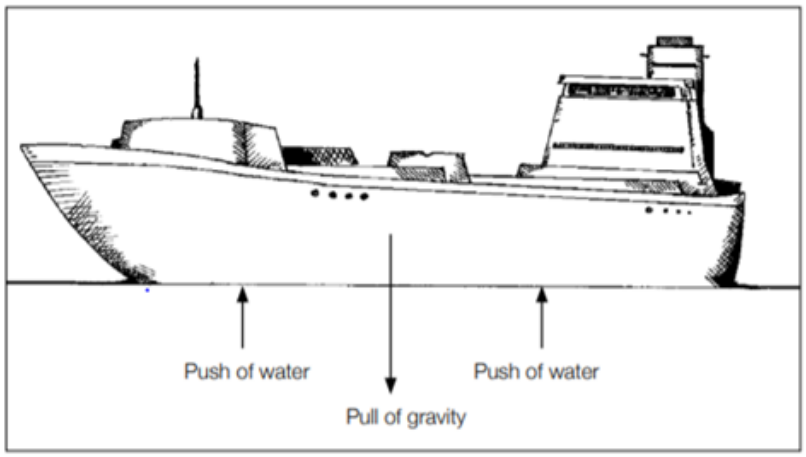
Push-Pull & Water

*All of the below can be found at **See Week 3 Tuesday Theme Unit Push-Pull*

Today you will:
• identify that gravity pulls down on objects
• explain that water can push up on objects in water
• investigate objects that sink or float in water
• investigate how to change an object that sinks into one that floats.



Water supports the weight of a boat

Whether an object floats or sinks is determined by the balance between the downward pull of gravity on an object (also called weight) and the upward push of water.

If the weight of an object is greater than the upward push of water on the object, it will sink.

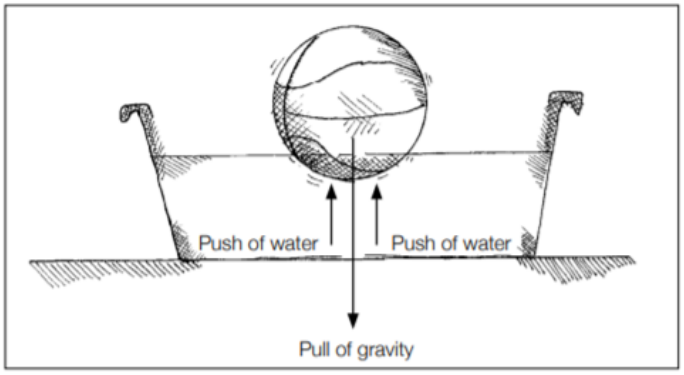
If the weight of an object and the upward push of water are in balance, the object will float.

Water Play Investigation

What will you need?
- Fill a container with water (bucket, large container)
- 3 different balls (e.g. tennis/hand ball, rubber ball, basketball etc)

Activity steps:
1. Discuss your experiences with water, such as, playing in a pool, swimming or having a bath.
   What do you think happens to different objects when they are placed in water?
2. Predict what will happen when you push one of the balls uber the water and let go.
3. Push the balls under water to feel what happens when the balls get pushed under.
   What does it feel like when you push the balls under the water?
   What happens when you release the ball? Why?

Questions:
Why does a ball thrown up in the air land on the ground?'
What pulls a rock down when it sinks?
Remember that it is gravity that pulls things down to the Earth.
Why did the ball move upwards when you released it?



Sink or Float Activity

Watch the following clip, **https://www.youtube.com/watch?v=erI4Jpn2ibw**

Whether an object sinks or floats is determined by two factors; the weight of the object, and the upwards force of buoyancy, or the balance between push and pull forces.

Buoyancy is a force on an object making that object float, rise or move upward.

In this activity you will investigate the push-pull forces of different objects in water.

What will you need?

- Reuse the container of water from previous
- A range of objects (tissue, paperclip, cotton bud, marble, fork, apple, ball, empty bottle, coins, playdough ball)
- Recording sheet ***See Week 3 Push-Pull Sink or Float*

Activity steps:

1. Collect your objects
2. Predict whether the objects will sink or float. Sort the objects into two groups, one for sink and one for float.
   Why do you predict group 1 will sink?
   Why do you predict group 2 will float?
3. Observe by placing the objects into the container one at a time. Describe what happened to each object. Record your findings by drawing the object in the sink or float column.
4. Compare your predictions with your observations/findings. Were your predictions correct?
5. Explain why you think these objects sink or float. Record your ideas in the 'explain' section under sink and float.

Questions:

What is similar about objects that float?
What is similar about objects that sink?
How can you change an object that sinks into an object that floats?

Example 1: Changing the shape of the plasticine ball into a boat will make it float because its size has increased with no change to its weight.

Example 2: A tonne of steel would sink if it displaced too small an amount of water, but if changed into a different shape, for example, a boat shape, it will float.

Findings:
Objects that are 'heavy for their size' sink.
Objects that are 'light for their size' float.