Water Resistance

Water Resistance

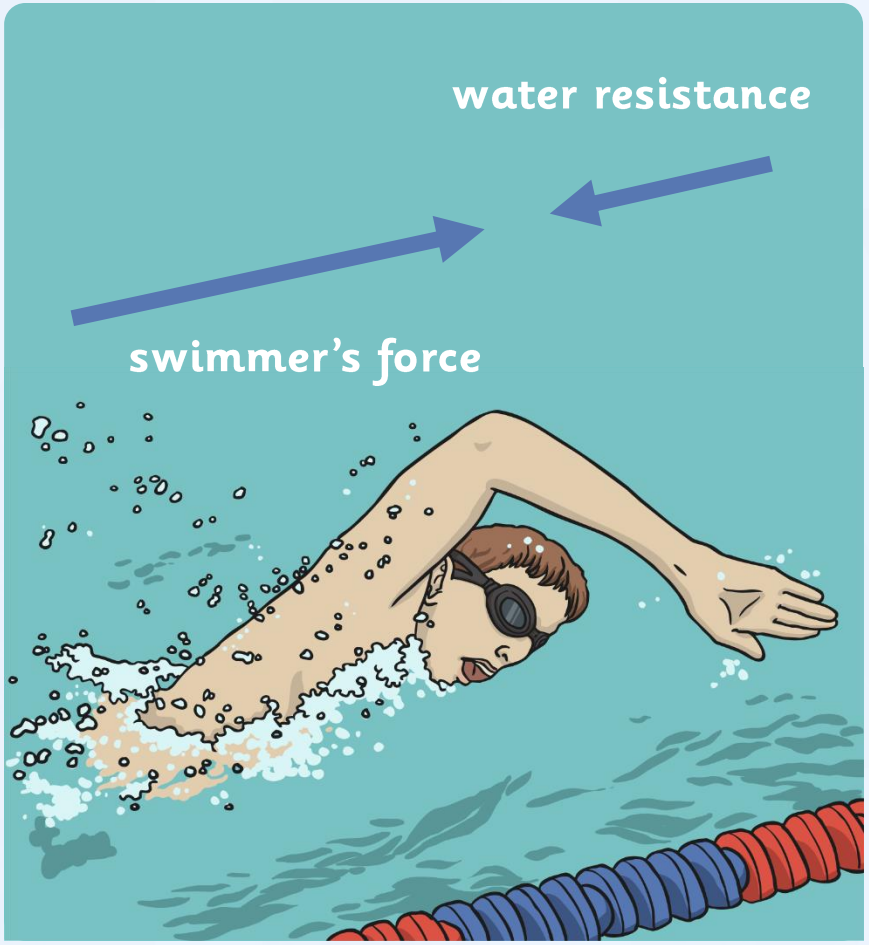
How does it feel to walk through deep water?

Think of some words and phrases to describe the feeling.

Water Resistance

If you have ever walked through water, you will have felt the effects of **water resistance** pushing against you.

Whenever an object moves through water, it experiences the force of water resistance. Water resistance **pushes** objects back, making it hard for them to move through water.

