# Learning from Home

## Winter Wonderland

- Science
  - Making Oobleck
  - Winter Mnemonics
- Expressive Arts
  - Cubism Snowman
- Technology
  - Renewable and Non-Renewable Energy
- Social Studies
  - Flood Kit
- Engineering
  - Make an Anemometer
- Health and Wellbeing
  - Road Safety in the Dark
- Literacy
- Maths & Numeracy
  - Keeping Warm

# Science Challenge

## Making Oobleck

When it is cold outside it's fun to experiment indoors. Today we are making Oobleck which is an unusual substance in the world of science.
**Watch:** https://www.youtube.com/watch?v=nw8KaHglokQ

Image from clipart-library.com

**You will need:**

| | | |
|---|---|---|
| 1½ cups of cornstarch | 1 cup of water | Spoon |
| Food colouring (optional) | Plastic bowl or basin | |

**Instructions** Adult supervision recommended

1. Measure 1½ cups of cornstarch. Pour into a plastic bowl or basin.
2. Next measure out 1 cup of water.
3. If you have food colouring, add a couple of drops to the water.
4. Slowly add the water and food colouring to the cornstarch.
5. Stir the mixture until it starts to thicken up. (You may need to add more water and/or cornstarch to get the consistency just right.
6. Once the mixture is ready, sink your hands into the Oobleck.
7. Try moulding it into shapes. Can you do that with other liquids?

**Note**: When you are finished with your Oobleck, be sure to put it into the rubbish bin. **Do not pour it down the sink.** It may separate and become a hard clump which could block the drain!
You could also store your Oobleck in a sealed container or sealable bag to play with later.

**The science:**
Solids have a definite shape. If you touch or transfer a solid from one container to another, it will keep its shape.
Liquids don't have a set size or shape. If you touch one, it moves. If you transfer it between containers, it will change shape to fit the new one.
**Oobleck can act like both a solid and a liquid.**
In liquids, the bonding or attraction between particles is weak, allowing the molecules to easily flow past each another and rearrange. In solids, the bonding between molecules is much stronger. The molecules can't be easily rearranged, so the solid keeps its shape.

In Oobleck, the relatively large solid cornstarch molecules form long chains. The smaller water molecules flow past each other and between the cornstarch molecules allowing the chains to slide and flow around each other. This allows Oobleck to behave like a liquid when it is not under pressure. When you squeeze or press on Oobleck, the water is temporarily forced out and the starch molecules are then pressed against each other, causing the mixture to behave like a solid again.

Activity adapted from http://www.sciencenter.org/

# Technology Challenge



## Renewable and Non-Renewable Energy

**What is Renewable and Non-renewable Energy?**
Winter weather is colder, and people must spend money heating their homes. Recently there have been problems with electricity supplies and costs are soaring with many people unable to heat their homes adequately.

There are different types of energy and electricity is one form. Energy can be **renewable** or **non-renewable**.

Non-renewables include **oil**, **coal** and **gas**. Most cars, trains and planes use non-renewables. They are made by burning **fossil fuels** to create energy. Renewables include **wind**, **solar** and **hydro** energy. Wind energy is made when the wind moves the blades on a wind turbine. This energy can then be converted into electrical energy.

**Click here to watch a video about energy: https://www.youtube.com/watch?v=Giek094C_I4**

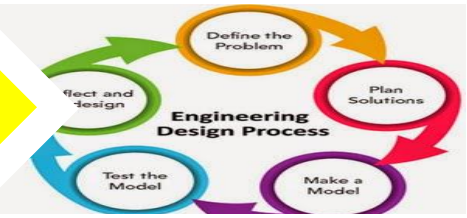
Read the information below and decide whether each statement is an advantage or disadvantage of using renewable energy. Can you think of any others? Discuss with an adult.

**Note: Advantage = A  Disadvantage = D**

| Renewable Energy Statements | A or D | Renewable Energy Statements | A or D |
|---|---|---|---|
| Opportunities can vary depending upon the individual environment. E.g., easier to collect solar energy in Spain than in Scotland. | | Randomly obtained (can't always predict how windy, rainy or sunny it might be) | |
| Limitless opportunities from the natural environment | | Safer for health | |
| Environmentally friendly | | Wind turbines can be noisy | |
| Hydroelectric systems can be harmful to some wildlife | | Solar panels are cheap to maintain. (Grants to install) | |
| Unused energy produced in homes can be sold back to the energy grid | | The technology required can be very expensive | |

Information adapted from BBC Bitesize

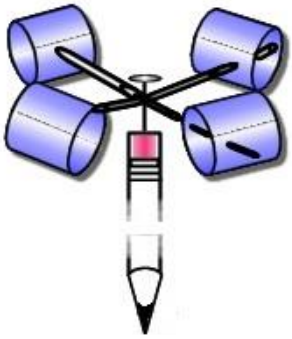
# Engineering Challenge






## Make an Anemometer

An anemometer is used to measure wind speed.



