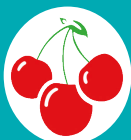


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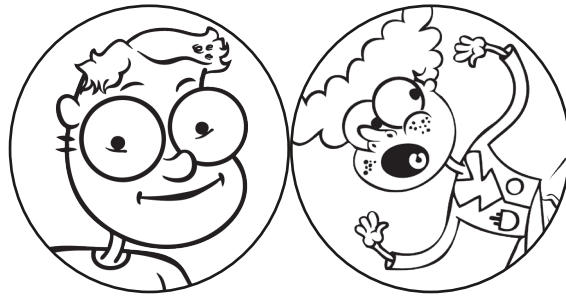
Class:



The Super-Sonic Submarine



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Page 1- Keywords
Page 2- Measuring Water Resistance
Page 4- Challenging Water Resistance
Page 5- Create and Design your very own
Super-Sonic Submarine
8- Feedback form

What is this activity book for? We're glad you asked! Danny Dingle is all about **INVENTIONS!** It's your time to help **Danny, Percy** and **Superdog** create a super-sonic submarine that will beat full-of-himself twerp-faced **Gareth Trumpshaw's** super-sonic submarine!

Have fun exploring the fart-tastic, experimental and totally nauseous world of Danny Dingle.



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Key Words

Gravity is a force which pulls objects towards each other. Anything which has mass has a gravitational pull. The larger the object, the stronger its gravitational pull.

Gravity

Friction

Friction is a force between two surfaces that are sliding, or trying to slide, across each other. Friction always slows a moving object down.

Water Resistance

Water resistance is a force that tries to slow things down that are moving through water. It is a type of friction and sometimes called drag.

Up-thrust

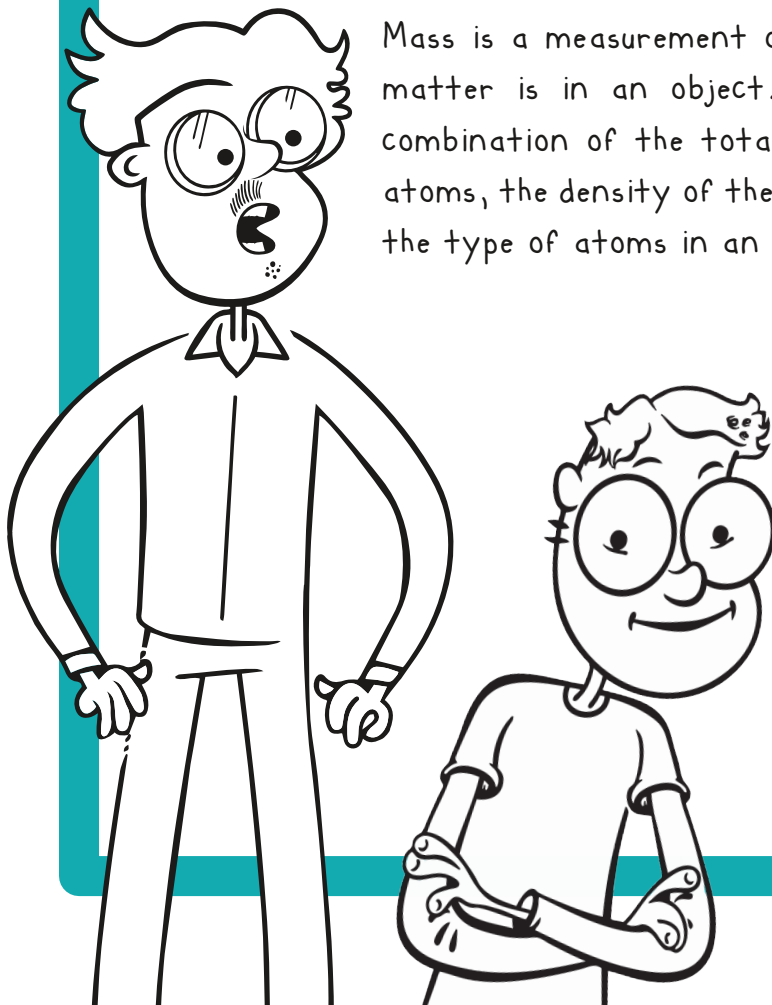
Up-thrust is a friction force that pushes things up. Things float in water because of up-thrust. Gravity pulls you down. The upwards force from the ground stops you from sinking into the Earth - this upwards force is called up-thrust.

