Mathletics

Series B Student

Measurement

My name

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Series B – Measurement

Contents

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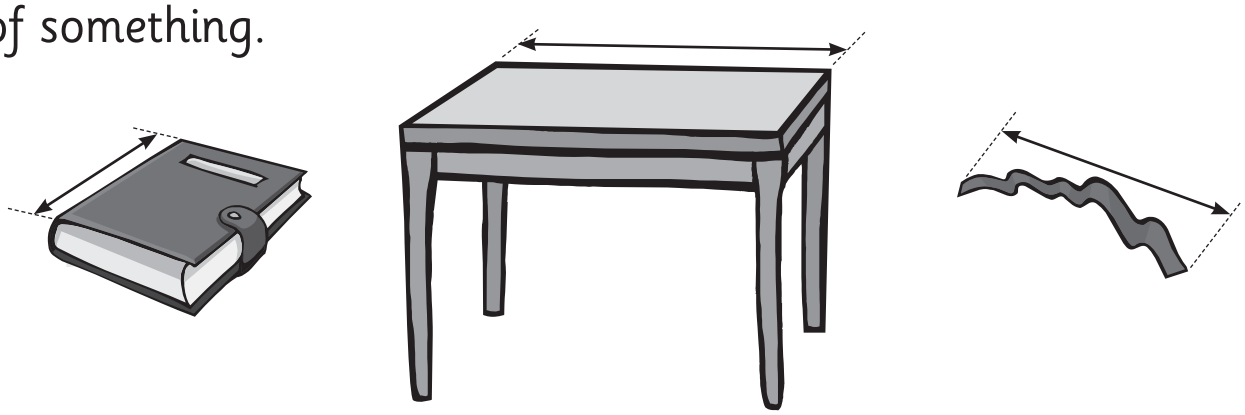
Length – language of length

Length is how far it is from one end to the other end of something.



We use lots of different words to talk about length.

1 Here are some words we use to talk about length. How many others can you think of? Brainstorm with a friend.

long

longer than

different

a bit over

longest

exactly

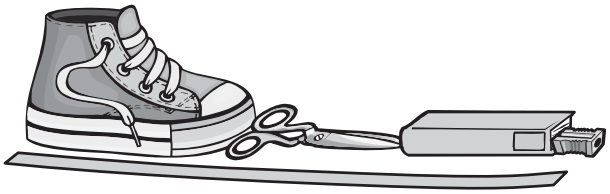
Length – measure with informal units

We can measure length lots of different ways. Here are some things we can use:

You will need: streamer scissors measuring tools

What to do:

Cut a piece of streamer about the length of your arm. Now find 4 things that together, are the length of your streamer. Here is an example.



Record them here.

What to do next:

Find someone whose streamer is the **same length** as yours.

Find someone whose streamer is **longer** than yours.

Find someone whose streamer is **shorter** than yours.

Length – measure with informal units

You will need:  a partner  measuring tools

What to do:

Find 2 things in your room that you can't move that are the same length. How will you prove they are the same length if you can't move them?

Record your findings here.

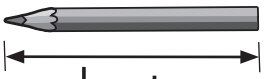
What to do next:

Now find another way to measure the same 2 things. What do you find?

Length – compare and order lengths

We can compare lengths. Look at this lead pencil.

The others are:



shorter

the same

longer

You will need:  a partner  streamer or string  scissors

What to do:

Cut a piece of streamer for your partner. This is their measuring 'stick'. Ask them to find a classroom object that is:

shorter than it	the same as it	longer than it

Check that they are right. Draw the objects under the headings.

What to do next:

Find 3 things in the room that are the **same** length as each other. Draw them here.

Length – compare and order lengths

1 Draw or write to make these statements true:

a My foot is **shorter** than

b My little finger is **longer** than

c My desk is **longer** than

d My lead pencil is about the **same** length as

e My nose is the **same** length as

2 Cut 5 pieces of streamer that will fit in the box below. Make each one longer than the one before. Paste them in order in the box.

Length – compare and order lengths

You will need: string scissors coloured pencils

What to do:

How long is your shoe?
Measure it with string.

