

Forces and Motion

The Magic of Push, Pull and Twist



Lesson Outline

1

What is Force?

2

Push, Pull and
Twist

3

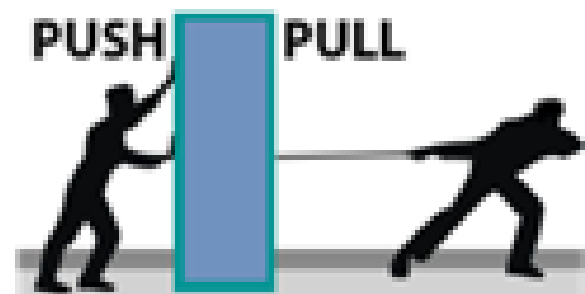
Effects of
Push and Pull

Learning Outcomes

By the end of the lesson, you'll be able to:

- recall push and pull as forces.
- describe what force is.
- explain the effects of push and pull forces on objects.

force



A force is a push or pull applied to an object.

What is Force?



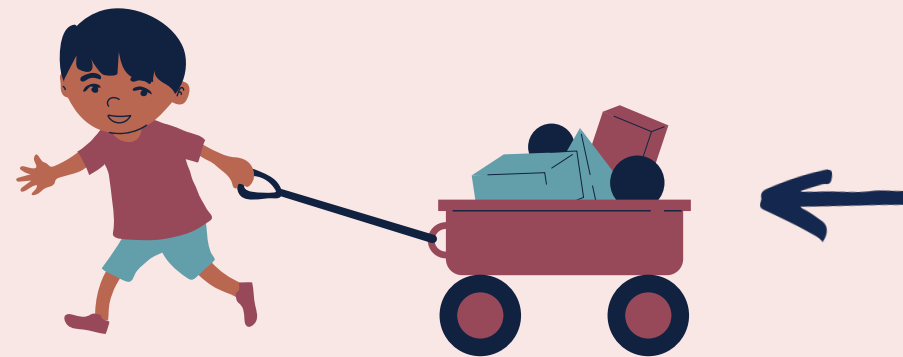
It is a push, pull or a twist

**It can affect the
motion of an object.**



PUSH

To move something
away from you



PULL

To move something
toward you



TWIST

To turn and rotate
something

Which images show a pulling force?



A



B



C



D

Which images show a pushing force?