Mass is a measurement of how much matter is in an object. Mass is a combination of the total number of atoms, the density of the atoms, and the type of atoms in an object.

Mass

Buoyancy

Buoyancy is the ability to float. It is an upward force on an object immersed in a liquid. If the buoyancy exceeds the weight, then the object floats; if the weight exceeds the buoyancy, the object sinks.



Experiment 2: Challenging Water Resistance

Can we make the ball travel **faster** and **slower** through the beaker of water?

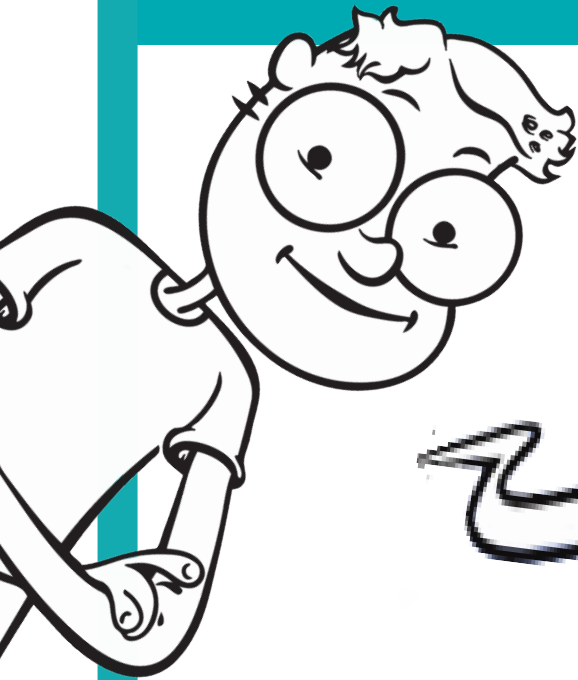
Using the same piece of plasticine, think about ways we might be able to change how quickly the plasticine travels! You will need the same materials from the previous experiment.

**What is surface area?
How can surface area
affect water resistance?**

Hint: Think about the shape of your plasticine - remember our keywords!



Activity 3: Create and design your very own Super-Sonic Submarine



Can you help me?! Can you design a Super-Sonic Submarine for me and help me beat that nasty, no for good, Trumpshaw? He's such a cheater!!!

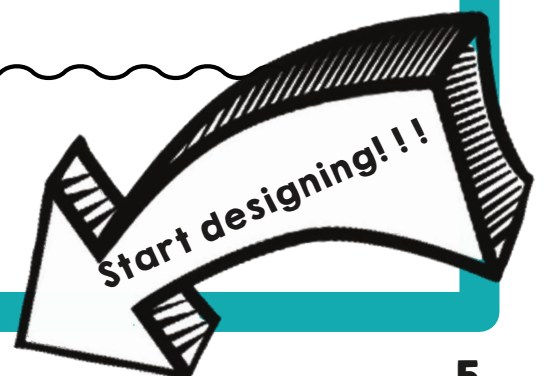
Think about the shape of the boat and the effects of water resistance - its mass, gravity, up-thrust and buoyancy.

