

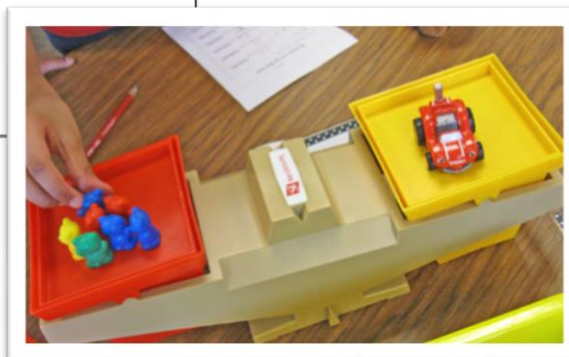
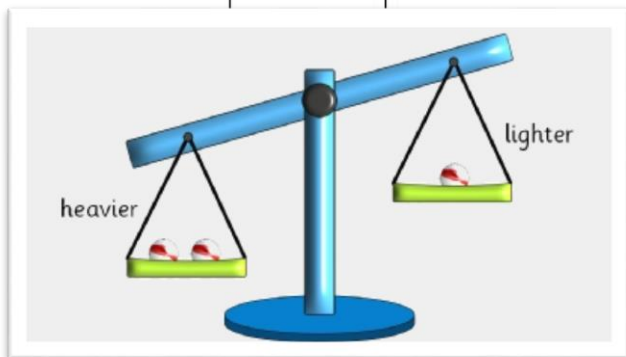


MEASUREMENT

Mass, Capacity and Length

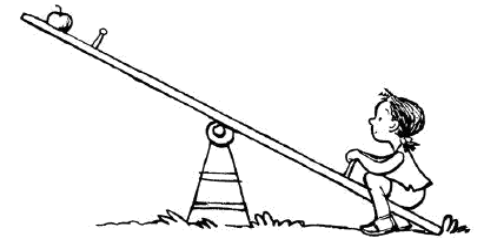
MASS

YEAR 2		
LEARNING OUTCOMES Children will be able to:	KEY VOCABULARY	OPPORTUNITIES Children should be given a range of opportunities such as:
E.2.1 understand and use the vocabulary related to mass to compare two masses by direct comparison; extend to more than two.	Heavy light heavier than lighter than balance scales	<ul style="list-style-type: none">• suggesting suitable uniform non-standard units and measuring equipment to estimate, then measure, a mass• recording estimates and measurements e.g. 'about as heavy as 20 cubes'.• practising comparing the mass (weight) of two objects using the balance scales (rocker balance or pan scales) and choosing which object is heavier or lighter (understanding that the heavier side goes down and the lighter side goes up).• understanding that smaller objects are not necessarily lighter than bigger objects, i.e. recognising that mass (weight) and size are not necessarily related. This could be carried out using toys or vegetables and fruits.• being exposed to the standard units in their environment (to become aware), i.e. kilograms and grams.
E.2.2 measure using uniform non-standard units.	weigh/s weight order	



MASS - DISCUSSION

- What is heavy?
- What is light?
- When and where have you seen things being weighed? Why?
- Have you ever been weighed?
- Can you think of things heavier / lighter than you?



lighter than me	this is me	heavier than me

MASS – DISPLAYS AND ACTIVITIES

- Collect different kinds of **scales**, **balances** and **weights** and put on display on **low tables** so that the children can handle them and do experiments.
- Make a large illustrated chart: **'Things we weigh'** by drawing pictures or cutting from magazines.



MASS – DISPLAYS AND ACTIVITIES

- **Paint** or **collect pictures** of a set of **heavy things**, and a set of **light things**.
- Make a set of **mystery parcels**. Design and make wrappings for parcels so that they are easily distinguishable. Fill the boxes with different materials making perhaps the largest also the lightest. Discuss relationships between parcels. Start with 2 parcels and gradually increase to 3, 4, 5.
- Individual worksheet. Draw and label. Make a **class book** or **personal journal**.



MASS – DISPLAYS AND ACTIVITIES

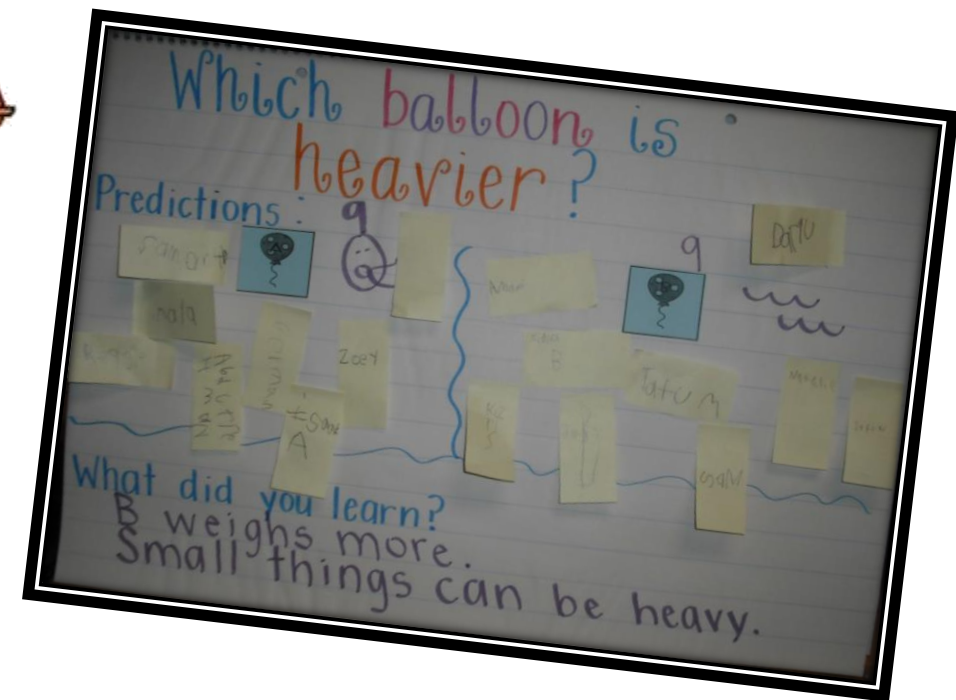
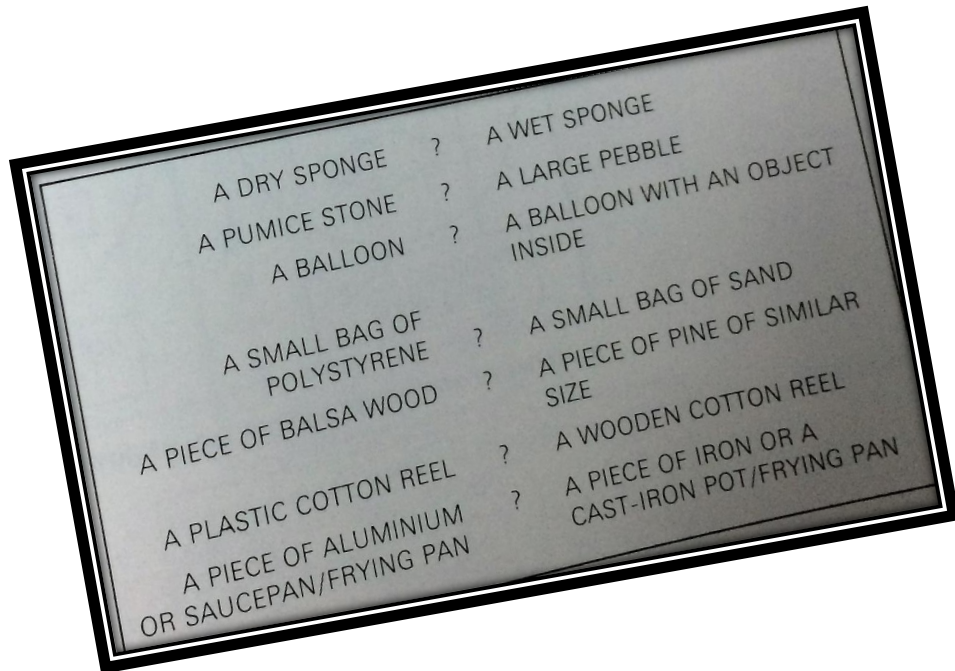
- Give each child a piece of **play dough** to make a model.
 - **Compare** the mass of **one model with another**, using a pan balance. Which is heavier?
 - Put the children in small groups. **Measure the mass** of **each model** and arrange the models in **order of mass**.
- Set up **display bags** on a line with the **same mass**.