A



B



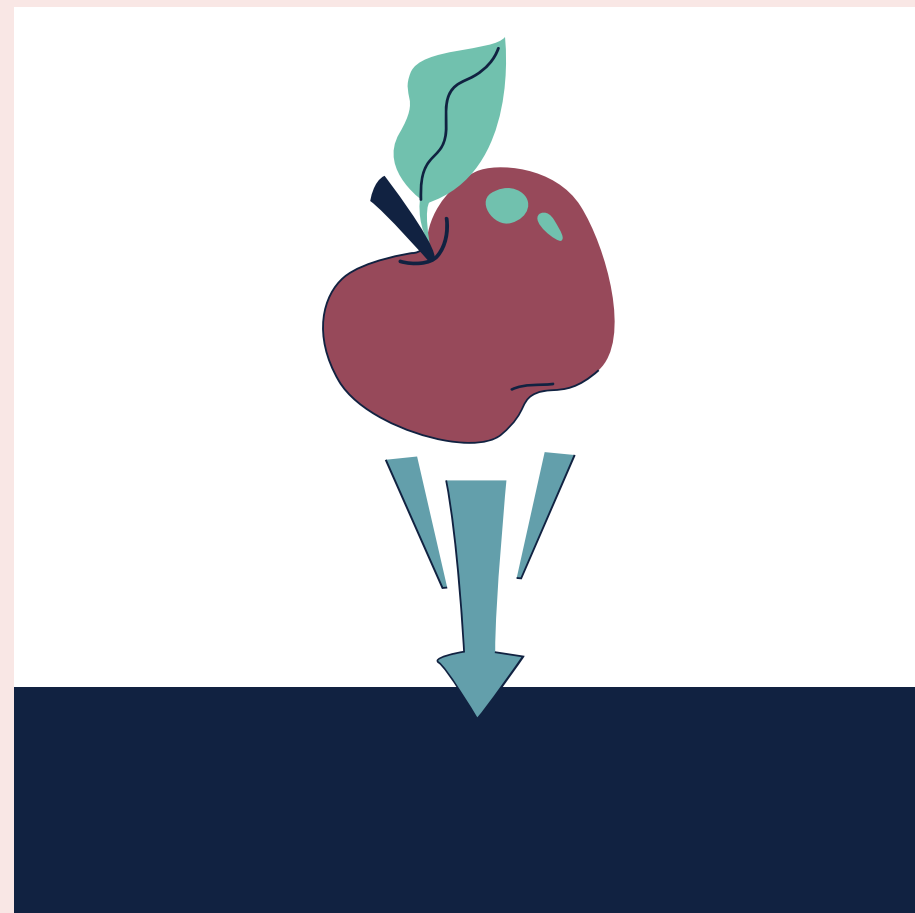
C



D

Examples of Forces

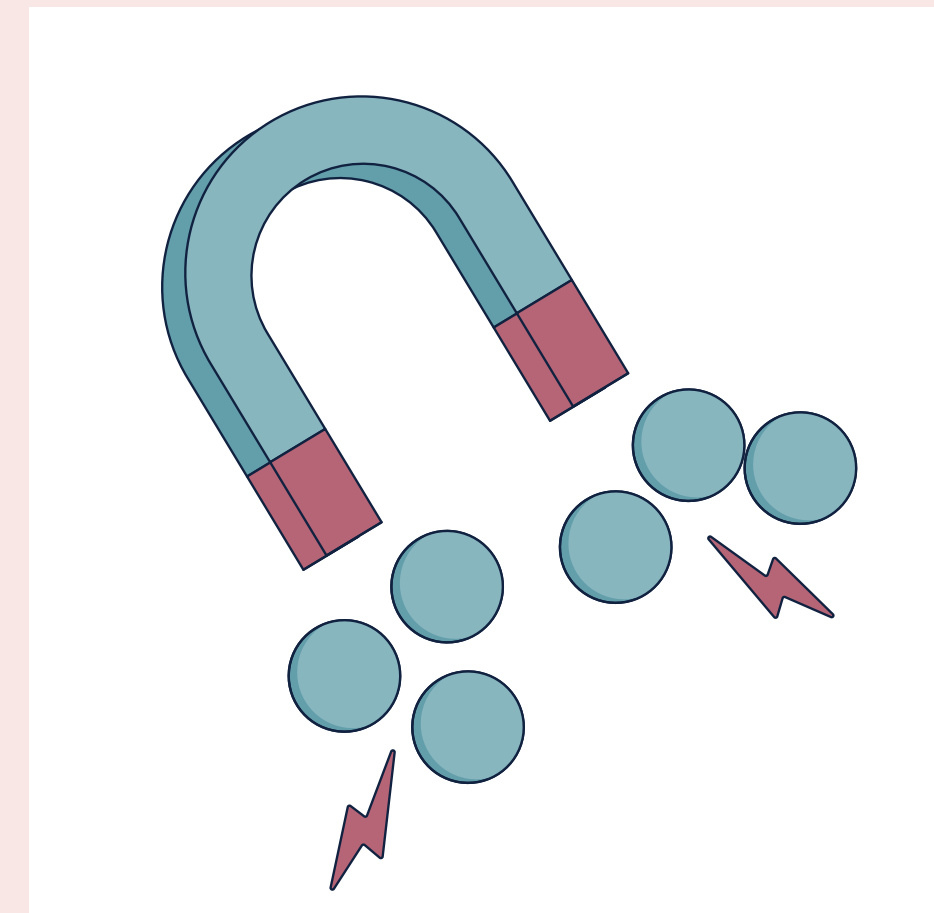
mn



Gravity



Contact Force



Magnetic

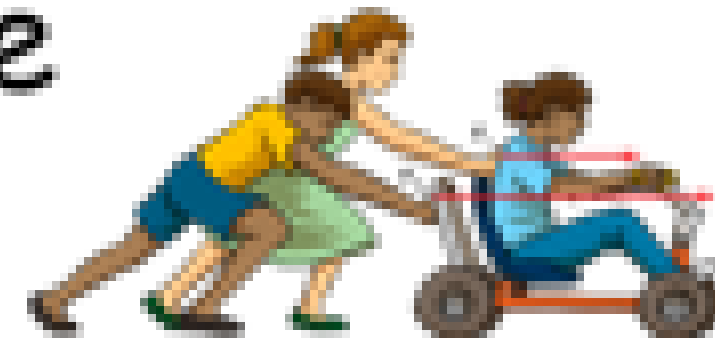
Examples of Forces

mn



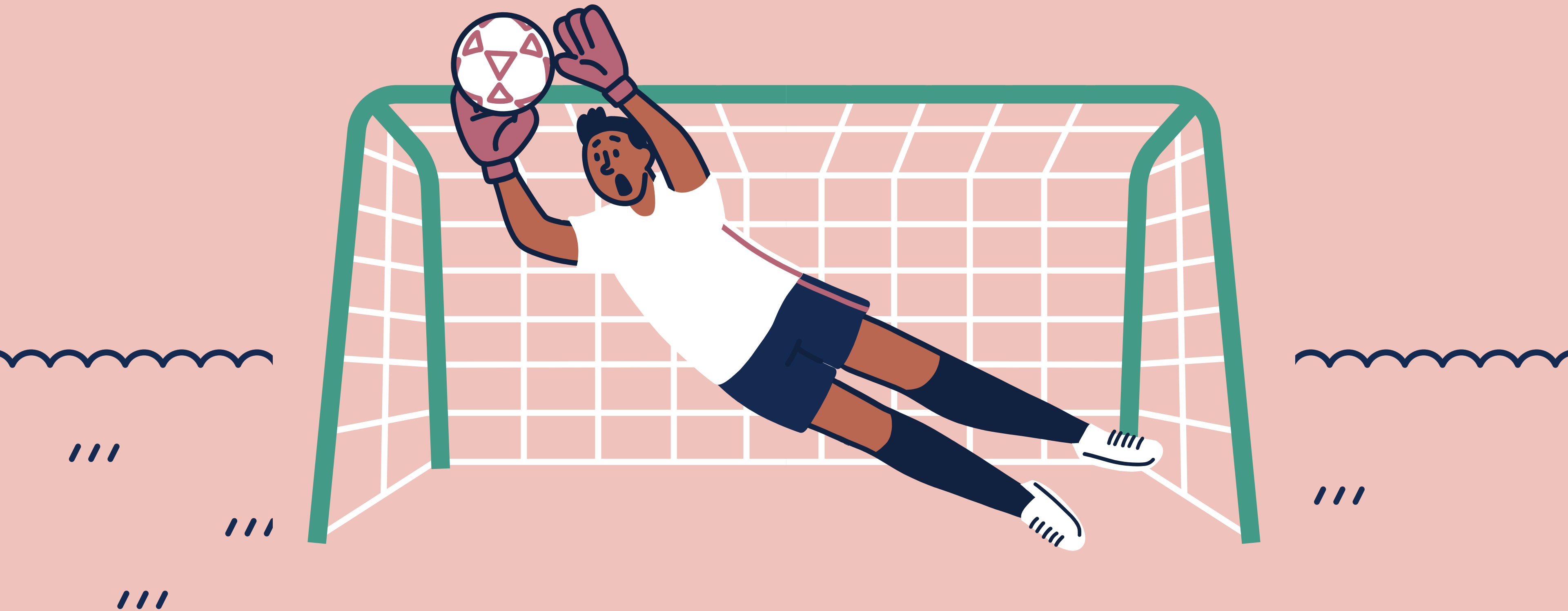
Contact Force

contact force



A contact force is a force that acts at the point of contact between 2 objects .

Will the force by the goalkeeper move, stop, or change the ball's direction?



Effects of Push and Pull

1

It can make a **stationary object move.**

2

It can also stop a **moving object.**





Effects of Push and Pull

3

It can make an object **move slower or faster.**

4

It can **change the direction** of a moving object.

Forces in Action



Think of an action that shows how forces move objects.

