



Year 5 Science Summer 3

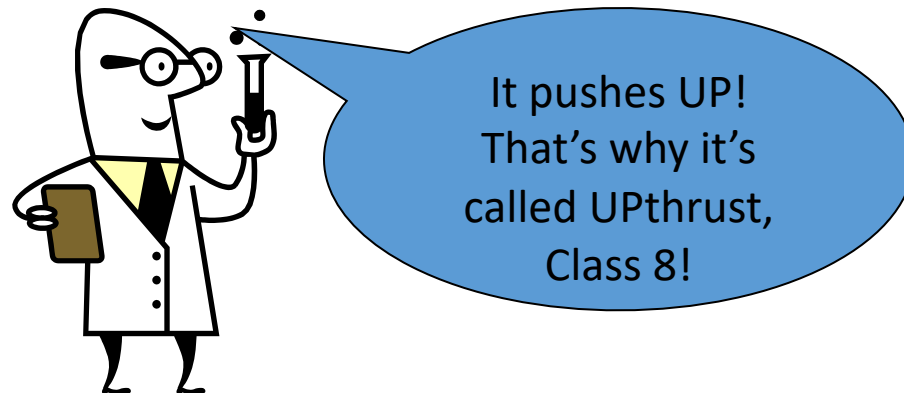
UPTHRUST

Watch the following videos.

- <https://www.bbc.co.uk/bitesize/topics/zc89k7h>
- <https://www.youtube.com/watch?v=CvWrkxzCiaY>

What's upthrust?

- Upthrust is a force that only exists in liquids, such as lakes, oceans, swimming pools and even cups of tea!
- It is a push that always goes straight up, against the direction of gravity.



Upthrust in action



This boat has gravity pushing it down, and the upthrust of the water pushing up. Because the forces are balanced, the ship floats.

What would happen if the forces weren't balanced?



More examples of upthrust



If you let go of your drinking straw, it floats up and sometimes tries to bob out of the glass!

Floating in the sea

- Salty seas have more upthrust. It's much easier to float in a sea than in a swimming pool.

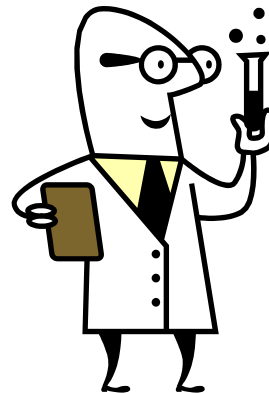


- The Dead Sea, in Israel, is the saltiest sea on earth. It's REALLY easy to float on it!



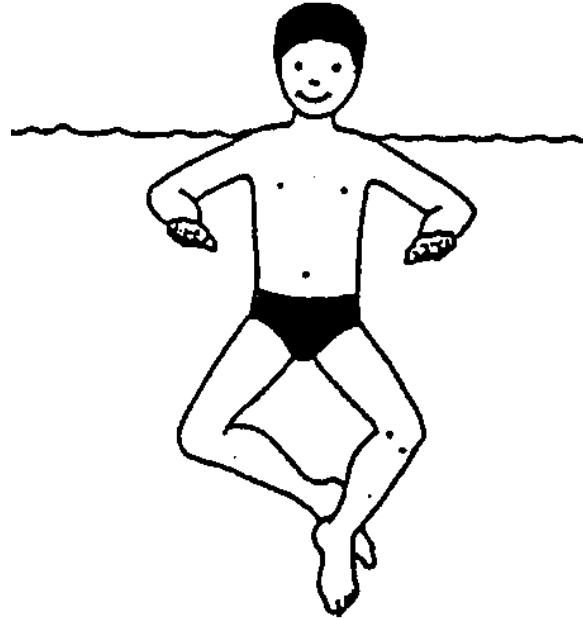
Shape affects upthrust.

- The larger the surface area of an object, the more the upthrust- you could try this at home in the sink or a paddling pool.



Imagine trying to hold this large beach ball, and this small tennis ball, under the water. Which would be easier?

- That's why swimmers float on their backs, not upright in the water.



