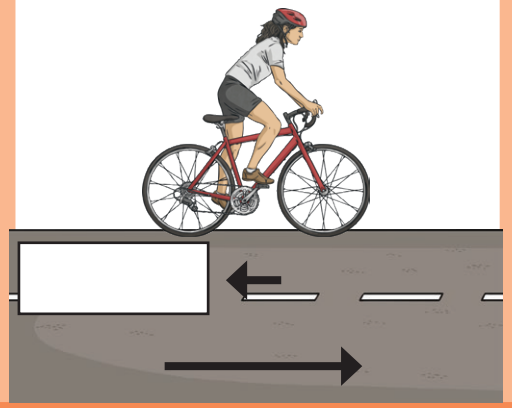


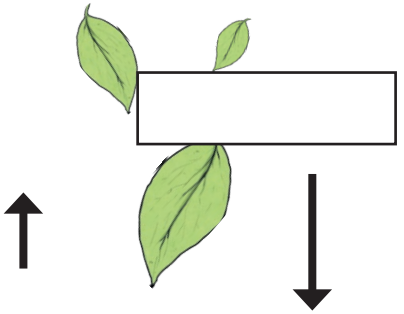


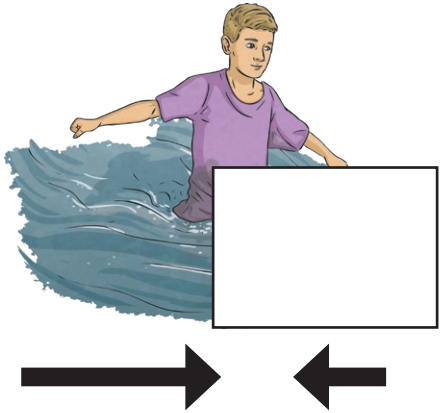




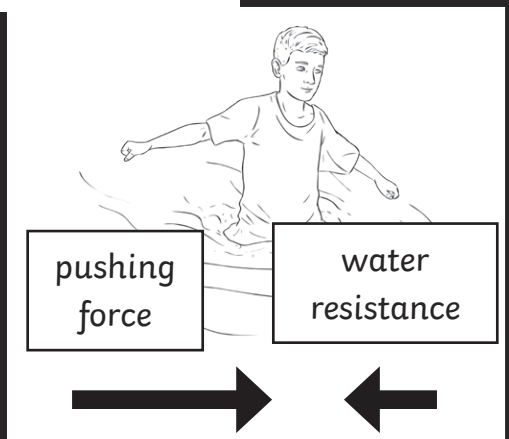


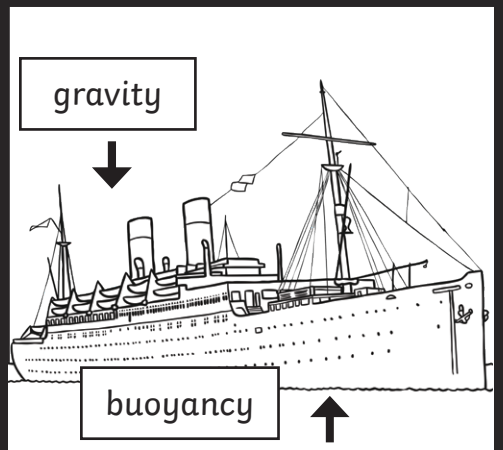


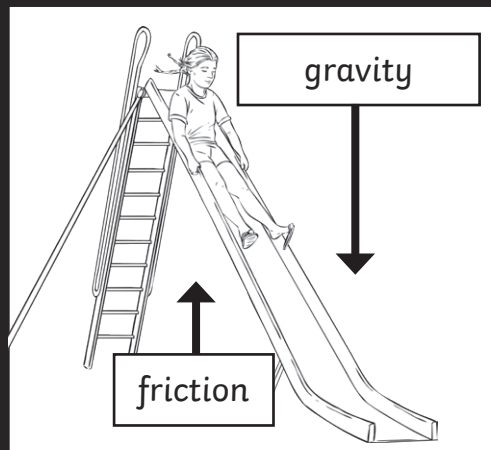


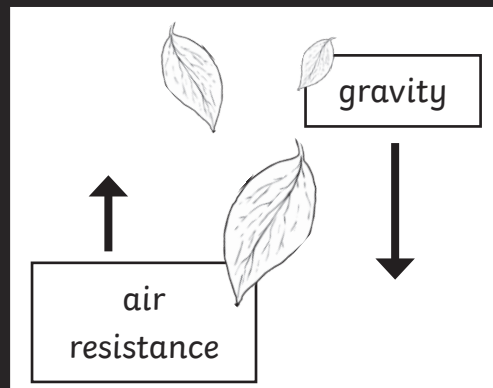


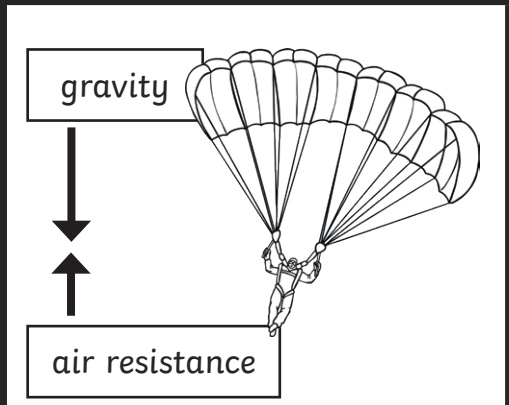
Answers

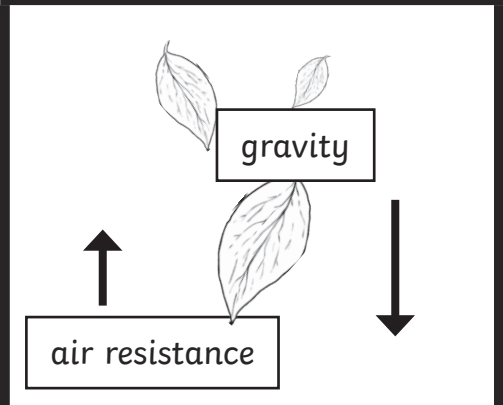

pushing force
water resistance

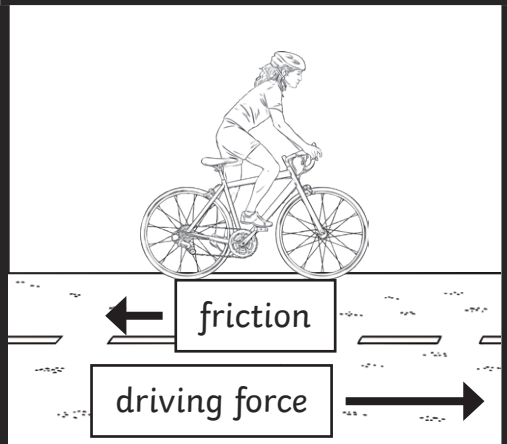

gravity
buoyancy

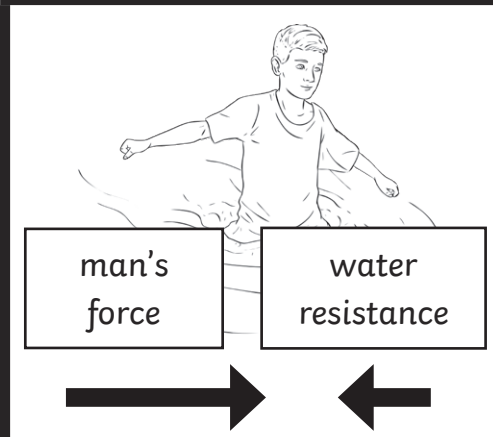

gravity
friction

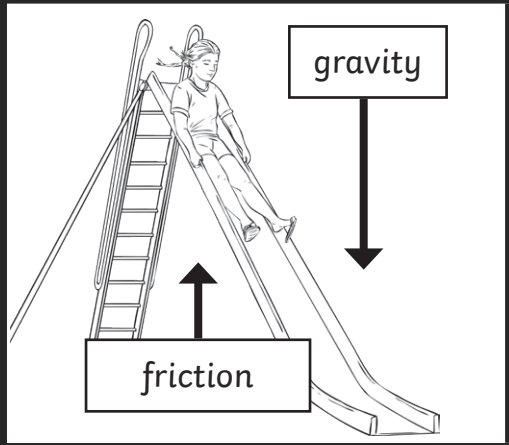

gravity
air resistance