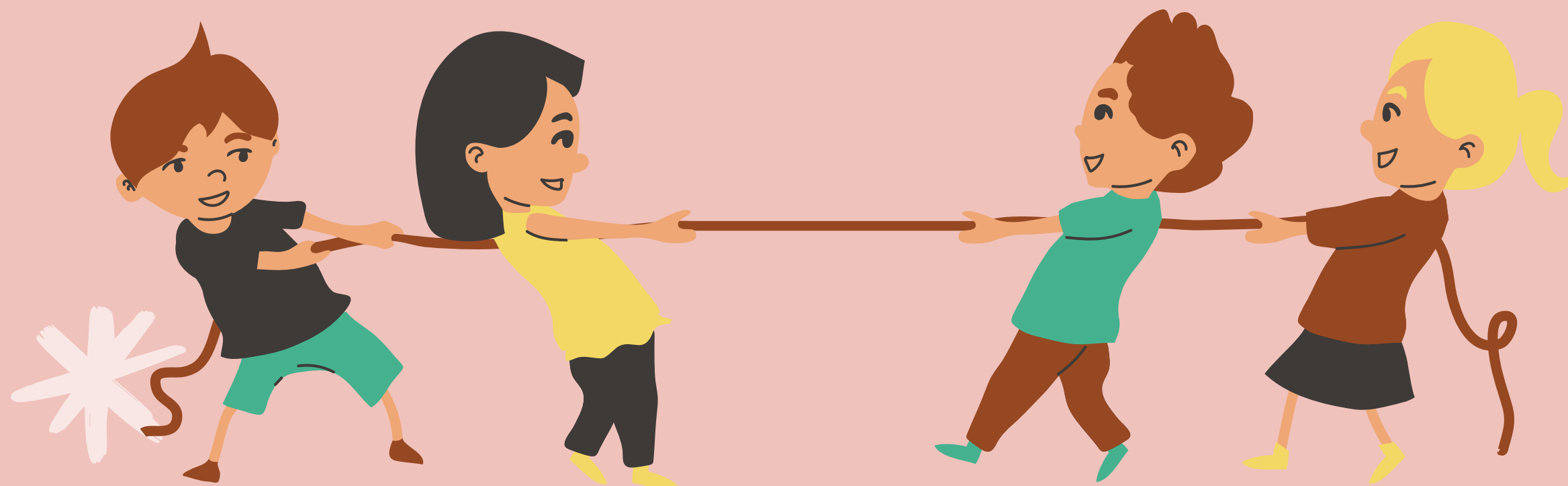
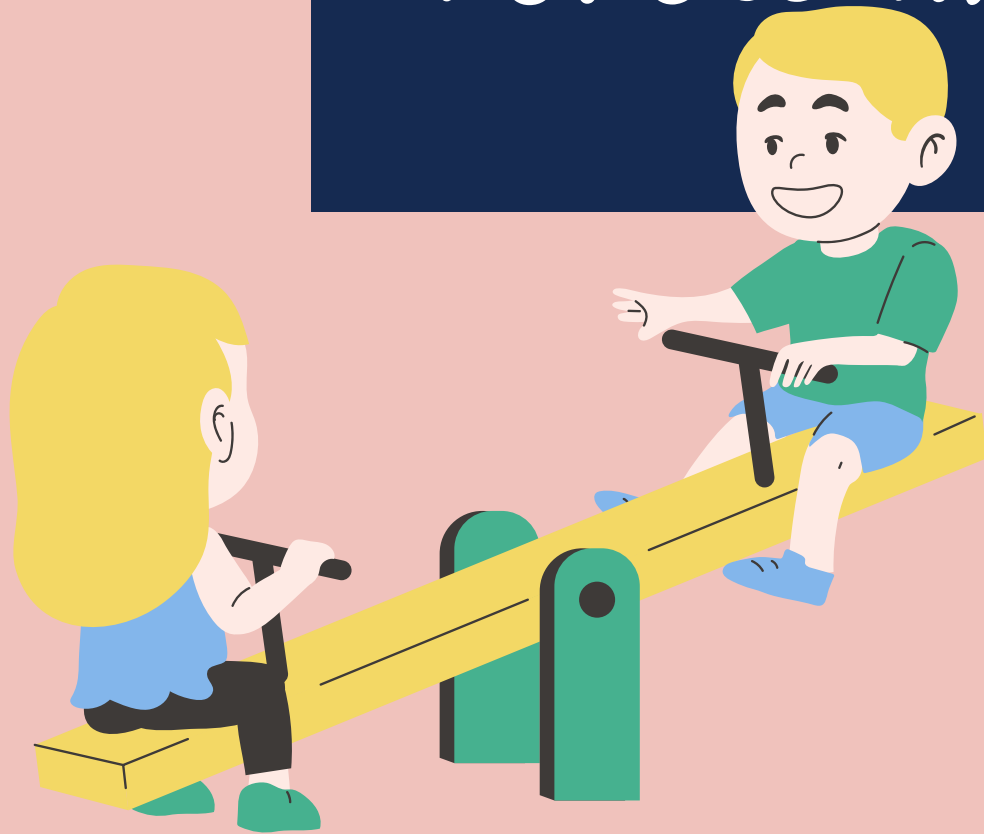
Work with your partner to create a freeze frame of the action you have chosen.



Forces in Action



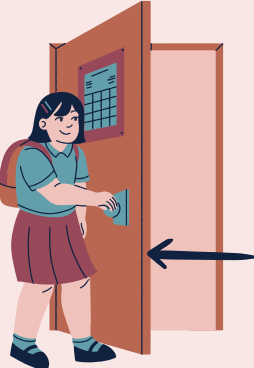
Partner Talk



Let's complete the table below.

Activity		Push or Pull?	Will the object start or stop moving?
Opening a door			
Moving the wheelbarrows			
Catching a ball			

Let's complete the table below.

Activity		Push or Pull?	Will the object start or stop moving?
Opening a door		Pull	Start
Moving the wheelbarrows		Push	Start
Catching a ball		Pull	Stop

TASK

30.06.25 KO: I understand forces

Activity	Push, pull or twist	Will the object stop or start?
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Forces and Motion

Friction



Recap

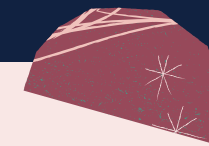
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1.
Something used in Star Wars



2.
It is a push, pull or a twist



3.
The way something moves

What is Force?



It is a push, pull or a twist

**It can affect the
motion of an object.**

Recap

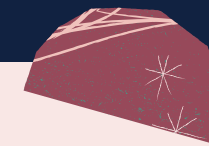
A push...



1.
**Moves something away
from you**



2.
**Brings something
towards you**



3.
Turns or rotates

Lesson Outline

1

What is friction

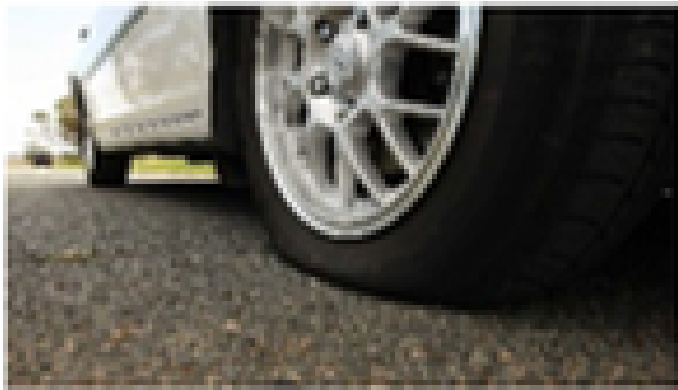
2

Do different
surfaces effect
friciton?

3

Experiment and
record

friction



Friction is a force that acts between two objects that are in contact with - or touching - one another. More friction slows or stops movement between the two surfaces that are touching.

surfaces



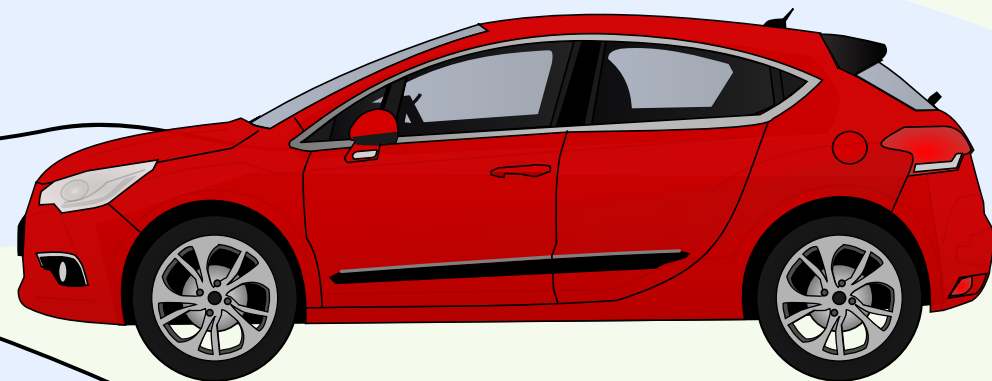
The surface is the top layer of something.

