

# SAVE OUR SEAS

## MATERIALS

### ACTIVITY 4: THINGS THAT FLOAT

#### Lesson Objective

- To describe which objects float and which sink, and why this happens.

#### You will need

- Washing up bowl
- Tap water and seawater (salty water)
- Washing up bowl
- Objects to test.

Which of these objects do you think will float in water?

Pebble or marble	Polystyrene block	Wooden block
Tin foil	Drinking straw	Bluetak/modelling clay

Which of these objects do you think will float in seawater (salty water)?

#### Results

Object	Water	Seawater
Pebble or marble		
Polystyrene block		
Wooden block		
Tin foil		
Bluetak/modelling clay		
Drinking straw		

#### Conclusion

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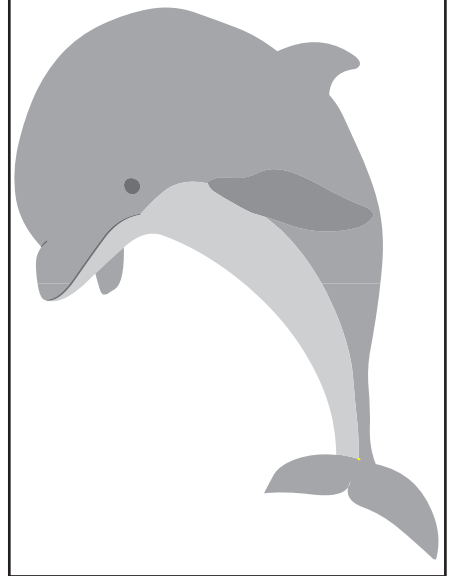
#### Duffy says,

"Lots of things float in the sea: seaweed, surfboards and even surfers.

"Unfortunately rubbish floats, too: plastic bottles, plastic bags, lollipop sticks, cigarette butts and other things humans have thrown away.

"If raw sewage gets into the sea, you might even see human poo floating in the sea. Not the kind of 'floaters' any of us want to see. Yeuch!!"

Find out more [www.sas.org.uk/campaign/sewage\\_and\\_sickness/protecting\\_your\\_health.php](http://www.sas.org.uk/campaign/sewage_and_sickness/protecting_your_health.php)



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### ACTIVITY 4: THINGS THAT FLOAT

#### Experiment 2 - Why things float

Objects that are less dense (lighter) than water will float.

But huge, metal ships can float, too, because the water they are floating in pushes upwards against them.

#### You will need

- Two drinking glasses/tumblers
- Tap water and seawater (salty water)
- Drinking straw
- Bluetak or modelling clay.

#### Method

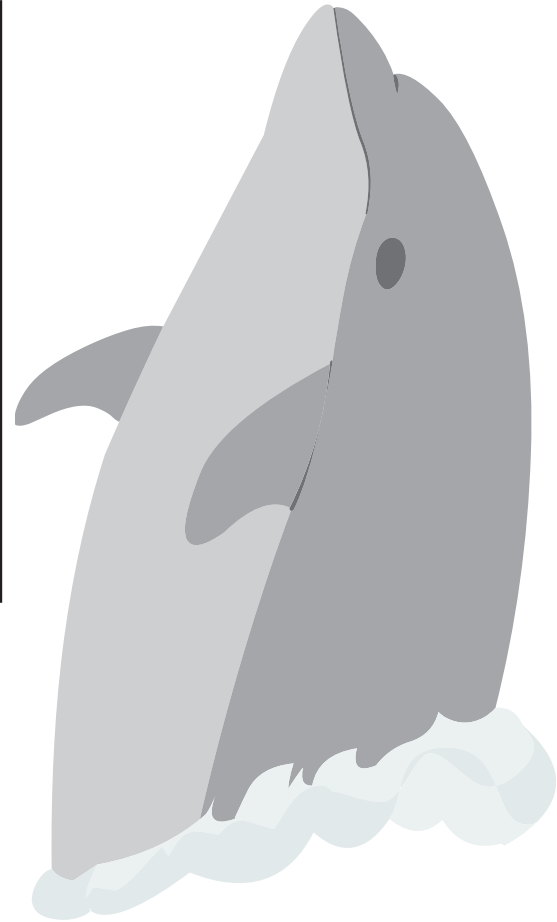
1. Take the drinking straw and place a small ball of bluetak/modelling clay on to one end.
2. Fill one tumbler with tap water. Fill the second tumbler with seawater.
3. Put one straw in the tap water and let it float. Mark where the water comes up to on the straw.
4. Now put the same straw into the glass with seawater. Mark where the water comes up to on the straw.