Weigh out 20 cubes of:
feathers, beads, straw,
sequins, sand, polystyrene.



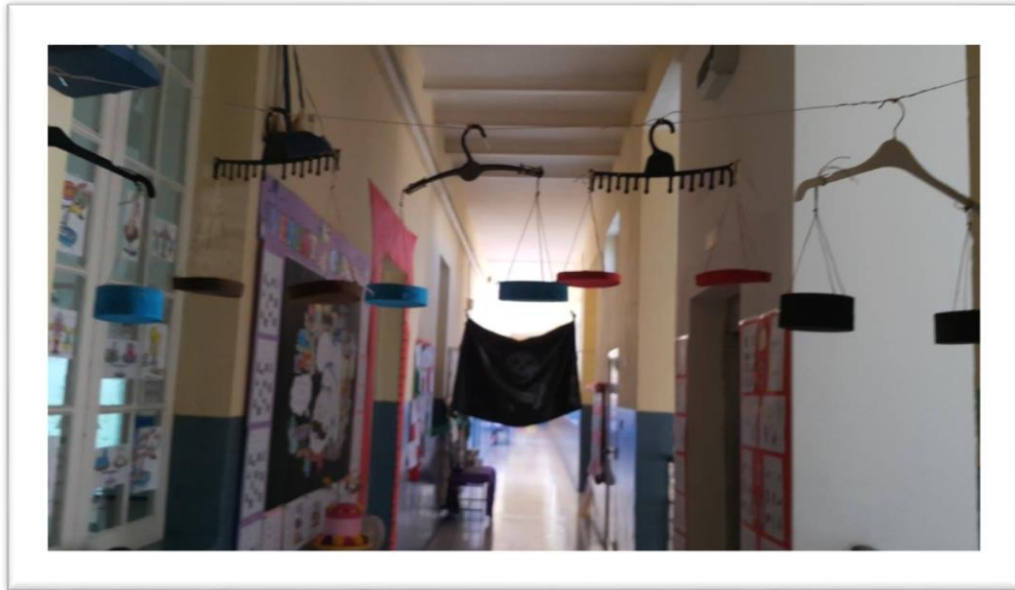
MASS – INVESTIGATE

- Set up a display table labelled 'It's now what you think!'
- Children **compare** the weights of **similar objects**, using a simple pan balance.



MASS – INVESTIGATE

- Investigate ways of **making** simple **see-saw balances** using junk materials and things available in the classroom. You can even make pan – balances.

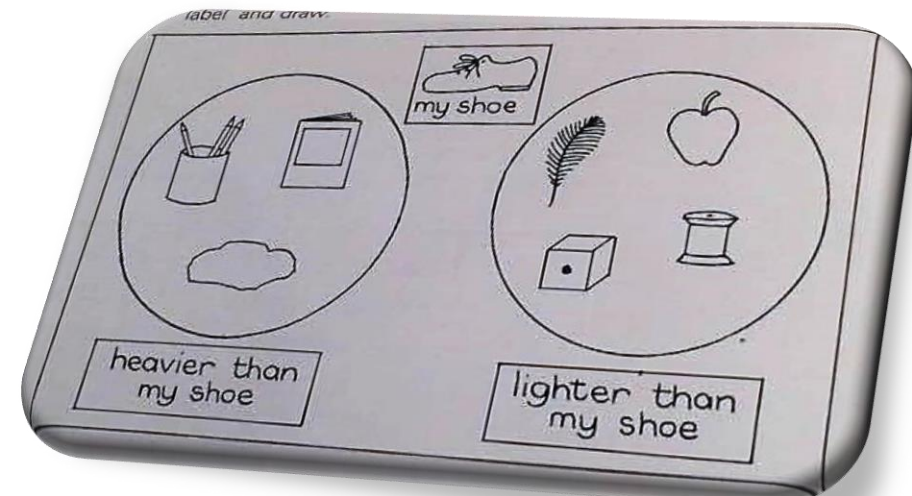


MASS - BALANCES



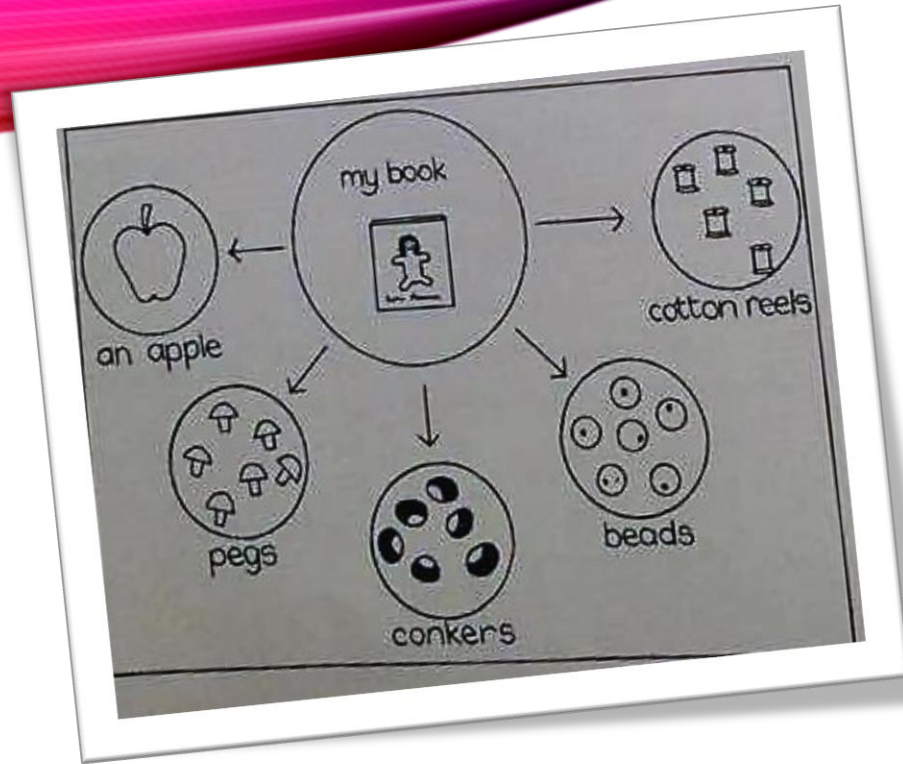
- Give each child a **ball of playdough**.
- Ask the child to **halve it using a pan balance**.
- Roll **half into a ball** and make a **model with the other half**.
- **Display** model and ball together.

- Find things **heavier than** and **lighter than** one **object**.
- Put into **sets**.
- Help the children **label** and **draw**.