**Things You Need:**

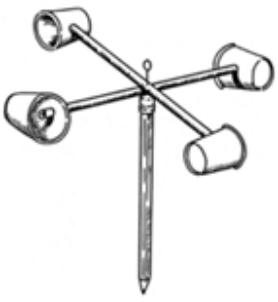
| | | |
|---|---|---|
| 4 small paper cups | Straight pin | |
| Pencil with a new eraser | Scissors | |
| 4 plastic drinking straws | Tape | Timer |

**Instructions:**

1. Cut off the "bendy" part of the straw and arrange the 4 plastic drinking straws to form a cross and tape them together at the centre.
2. Take 1 plastic cup and design the cup anyway you want. This will be the one you use for counting when the anemometer spins so make sure it stands out.
3. Tape the top side of one drinking cup to the end of each straw, so the open ends of the cups all face the same direction.
4. Push a straight pin through the centre of the straws into an eraser on the end of a pencil. This provides the axle.
5. Blow on the anemometer or turn an electric fan on low to make sure that it spins easily. How many times the anemometer will spin in one minute?

**How to use:**

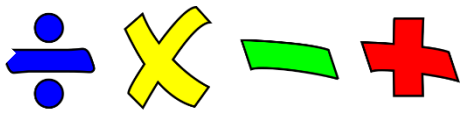
1. Mount or hold the anemometer in a place that has full access to the wind from all directions. (Or ask someone at home to hold the anemometer while you count the spins.)
2. Count the number of times your anemometer turns fully in 1 minute, keeping your eyes on your decorated cup. The higher the wind speed the faster it will turn!
3. Repeat the above step 4 times and record the average number of spins.



**NOTE**: When using this anemometer, 10 turns per minute means the wind speed is about one mile per hour.
*If it is spinning really quickly can you film it in Slow Mo using smart phone/tablet?*

Activity and images from TES

# Maths & Numeracy Challenge

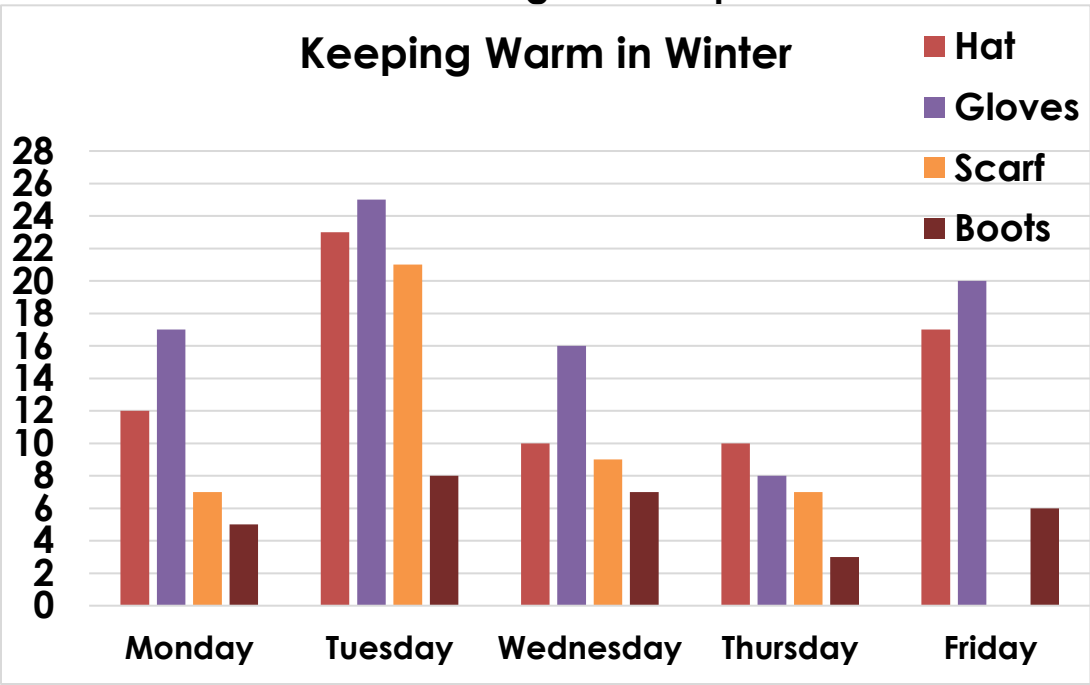




## Keeping Warm

During a cold week in December a survey counted children from a class of 30, to see how many were wearing a hat, gloves, scarf and boots at school.