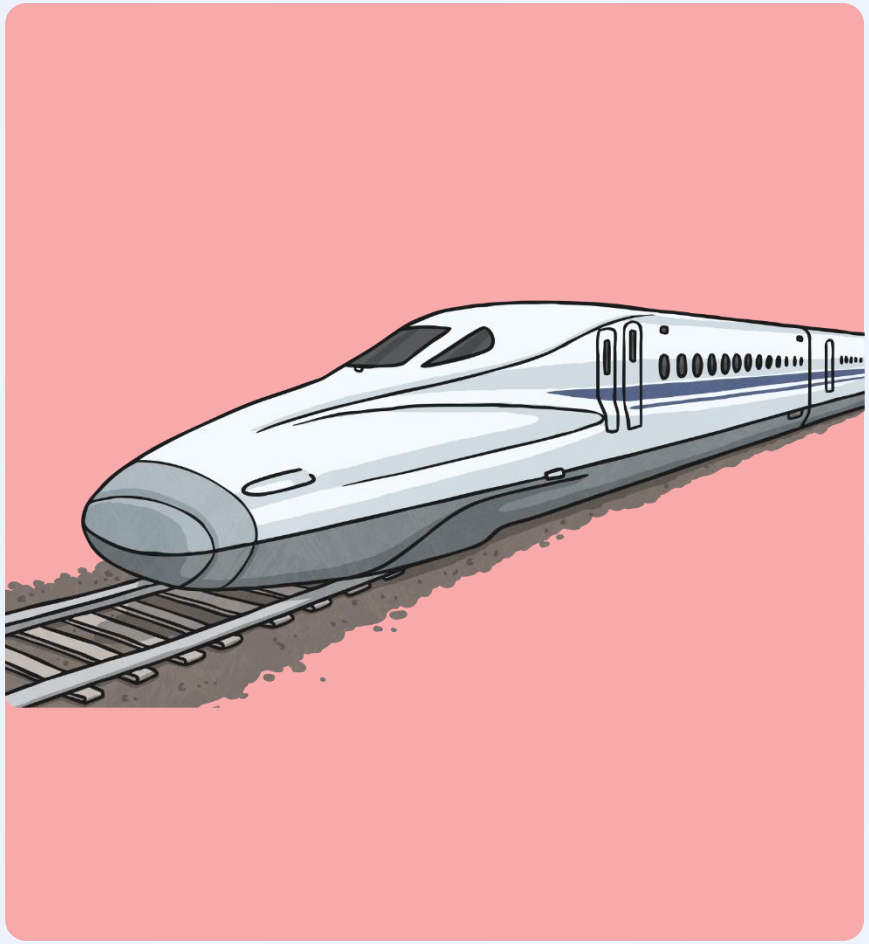


Streamlined Shapes

It is possible to reduce the effects of water and air resistance.

Objects that do not experience much water or air resistance are called streamlined.

What do they all have in common?

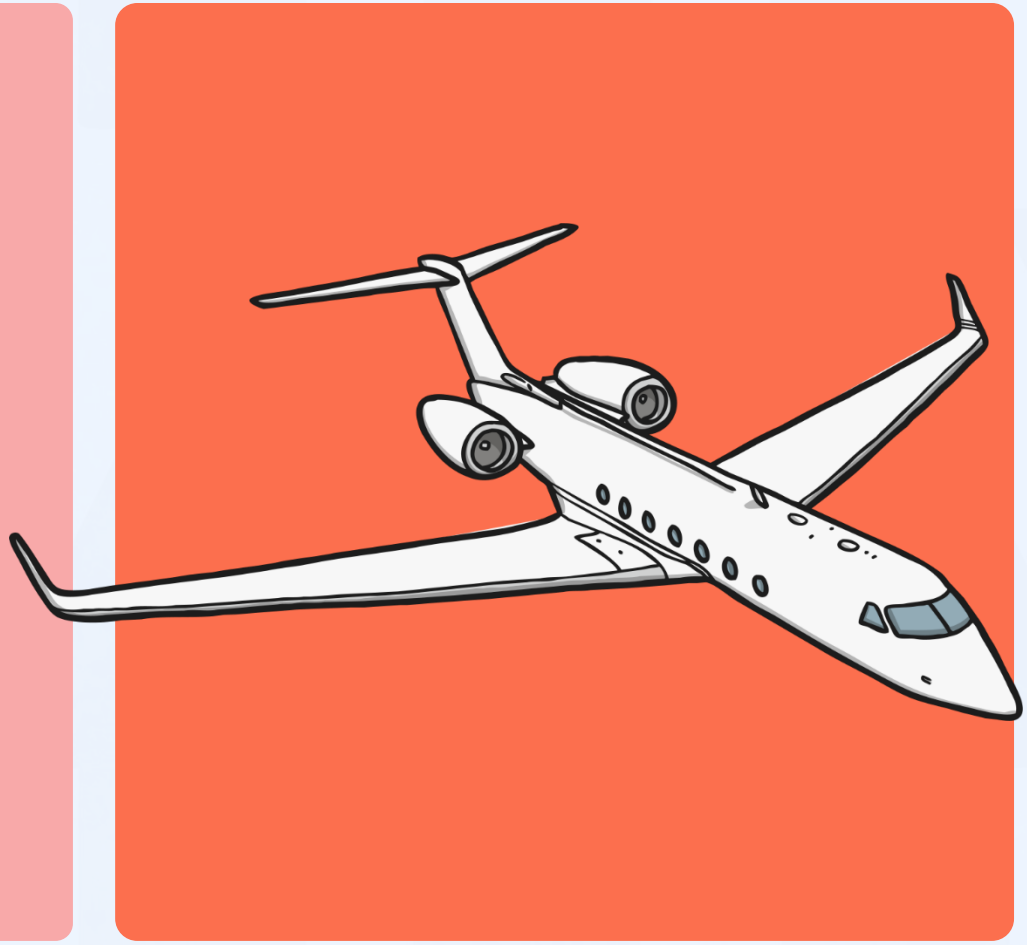


Streamlined Shapes

This aeroplane is **streamlined**.