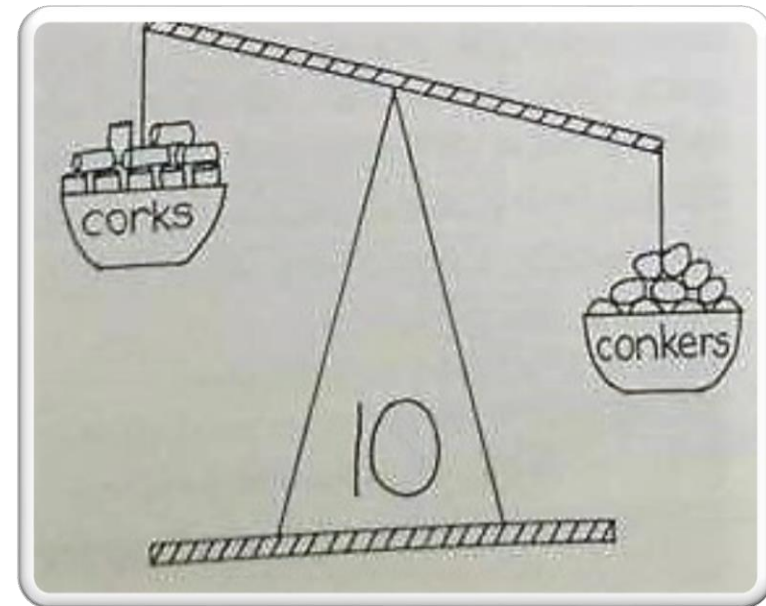


MASS - BALANCES

- Balance **one object** against sets of different objects.



- Compare **equal numbers** of different objects on a pan balance. Draw what you see.



MASS: LINK TO OTHER AREAS

- Cooking
 - Illustrate recipes.
 - Compare observe colour, texture, and taste, as well as mass of biscuits and cakes before and after baking.
 - Make sweets to sell, or candy cones for school party. Weigh out amounts and package them attractively.



MASS: LINK TO OTHER AREAS

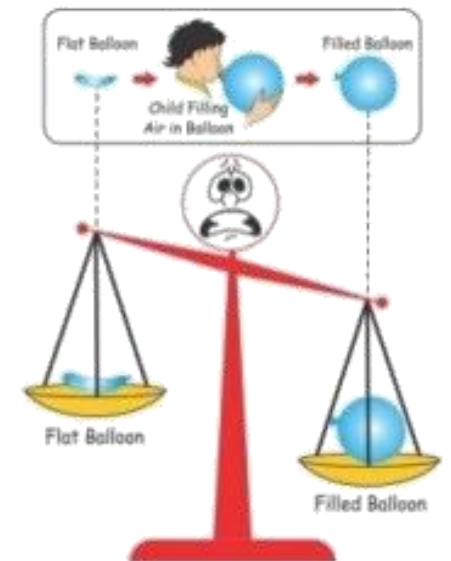
- Science Activities

- Make model bridges with cardboard and junk boxes. Which bridge supports the heaviest weight?
- Make weighted toys, balancing toys and mobiles.



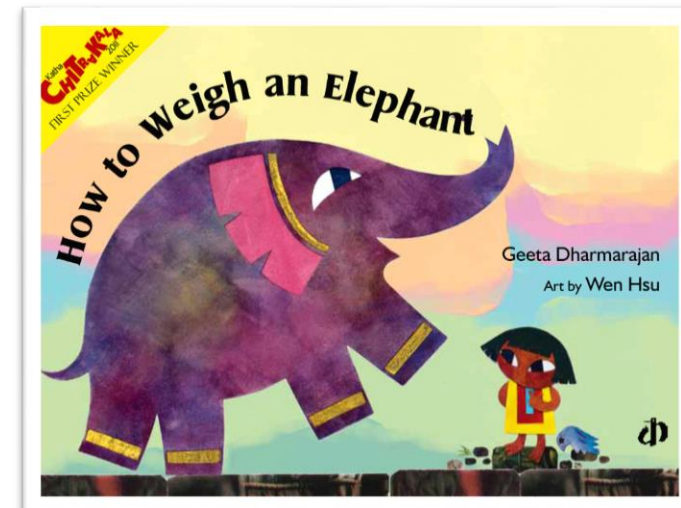
Air Has Weight

- Air has **weight**.
- When a balloon is blown-up it becomes heavier than a flat one. This is because **air is heavy**.



MASS: LINK TO OTHER AREAS

- Language
 - Collect vocabulary: 'feather weight', 'lighter than air', 'light as a fairy', 'weightless', 'tip the scales' etc.
 - Write imaginative sentences: dreams of flying, floating, being weightless in space. Display sentences on the baskets of painted hot air balloons.
 - Display 'heavy' stories / sentences on elephant shapes.
 - Interview the school nurse or bring a nurse or doctor to school and ask about weighing children. Why is it necessary?
 - <https://www.youtube.com/watch?v=arRUDc8c508>



MASS: LINK TO OTHER AREAS

- P.E., Music and Movement
 - Lifting, pushing, pulling.
 - Moving in a heavy or light way.
 - Taking weight on different parts of the body.
 - Moon-hopping, floating and jumping.
- Research
 - Use The Guinness Book of Records to discover mass facts.



CAPACITY

YEAR 2			
LEARNING OUTCOMES Children will be able to:		KEY VOCABULARY	OPPORTUNITIES Children should be given a range of opportunities such as:
F.2.1	understand and use the vocabulary related to capacity.	fill pour empty /nearly / half empty full / half / nearly full capacity holds more / the most less / the least largest smallest	<ul style="list-style-type: none"> measuring using uniform non-standard units (e.g. yoghurt pots, jam jar, beaker, eggcup) or standard units (e.g . litre jugs). suggesting suitable standard or uniform non-standard units and measuring equipment to estimate, then measuring a capacity, recording estimates and measurements as 'about 3 beakers full' or 'almost 5 tea cups full', etc. filling containers to given capacities, e.g show half full, then nearly full, then full, etc. estimating the order of capacity of a set of containers and later measuring each container using non-standard units to find the actual capacity in terms of yoghurt pots, cups, eggcups, etc.
F.2.2	compare two capacities by direct comparison; extend to more than two.		



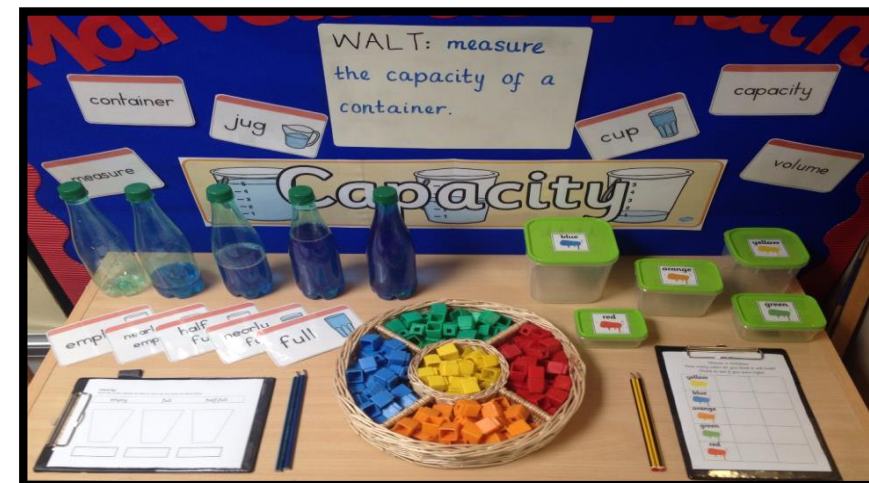
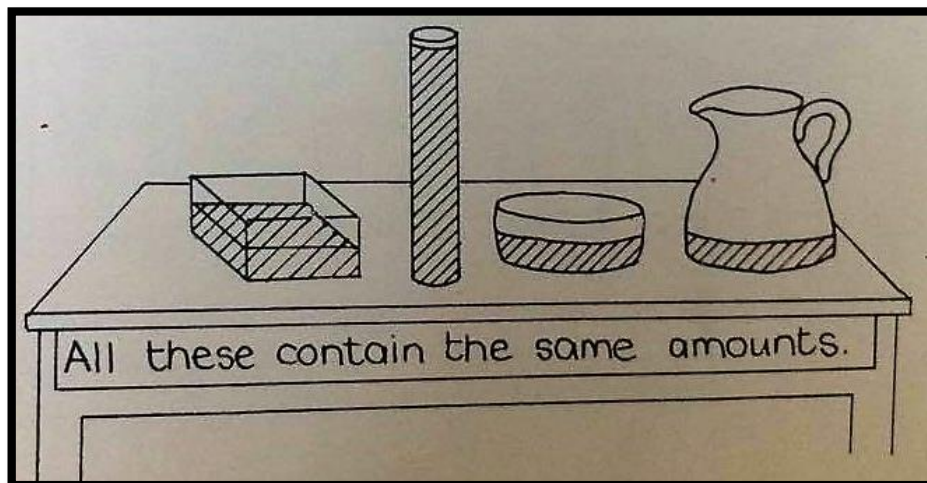
CAPACITY - DISCUSSION

- Which liquids do you have in your home?
- How are they packaged?
- How many **cups of water** did we need to fill the **jug**?
- Imagine we are having a **tea party**. How many guests could have a **full cup of tea** from the **teapot**?
- Which **container** holds the **most** or the **least**?