Now compare your piece of string with your classmates' shoes so you can answer:

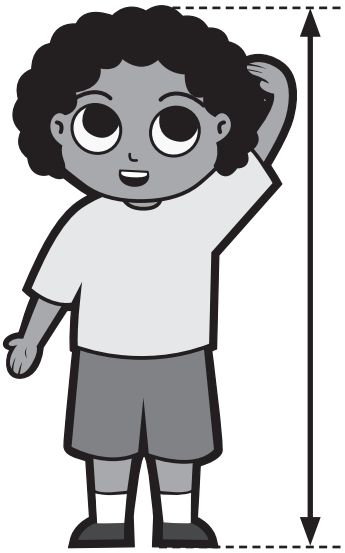
a My shoe is longer than _____

b My shoe is shorter than _____

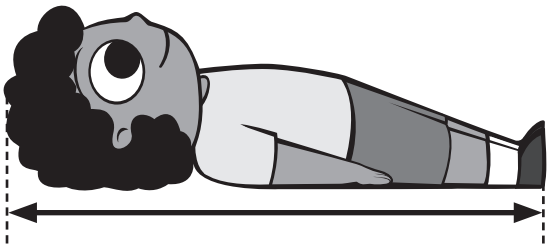
c My shoe is about the same length as _____

Length – compare and order lengths

Did you know height is a kind of length?



We are the same height when we are standing up or lying down.



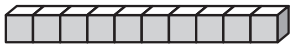
You will need:  3 friends  measuring tools

What to do:

Compare the height and then order the people in your group from shortest to tallest. You must do it without lining up or going back to back. Write or draw your results below and explain how you did it.

Length – measure with common units

1 Find 5 things to measure using tens blocks.



First estimate, then measure.

Record your findings in the table below.

	Item	Estimate	Measure
a			
b			
c			
d			
e			

2 Draw or write the items from shortest to longest below.

	Item
a	
b	
c	
d	
e	

shortest

longest

Length – measure with common units

Sometimes when we measure, we have parts left over. We have to decide how to describe these parts.

1 Look at the picture. How would you describe the part hanging over the edge?

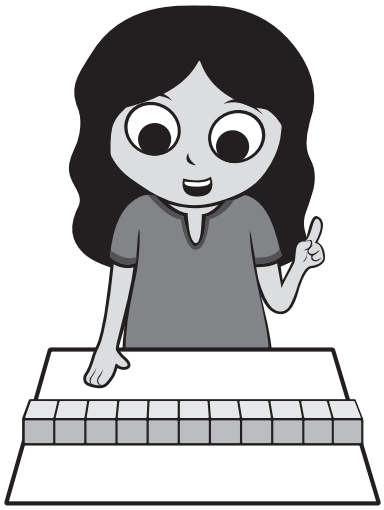
2 How did other people describe it? Make a list of all the ways you could describe it.

3 Measure 3 things with blocks. Record the measurements in the boxes. If there are leftovers, describe them.

Length – measure with common units

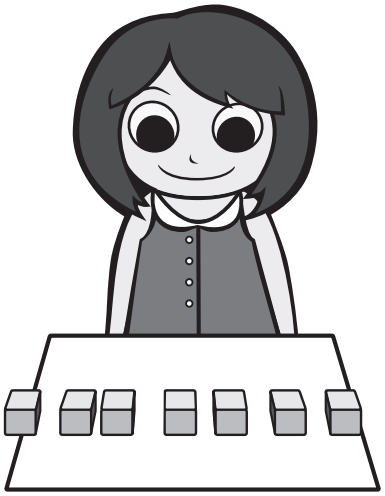
1 Amira, Millie and Jackson all measured the length of a table with blocks.

Amira



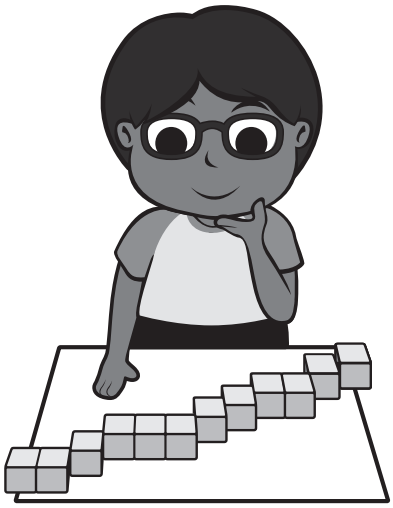
11 blocks

Millie



7 blocks

Jackson



12 blocks

a Who do you think has done it the best way? _____

b Explain to your neighbour or your teacher why.