Its nose is **pointed** so it can cut through the air, and it has a **low, smooth, curved back** to allow air to flow over and around it.

It does not create much **air resistance** so it can move through the air easily.

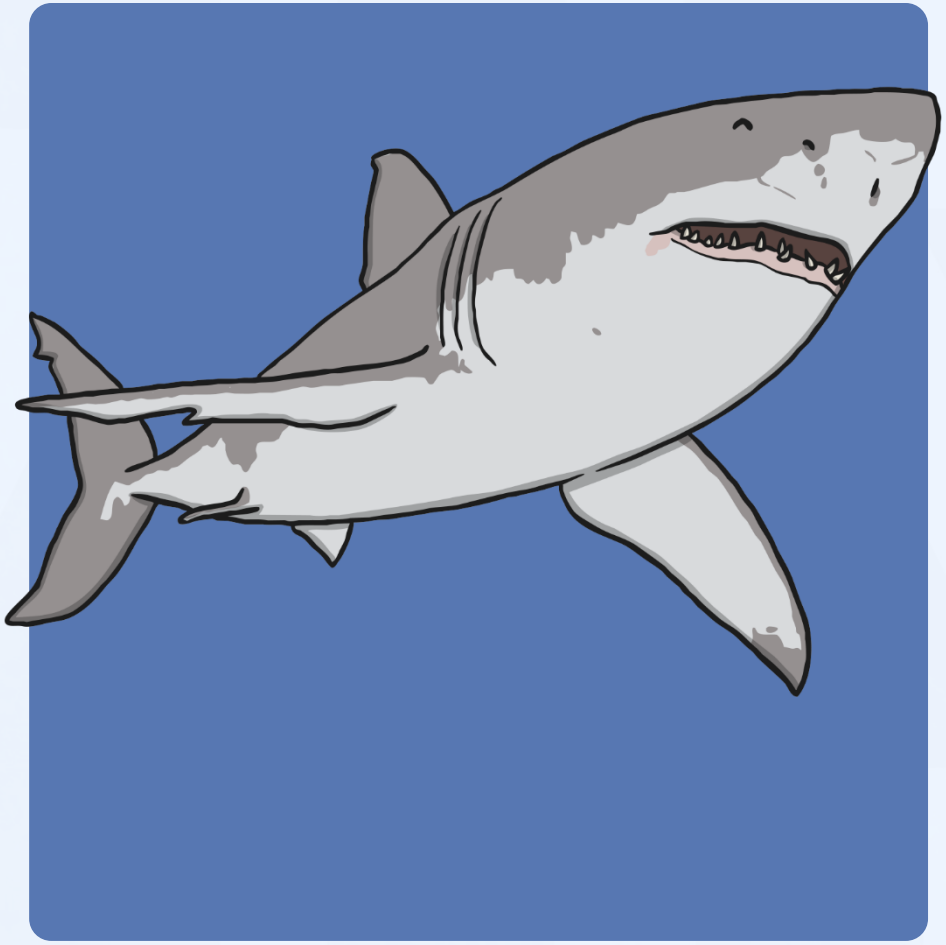


Streamlined Shapes

The shark is **streamlined**.

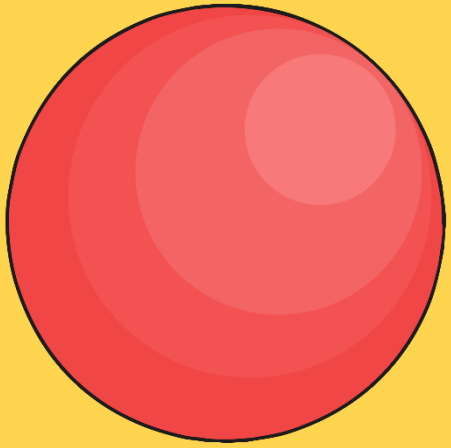
It has a **pointed** nose to cut through the water, and a **smooth, low, curved back** to allow the water to flow over and around it.