**Look at the bar chart below and have a go at the questions.**




## Questions

1. How many children wore a hat on Monday?
2. How many children wore a scarf on Wednesday?
3. On Tuesday, how many more children wore a hat than a scarf?
4. What was unusual about Friday?
5. On which day did the fewest children wear boots?
6. Which item was worn more often than any other over the week?
7. If there were 30 children altogether in the class, what fraction of children wore gloves on Friday?
8. What fraction did not wear boots on Friday?

## Extension

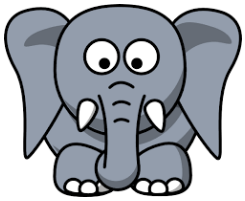
Try to make up your own question based on the chart – ask a grown up at home. Can they answer your question?

# Literacy Challenge



## Winter Mnemonics

A **mnemonic** is a tool of learning which helps us to retain or retrieve information. Mnemonics can help us to remember tricky spelling words. The sillier you can make them, the easier they will be to remember.



Here are some general examples:

**b**ig **e**lephants **c**an **a**dd **u**p **s**ums **e**asily because

**s**now **e**agles **p**ick **a**t **r**abbits **a**nd **t**aste **e**ggs separate

Here are some Winter themed examples:

**t**he **e**mus **m**ust **p**aint **e**very **r**at **a**nd **t**oad **u**nder **r**ed **e**ggs

temperature

**t**urkeys **i**gnore **n**ewts **s**haking **e**ach **l**eg

tinsel

Can you think of some words which you find tricky to spell? Write yourself a mnemonic to help remember them.

If you can't think of any words, use some of the ones below. It also helps you remember if you use bright colours or use a different colour for the first letter like the examples above.

| | | | | |
|---|---|---|---|---|
| **chimney** | **glacier** | **January** | **skiing** | **cocoa** |
| **February** | **reindeer** | **sleigh** | **toboggan** | **mistletoe** |

Images from clipart-library.com

# Health & Wellbeing Challenge

## Road Safety in the Dark

When you travel to and from school it is important to do so safely, following * **The Green Cross Code** and using your common sense.

**Click here to play a game about road safety:**
**https://www.think.gov.uk/games/take_the_lead/take_the_lead.html**

It is much harder to see when it is dark than when it is light. In Winter it gets dark much earlier there is less light in the mornings. This means it could still be dark when you travel to school, and it could be starting to get dark again when you make your journey home. This means it is even more important that you make an effort to stay safe.

**Watch this clip** from **BBC Bitesize** which shows Wee Willie Winkie investigating what to wear before going out on a dark night. **https://www.bbc.co.uk/bitesize/clips/zs3ygk7**

1. **What do you think happened that night which caused Willie's accident?**
2. **How could reflective clothing help keep you safe if you are out in the dark?**

If you can't be seen by drivers, then this could be very dangerous. Wearing bright colours and reflective materials helps other people to see you in the dark. However, they will only work when a source of light, such as a torch, streetlamp or car headlight reflects off them. This is another reason why you should avoid shortcuts and stick to main routes when out in the dark, as they tend to be better lit.


**Task:** Design a poster explaining how to stay safe in the dark.
**You will need:** paper and coloured pencils / pens

- Include a picture/drawing of yourself wearing bright colours.
- Are you carrying a torch and / or do you have reflective clips or strips on your coat or school bag?
- Is it safe to be out by yourself in the dark? Should someone be with you?
- The reflective strips didn't work in the video when Willie entered the dark alley because there was no light to reflect off them – this means you should include a light source such as streetlamps, light from shop windows, a torch etc.

***Click here for a useful PDF full of information about road safety and the Highway Code:**
**https://www.think.gov.uk/wp-content/uploads/2020/07/Tales-of-the-Road.pdf**

Ideas and image from www.think.gov.uk

# Social Studies Challenge



## Flood Kit

Winter weather in Scotland tends to be more extreme than at other times of the year. After a recent storm many homes and businesses in our region were flooded.
We are going to think about floods and what items would be useful if we were making up a flood kit to keep at home.

