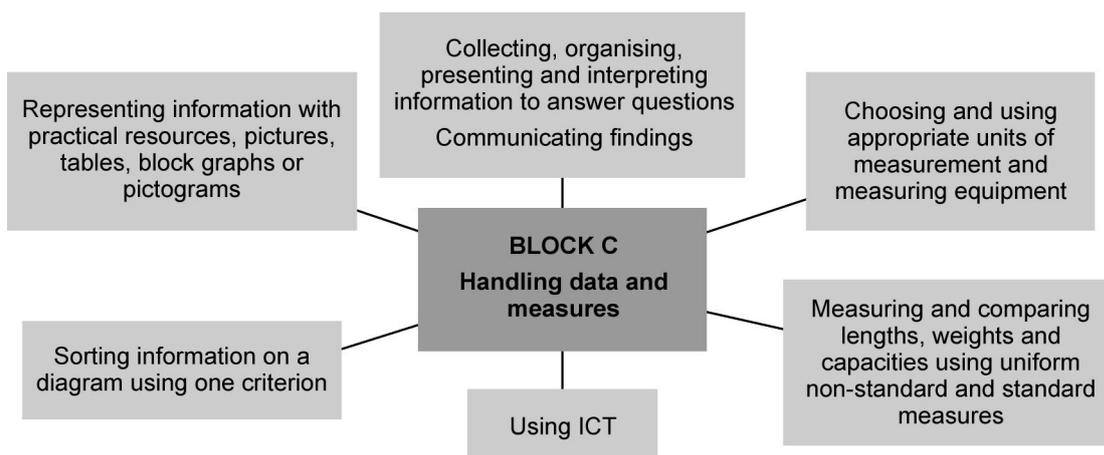


Handling data and measures



Objectives	Units		
	1	2	3
<i>End-of-year expectations (key objectives) are highlighted</i>			
• Answer a question by selecting and using suitable equipment, and sorting information, shapes or objects; display results using tables and pictures	✓	✓	✓
• Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures	✓	✓	✓
• <i>Answer a question by recording information in lists and tables; present outcomes using practical resources, pictures, block graphs or pictograms</i>	✓	✓	✓
• Use diagrams to sort objects into groups according to a given criterion; suggest a different criterion for grouping the same objects	✓	✓	✓
• <i>Estimate, measure, weigh and compare objects, choosing and using suitable uniform non-standard or standard units and measuring instruments (e.g. a lever balance, metre stick or measuring jug)</i>	✓	✓	✓

Speaking and listening objectives for the block

Objectives	Units		
	1	2	3
• Tell stories and describe incidents from their own experience in an audible voice	✓		
• Listen to and follow instructions accurately, asking for help and clarification if necessary		✓	
• Explain their views to others in a small group, and decide how to report the group's views to the class			✓

Opportunities to apply mathematics in science

Activities		Units		
		1	2	3
1a	Ourselves: Collect and organise data about eye colour or shoe size and present it in a chart.	✓		
1c	Sorting and using materials: When sorting a collection of paper, cardboard and so on, present data in a diagram, and explain groupings.		✓	
1f	Sound and hearing: Measure distances from which a sound can be heard and present in a chart.			✓

Key aspects of learning: focus for the block

Enquiry	Problem solving	Reasoning	Creative thinking
Information processing	Evaluation	Self-awareness	Managing feeling
Social skills	Communication	Motivation	Empathy

Vocabulary

problem, question, explain, predict, pattern, collect, organise, compare, order, sort, group, same, different, property, represent, interpret, count, tally, vote, measure, weigh, guess

information, graph, block graph, pictogram, diagram, list, table, label, title

zero, one, two, three, ..., twenty; first, second, third, ...; more/less, most/least, most/least popular, most/least common, about the same as, enough, not enough, too much, too little, too many, too few, nearly, roughly, about, close to, just over, just under, half way

how many ...?, how many more is ... than ...?, how much more is ...?, how many fewer is ... than ...?, how much less is ...?

unit, centimetre (cm), metre (m), ruler, metre stick, tape measure, balance, scales, container, measuring jug, capacity, weight, length, width, height, depth, size, long, short, tall, high, low, wide, narrow, deep, shallow, thick, thin, and comparatives such as longer/longest, heavier/heaviest, holds more/holds most

Building on previous learning

Check that children can already:

- describe solutions to practical problems, drawing on experience, talking about their own ideas, methods and choices
- sort familiar objects and count how many objects share a particular property, presenting results using pictures, drawings or numerals
- count reliably at least 10 everyday objects and recognise the corresponding numerals
- use language such as 'more' or 'less' to compare two numbers
- use language such as 'circle' or 'bigger' to describe the shape and size of solids and flat shapes
- use language such as 'greater', 'smaller', 'heavier' or 'lighter' to compare quantities