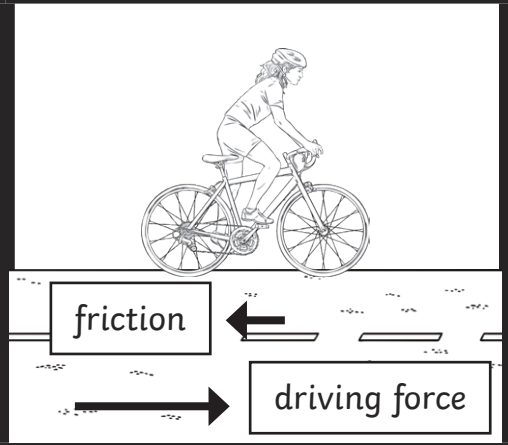

gravity
air resistance

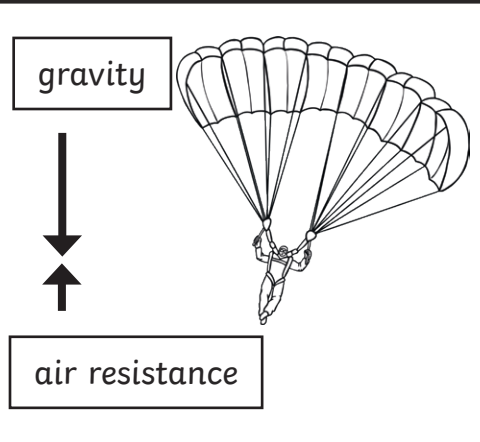

gravity
air resistance

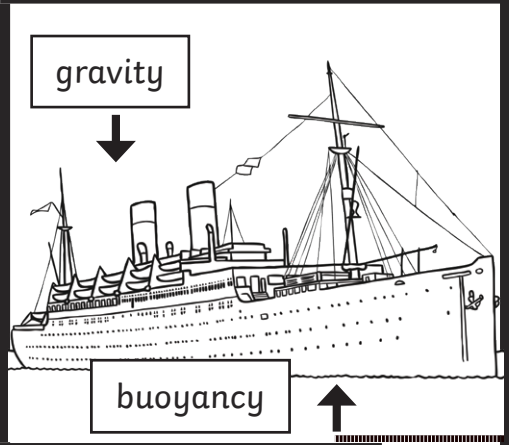

friction
driving force


man's force
water resistance

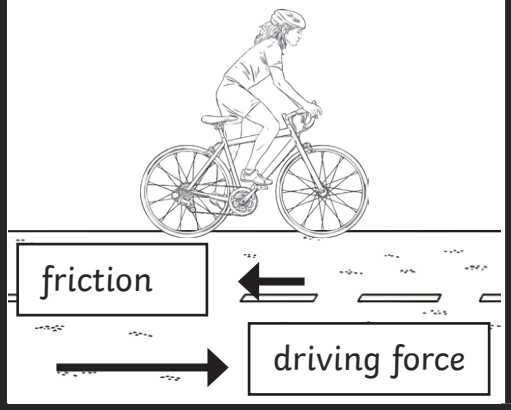

gravity
friction

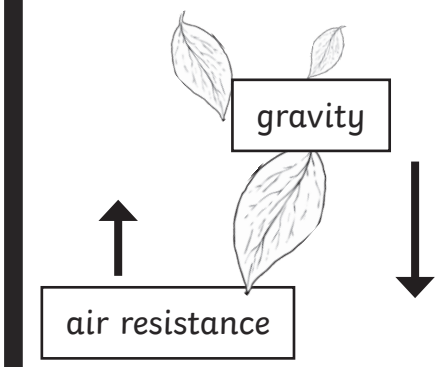

friction
driving force

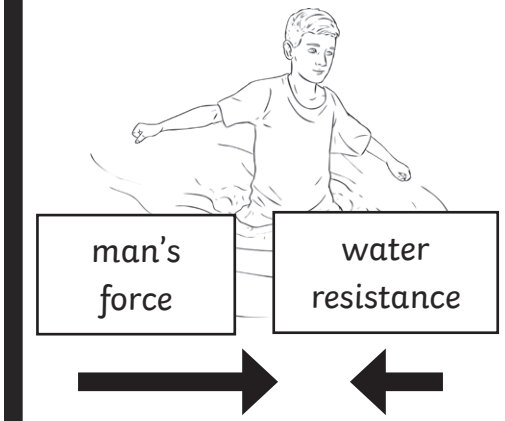

gravity
air resistance

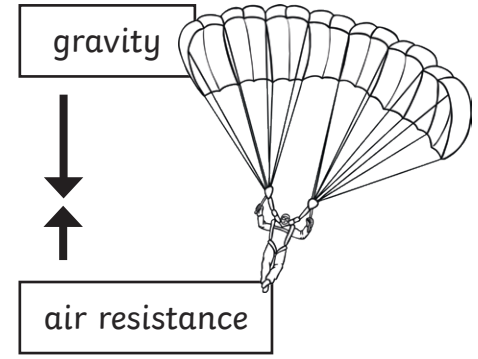

gravity
buoyancy

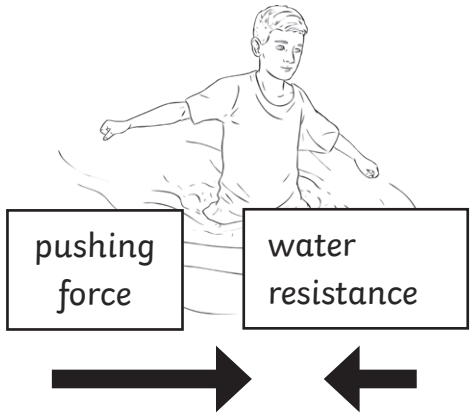
Answers

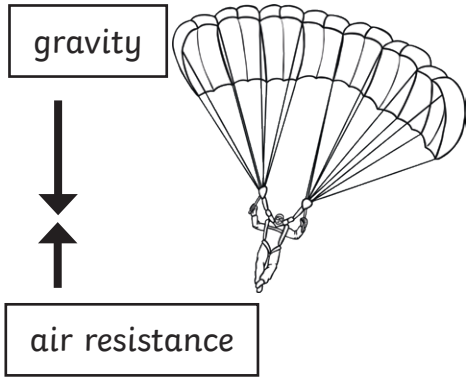

friction
driving force

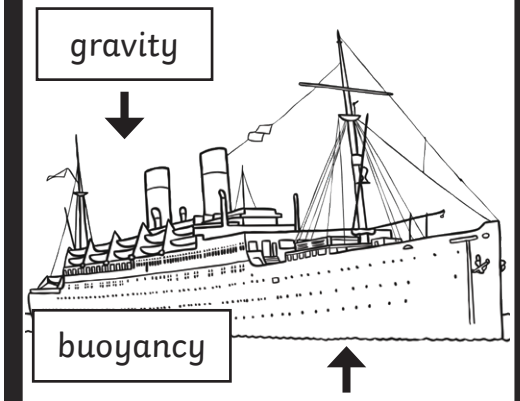

gravity