**Have a look at the table below. Try to match each item with the correct statement.**

| Item | Statement |
|---|---|
|  Bottled Water 1. | **A.** You should never enter flood water during a flood, but when it is safe the house will still be wet, and you will need wellies and rubber gloves when you go into flood damaged areas. |
|  Torch 2. | **B.** In case of minor injury it is important to be able to clean and dress any wounds. |
|  First Aid Kit 3. | **C.** You will want to know what is happening, so will need something that you can listen to which may provide important information without needing to be plugged in. |
|  Radio 4. | **D.** Information on how to turn off electricity, gas and water; insurance documents etc will be useful. |
|  Waterproof Clothing 5. | **E.** If there is a flood at night, your power may be affected, and you will need to see where you are and what you are doing. |
|  Useful Information 6. | **F.** During a flood electrical equipment becomes dangerous if wet. Gas pipes may become damaged, and water may become contaminated and undrinkable so everything will need to be turned off. |

| | | | | | |
|---|---|---|---|---|---|
| 1 ⟶ | 2 ⟶ | 3 ⟶ | 4 ⟶ | 5 ⟶ | 6 ⟶ |

**Discuss these questions with a grown up at home.**

What would you do during a flood?
What sort of things must you never do during a flood?
Can you think of anything else you would pack in a flood kit and why would you want or need it?

Activity and images adapted from: www.sepa.org.uk

# Expressive Arts Challenge



## Cubism Snowman

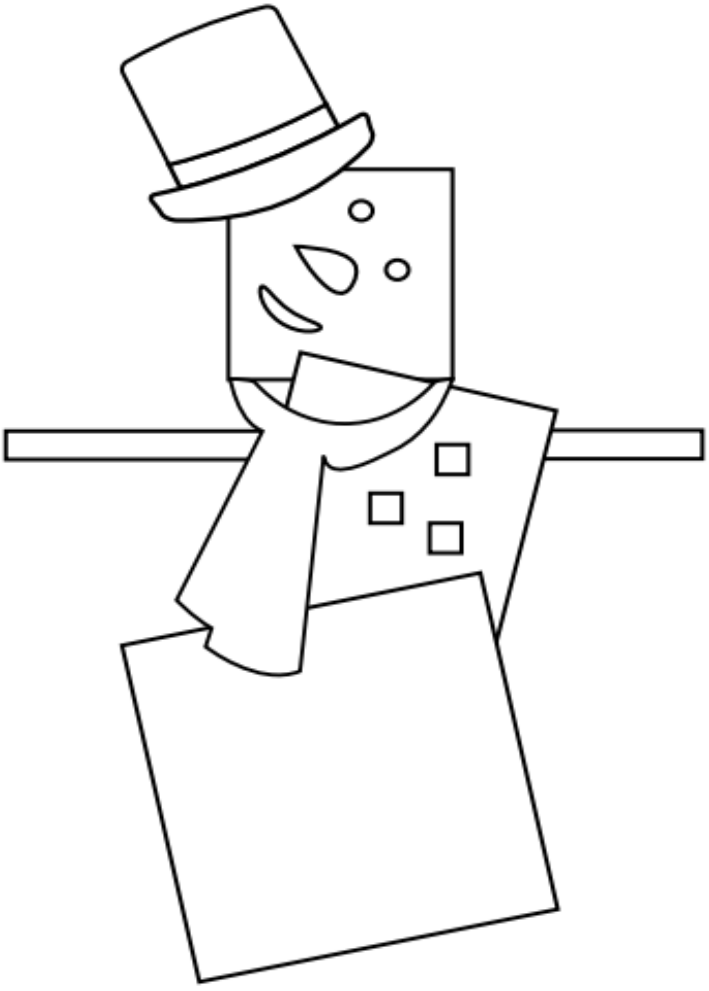
**Cubism** is a style of art that developed in the early 1900s led by **Pablo Picasso** and **Georges Braque**. Cubist paintings show objects from many different angles at the same time.

Cubist artworks, as the name suggests, depict objects that look like they are made from cubes and other geometric shapes.

**Have a go at creating your own cubism snowman.**

**You will need**

- Copy of the snowman – use the one from this page or you could redraw it (using a ruler) making it fit your paper
- Ruler
- Pencil and coloured pens / pencils or any other media you choose.



**Instructions**

1. Obtain your snowman template – either by using the small one here or redrawing on larger paper.
2. Use your ruler and a pencil to divide your snowman and background with various shapes.
3. Colour each individual shape a different colour.

Idea and pictures from PINTEREST