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> Answer a question by selecting and using suitable equipment, and sorting information, shapes or objects; display results using tables and pictures <p><i>I can answer a question using the equipment my teacher uses</i></p>	<p>How could you find out which objects are heavier than the bag of sand? What did you use to find out?</p> <p>Where do the objects that are heavier than the bag of sand belong on the diagram? Why is the box of paper clips here on the diagram?</p>
<ul style="list-style-type: none"> Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures <p><i>I can talk about how I solved a problem</i></p>	<p>How did you find out which of these would hold the most water? How did you begin? How did you decide what you needed to do? How could you show someone else that this one holds most?</p>
<ul style="list-style-type: none"> Answer a question by recording information in lists and tables; present outcomes using practical resources, pictures, block graphs or pictograms <p><i>I can help to answer a question and to show what we found out</i></p>	<p>How could we show the number of children who voted for each of these?</p> <p>If you add your brick to that tower, what does that mean? Without counting, which of the flavours had most votes? How do you know?</p>
<ul style="list-style-type: none"> Use diagrams to sort objects into groups according to a given criterion; suggest a different criterion for grouping the same objects <p><i>I can sort objects by placing them onto a big diagram</i></p>	<p>How have you sorted the objects?</p> <p>Which of the objects on the diagram is wider than your hand-span?</p>
<ul style="list-style-type: none"> Estimate, measure, weigh and compare objects, choosing and using suitable uniform non-standard or standard units and measuring instruments (e.g. a lever balance, metre stick or measuring jug) <p><i>I can compare the lengths/weights/capacities of more than two objects and put them in order</i></p>	<p>Which of these three objects do you think will be the lightest? Which do you think will be the heaviest? Which will you compare first?</p> <p>What else will you have to do to check if you have put them in order from lightest to heaviest?</p>
<ul style="list-style-type: none"> Tell stories and describe incidents from their own experience in an audible voice <p><i>I can tell another person what I have done</i></p>	<p>Tell the others how you solved the problem. How did you begin?</p>

Learning overview

Children **pose a question, gather information, order and interpret the information** in group or whole-class enquiries. They **solve problems** such as:

Which of these things is heavier than the bag of sand?

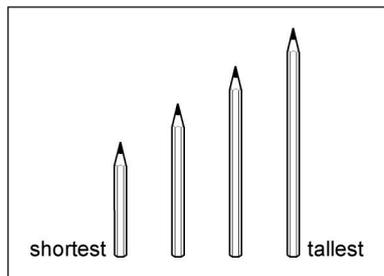
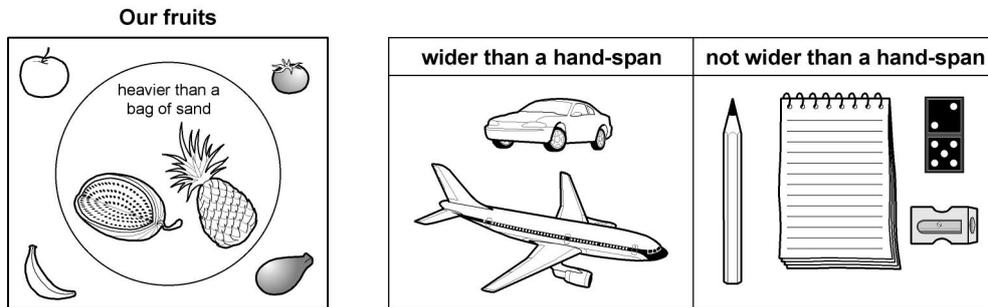
Find four things in the classroom that are wider than your hand-span and four that are not.

Put the pencils into order from shortest to longest.

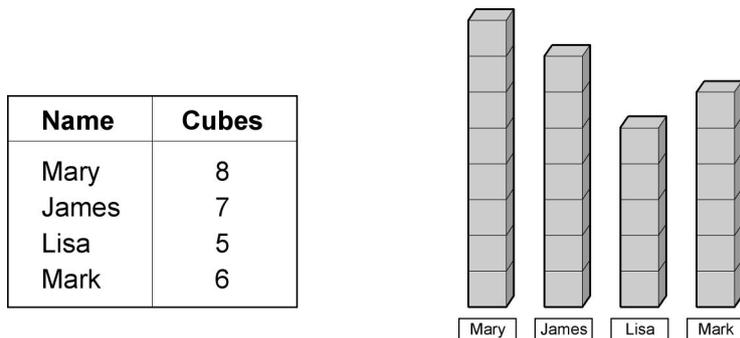
Which of the three bears would want which container? Put the containers into order, starting with the one that holds most.