Sometimes even when we line things up carefully we can get different answers. Why do you think this is?

2 **a** Measure your maths book with blocks. How long is it? _____

b Is your answer the same as your friend's answer? Why might it be different?

Length – measure with common units

You will need: a partner, counters, flats

What to do:

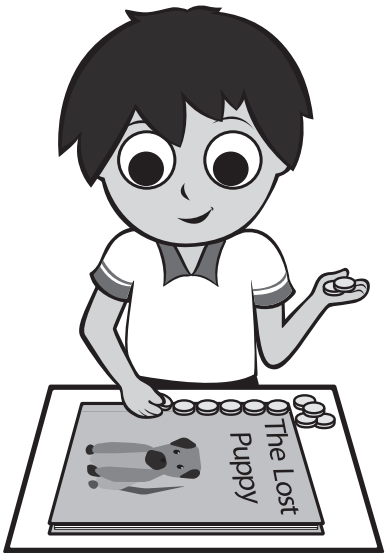
Measure the length of your table with flats.
How many flats long is it?

Ask your partner to measure the same table with counters.
How many counters long is it?

Are your answers the same? Why or why not? Explain to your neighbour or teacher why this is.

What to do next:

Measure the length of a big book using flats.
How many flats long is it?



Now, how many counters long do you think it will be? Will it be more or less than the number of flats? Circle your choice.

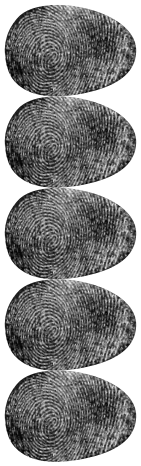
more **less**

Measure the book with the counters. Were you right?

Length – measure with common units

1 How many thumb prints do you think the length of this page is? Use your own thumb prints to estimate and then measure.

estimate



measure

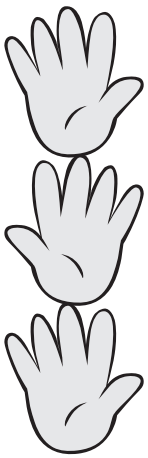
2 How many feet long do you think your classroom is? Use your own feet to estimate and then measure.

estimate

measure

3 How many handspans long do you think your table is? Use your own hands to estimate and then measure.

estimate



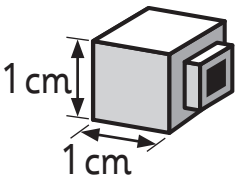
measure

Length – measure with formal units

Sometimes it is important for everyone to use exactly the same measuring unit. We can't use hands or feet because they are all different. And not everyone in the world has the same counters or building blocks.

To solve this problem we invented units that are the same EVERYWHERE. One of these is the **centimetre**. We can write this as **cm**.

1 A centicube is exactly one centimetre long. Use centicubes to measure 6 things in the room.



	Item	Estimate	Measure
a			
b			
c			
d			
e			
f			

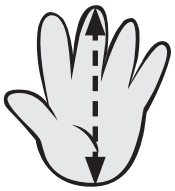
Length – measure with formal units

You will need:  a partner  centicubes

What to do:

Spread your hand out on this page and ask a friend to trace around it. Use centicubes to measure and then record:

width  _____ cm

length  _____ cm

Mass – language of mass

We find the mass of something by measuring how heavy it is. The more mass something has, the heavier it is.

1 Draw 3 things you think have a lot of mass. These feel heavy.

2 Draw 3 things you think have a little bit of mass. These feel light.

3 Draw something you could only just lift.
Draw something you could easily lift 2 of.

Mass – language of mass

1 Here are some words we use when we measure and talk about mass. Can you think of any more? Write them.

lighter than

less mass than

a bit more

different

weigh

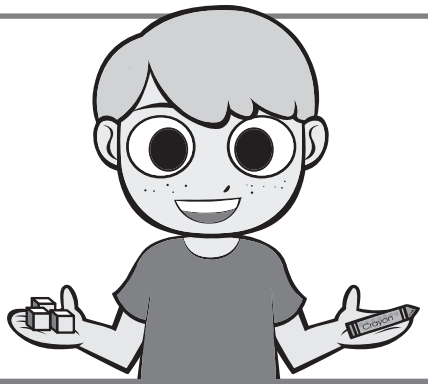
2 Are small things always light? Can you think of something that is small but feels quite heavy?