It does not create much **water resistance** so it can move through the water quickly.

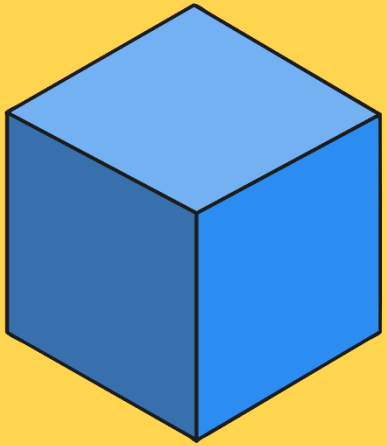


Streamlined Shapes

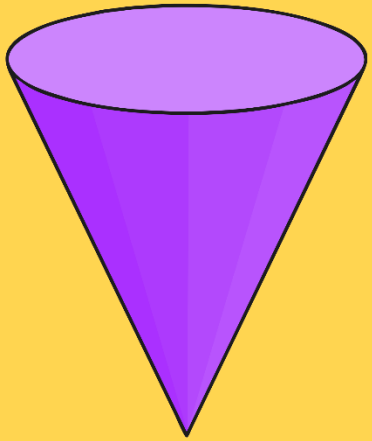
Try this mini-investigation to explore streamlined shapes.
Weigh three equal pieces of Plasticine or modelling clay.
Then mould each piece into one of the three different shapes shown below.



sphere



cube



cone

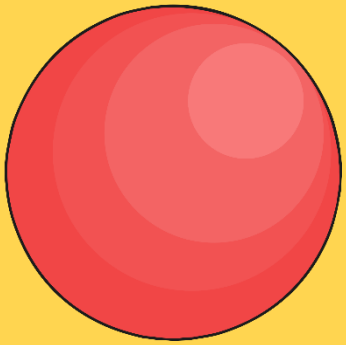
Streamlined Shapes

Fill three **identical** containers with the same amount of water.

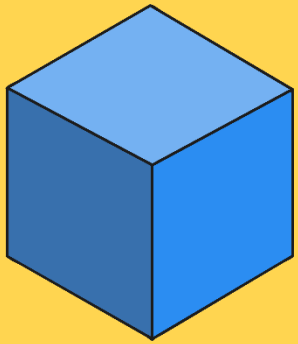
You will drop each Plasticine shape into the water and **time** how long it takes to fall through the water.

Which shape do you think will fall **fastest**? Which will fall **slowest**?

Try it out!



sphere



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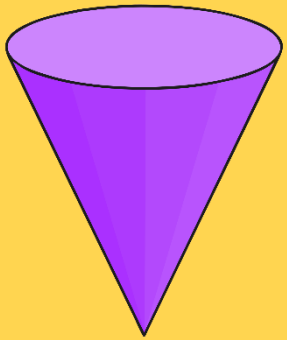
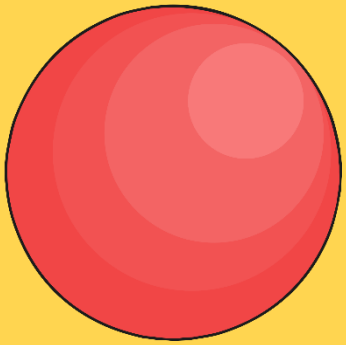


cone

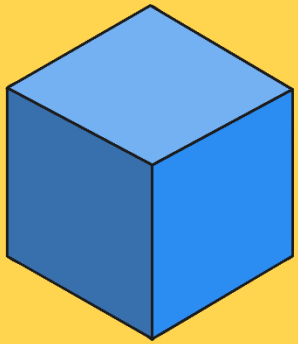
Streamlined Shapes

The **cone** should have fallen through the water the **fastest**. It is the **most streamlined** shape as it has a **pointed** end to cut through the water.