Children **measure by making direct comparisons**. To compare the weight of one object with the weight of the bag of sand, for example, children hold one of the items in each hand and feel the difference, and they use a balance. They compare heights by placing objects together and the capacity of containers by pouring rice, sand or water from one container to the other. By comparing pairs of objects they build up the information they need to order more than two objects.

Children place the objects on large **diagrams** prepared for the task to show what they have found out.



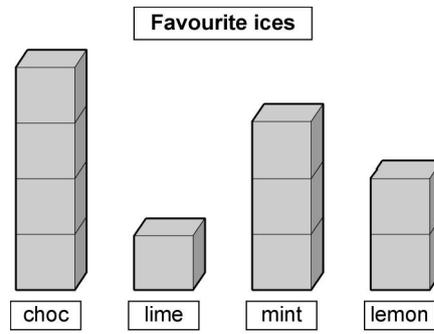
Children collect numerical information and record it in tables and **block graphs**. For example, to find out how many cubes different children in the group can pick up with one hand they might draw a table to show their names and record the number of cubes. Alternatively, each child might fix the cubes into a column and display the labelled columns as a block graph.



Children use the table or block graph to answer questions such as:

- Who picked up the largest number of cubes?*
- How many cubes did Mark pick up?*
- Who do you think has the smallest hand? Why?*
- Who picked up one more cube than Lisa?*

Children solve other problems. They collect information about likes and dislikes by placing a brick or cube on the tower of their choice. They use the completed towers and labels to find, for example, their favourite ice-cream flavour.



Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> Answer a question by selecting and using suitable equipment, and sorting information, shapes or objects; display results using tables and pictures <i>I can show what I found out so that other people will understand</i> 	What information did you need? What equipment did you use? How does your table show the things that you found out?
<ul style="list-style-type: none"> Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures <i>I can talk about why I chose to solve the problem in the way that I did</i> 	Why did you decide to ...?
<ul style="list-style-type: none"> Answer a question by recording information in lists and tables; present outcomes using practical resources, pictures, block graphs or pictograms <i>I can draw pictures/diagrams to show what I have found out</i> 	What does one cup on your pictogram stand for? How could you use your pictogram to find out which container held two cups of water?
<ul style="list-style-type: none"> Use diagrams to sort objects into groups according to a given criterion; suggest a different criterion for grouping the same objects <i>I can sort objects using my own diagram to help me</i> 	How did your diagram help you to sort the objects? When you measured the book and it was more than one straw wide, how did you know where the book belonged on your diagram?
<ul style="list-style-type: none"> Estimate, measure, weigh and compare objects, choosing and using suitable uniform non-standard or standard units and measuring instruments (e.g. a lever balance, metre stick or measuring jug) <i>I can use equipment to measure objects</i> 	Which of the containers do you think will hold most? How many cups of water do you think it will take to fill the biggest jug? How do you know how much the biggest jug holds? Where do you start to measure the width of the hall? How many metres wide do you think the hall is? Write your guess on a piece of paper. Measure to halfway. Do you want to guess again? How many cubes balanced the tennis ball? How did you know when you had found the correct weight?
<ul style="list-style-type: none"> Listen to and follow instructions accurately, asking for help and clarification if necessary <i>I can do the things that I am told to do to help me to measure objects</i> <i>I can ask questions if I don't understand</i> 	Remind each other how you will place the metre sticks to measure the width of the hall. What are the important things to remember?

Learning overview

Children take greater responsibility for **posing and answering questions**. They begin to explore their own ways of solving problems and organising the information that they gather. They build on their experience of measuring by direct comparison. They use uniform non-standard units such as wooden bricks to balance an object, egg cups to fill a container and straws to fit along a line or their own steps to measure a longer distance. They solve problems such as:

Which is wider: the table or the doorway? How much wider is it?

How heavy is each of these objects?

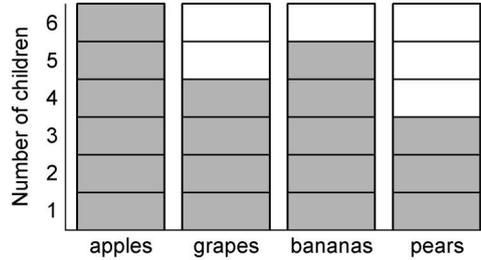
How many cups does it take to fill this jug? Check your estimate.