Mass – measure by hefting

We can also use our hands to compare masses.

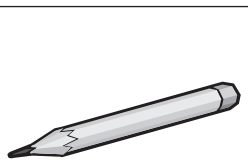
Things with more mass feel heavier.

We call this 'hefting'.



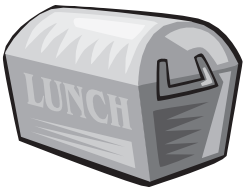
1 Heft classroom objects in your hands to find something that has more mass. Draw it.

a



more mass

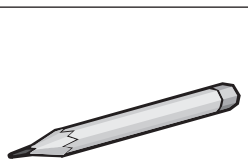
b



more mass

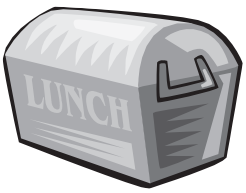
2 Heft classroom objects in your hands to find something that has less mass. Draw it.

a



less mass

b



less mass

3 How do you know that something has more or less mass when you measure like this? What tells you?

Mass – measure by hefting

You will need:  a partner  objects  unifix or multilink cubes

What to do:

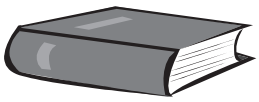
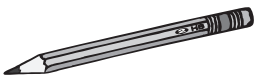
Put a cube in your hand and feel its mass. Put the cube back. Feel the mass of a reader.

Let your partner do the same. Then both of you estimate how many cubes will have the same mass as the reader. Write this under the estimate heading.

Now put cubes into your partner's hand one at a time while they hold the reader in their other hand. They will tell you to stop when they think their hands are holding the same mass.

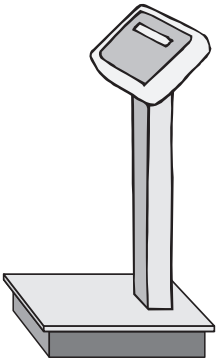
Now you hold the reader and the cubes and see if you agree with your partner. Write down the number you decide on. Does the number of cubes surprise you?

Try this activity 3 more times with the objects below.

Object				
Estimate				
Measure				

Mass – find equality with balance scales

We can use different kinds of scales to measure mass.



The kind of scale we use depends on how much mass the object has. What would you use the last scale to measure?

You will need: a partner objects a balance scale

What to do:

Use scales to find things in the classroom that are **equal** in mass. Draw them on the scales.

a

b

c

d

Help Equal means the same.

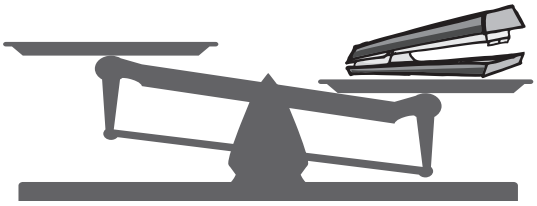
Mass – measure with balance scales

You will need: a partner, objects, a balance scale

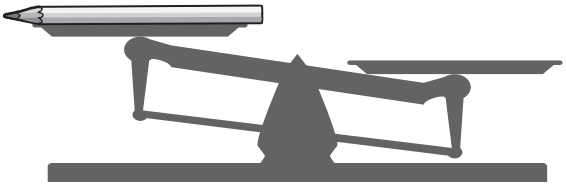
What to do:

Find things in the classroom to put on the other side of the scale to make the scale look like this. Record them on the scale.