WHY DO CARS SKID ON THE ICE?



WHY DO CARS SKID ON THE ICE?

Ice is a smooth surface, so less friction is created. This causes the car's tyres to skid.

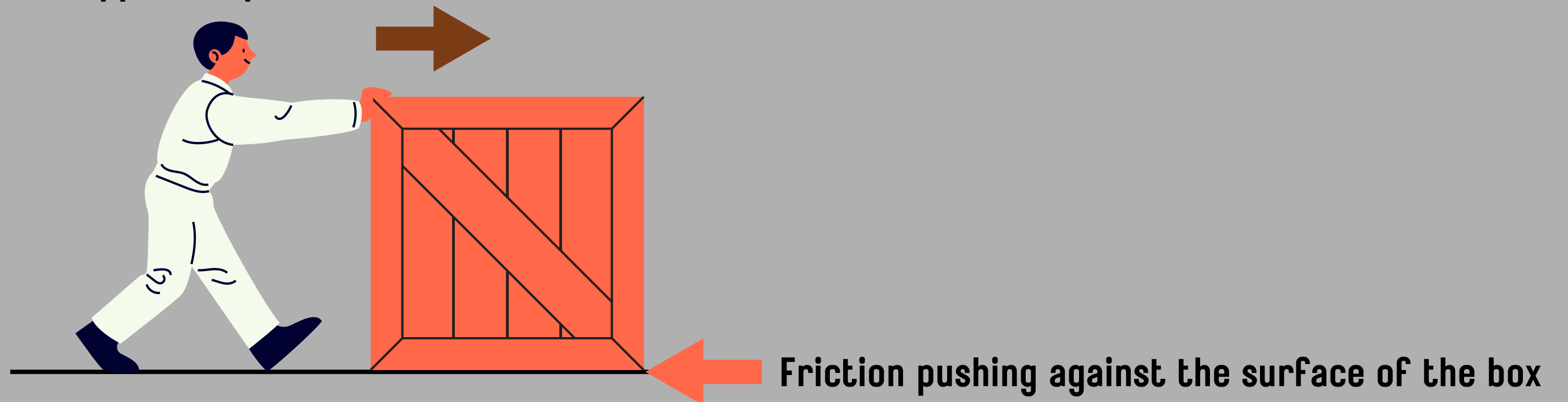


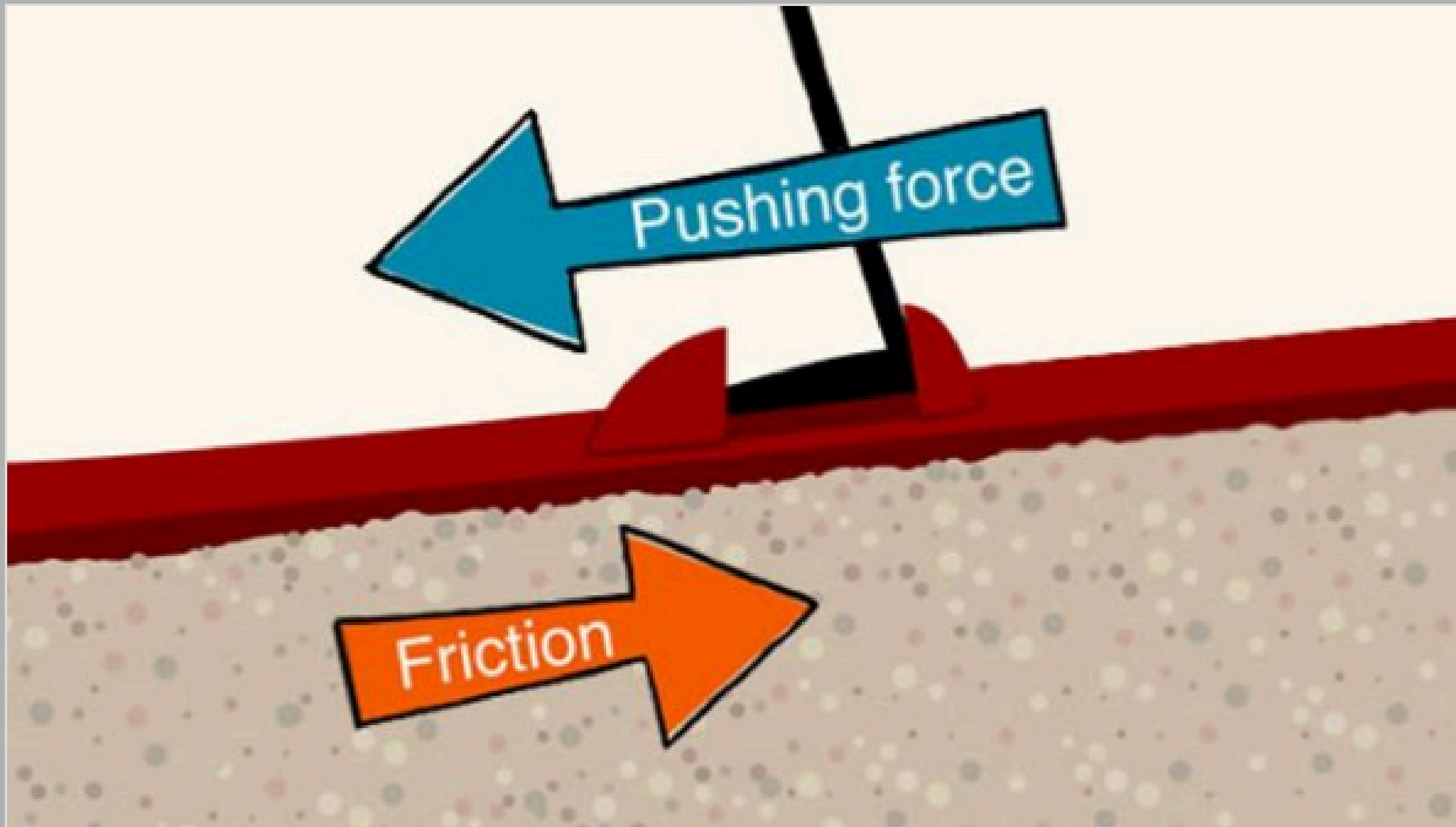
WHAT IS FRICTION?

Friction is a type of force. Forces, like friction, affect the way things move on Earth.

Friction occurs when two surfaces are either sliding or attempting to slide against each other. For instance, when you push an object along the floor, friction slows down the movement. It always acts in the opposite direction to the object's motion or intended motion.

