

# Toys – Pushes and pulls

Name \_\_\_\_\_

Class \_\_\_\_\_

**What you will need for this lesson:** 3 empty plastic bottles - these could be water bottles or washing up liquid bottles or shampoo bottles – and some water.

Remember to always ask an adult to help you find these items and to help you carry out the investigation!

## Lesson starter

### Which toys need to be pushed or pulled to make them move?

Look at the poster below and work out which toys have to be pulled or pushed to work.

Then, think about how you could show which group they belong to, for example, you could use one colour pen to draw a circle around the push toys and another colour pen around the pull toys. Are there any that can be pushed and pulled and how would you show that?



When you've done that you might want to sort them into other groups like ones you like and ones you don't!

## The Investigation

You are going to see which bottle makes the best water squirter –

**Remember you will need:** 3 empty plastic bottles - these could be water bottles or washing up liquid bottles or shampoo bottles - and some water.

**YOU SHOULD ASK AN ADULT TO HELP YOU DO THIS!**

**What you need to do first (the method):**

- Put water into each of your bottles
- Take them outside and carefully make a line out of stones on the ground. This is where you are going to squirt the bottles from.
- Take one of the bottles and hold the bottle straight out in front of you. Remember how you are holding this bottle because you need to hold all bottles in the same way.
- Now squash the bottle as hard as you can so the water is squirted out of the bottle.
- How far did the water travel? Put a stone or marker to mark this spot.
- Repeat this for the second water bottle and then the third. Remember to hold all the bottles in exactly the same way.
- Which bottle came in 1<sup>st</sup> place? Which was 2<sup>nd</sup> and which was 3<sup>rd</sup>?
- Now you can repeat this investigation by holding the bottle at a different angle



How did you hold the bottle?	Which water bottle	Did it come first, second or third?
Straight	1	
Straight	2	
Straight	3	

How did you hold the bottle?	Which water bottle?	Did it come first, second or third?
Pointing slightly upwards		

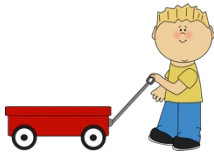
Remember to be very careful not to squirt the water at a person!

## What is a force?

In your investigation you were squashing the bottle to push the water out of the bottle. Force is a word for pushing or pulling.



When a force touches something, that thing will change direction. A ball is still but when it is kicked, the force of the kick will **push** the ball in one direction away from the kicker.



Another force can make something travel towards it like a child's toy being pulled on a string. It is being **pulled** towards the person that is pulling it.



Some things can be pushed and pulled, like a door or a swing.

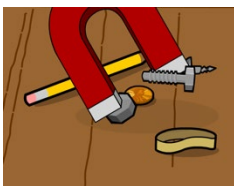


Sometimes we can't see the force that's making something move. We can't see the wind, but it can push the washing on the line or the branches of a tree.



There are 2 natural forces. In other words, forces that are just all around us that are there all the time happen. One of these is **GRAVITY**.





Gravity tries to **pull** everything down to the Earth. So when you let go of a stone it falls to the ground. When you jump on a trampoline, your legs push you up and then gravity pulls you down again!



The other is the force from **MAGNETS**. Magnets can pull things towards it but it can also push things away. Metals are often pulled towards a magnetic force.

## Your Challenge!

Look at the pictures in the table. Write down if you think it is a PUSH or a PULL force.

	Is this a PUSH or a PULL force?
	
	
	
	

We hope you enjoyed this science lesson!