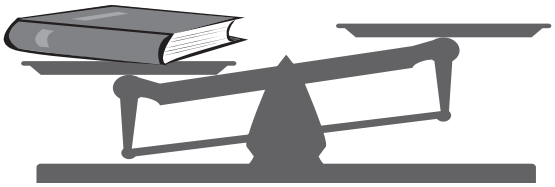
a



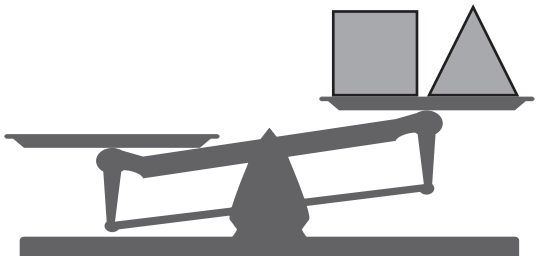
b



c

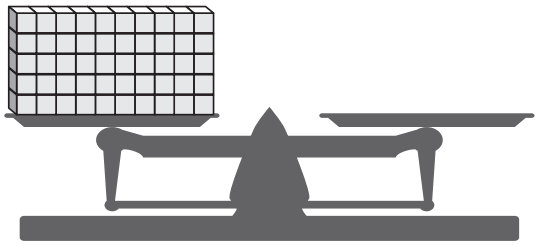


d



e

f



Help

heavier  lighter

Mass – measure with informal units

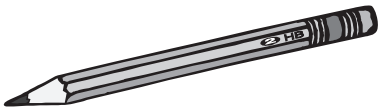
You will need: a partner, objects, a balance scale, unifix or multilink cubes

What to do:

Place a pencil on one side of the scales. How many cubes do you think will have the same mass as the pencil?

Estimate and then take turns putting the cubes on the scales. Do this 4 more times with 4 different objects.

Do your estimates get closer with practise?

	Item	Estimate	Measure
a			
b			
c			
d			
e			

Mass – measure with informal units

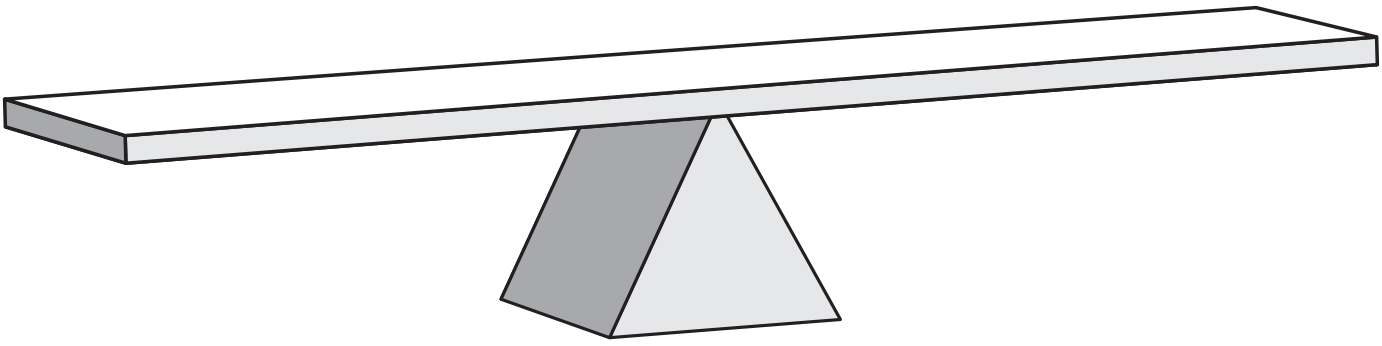
You will need: your classmates and your teacher a seesaw

What to do:

Go to the playground with your class. Look at your teacher. How many students do you think will balance him or her on the seesaw? Write your estimate down.

Try it out. How close was your estimate? Draw the answer below.

estimate ☐ **measure** ☐

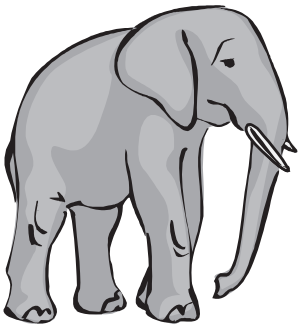


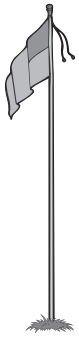
What to do next:

Experiment. How many kids will equal 2 teachers? What about a teacher and a bucket of sand? Or a teacher and 2 kids?

Mass – size

When we say something is big we usually mean it is tall **and** wide.
We would say an elephant is big.
Would you say a flagpole is big?
Why or why not?





1 Draw 3 things you think are big.

2 Draw 3 things you think are small.

3 Show your pictures to a friend. Do they agree? Can you both be right?

Mass – size

1 Use the words in the help strip below to finish the sentences.

a

b

2 Why do you think the characters say different things about the same object?

Mass – size and mass relationship

Are big things always heavy? Are small things always light?

