



## Waddle I Do Without You?

This activity will investigate why huddling keeps humans and animals warm.

### Learning Outcome:

To explore how living things rely on each other within the natural world.

To record data accurately and carry out a fair test.

### You will need:

Plastic Bottles	Elastic bands
Thermometer	Hot water
Basins	Ice

### What to do:

- Pour equal amounts of hot water in each of the 7 bottles
- Use elastic bands to tie 6 bottles together
- Place 6 bottles into a basin of icy water, these are your huddling penguins. Place one bottle by itself, this is your lonely penguin
- Put a thermometer in the middle of the huddle of 6 and another in the lonely penguin
- Record your results



## Waddle I Do Without You?

I have explored my senses and can discuss reliability and limitations in responding to the environment. **SCN 1-12b**

*Uses their senses to detect information and explains how they help to keep people safe.*

*Investigates the reliability and limitations of the senses, for example, using taste tests, limits of sound, optical illusions and blind-fold games.*

I have explored the structure and function of sensory organs to develop my understanding of body actions in response to outside conditions.

### SCN 2-12b

*Describes how senses work individually or together to keep people safe from harm.*

*Demonstrates understanding of how, if one sense is impaired, it can have an effect on the other senses, either positively or negatively.*

*Describes how light enters the eye through the pupil and how the pupil changes size in dark/light conditions.*





## Ice Scream

### Learning Outcome:

Understand that liquids change state when heated up and cooled down..

### You will need:

Two sealable sandwich bags, one large, one small

Salt                      Ice

Fruit juice/Milkshake

### What to do:

- Put both the ice and salt in the LARGE sandwich bag
- Make sure the salt has mixed well with the ice
- Pour the fruit juice/milkshake into the SMALL sandwich bag
- Seal the SMALL bag carefully so that no liquid escapes
- Place the SMALL bag inside the LARGE sandwich bag and seal
- Rub the salt and ice mixture around the SMALL sealed bag. Continue to do so until your fruit juice freezes
- Once frozen open up the bag and enjoy your sorbet/ice cream



## Ice Scream

By investigating how water can change from one form to another, I can relate my findings to everyday experiences. **SCN 0-05a/ SCN 1-05a**

*Uses more complex vocabulary to describes changes of states of water, for example, 'condensation' and 'evaporation'.*

*Contributes to the design of an experiment to determine the temperature of which water boils, freezes and melts, ensuring appropriate use of units.*

*Knows that pure water boils at 100°, melts at 0° and freezes at 0°.*

I can apply my knowledge of how water changes state to help me understand processes involved in the water cycles in nature over time.

### **SCN 2-05a**

*Discusses the necessity of water for life, for example, for the growth of crops, for drinking and in river formation/flow.*

*Demonstrates an understanding of the processes involved in the water cycle.*





## Sinking Ships

### Learning Outcome:

Understand how shape linked to mass can affect floating and sinking.  
Know that some shapes move more easily through water than others.

### You will need:

Plasticine                      Weights (e.g. marbles)  
Water tank

### What to do:

- Roll a piece of plasticine into a ball
- Place the plasticine into a tub of water and note what happens
- Mould the plasticine into a shape that floats (note, weights will be added to your plasticine shape)
  - Make predictions for how many weights your boat can carry before sinking
  - Add the weights and record the results
  - Decide which shapes carries the most weights
  - Evaluate, explain and discuss



## Sinking Ships

By investigating floating and sinking of objects in water, I can apply my understanding of buoyancy to solve a practical challenge.

### SCN 2-08b

*Explores the factors which affect floating, for example, the object's shape and the density of the material that the object is made of, and collates, organises and summarises findings with assistance.*

I can design and construct models and explain my solutions.

### TCH 1-09a

I can extend and enhance my design skills to solve problems and construct models. **TCH 2-09a**

I explore and discover engineering disciplines and can create solutions. **TCH 1-12a**

I can extend my knowledge and understanding of engineering disciplines to create solutions. **TCH 2-12a**





## Boaty McBoatface - Propellers

A propeller is a type of fan that rotates against air or water to transmit power. The rotation causes 'thrust' which propels the boat forward.

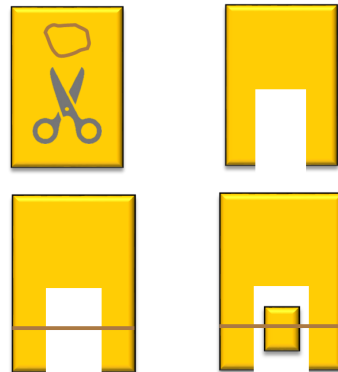
The speed of the propeller controls how fast/slow the boat will travel.

Create a simple 'boat' with a propeller which can propel itself through the water.

### Resources

- Thick card or plastic sheets
- Scissors
- Elastic Bands
- Basin or tub of water

Once all boats have been built then we'll see who's can travel furthest.



Things to consider:

1. The more you twist the propeller around the elastic band the more potential energy is stored
2. The more aerodynamic your boat is the less drag will slow it down



## Boaty McBoatface - Propellers

### Science

By investigating forces on toys and other objects, I can predict the effect on the shape or motion of objects

#### SCN 1-07a

- *Predicts and then investigates how a force can make an object change speed, direction or shape, and uses vocabulary such as pushing, pulling, stretching, squashing and twisting to describe forces.*

By investigating how friction, including air resistance, affects motion, I can suggest ways to improve efficiency in moving objects

#### SCN 2-07a

- *Finds an association between air resistance (drag), the speed of the object being investigated and the surface area exposed to the air, making links to original predictions.*
- *Demonstrates understanding of how friction and air resistance can both be useful, for example, in braking systems, and also a problem, for example, causing moving parts to wear.*

### Technology

I can design and construct models and explain my solutions.

#### TCH 1-09a

I can extend and enhance my design skills to solve problems and can construct models

#### TCH 2-09a

I can extend my knowledge and understanding of engineering disciplines to create solution

#### TCH 2-12a



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## Baltic Blubber

This activity is all about the body's reaction to cold temperatures.

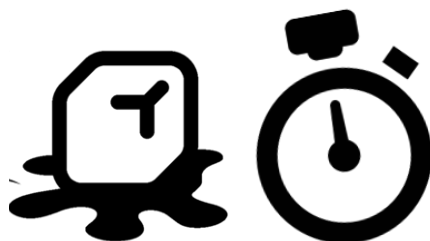
Many people who find themselves in freezing water quickly experience reduced fine motor skills. This is because nerve conduction at low temperatures slows and prevents signals getting from the brain to the hands and fingers.

But why does this not effect animals like walruses?

You'll be investigating the body's reaction to cold temperatures and how simple measures can protect your fine motor skills.

### Resources

- Ice
- Stopwatch
- Rubber gloves
- Petroleum jelly
- Basin or tub of water



Firstly take a piece of paper and write your name.

Next place your writing hand in the ice filled tank and keep it in for as long as you can. Then time yourself to see who can keep it in the longest.

Now write your name again. Compare to the first attempt.

Now we're going to try and recreate the blubber. Put on a glove and cover it in petroleum jelly (our version of blubber).

Place your hand back in the icy water and see if you can last longer than your first attempt, use the timer to check.



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## Baltic Blubber

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### SCN 1-05a

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I can apply my knowledge of how water changes state to help me understand the processes involved in the water cycle in nature over time.

### SCN 2-05a

- *Discusses the necessity of water for life, for example, for the growth of crops, for drinking and in river formation/flow.*