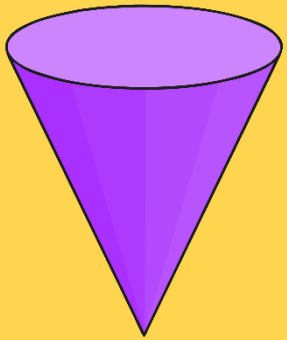
The **cube** should have fallen through the water the **slowest**. It is the **least streamlined** shape because it has a **flat** surface which will create a lot of **water resistance**. The water will push against the flat surface, slowing it down.



sphere



cube



cone

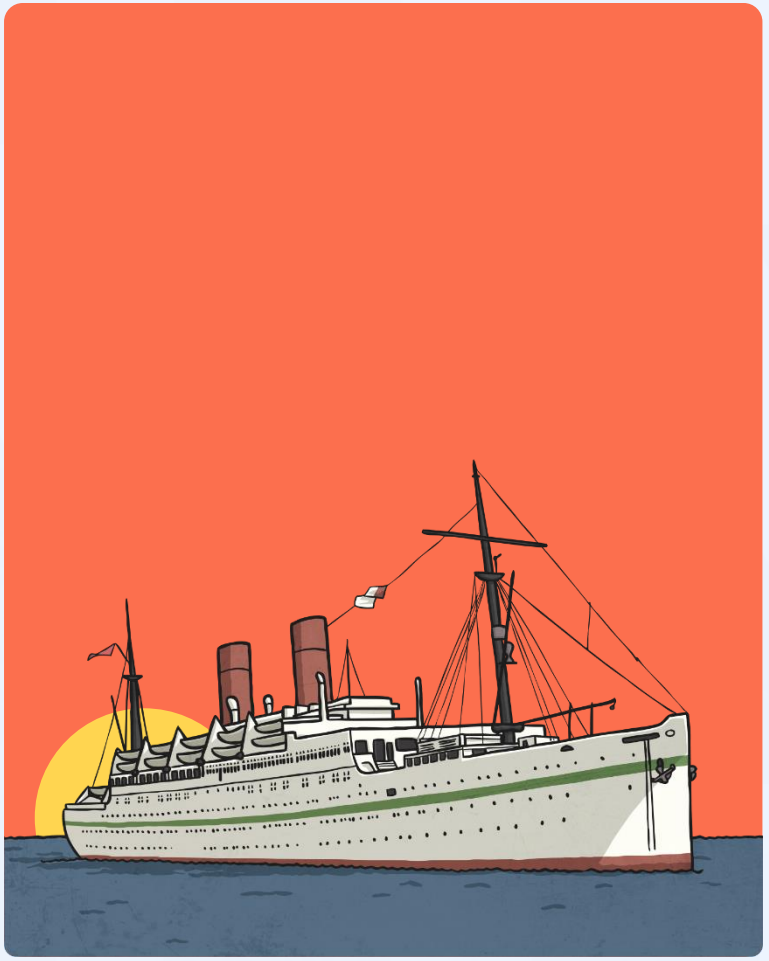
Boat Race

Your challenge today is to use what you have found out about **water resistance** and **streamlined shapes** to make a boat!

You will need to decide how to test your boats.

The **most streamlined** boat will create **the least water resistance**, and will move through the water the **fastest**.

Think about the best **shape** for your boat.



Boat Race

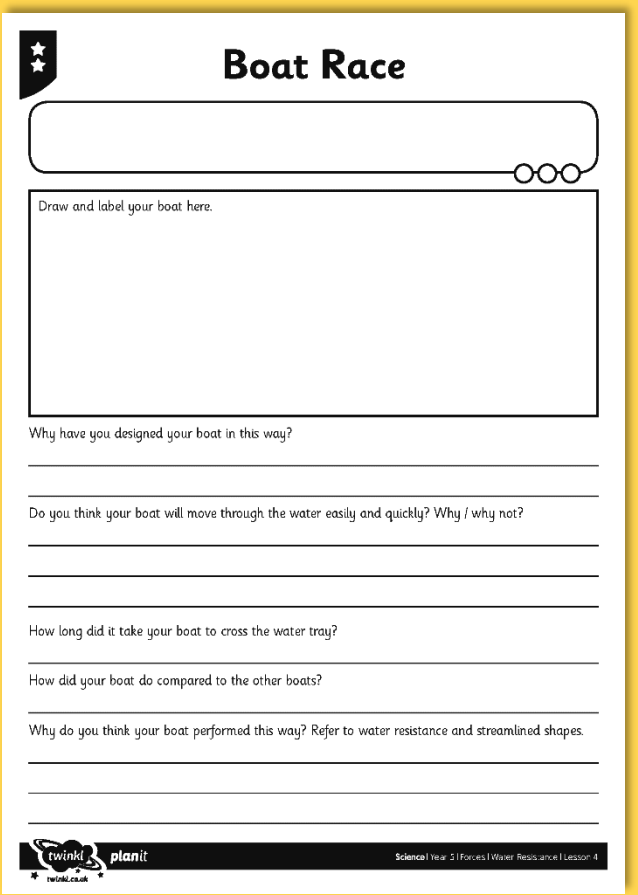
Draw and label your boats on the **Boat Race Activity Sheet**.