Object moves when a person applies a 'push' force





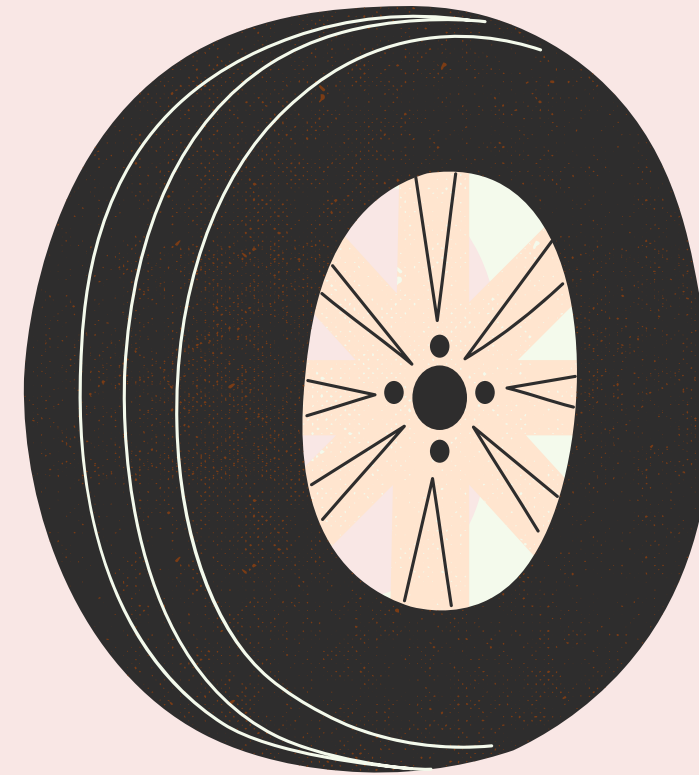
What is friction and how does it work?

Friction is a force between two surfaces that are sliding, or trying to slide, across each other. You can find out more using this [Bitesize KS2 Science guide](#).

FRICTION

On smoother surfaces, less friction occurs. That's why cars skid sometimes on icy roads and we slip over on the ice! To stop this from happening, we try and create more friction on tyres and shoes.

Car tyres and shoe soles have ridges and bumps on them which makes their surface rougher, rather than smooth. More friction is created on rougher surfaces, preventing skidding and slipping.



CAN YOU CREATE FRICTION?

Look at the soles of your shoes. Are they made of rubber with a bumpy pattern on them?

If you rub your shoes back and forwards on the carpet, you will feel the force of friction slowing down the movement.

Did you know, friction produces heat? Test it yourself! Rub your hands together. After some time, you will feel heat between your hands. As you rub the surfaces of your hands together you will feel the effects of friction, including heat!



CAN YOU CREATE FRICTION?

Look at the soles of your shoes. Are they made of rubber with a bumpy pattern on them?

If you rub your shoes back and forwards on the carpet, you will feel the force of friction slowing down the movement.



TRY RUBBING YOUR HANDS TOGETHER

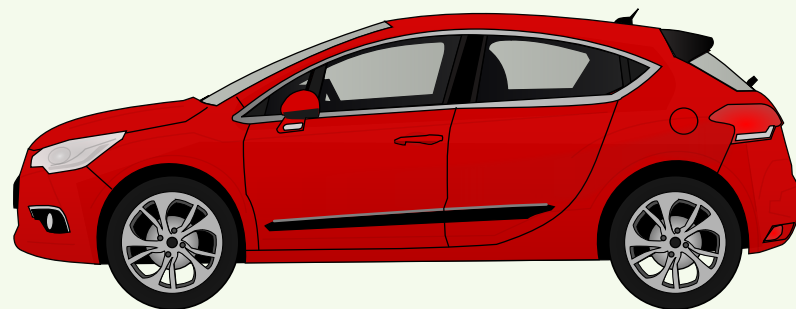


THE FRICTION MAKES YOUR HANDS WARM

IS FRICTION A GOOD OR BAD FORCE?

Friction is a useful force, most of the time.
Here are some of the ways friction can be useful to us...

PREVENTS CARS SKIDDING



KEEPS YOUR HANDS WARM



HELPS US GRIP THINGS



WHEN DO WE WANT LESS FRICTION?

Sometimes, we want less friction to be created so we can move faster.



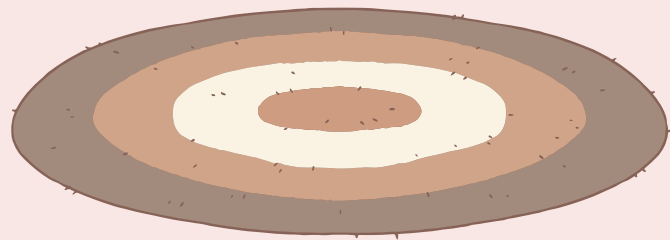
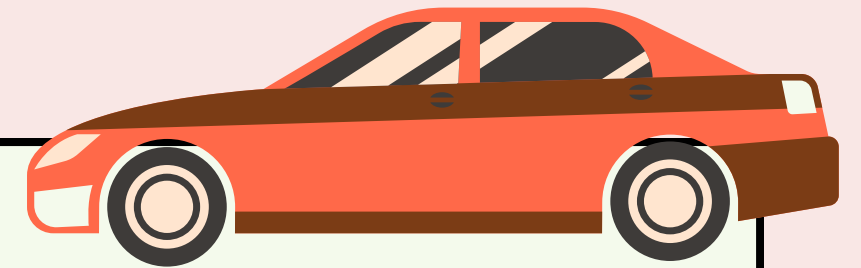
Ice skaters want to move quickly across the ice. The blades on ice skates are narrow. This means less friction will be created on the ice and the skaters can move more quickly,

Olympic cyclists want to travel quickly so that they can win races. Their bikes have narrow tyres with few ridges to create less friction against the surface, helping them move faster.

FRICTION EXPERIMENT

You are going to explore the friction on different surfaces.

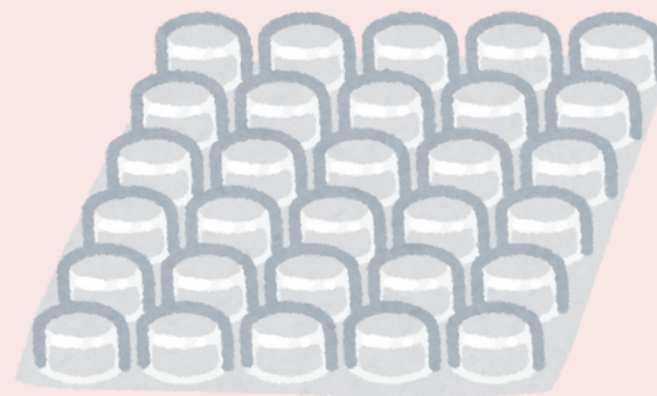
Look around you – what surfaces could we use?



carpet



sandpaper



bubble wrap



wooden floor

FRICTION EXPERIMENT

We are going to prediction which one will great the most friction! Which means it will go slowly.