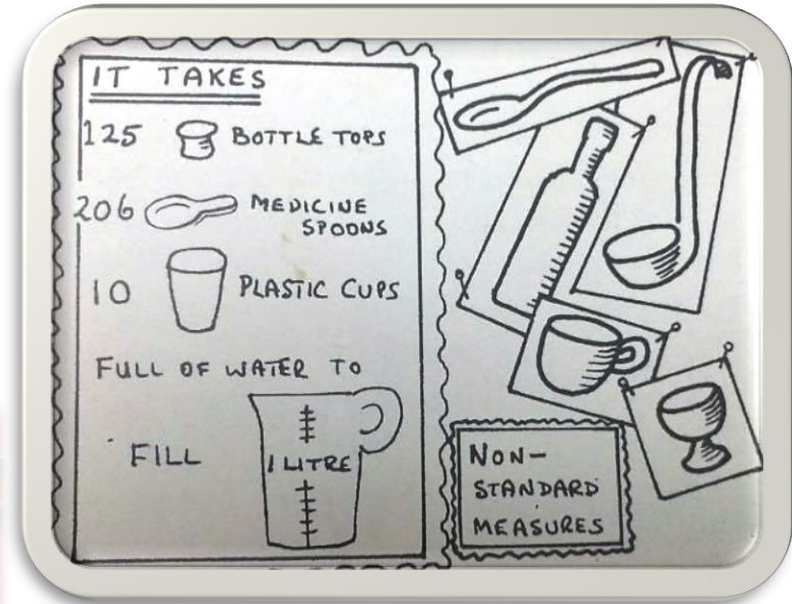
CAPACITY - DISPLAYS AND ACTIVITIES

- **Capacity display table** - Collect a good supply of varied containers – clear plastic ones are best. Plastic bottles, beakers, spoons, cartons, ladles, yogurt cups, funnels etc.
- Have a set of **different containers** which hold the **same capacity**.
- Make a chart / posters providing **vocabulary** necessary for capacity work.
- Pour **same amount of liquid** into each of four different containers. Display the containers of a table and label 'All these contain the same amounts.'



CAPACITY - DISPLAYS AND ACTIVITIES

- Make a collection of different objects that can hold liquid: bottle tops, spoons and plastic cups. Use these to fill a litre jug. How many spoonfuls, how many cups and how many bottle tops does it take? Record the results and show the relationship between the capacity of a spoon and a plastic cup etc.
- You can link this activity with the need for measuring accurately for certain tasks such as cooking and medicine dosages.



CONVERTING RECIPES FOR YOUNG CHILDREN

500g sugar = 2 ½ cups sugar

500g flour = 4 cups flour

Vanilla Cake / 30 cupcakes

- 2 pkts. butter (500g)
- 2 ½ cups sugar (500g)
- 4 cups flour (500g)
- 1 tbsp. baking powder
- 1 tbsp. vanilla essence
- 6 tbsp. milk
- 8 eggs

Chocolate Cake / 36 cupcakes

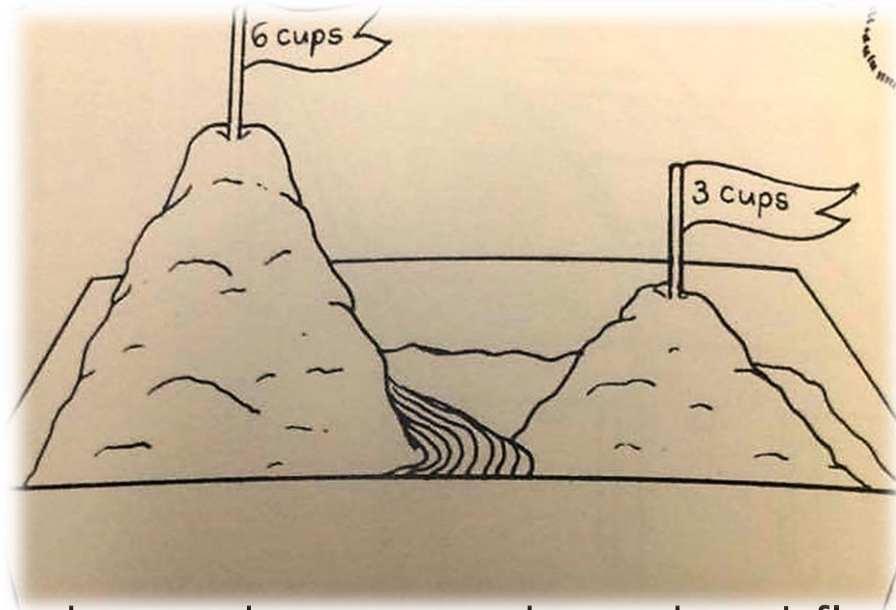
- 4 ½ cups flour
- 3 cups sugar
- 3 tsp. baking soda
- 3 tsp. salt
- 1 cup cocoa powder
- 1 ½ cups oil
- 3 cups water
- 1 tbsp. vanilla
- 3 tbsp. vinegar



CAPACITY – DISPLAYS AND ACTIVITIES

- Make 'landscape' cards for the sand tray. For example:

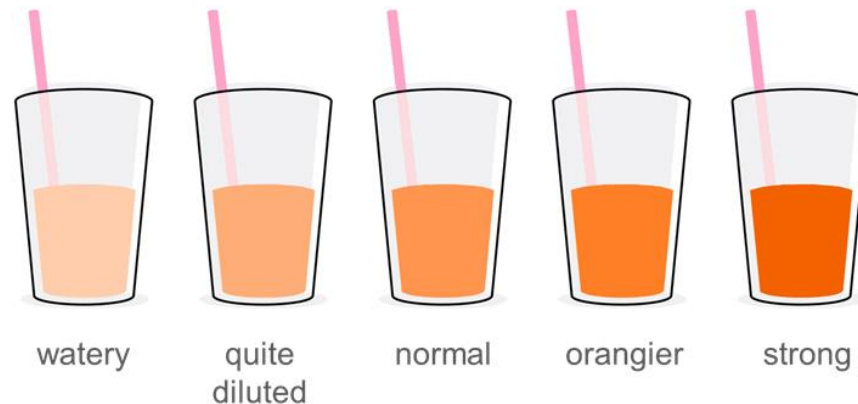
Build a hill with a flat top using 6 cups of sand. Next to it, build a hill with 3 cups of sand. Make a river in between them.



- Other children could estimate how much sand was used, and put flags with their estimates written on. The 'builders' could check for accuracy.