air resistance

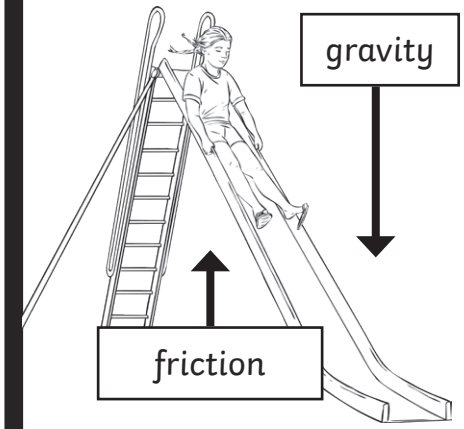

man's force
water resistance

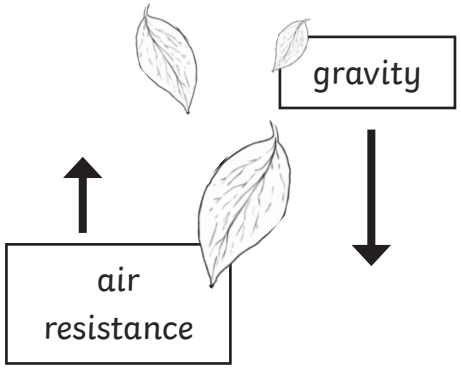

gravity
air resistance

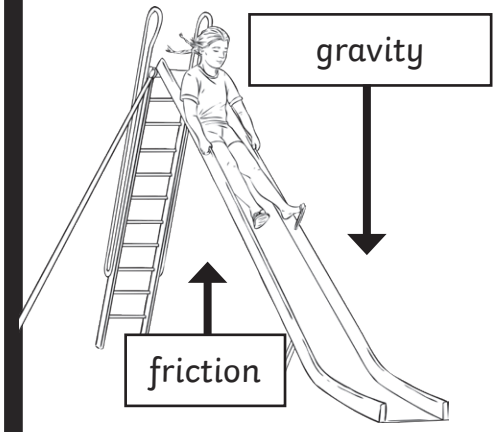

pushing force
water resistance

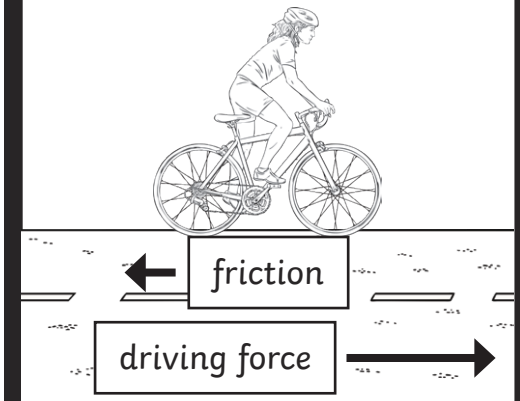

gravity
air resistance

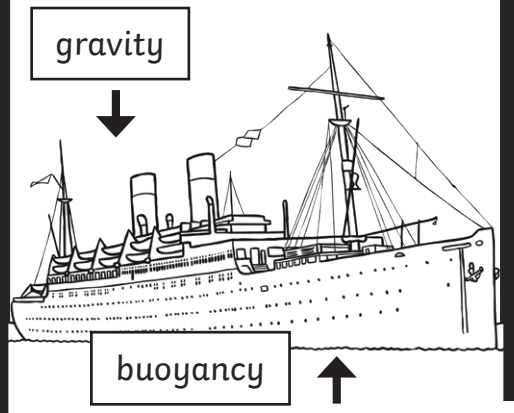

gravity
buoyancy


gravity
friction

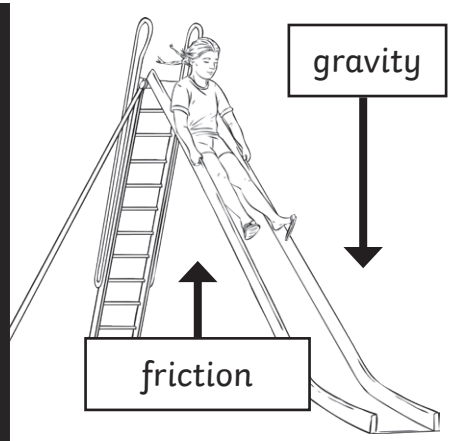

gravity
air resistance

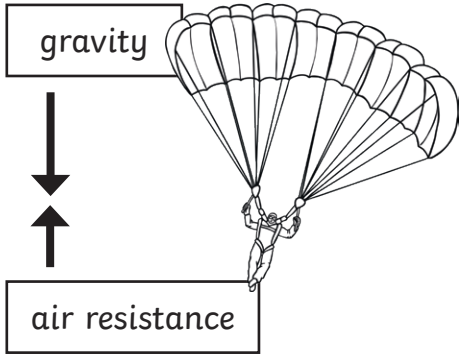

gravity
friction

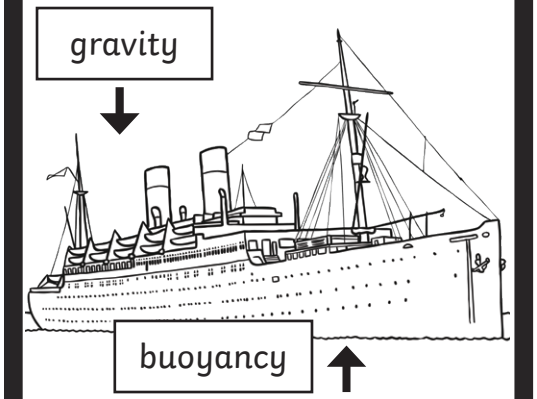

friction
driving force

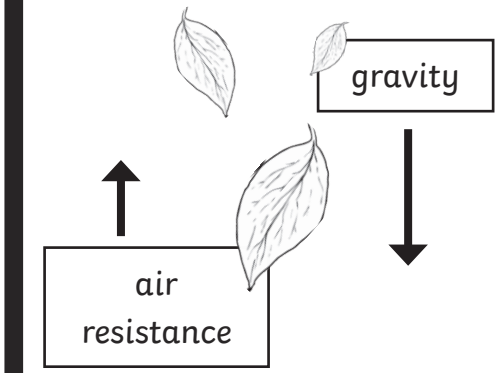

gravity
buoyancy