Surface	People
table	
paper	
carpet	
foam mat	

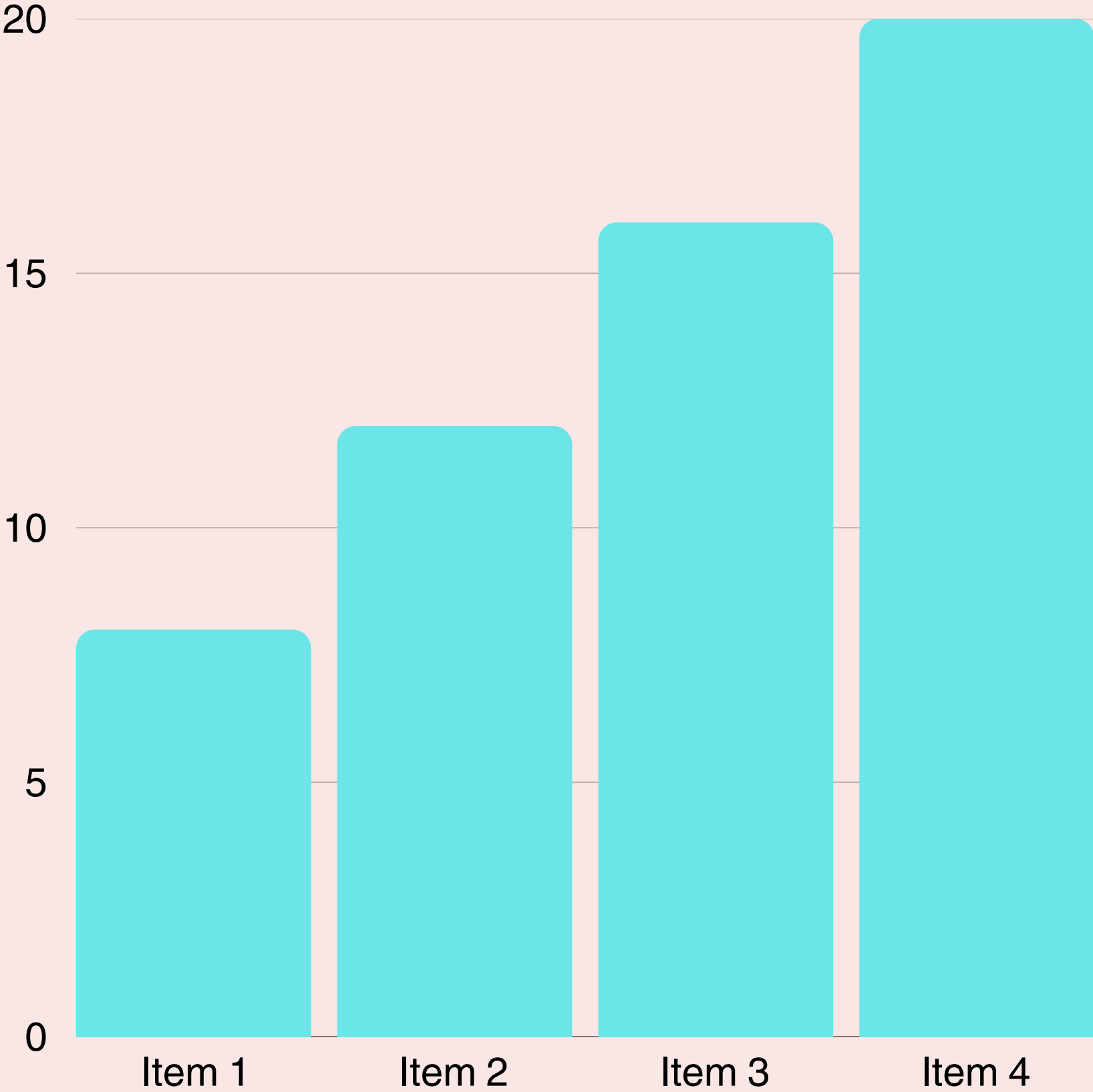
KO: Understanding friction

I predict that _____ will create the **most** friction.

I predict that _____ will create the **least** friction.

Surface	Distance car travelled
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LETS MAKE A BAR CHART



Forces and Motion

Magnets

3



Recap

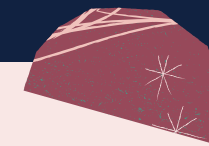
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Recap

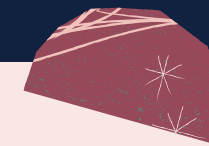
A pull...



1.
**Moves something away
from you**



2.
**Brings something
towards you**



3.
Turns or rotates

Recap

Friction is...



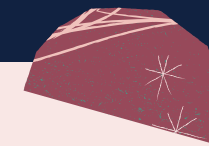
1.

A force that is with you



2.

**A force that affects the
way things move.**



3.

**A force that works for
the government**

Recap

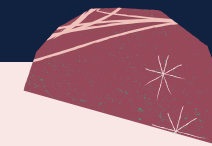
What does friction do?



1.
speeds things up



2.
slows things down



3.
give things energy

Lesson Outline

1

What is magnet?

2

How do magnets
work?