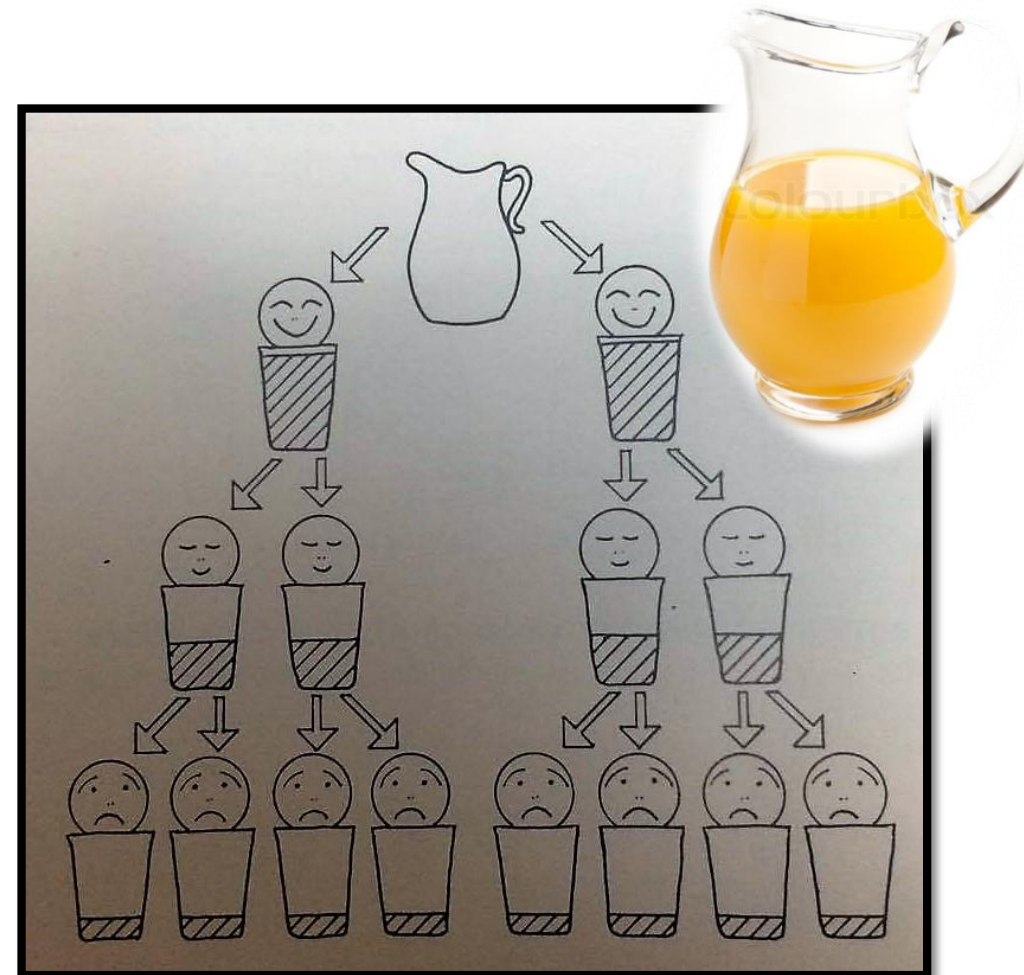
CAPACITY – DISPLAYS AND ACTIVITIES

- Diluting orange squash: Allow the children to taste, smell and look at undiluted squash. Ask them to measure an equal amount into each of five transparent cups, e.g. two spoons.
 - Add water:
 - 1st cup – 1 spoons of squash and 6 spoon of water
 - 2nd cup – 2 spoons of squash and 5 spoons of water
 - 3rd cup – 3 spoons of squash and 3 spoons of water, and so on.
- Discuss the results. Display on a window sill to see colour gradation.



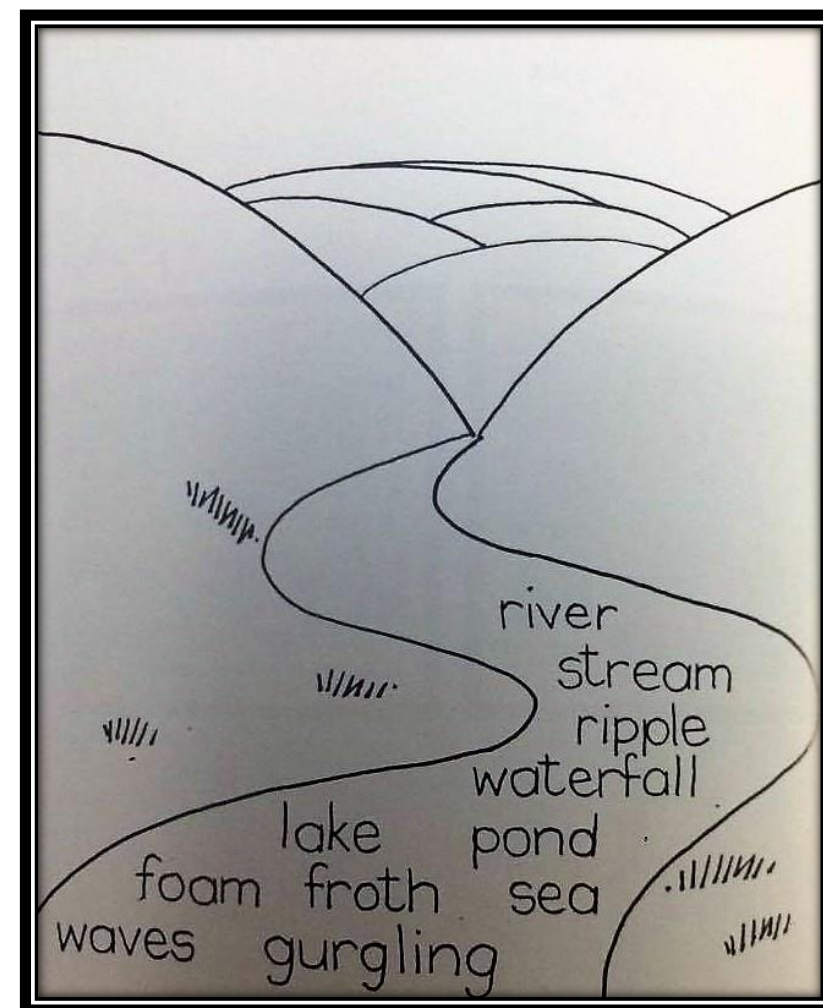
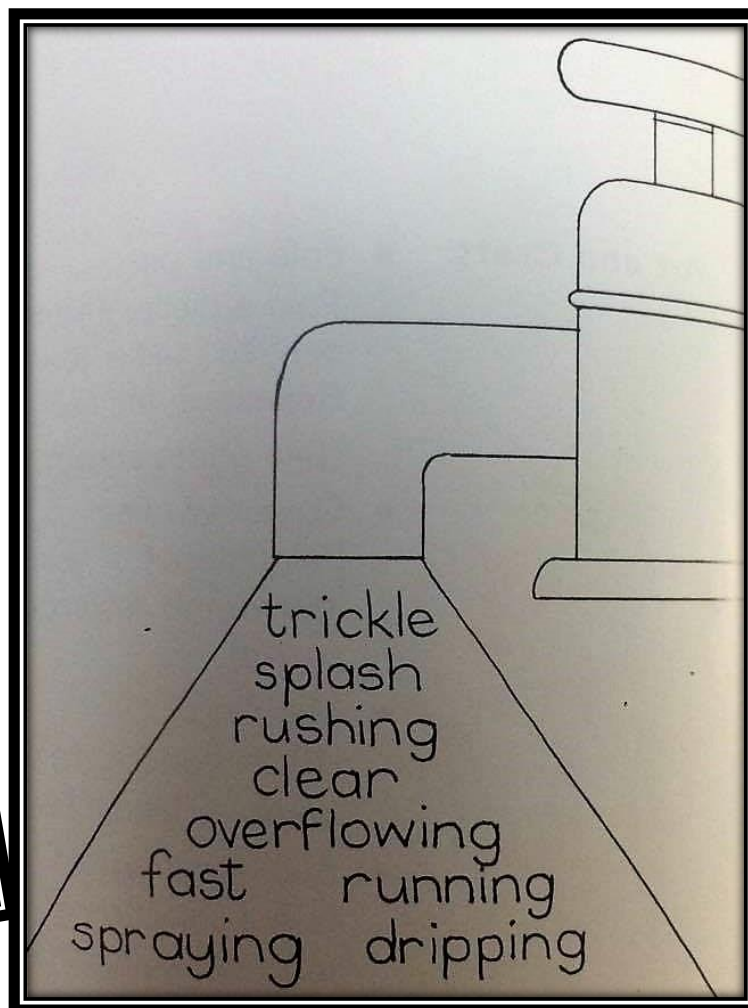
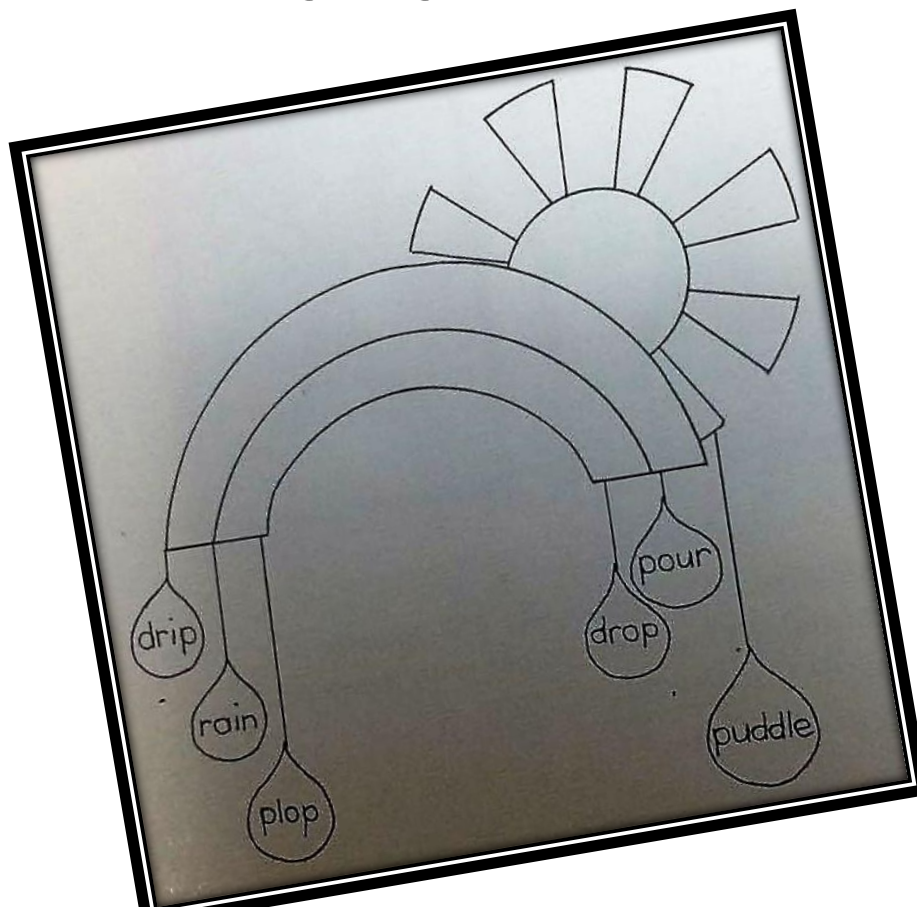
CAPACITY – DISPLAYS AND ACTIVITIES