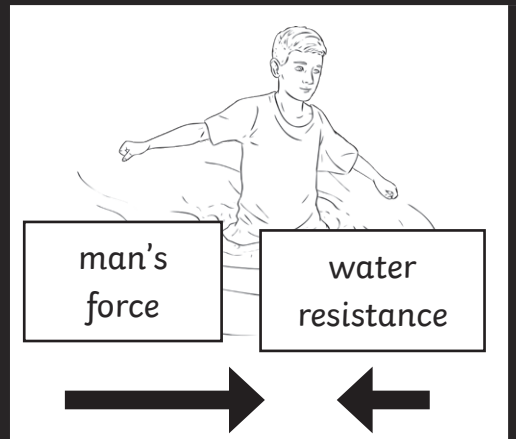
Answers

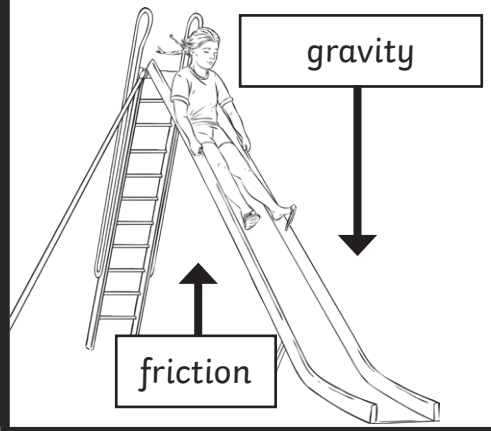

gravity
friction

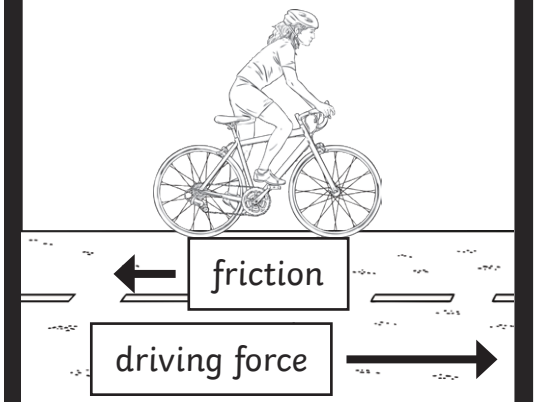

gravity
air resistance

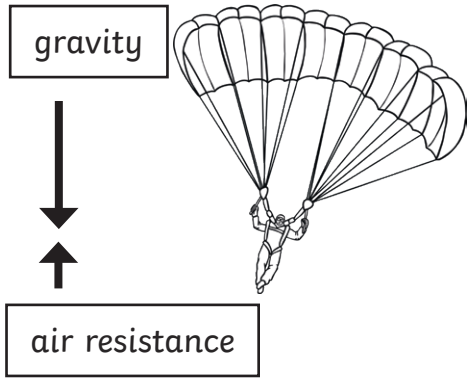

gravity
buoyancy

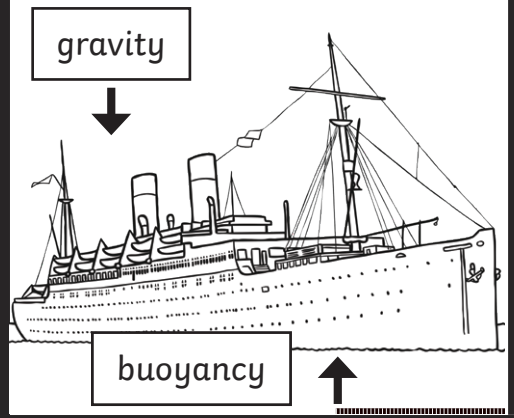

gravity
air resistance

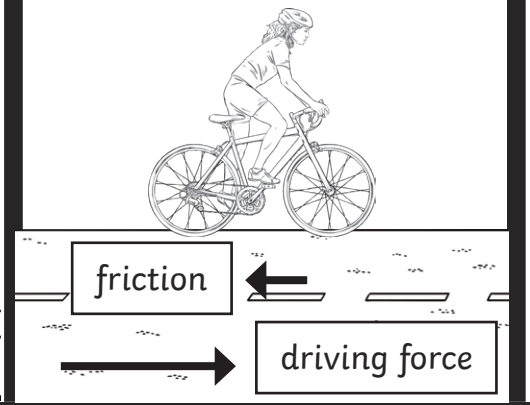

man's force
water resistance

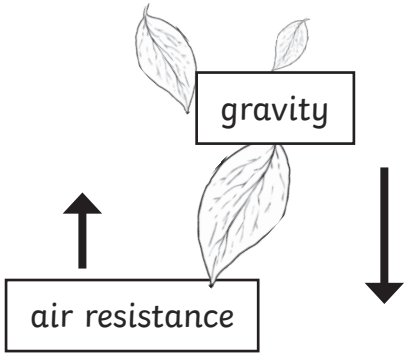

gravity
friction

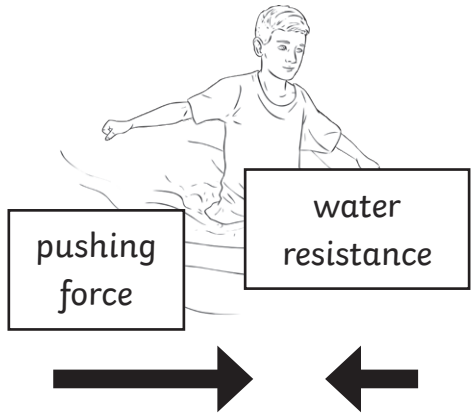

friction
driving force


gravity
air resistance


gravity
buoyancy


friction
driving force


gravity
air resistance

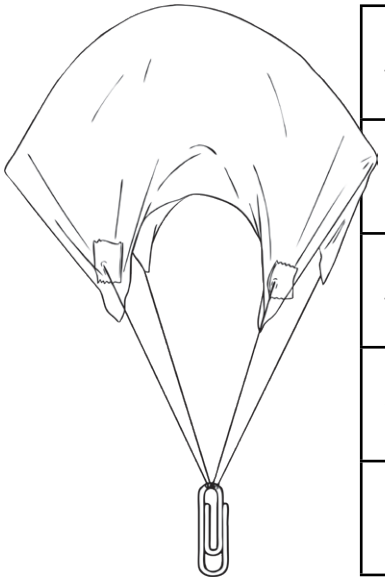