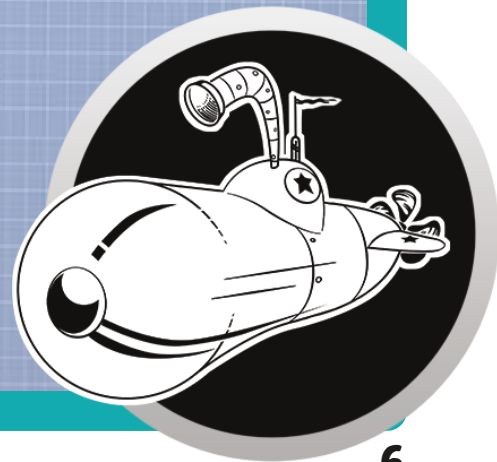
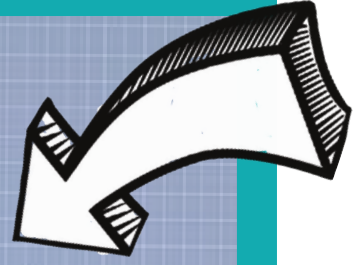
Design your very own Super-Sonic Submarine that can hold the most paper clips!!! Take into consideration what we have learnt about mass and surface area.

Launch your boats into a large pool of water and slowly add paper clips. Record how many paper clips your boat can hold!!! Your boats all have to weigh the same but you can design them anyway you like - this has to be a fair test!

Give your Super-Sonic Submarine a super cool name:

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# Danny Dingle's Fantastic Finds: Tell us what you thought

1. Who was your favourite character and why?

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2. If you made a fart-tastic jelly what ingredients would you include?

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3. What was your favourite and least favourite part of the book and why?

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4. How would you create your very own Super-Sonic Submarine and impress Metal Face?

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5. Danny and Percy are master inventors, if you could invent anything in the world what would it be?

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Let us know what you thought of the book! Why not write a letter to Angie Lake letting her know what you thought and remember never fart in an elevator.

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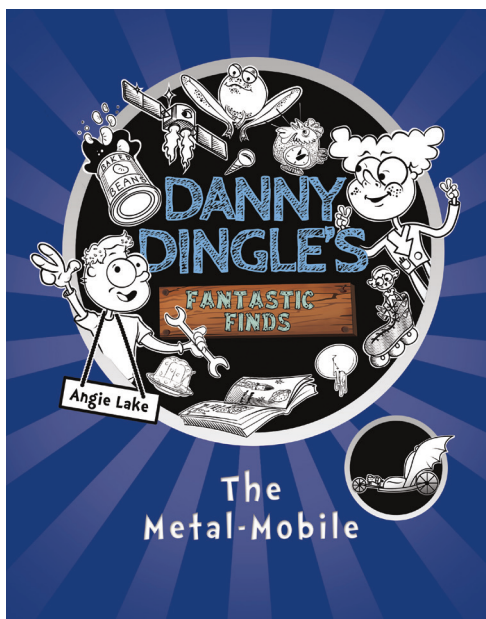




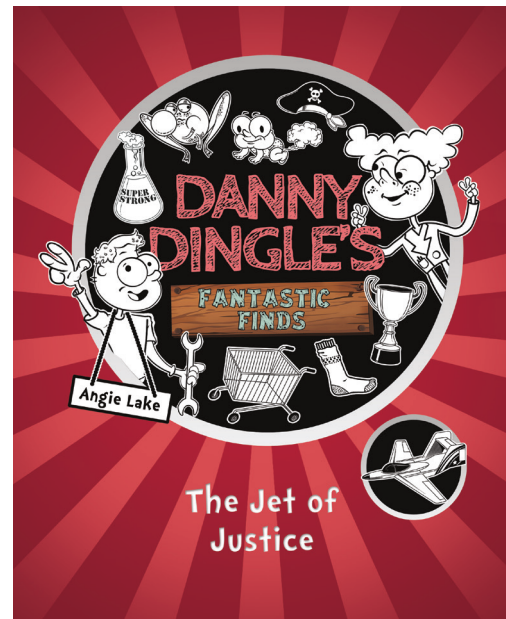
# Your Danny Dingle Pack

## extra activities

Visit our website for more fun activities and games. Don't forget to check out our other Danny Dingle titles and follow the fart-tastic adventures of Danny, Percy and Superdog. It's your mission to become a super hero inventor, just like Metal-Face.



**BOOK 1**  
**Danny Dingle's Fantastic Finds: The Metal-Mobile**



**BOOK 3**  
**Danny Dingle's Fantastic Finds: The Jet of Justice**



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