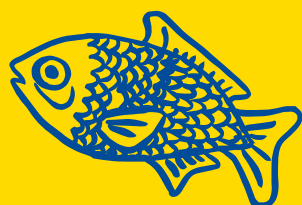


# Ready. Steady. Science!

## Winter activities

A collection of fun and creative winter-themed science experiences, using household items, for ages 4-11.

Adult supervision is recommended for young learners.



### Activity 1 – Go fishing for ice!

**Time:** 10-15 minutes

**Skills:** problem-solving, observing, planning variables



### Activity 2 – What's the best fake snow?

**Time:** 15-20 minutes

**Skills:** problem-solving, observing, recording



### Activity 3 – Make a glass sing

**Time:** 10-15 minutes

**Skills:** problem-solving, observing, hypothesising, testing

Ages 4-11

# Go fishing for ice!

Ages 4-11



## Method

1. Lay the string on the plate.
2. Add enough water to cover the bottom of the plate.
3. Put the ice cubes into the water on the plate.
4. Take the wet piece of string and lay it across the ice cubes, touching as many ice cubes as you can.
5. Sprinkle some salt onto the string, wherever it touches the ice.
6. Wait for about 10 seconds.
7. Now, it's time to go fishing! Gently lift the string up from the plate. How many 'ice fish' did you catch?

## What's the science?

Water is a liquid. When it gets very cold (reaches 0 degrees Celsius) it turns into ice (a solid).

When you sprinkle salt onto ice, it dissolves into a very thin layer of water on top of the ice cube and makes saltwater.

Saltwater freezes at a lower temperature than water. Adding salt to the ice makes some of the ice melt and the area around it cools down. This cooling then quickly freezes the water on the ice cube, causing ice to form again over the string.

Without salt, the water and ice are both at a similar temperature and the string doesn't freeze to the ice.



Timing: 10-15 minutes

Skills: problem-solving, observing, planning variables

## You will need:

- 4-5 ice cubes
- water
- a piece of string about 30cm long
- a plate
- a pinch of table salt



## Let's investigate!

Try fishing without salt. Do you catch anything?

What happens if you use different sized ice cubes and different amounts of salt? Or use pepper or sugar instead of salt? Can you explain what happens?

## Get talking!

Challenge your family and friends to a fishing competition. Who can catch the most ice?

## Find out more

Why do we put salt and sand on roads and pavements when it's icy? Ask your family or go online together to find out more.



# What's the best fake snow?

Ages 4-11



Timing: 15-20 minutes

Skills: problem-solving, observing, recording

## You will need:

- small bowls
- spoons

## Ingredients to make your snow e.g.

- baking powder
- cornflour
- hair conditioner
- shaving cream
- vinegar
- water
- kitchen towel torn into tiny pieces



You are going to investigate which ingredients make the best fake snow. Here are some recipe ideas but make sure you make up your own recipes too.

### Recipe 1

#### Cornflour and baking powder

Mix equal amounts plus enough water to make the mixture hold its shape.

### Recipe 2

#### Baking powder and hair conditioner

Try 1 part conditioner to 6 parts baking powder.

### Recipe 3

#### Shaving cream and cornflour

Mix equal amounts together.

### Recipe 4

#### Torn up pieces of kitchen towel, baking soda and vinegar

Mix equal amounts of towel and soda. Add 1 teaspoon of vinegar.

## Let's investigate!

Record your observations about each fake snow in the table below. Is the snow rough, smooth, wet, dry, flaky, crumbly? Does it form a ball easily or does it fall apart? Give each fake snow a score out of ten.

<b>Recipe description</b>				
<b>Observations</b>				
<b>Score</b>				

## Get talking!

Challenge your family and friends to make the best snowman they can with each recipe. Put the fake snow in the freezer. Does it make a difference? What's the best recipe for fake snow? Why do you think it works so well?

## Find out more

What is real snow made from? How do indoor ski slopes make their own snow? Ask your family or go online together to find out more.





# Make a glass sing

Ages 4-11



## Method

1. Press down on the base of a wine glass to hold it firmly on the table.
2. Dip your finger into the water and then run it around the rim of the wine glass. Don't press too hard as glass is fragile and can easily break. What do you notice?

## What's the science?

A sound is made when an object moves backwards and forwards very quickly (it vibrates).

The vibrating object makes the air, or any other material next to it vibrate as well. When the vibrating air reaches our ear, it makes our ear drum vibrate. Our brain then recognises this vibration as a sound.

When you run your wet finger around the rim of the glass, it sticks and slides again and again. This makes the glass vibrate and makes the sound.

When we change the amount of water in the glass, or the thickness or shape of the glass, this changes the way it vibrates and changes the note that you hear.



Timing: 10-15 minutes

Skills: problem-solving, observing, hypothesising, testing

## You will need:

- a selection of different sized glasses with stems (wine glasses work well)
- a jug of water



## Let's investigate!

- What happens to the sound if you press softly or a little bit harder? Or use a dry finger?
- What do you think will happen if you add water to the wine glass? Try it and see!
- What happens to the sound when you add different amounts of water to the glass?
- Does the size and shape of the glass affect the sound?

## Get talking!

Challenge your family and friends to a glass singing competition. Who can play the best tune on their glasses?

## Find out more

Be amazed as you watch this clip of a musician playing a tune on a set of glasses called a glass harp: <https://www.youtube.com/watch?v=47TGXJoVhQ8>