pushing force
water resistance

Perfect Parachutes

To investigate the effects of air resistance.

You have been asked to redesign a parachute for the Super Skydiving Company. You will make three parachutes and see which type of parachute falls the slowest. Which variable will you change about your parachute each time? Which variable will you measure?

Variable that I will change about my parachute each time:



Size of parachute	
Height of drop	
Shape of parachute	
Object attached to parachute	
Length of string to attach object to parachute	

Variable that I will measure: _____

Why is it important to keep the other variables the same?

_____

_____

I think that the parachute that will fall the slowest will be the _____

_____

I think this parachute will have the most air resistance because _____

_____

Complete your results in the table below:

	Description of parachute (e.g. size/ shape/material)	Variable to measure (e.g. time taken for parachute to hit the ground) _____
Parachute 1		
Parachute 2		
Parachute 3		

Now take repeat readings.

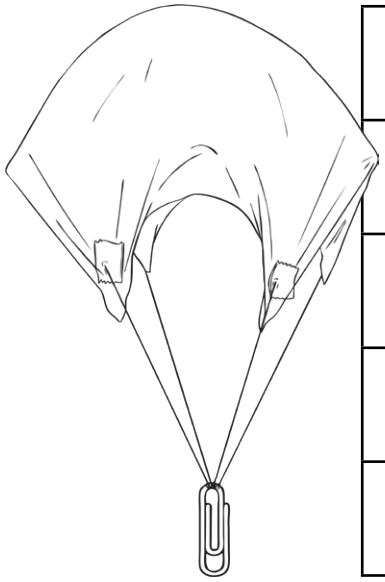
	Description of parachute (e.g. size/ shape/material)	Variable to measure (e.g. time taken for parachute to hit the ground) _____
Parachute 1		
Parachute 2		
Parachute 3		

Perfect Parachutes

To investigate the effects of air resistance.

You have been asked to redesign a parachute for the Super Skydiving Company. You will make three parachutes and see which type of parachute falls the slowest. Which variable will you change about your parachute each time? Which variable will you measure?

Variable that I will change about my parachute each time:



Size of parachute	
Height of drop	
Shape of parachute	
Object attached to parachute	
Length of string to attach object to parachute	

Variable that I will measure: _____

Why is it important to keep the other variables the same?