#### Results

The difference between the two marks was ..... mm.

#### Conclusion

Seawater (or salty water) is more dense than tap water, so it's easier for things to float in it.



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### ACTIVITY 4: THINGS THAT FLOAT

#### Experiment 3 - Testing upthrust

Objects will float in water where the upthrust (the 'pushing force') of the water is enough to overcome the weight of the object.

When you put an object in water, it pushes water (displaces) out of the way. (Archimedes proved this when he jumped into a bath that was full to the top and water slopped all over the floor - Eureka!)

When upthrust is the same as the object's weight, the object will float.

#### You will need

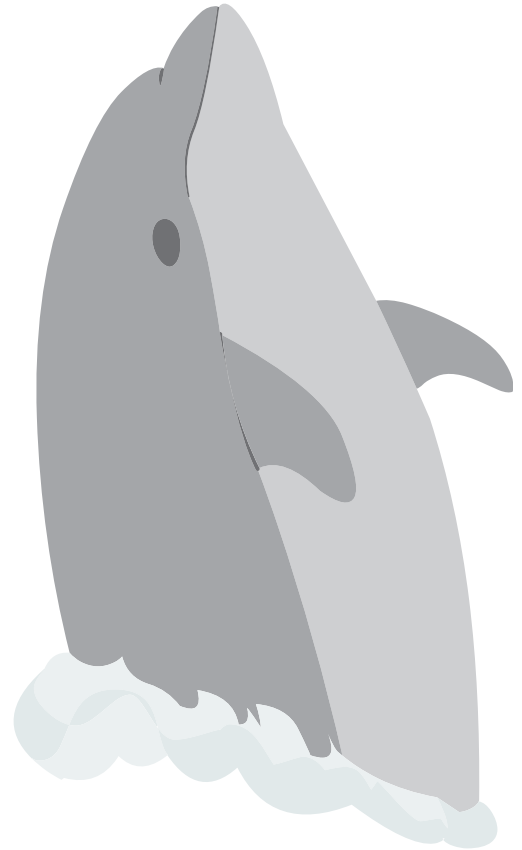
- Washing up bowl
- Tap water
- Polystyrene block
- Wooden block
- Marble.

#### Method

1. Fill the washing up bowl with tap water.
2. Put the polystyrene and wooden block in the water. Push down on each to feel the upthrust pushing back.
3. Put the marble in the water.

#### Conclusion

- The polystyrene block floats because it is less dense than water.
- The wooden block floats deeper in the water because wood is denser (heavier) than polystyrene.
- The marble sinks because the upthrust is not as great as its weight - it is very dense.



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### ACTIVITY 4: THINGS THAT FLOAT

#### Experiment 4 - Making a ship's hull

Heavy metal boats can float in water because of a) upthrust and b) because they have hollow hulls - the hulls are full of air.

#### You will need

- Washing up bowl
- Tap water
- Marbles
- Tin foil

#### Method

1. Fill the washing up bowl with tap water.
2. Float a small sheet of tin foil on the surface of the water. Push it gently (it will sink).
3. Now shape the sheet of tin foil into a bowl shape.
4. Put it on the water (it will float).
5. See how many marbles you can load into it before it sinks.

#### Results

The tin foil hull held ..... marbles before it sank.

#### Conclusion

The tin foil hull floated easily even though it is made from metal. Because of the hull's hollow shape, it gives it a much lower overall density because it is filled with air (which is a lot lighter than water).

