

Lesson 7 - Floating and Sinking

Physics - Key Stage 3
Matter

Mr McKee



Investigating floating

Write down what you think she predicted would happen (ie did the 'weight' in water increase or decrease compared to air)

Explain why you think this.

Key facts

- Upthrust is less in air than it is in water
- Objects will float if the overall force on an object is zero (upthrust and weight are equal and opposite).
- Objects will rise or sink if they have an unbalanced force on them (i.e. weight and upthrust are not equal)



Object	Weight in air (N)	'Weight' in water (N)
Cork (floats)	0.2	0.0
Apple (floats)	1.1	0.0
Coke can (sinks)	3.5	3.4
Rock (sinks)	7.1	6.9

Conclusion:

1. What happened to the weight of the objects in water? Why is this?
2. What do you notice about the weight of objects that float?
3. Why do some objects still sink?



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Calculate the value for upthrust in water in each case by finding the difference between weight in air and weight in water.

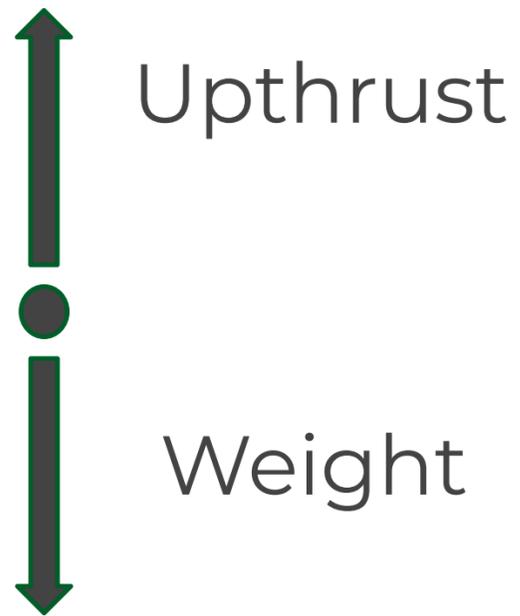


Object	Upthrust (N)
Cork (floats)	0.2
Apple (floats)	1.1
Coke can (floats)	0.1
Rock (sinks)	0.2



Free Body Diagrams

Draw a free body force diagram to show the forces for an object that floated



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Scaffold

- Force arrows drawn with a ruler
- Appropriate scale used for length of arrow (eg 1cm =1N)
- Arrows are labelled 'upthrust' and 'weight' correctly
- Arrows are equal and opposite in size



Independent task

1. Describe two ways that the density of water can change.
2. Explain why using the idea of density and particles

Word bank

Salt, temperature, particles, spaced, kinetic energy, mass, volume, density

$$\text{Density} = \text{mass} \div \text{volume}$$



Home experiment

Test the the effect of salinity (how much salt is dissolved water) on floating

- You need:
 - Three glasses of water
 - Salt
 - Three cherry tomatoes
- Pour water into three glasses
- Place a cherry tomato in each
- Add salt to the first glass and gently stir to dissolve it until the tomato floats
- Repeat for the second until it is suspended mid-point
- How salt is needed to make it sink?