_____

_____

My prediction: (explain what you think will happen, which parachute will have most air resistance and which will fall the slowest):

_____

_____

Complete your results in the table below:

Parachute 1		
Parachute 2		
Parachute 3		

Now take repeat readings.

Parachute 1		
Parachute 2		
Parachute 3		

Perfect Parachutes

To investigate the effects of air resistance.

You have been asked to redesign a parachute for the Super Skydiving Company. You will make three parachutes and see which type of parachute falls the slowest. Which variable will you change about your parachute each time? Which variable will you measure?

Variable that I will change about my parachute each time:

_____

Variable that I will measure: _____

Why is it important to keep the other variables the same?

_____

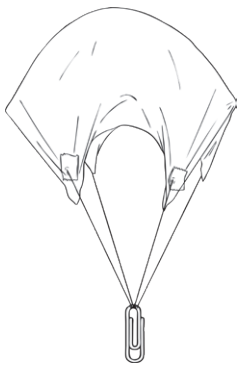
_____

Write a prediction of what you think will happen and which parachute will fall the slowest. Make reference to air resistance in your prediction.

_____

_____

_____



Fill in the table, including the headings:

Parachute 1		
Parachute 2		
Parachute 3		

Now take repeat readings.

Parachute 1		
Parachute 2		
Parachute 3		

Super Skydiving Report

I can explain how air resistance affects moving objects.

The Super Skydiving Company are waiting for your report! How should they redesign their parachute to make it fall slowly? Use your results to tell the company what their parachute should look like or be made of in order to create the most air resistance.

Draw and label your suggestion for the new parachute.

Complete these sentences to explain which parachute fell the slowest, and why. Our results show that the parachute that was the slowest was

_____

This parachute created the most air resistance because

_____

_____

_____

_____

Use these words and phrases in your explanation

bigger	force	more	air resistance	gravity	thicker	push
stronger	wider	thinner	smaller	narrower	space	less

Super Skydiving Report

I can explain how air resistance affects moving objects.

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_____

_____

_____

_____

The new parachute should be

_____

_____

Super Skydiving Report

I can explain how air resistance affects moving objects.

The Super Skydiving Company are waiting for your report! How should they redesign their parachute to make it fall slowly? Use your results to tell the company what their parachute should look like or be made of in order to create the most air resistance.

Draw and label your suggestion for the new parachute.

Explain which parachute fell the slowest, and why.

The new parachute should be

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.**

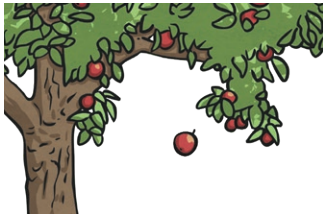
Talk about Forces **Answers**

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.	**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.	***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.***
Next, she juggled with silk handkerchiefs. After she threw them into the air, they fell gently downwards for her to catch.	***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.***
After, she lifted a robot penguin out of the box. She held it high in the air.	***The magician's force is lifting it up and gravity is pulling it down to Earth.***
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 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 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 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.***

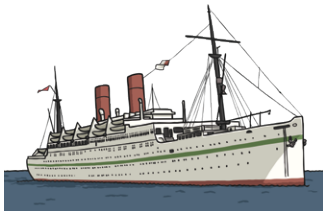
Forces



gravity

friction

air resistance



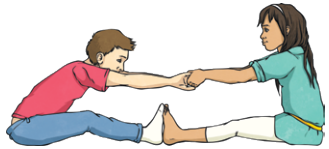
buoyancy

compress

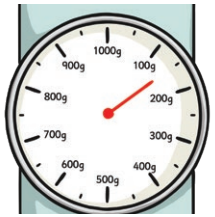
extend

exert/apply

repel/attract

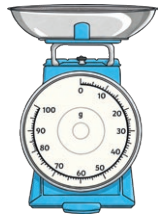


resist/resistance



unit

weight

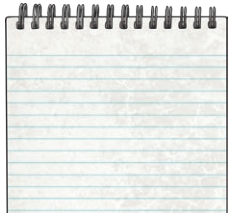


mass

force meter

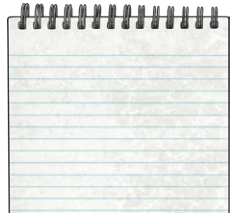
newton (N)

explanation



average

mean



median

water resistance