- Sharing a jug of orange juice:
 - How much orange juice would two children have?
 - Four children?
 - Eight children?



CAPACITY – LINK TO OTHER AREAS

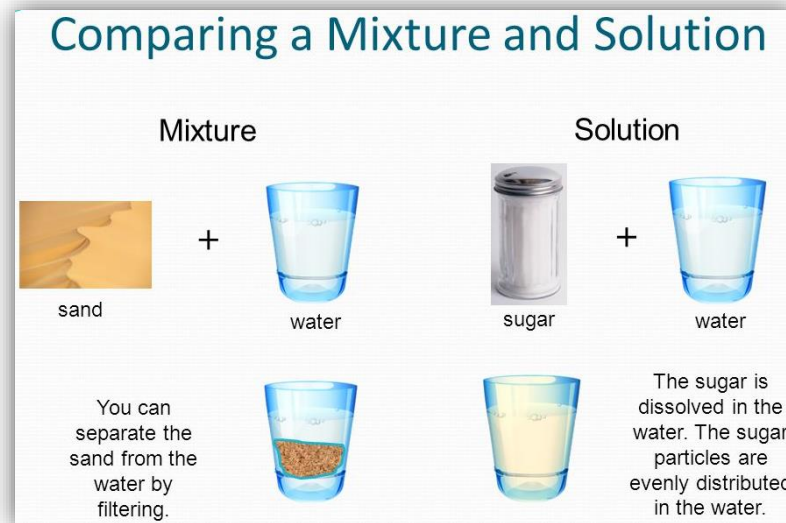
- Language: Word banks



CAPACITY – LINK TO OTHER AREAS

- Science

- Things that dissolve. Choose a number of common substances to include sugar, flour, salt and sand. Get the children to investigate which of these will dissolve in water. Attention to fair testing is important so use the same weight of substances (mass) and amount of water (capacity).



CAPACITY – LINK TO OTHER AREAS


- Science

- Investigate:

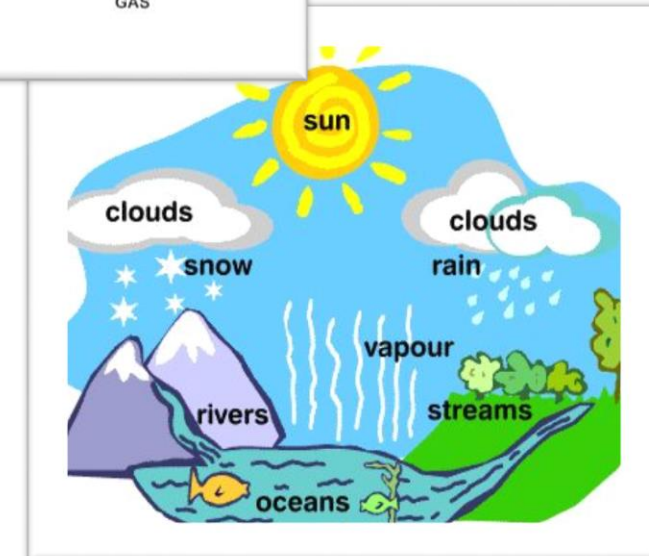
- absorbency
 - washing
 - water in nature
 - solutions and mixtures
 - evaporation
 - freezing
 - floating and sinking.

States of water

- Water is known to exist in three different states; as a **solid, liquid or gas.**



SOLID LIQUID GAS

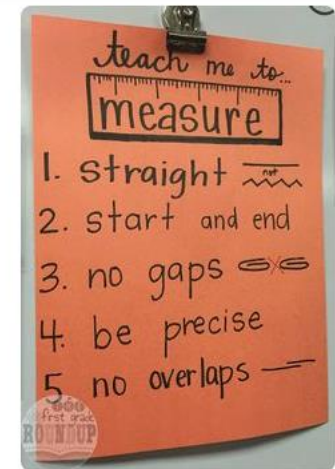
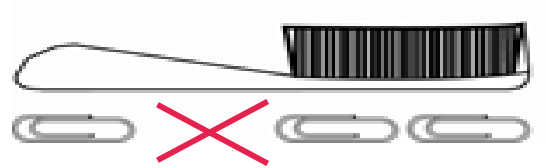
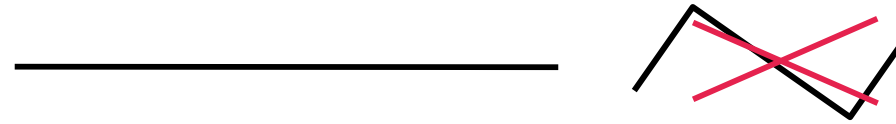


MEASURING: LENGTH

YEAR 2			
LEARNING OUTCOMES Children will be able to:		KEY VOCABULARY	OPPORTUNITIES Children should be given a range of opportunities such as:
G.2.1	understand and use the vocabulary related to length.	long/longer short/shorter tall/taller high/higher length height compare measure correct / correctly closest furthest	<ul style="list-style-type: none"> • comparing two lengths and recognising that one is longer, the other is shorter. • comparing two heights and recognising that when one is taller and the other is shorter. • choosing two objects and predicting which one is longer / taller / shorter using appropriate vocabulary and then putting them side by side and checking. • recognising that different units can be used to measure length or height. (e.g. towers of ten interlocking cubes, drinking straws, strips of squared paper, paper clips etc.) • recognising that the units must be placed end to end and should be the same length. • recognising that the first unit must be lined up with the end of the object to be measured. • recognising that the length is not usually an exact number of units.
G.2.2	compare two lengths/heights by direct comparison; extend to more than two.		
G.2.3	suggest suitable standard or uniform non-standard units and measuring units to estimate.		
G.2.4	measure the length or height of an object using non-standard units.		