3

Magnetic
materials

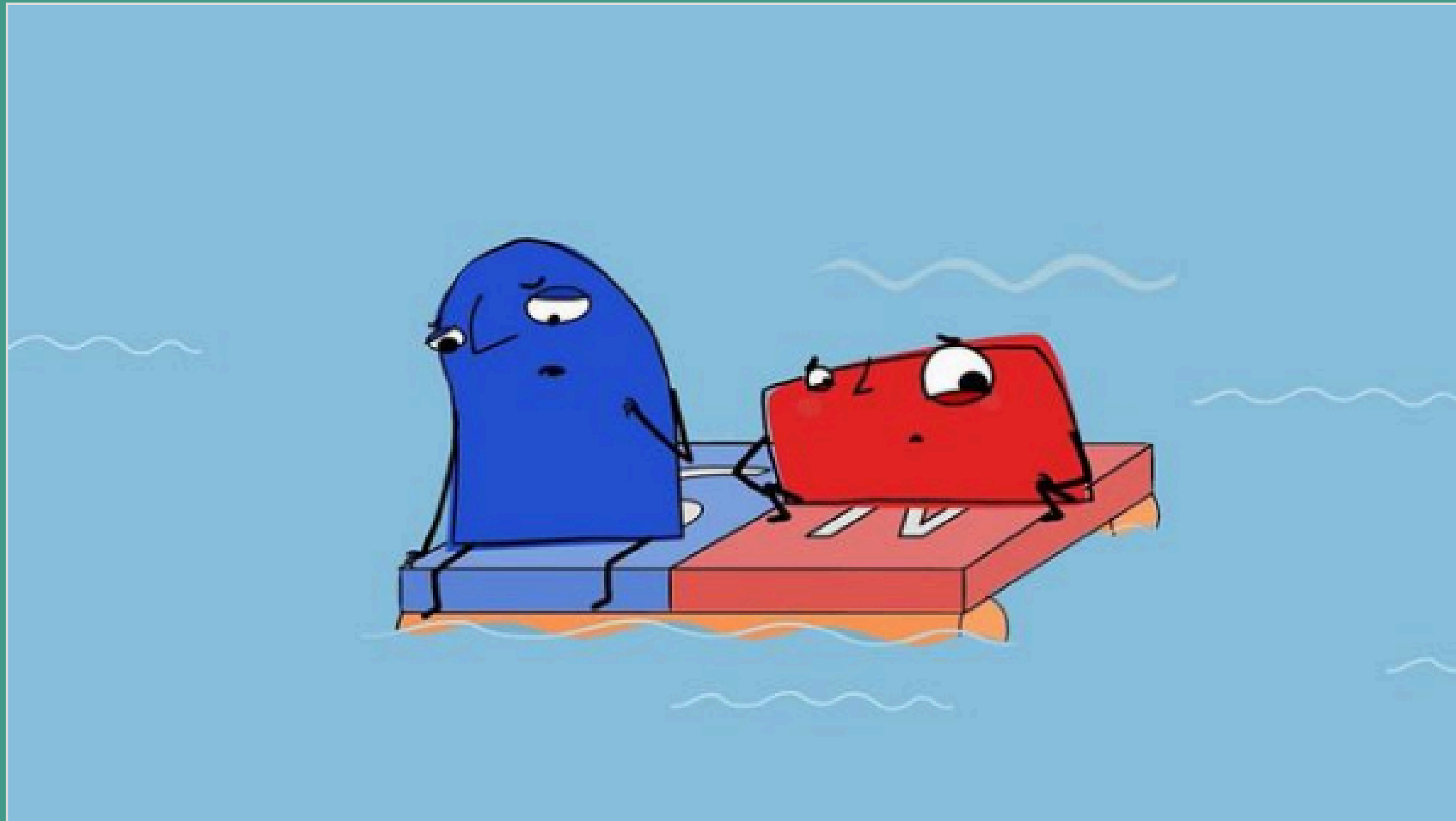


non contact force



A force that affects something from a distance - for example gravity or magnetism.

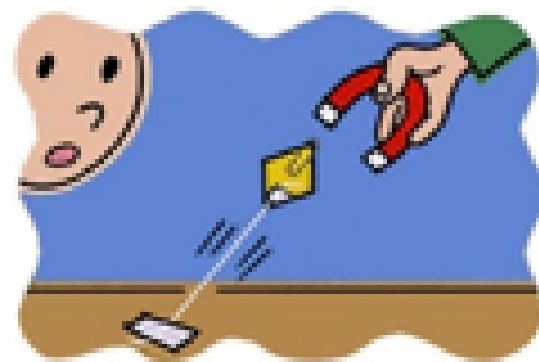




What is a magnet?

Find out about everyday uses of magnets, how magnets attract and repel and their poles in this 2nd level Science Explainer.

magnetic force



Magnets create a magnetic field. This field is the space where a magnetic force can attract or repel another magnet.



The Earth's Magnetic Field - FULL EPISODE 🌍🔗 | Down To Earth | Da Vinci TV

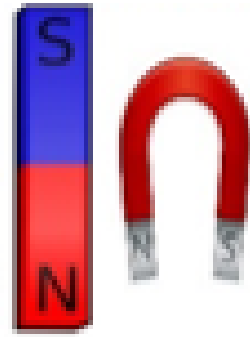
Da Vinci  Copy link



**FULL
EPISODE**

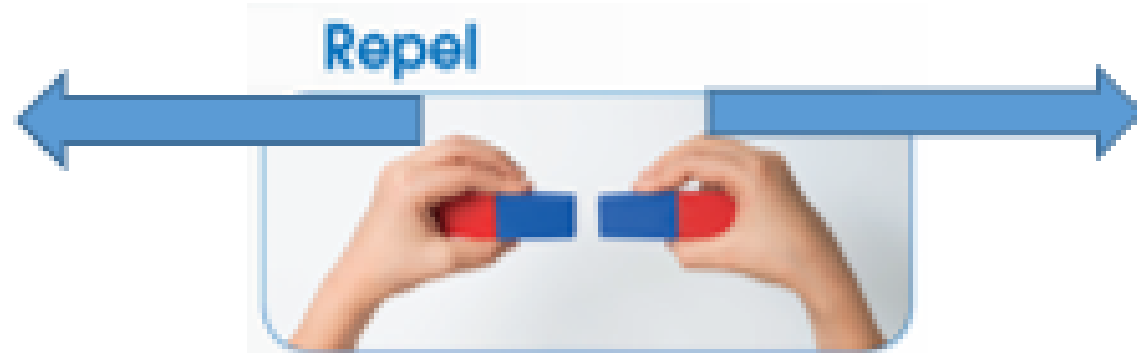
Watch on  YouTube

north pole
south pole



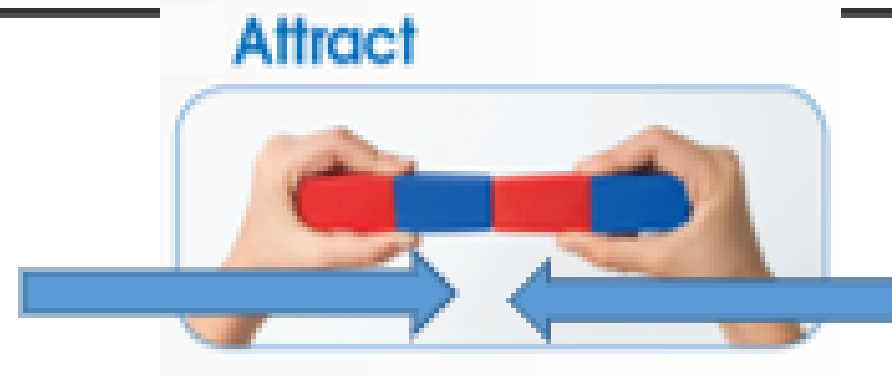
These are magnetic poles on a magnet which either attracts or repels another magnetic pole.

repel

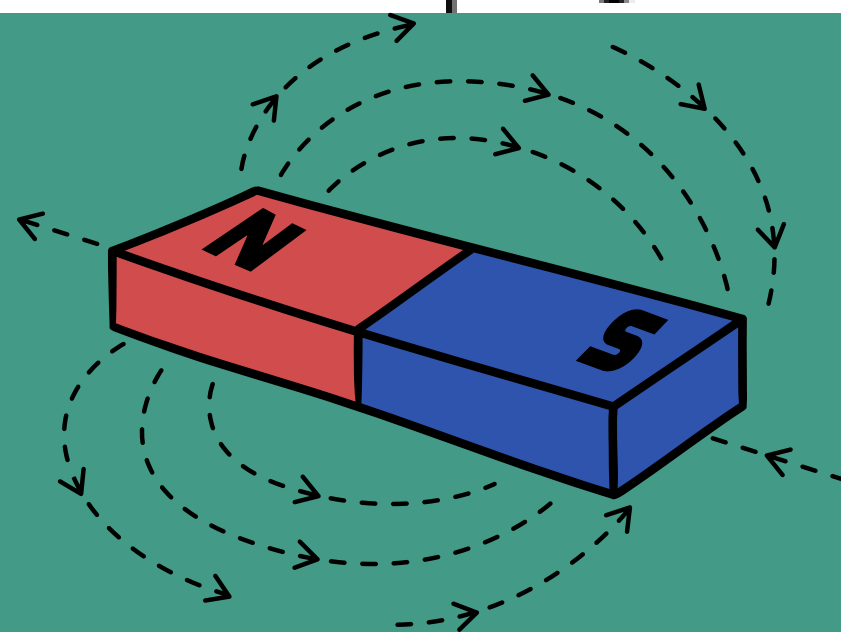


When like poles are placed near each other, they will push away.