1 Draw some things you think are:

big and heavy

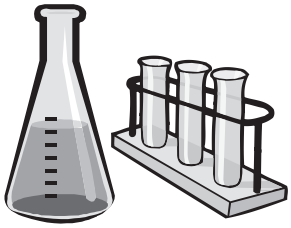
big and light

small and heavy

small and light

Volume and capacity – language

1 If you were using this equipment, what do you think you might be measuring?



2 What words do you use when you are doing this kind of measuring? Here are some to get you started.

full

more than

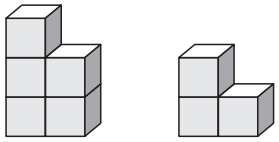
half

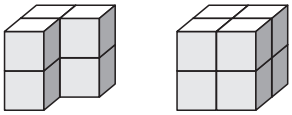
Volume and capacity – volume

Volume is how much space an object takes up. We often use blocks to measure volume.

1 Put a ring around the block building that has the greater (bigger) volume. It will use more blocks.

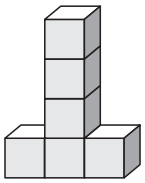
a 

b 

c 

2 Use blocks for this activity. Build this tower.

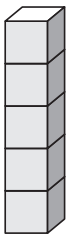
How many blocks is it made up of? ☐

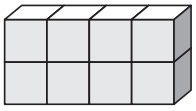


a Build a tower with a **greater** volume. Draw it here.

b Build a tower with a **lesser** volume. Draw it here.

3 Put a ring around the building that has the greater volume. Explain why.





Volume and capacity – capacity of containers

Capacity is how much a container can hold.

You will need:  4 friends with their lunchboxes

 measuring equipment

What to do:

You will need your empty lunchboxes for this. You may also need some measuring tools like sand, water, jugs or blocks.

Whose lunchbox holds the most?

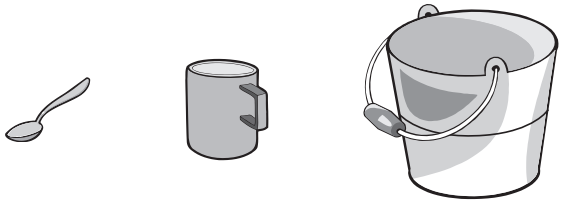
Find a way to prove this. Record your findings below and share how you did it with your teacher.

What to do next:

Can you find a different way to prove it?

Volume and capacity – capacity of containers

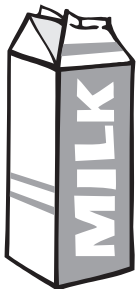
1 Which of these would you use to fill the containers below? Draw your pick in the boxes.



a

b

c



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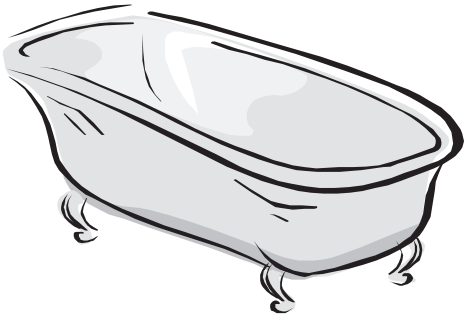


2 I filled a container to the top with 4 cups of rice. What might the container have been?

Volume and capacity – capacity of containers

You will need: a partner, a spoon, a cup, a bucket, an ice cream container, sand or water

What to do:

a How many spoonfuls of water or sand will fill your cup?