Predict how well you think they will move through the water.

Then **float** your boats in the water.

Time how long they take to cross the water.

The fastest boat wins!



Boat Race

Draw and label your boat here.

Why have you designed your boat in this way?

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

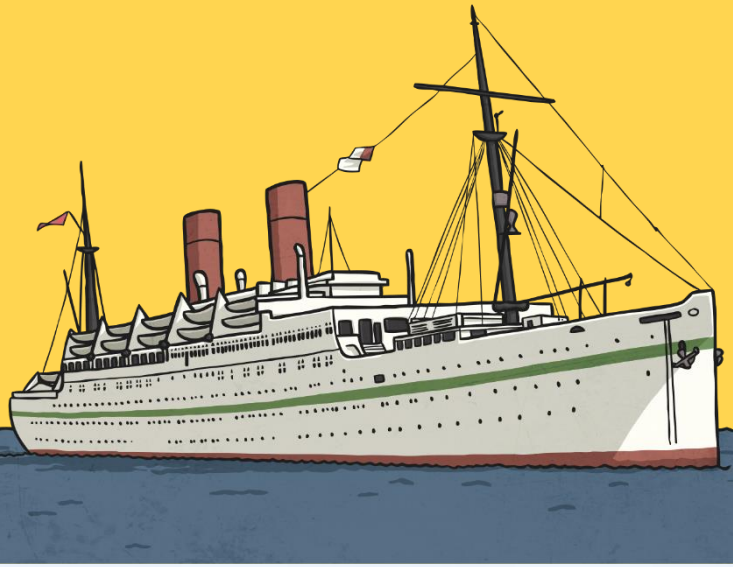
How long did it take your boat to cross the water tray?

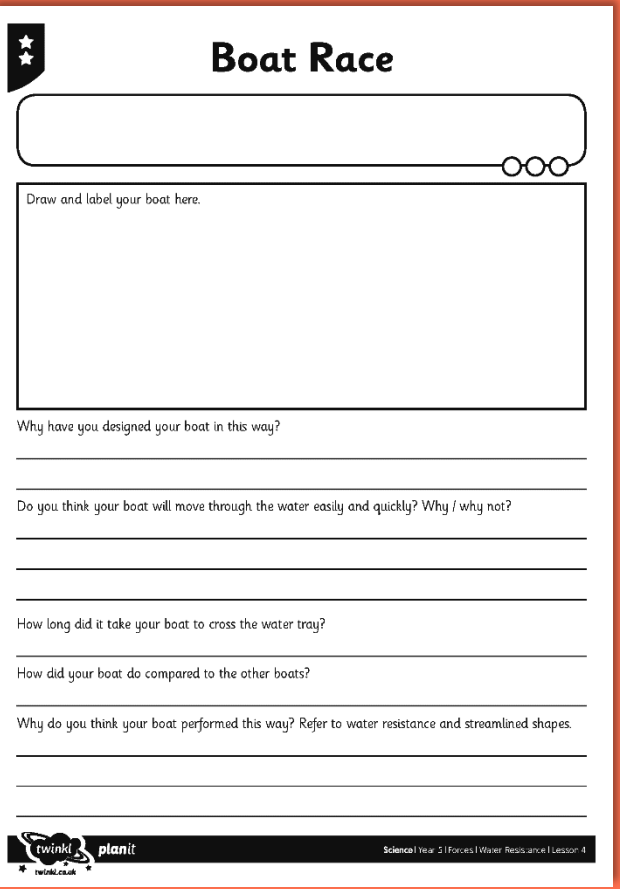
How did your boat do compared to the other boats?

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

Boat Race

Evaluate your boat's performances on your Boat Race Activity Sheet.





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