Children begin to use standard units to measure and sort objects. For example they sort objects according to whether they are taller than 1 metre or not. They make a collection of items that together weigh just over 1 kilogram.

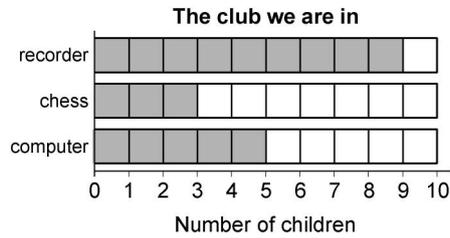
Children show the information using lists, pictures, tables, block graphs and pictograms. They represent the same information in different ways.

The fruit we like best	
Fruit	Number of children
apples	6
grapes	4
bananas	5
pears	3



stands for 1 child

Club	Number of children
recorder	
chess	
computer	



Children use a context, such as the story of building a bed for the queen, to explore how using non-standard units can lead to different results:

The queen's bed must be 2 metres long and 1 metre wide.

How big would the bed be if you used your feet to measure the wood to build the bed?

How big would it be if you used your teacher's foot to measure?

How big would the bed be if you used the biggest foot in the school?

Unit 1C3

2 weeks

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> Answer a question by selecting and using suitable equipment, and sorting information, shapes or objects; display results using tables and pictures <i>I can make choices about how to organise what I find out to help me to explain my answer</i> 	<p>Why did you organise the information in that way? How does it help you to show that the bottle holds less than the jug?</p>
<ul style="list-style-type: none"> Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures <i>I can draw a picture/diagram to show how I solved the problem</i> 	<p>How does your picture/diagram show what you did and what you found out?</p>
<ul style="list-style-type: none"> Answer a question by recording information in lists and tables; present outcomes using practical resources, pictures, block graphs or pictograms <i>I can show what I found out by using a block graph</i> 	<p>What does your block graph show about how heavy the objects are? How did you line up the blocks to make it easy to compare the weights?</p>
<ul style="list-style-type: none"> Use diagrams to sort objects into groups according to a given criterion; suggest a different criterion for grouping the same objects <i>I can sort objects in different ways I can use what I know from comparing their lengths or balancing them</i> 	<p>You found that the ribbon was the longest object in the set. What else did you find out about the ribbon when you sorted your objects in a different way?</p>
<ul style="list-style-type: none"> Estimate, measure, weigh and compare objects, choosing and using suitable uniform non-standard or standard units and measuring instruments (e.g. a lever balance, metre stick or measuring jug) <i>I can estimate by looking and feeling I know how to measure objects giving the measurements correctly</i> 	<p>Did you think the jug or the mug would hold more? How much more? What did you do to measure as carefully as you could? How do you know that the measurement is correct?</p>
<ul style="list-style-type: none"> Explain their views to others in a small group, and decide how to report the group's views to the class <i>I can explain what I have found out to my group I can work with the others in my group to agree what we will tell the rest of the class</i> 	<p>In your group discuss what you have found. How will you get ready to tell the rest of the class?</p>

Learning overview

Children extend the process of **posing and answering questions**. They choose how to solve problems and **organise** the information that they gather. They are increasingly aware of how to communicate their findings to a wider audience.

They use their experience of standard units to make realistic estimates, answering questions such as:

Is the table taller or shorter than a metre?

Is this doll taller or shorter than one of the class rulers?

Does this bottle hold more or less than the litre jug?

Which of these things do you think will weigh less than a kilogram?

They use standard units to measure and compare objects. For example, they place metre sticks end-to-end to find out how much wider the hall is than the classroom. They use a litre jug to measure how much more the washing-up bowl holds than the cola bottle.

They build on their experience of uniform non-standard and standard units for measurement and are increasingly accurate in their measurements. They suggest suitable standard or uniform non-standard units to estimate and measure. They answer questions such as:

How far up the wall can you reach without lifting your feet from the floor?

How far can you jump from this line?

Does the tall thin mug hold more or less than the short fat one?

How much heavier is the red parcel than the blue parcel?

They choose how to communicate their findings using tables, pictograms or block graphs. They interpret the information to answer or raise further questions.

They sort objects using one criterion, then suggest and use a different criterion for sorting the same objects. For example, they sort a set of objects to show those that are heavier than 20 cubes or not. They sort the same objects using a different criterion such as float/do not float. They use both sets of results to answer further questions, such as:

Do all of the heavier containers sink?

Are all shorter things lighter than 20 cubes?

The red parcel is the longest. Does it weigh the most?

Does the tallest mug hold the most?

Is the hand that picked up the most cubes the widest hand?