attract



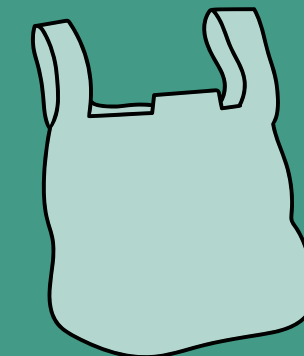
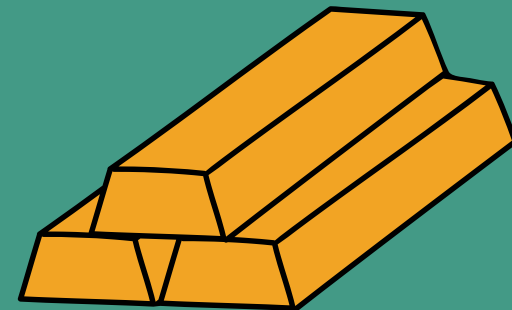
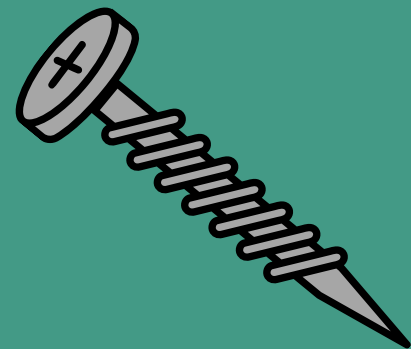
When different poles are placed near each other they will pull together - they attract.



magnetic materials



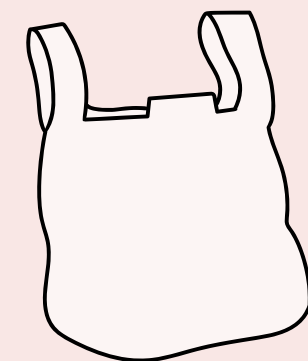
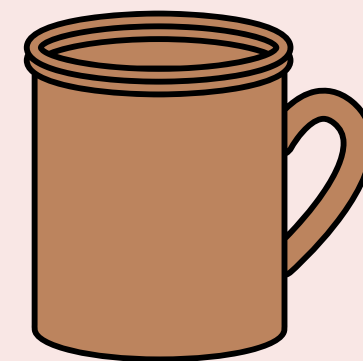
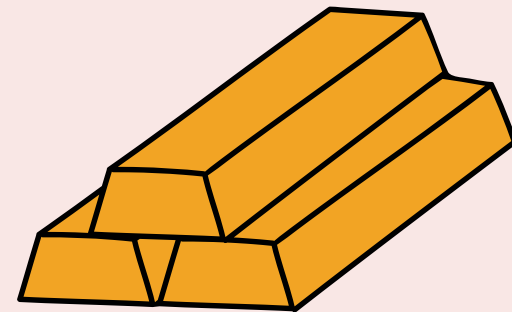
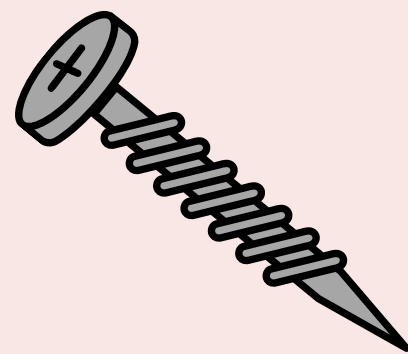
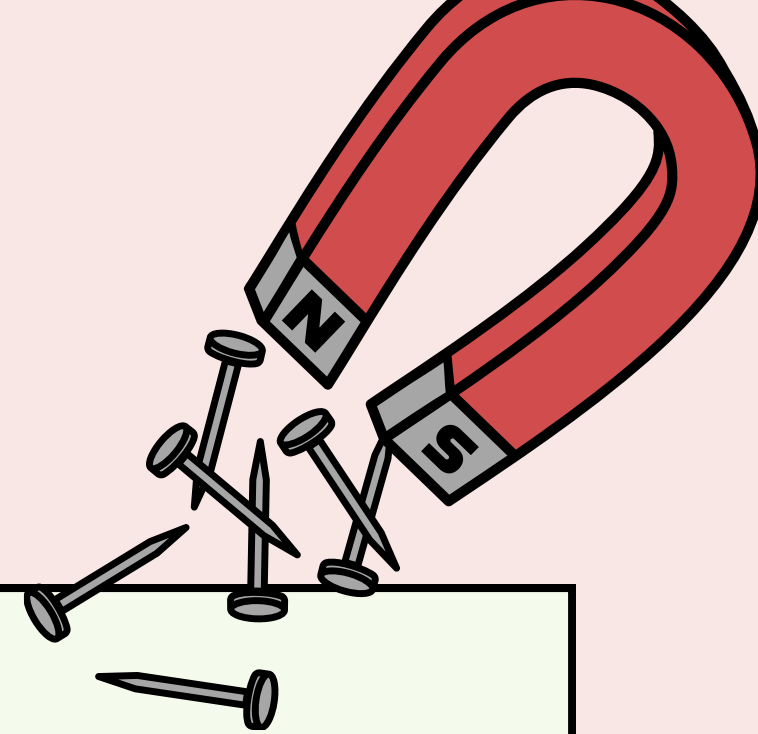
Materials that are attracted to a magnet - for example, iron and steel.
Most other metals - eg copper, aluminium are not magnetic



MAGNETIC EXPERIMENT

You are going to explore which objects might be magnetic

Look around you - what objects could we test?



KO: Forces, movement and magnets

object	my prediction yes / no	attracted to magnet yes /no
--------	---------------------------	--------------------------------

RECORDING RESULTS

Lets turn our results into a pictogram



Resource Page



Find more elements using this code: **canvaeducationsciencepushandpull**

Find more videos using this code: **canvaplayground**

Find more photos using this code: **canvapushandpull**

Use these elements and illustrations in your Canva Presentation.
Happy designing! Don't forget to delete this page before presenting.



Try this background for online class.

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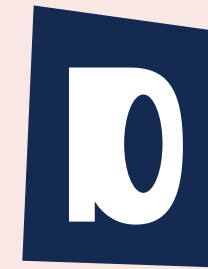
Press these keys while on Present mode!



for blur



for confetti



for a drumroll



for mic drop



for bubbles



for quiet



for unveil



Any number from 0-9 for a timer