HOW TO MEASURE LENGTH

- Measure straight
- Start and end.
- No gaps
- Be precise
- No overlaps



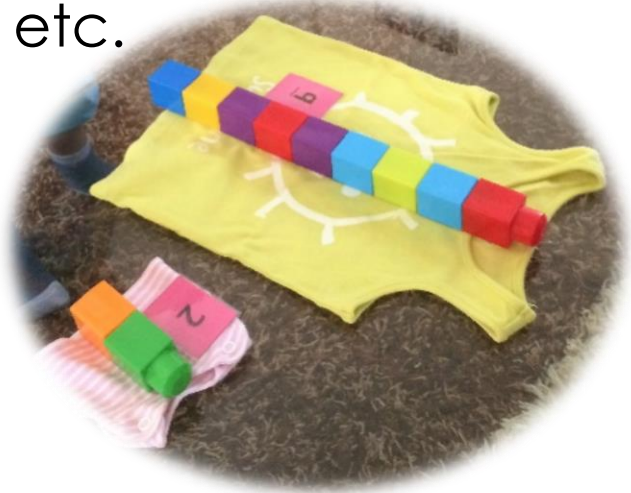
LENGTH - DISCUSSION

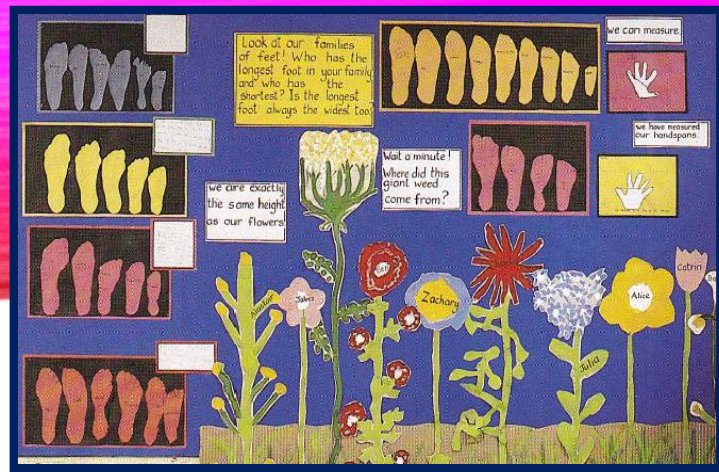
- Can you remember being small? What can you do now that you could not do then. What could you do then? (e.g. fit into small places.) Why do we talk about a baby's length?
- Why do we need to measure things?
- Talk about distances, athletics, making things fit, buying material, clothes and furniture, buildings ...



LENGTH – DISPLAY AND ACTIVITIES

- Build a collection of ribbons, lengths of braiding, ropes, string, Russian dolls etc. to be sorted according to length.
- Old baby clothes and shoes.
 - Draw around first shoe and present shoe. Cut out and mount on a chart. Make towers of unifix cubes or interlocking cubes and compare lengths.
- Non-standard measuring instruments including blocks, strips of squared paper, marked broom stick, straws, sticky notes etc.



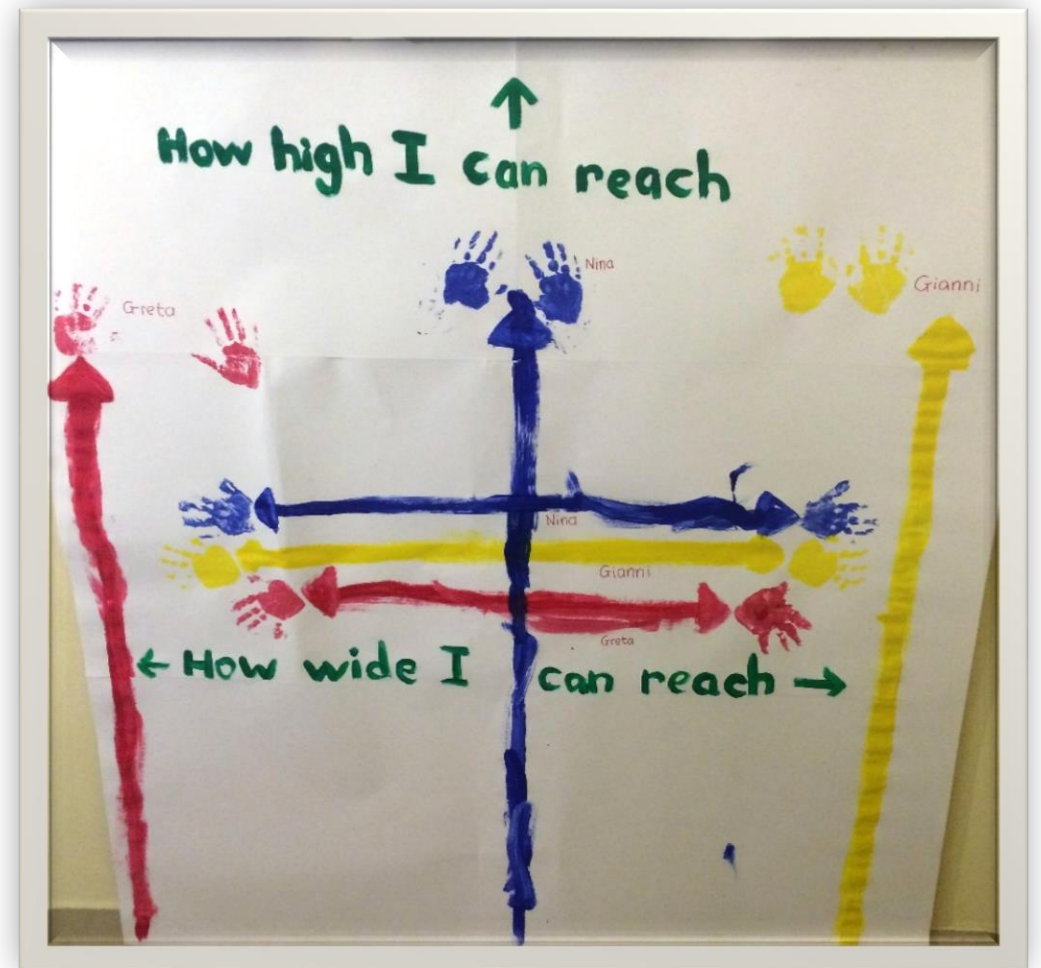


LENGTH – DISPLAY AND ACTIVITIES

- 'About me' display
 - Draw around children , paint and cut out. Display silhouettes holding hands around classroom or in corridor. (Link to Art). Use sticky notes to measure height of each child's silhouette.
 - Measure around head, waist, wrist, with strips of paper or string. Why do we have to use strips of paper or string and not straws, sticks or unifix cubes? Introduce the word circumference. Glue on charts to measure and compare. You can use these measurements to make headbands, belts and bracelets. (Link to Art and Craft)
 - Thread beads or hollow pasta onto elastic, count number of beads or pasta on your bracelet and compare with that of your friend. (Link to Art and Craft)
 - Measure the length of each finger, make five towers of unifix cubes. Are they the same length?
 - Measure length of hair. Draw sets of long-haired and short-haired children. (Link to Data Handling)

LENGTH – DISPLAY AND ACTIVITIES

Measure reach. Put large sheets of paper on the wall and record reach (both height and width) by using handprints. Children can work in groups and each child uses a different colour paint. Measure each child's reach.



