

OUT AND ABOUT

OUTDOOR ACTIVITIES FOR KEY STAGE 2 MATHEMATICS

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MEASURE

Garden Olympics

Learning focus

- Estimate and measure lengths in metres and centimetres
- Choose appropriate measuring tools and units
- Record measurements in different ways
- Use the 4 operations to solve problems involving measure

Key vocabulary

- Measure
- Measuring unit
- Measuring tool
- Metre
- Centimetre
- Millimetre
- Ruler
- Measuring tape
- Trundle wheel
- Estimate
- Calculate
- Length
- Circumference
- Perimeter
- Distance

Resources

- A variety of fruit, vegetables, flowers, plants and trees
- 30 cm rulers
- Metre sticks
- Measuring tapes
- Trundle wheels
- Pencils, paper and clipboards



Activity

Discuss with children the variety of fruit, vegetables, flowers, plants and trees that are growing in the school garden. (If this is not possible, you could source items from the local greengrocer.) Explain that you are going to host a garden Olympics. There will be a range of categories such as:

- The tallest sunflower
- The longest carrot
- The tree with the largest circumference

Invite further suggestions of what could be included. Once the various categories have been agreed with the children, explain that they are the judges and it is their job to find the winner in each category. Organise the children into small groups and ask them to plan how they might go about this task.

What steps will you go through to complete this task?

What resources will you need?

How will you record your findings?

Invite children to share their ideas.

Discuss how they are going to measure the items in each category. Take, for instance, the 'longest carrot' category.

What measuring tool might you use?

What measuring units might you use to record your measurement?

Teaching point

To be skilled at measuring involves being able to choose an appropriate measuring tool and units of measurement. Children should be given freedom to select the appropriate measuring tool and units of length. It is therefore important to include a variety of items for children to measure.

Revise the key teaching points related to each measuring tool. In particular, encourage children to identify the starting point on the measuring tool (the zero marked on the scale) and the value of each interval.

Teaching point

One of the key skills involved in the study of measurement is the ability to measure accurately. Children will encounter a range of scales on many measuring tools, from a simple scale progressing in single units through to more complicated scales where each division might represent more than one unit. It is important that children can identify the value of each interval on the scale that they are using before beginning to measure.

Work with the children to devise a recording sheet. For example, they may record in a table as follows:

Category	What I measured with	Actual measurement
The longest carrot		

Encourage children to estimate before measuring. (They could add another column to their table to record their estimates.)

Teaching point

Estimation is a key skill used frequently in everyday life. Often, when asked to estimate, children will change their estimation after the actual measurement in order to appear more accurate. To address this issue, children could be encouraged to estimate within a range. As their skills develop, they can be encouraged to narrow the range of their estimates.

Assign each group to their 'starting point' to begin the task. Each group should have a selection of measuring tools to choose from. Children should collaborate in their groups to find the winning entry in each category. Some of the items can be compared directly. For example, children could place the carrots side by side to determine which one is the longest. They should then measure and record its length. For other items such as the tree with the largest circumference, direct comparison will not be possible and so it will be necessary to measure several trees to determine the winner.



This activity could also be adapted to include other forms of measurement. For example, children could be asked to find:

- The heaviest potato
- The leaf with the largest area
- The pumpkin with the greatest capacity

Once the children have found the winners in each category, explain that the organisers wish to use tape to mark off the boundary (around the playground) for the event. Ask the children to work out how much tape will be needed.

How will you find out how much tape is needed?
How will you find the distance around the playground?
How long (and wide) do you think the playground is?
How will you find the length (and breadth) of the playground?
What measuring tool will you use?
What measuring units will you use?

Each group should then find the distance around the playground using trundle wheels and record their findings.

Children could be encouraged to record measurements in different ways, depending on their knowledge and understanding. For example, 135 cm could be recorded as 1 m 35 cm or 1.35 m.

Taking ideas further

As a challenge, you could explain that the organisers have decided to set up an exhibition area in the playground. They wish to erect a tent and inside the tent they wish to set up several long tables to display the winning entries and the prizes. They would also like to have an ice-cream van and a bouncy castle. Explain that it is their job to decide where to position the items within the playground.

Where would be the best place for the tent? The ice-cream van? The bouncy castle?
Approximately what size do you think an ice-cream van is? How long? How wide?
Bouncy castles come in different sizes. What size do you think the organisers should hire? Why?
Where would be the best place to position the tent? Why?
How many tables do you think you will need? How long is each table? How many will fit inside the tent?
How much space do you think you should allow around the tent? The ice-cream van?
The bouncy castle?

This task will require children to do some research. They could use the internet to investigate various options and the associated costs. They will need to find the approximate size of a tent, tables, ice-cream van and bouncy castle. They will also need to draw a plan of the playground and decide where each item should be placed.

The children could be given a set budget to work within. They will need to keep a record of the cost of each item.

Each group could then present their ideas to the whole class. They should be able to explain and justify their decisions

Consider posing further problems for children to solve. For example:

Adult tickets cost £10 each and child tickets cost £5 each. How much will it cost for a family of 2 adults and 3 children to attend the event?

Bouncy castle rides cost £1.50. A small ice-cream costs £1.75 and a large ice-cream costs £2.25. Tom has £10 to spend. He would like to buy a ticket for the event and have a go on the bouncy castle. Will he have enough money left over to buy an ice-cream? How much?

They could create a simple spreadsheet and use it to calculate the solutions.

	A	B	C	D
1	Item	Price	Quantity	Cost
2	Adult ticket	£10.00	2	£20.00
3	Child ticket	£5.00	3	£15.00
4	Bouncy castle	£2.50	3	£7.50
5	Ice-cream (small)	£1.20	3	£3.60
6	Ice-cream (large)	£2.00	2	£4.00
7	Burger	£3.00	5	£15.00
8	Chips	£1.75	5	£8.75
9	Orange juice	£0.90	3	£2.70
10	TOTAL COST			£76.55
11				

Assessment opportunities

Are the children able to:

- Choose an appropriate measuring tool and measuring unit
- Make a sensible estimate when measuring
- Measure with an appropriate degree of accuracy
- Record measurements in different ways
- Use addition, subtraction, multiplication and division to solve problems involving measure
- Explain and justify their decisions