(You *can* stay afloat like this, but it's harder work, called "treading water". If you stopped moving your feet you'd sink, because the force of gravity would be stronger than the upthrust.)

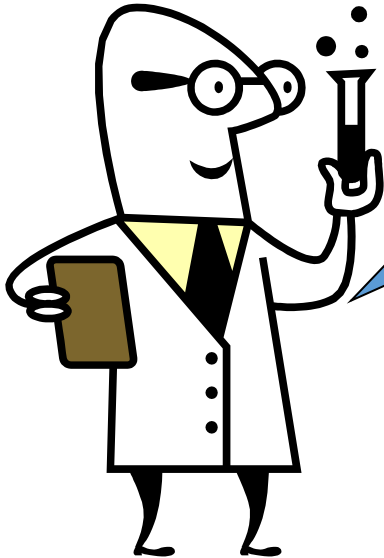
Submarines

- Submarines are specially designed to sail underwater. They fill up with water which makes them weigh more.
- More weight = more gravity. The gravity is greater than upthrust, so the submarine sinks.

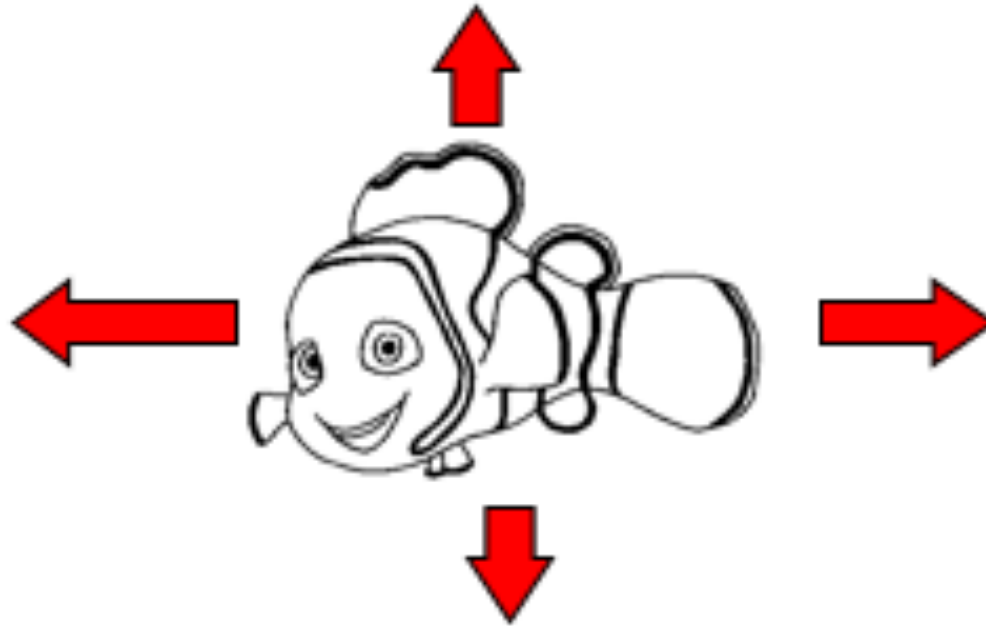


All very interesting, but so what?

UPTHRUST is the reason
that objects weigh less
in the water than in air!