LENGTH – DISPLAY AND ACTIVITIES

- Ask children to draw members of their families in order of height or make a 'family of feet' chart. Children are asked to draw around the foot of each family member at home (including grandparents, friends, uncles, aunts). Cut out foot shapes and arrange on chart, ordering according to length. Measure each foot using graduated paper strips. Record measurement underneath each foot.



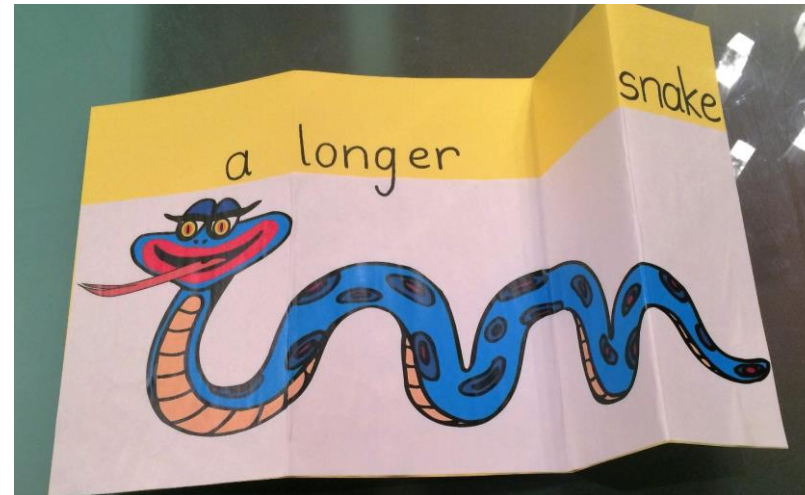
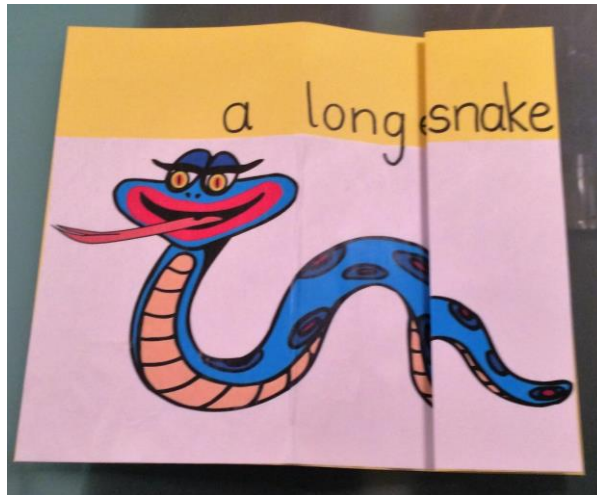
LENGTH – DISPLAY AND ACTIVITIES

ESTIMATING



LENGTH – DISPLAY AND ACTIVITIES

- Make expanding cards, e.g. a snake → a longer snake, or a flower → a taller flower.



LENGTH – INVESTIGATE

- How much ribbon do you need to tie a bow?
- Make a cube using a net. (Link to shapes and symmetry) Now make a playdough person or creature to fit inside your box. Write a sentence/s about your creature. (Link to Language)
- Design a height chart for your class (Link to Art) (giraffe, sunflower, dinosaur, rocket, tower etc.). Draw a graduated measuring strip.

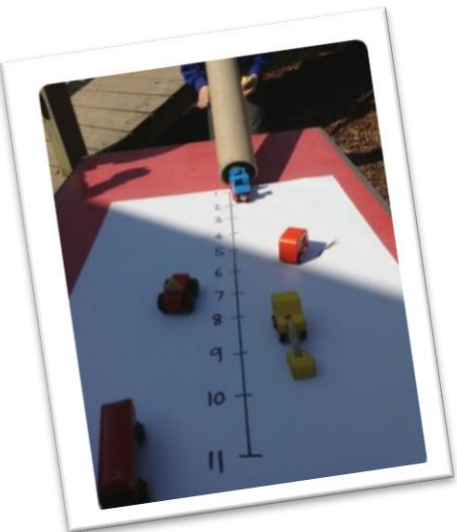
LENGTH : LINK TO OTHER AREAS

- P.E.
 - How far can you jump? Cut a strip as long as the jump and measure.
 - Measure stride lengths.
 - How far can you throw a beanbag? a Frisbee? Use strides as an instant measure.



LENGTH : LINK TO OTHER AREAS

- Design and Technology
 - Who can make the tallest tower using blocks? Display and measure the tower.
 - Make clothes to fit cardboard dolls.
 - Design and make a label to fit a tin.
 - How far can you make a Lego model car travel? Record distances measured in strides or graduated broomstick and display with models.



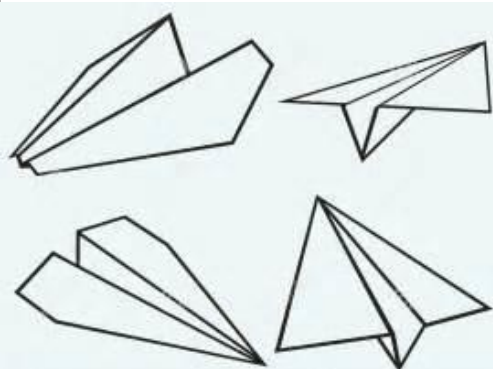
LENGTH – LINK TO OTHER AREAS

- Science

- Plants and seeds.

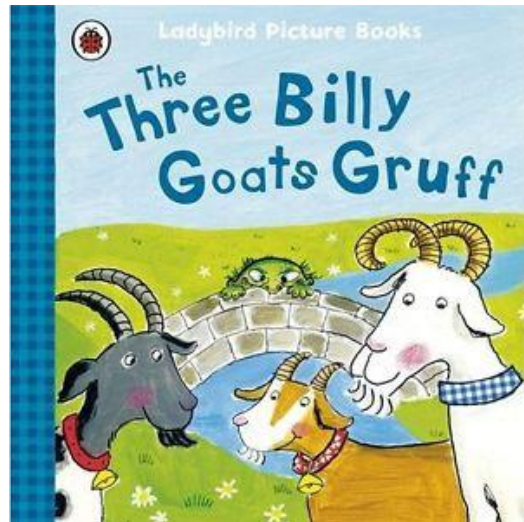
Make a growth diary or chart. Choose fast-growing seeds to sow, e.g. beans. Make towers of unifix cubes, measure at regular intervals and keep a record. You can also attach a scale to the pot made of a graduated strip.


- Measure shadows at different times of the day.
- How far can you make different paper aeroplanes travel?



LENGTH – LINK TO OTHER AREAS

- Language
 - Tell traditional stories, e.g. 'The Three Bears', 'Jack and the Beanstalk', 'The Three Billy Goats Gruff', using language of comparison: taller than, shorter than, larger, smaller, middle sized.



 The Teacher's Notebook
A Resource for Inspired Teaching

Jack & the Beanstalk - Math: Measurement

The Giant's Foot and Non Standard Measurement

1. I made the giant's shoe print by tracing a boot and blowing it up on the copier (legal size). I made two shoe prints for each student.
2. I had each child cut out two Giant's shoe prints. They explored the Giant's shoe print by comparing it to their own foot size.
3. I modeled measuring the group time carpet with the Giant's shoe print. I then let the children measure different things in the classroom. They brainstormed a list of things to measure at home.
4. One student asked if he could measure the Giant's foot with cubes. It was 16 cubes long. He then suggested that we could figure out how many cubes the things we measured were using this information! Pretty cool!

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THANK YOU!