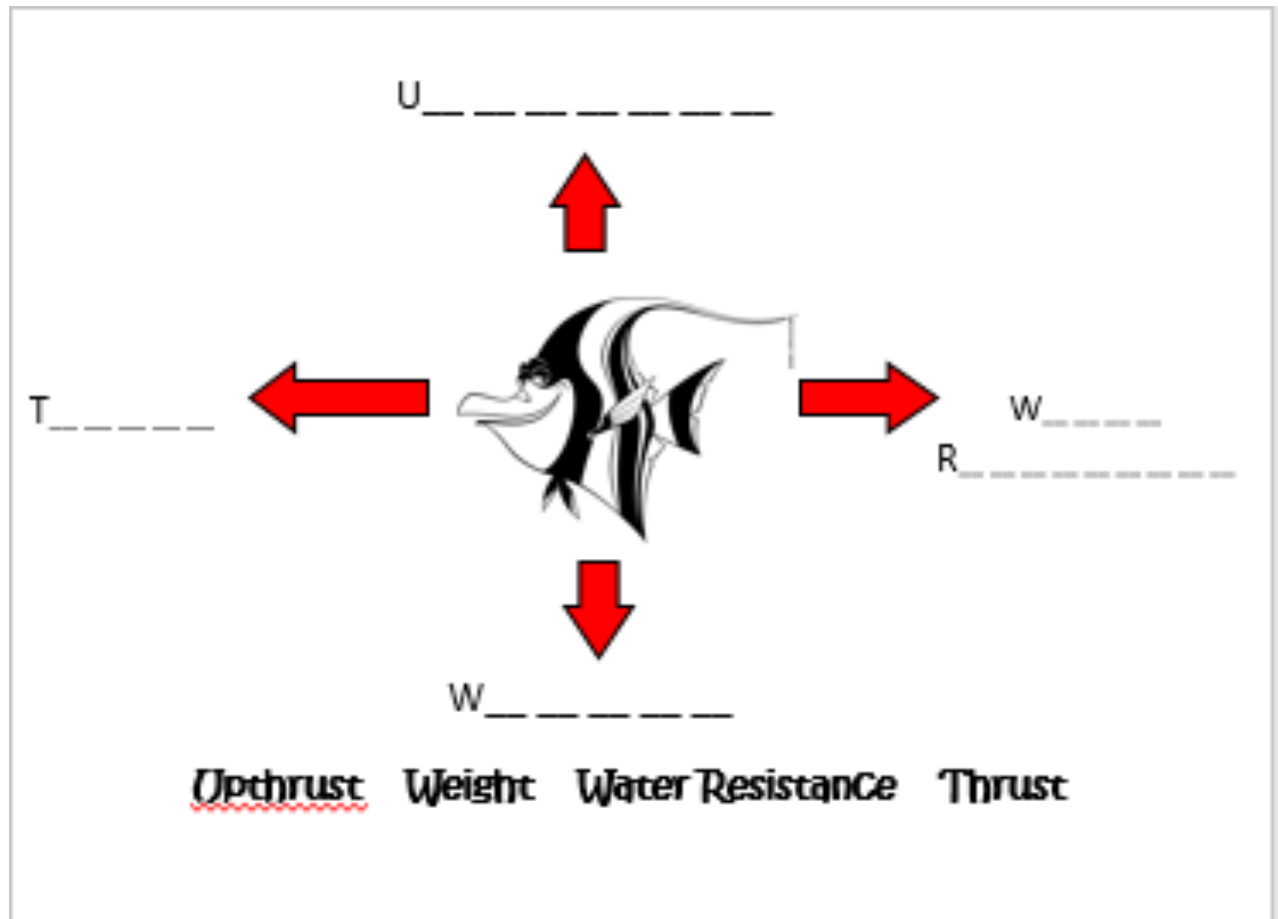


Label the forces acting on Nemo.



Upthrust Weight Water Resistance Thrust

Check your work using these initial letters.



DISNEY FLOAT OR SINK???

Look at the size of the forces. Decide whether the characters are floating or sinking. Write the name of the force

<p>1</p> <p>Upthrust 100 N </p> <p>100 N Weight </p>	<p>2</p> <p>2000 N </p> <p>2000 N </p>	<p>3</p> <p>100 N </p> <p>150 N </p>
<p>1. Nemo is <u>Floating</u></p>	<p>2</p>	<p>3</p>
<p>4</p> <p> 75 N</p> <p>75 N </p>	<p>5</p> <p> 150 N</p> <p>250 N </p>	<p>6</p> <p> _____ N</p> <p>25 N </p>
<p>4</p>	<p>5</p>	<p>6. What upthrust does Sebastian need to float?</p>

Answers

1. Floating as the forces are balanced.
2. Floating as the forces are balanced.
3. Sinking as gravity is the bigger force
4. Floating as the forces are balanced.
5. Sinking as gravity is the bigger force.
6. At least 25N.