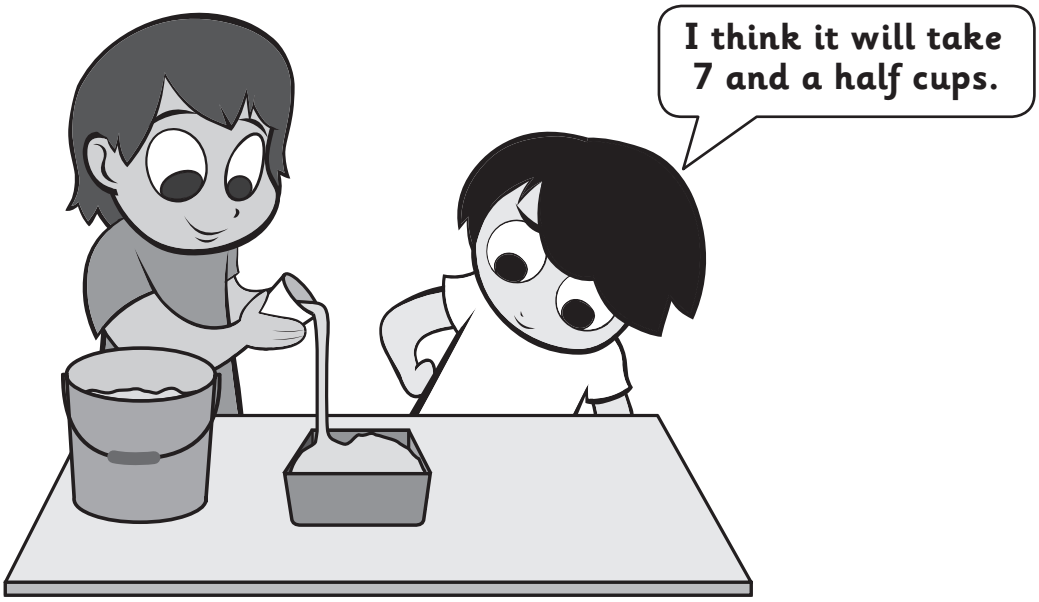
estimate ☐ **measure** ☐

b How many cups of water or sand will fill your ice cream container?

estimate ☐ **measure** ☐

c How many ice cream containers of water or sand will fill your bucket?

estimate ☐ **measure** ☐



Volume and capacity – capacity of containers

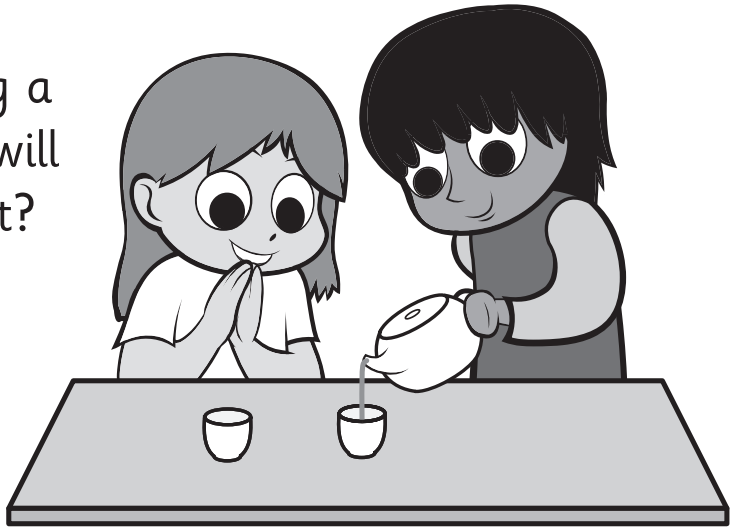
You will need: a partner, a teapot and cups, water, different sized jugs

What to do:

You and your friend are having a party. How many cups of tea will you **each** get from your teapot?

estimate ☐

measure ☐



What to do next:

What size jug would you need for 8 cups of lemonade? Test out your different jugs to find the right one.

Draw it and show how full the jug is.

Volume and capacity – measure with solids

You will need:  a partner  a lunchbox  an empty matchbox

 small animal or teddy counters

What to do:

a How many animals will fill a matchbox? The lid must close normally.

estimate ☐ **measure** ☐

b How many animals will fill your pencil tin?

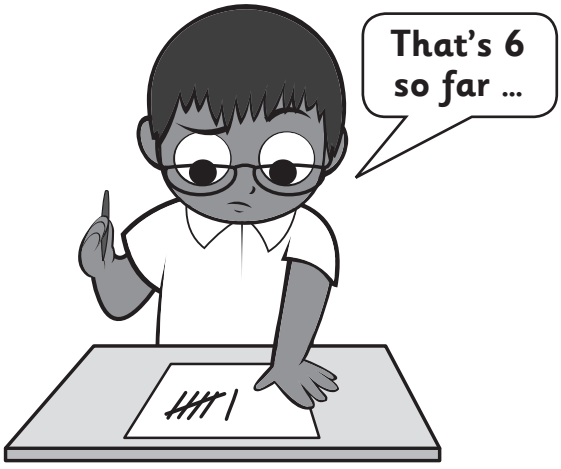
estimate ☐ **measure** ☐

c How many animals will fill your lunchbox? It can be tricky to keep count. You could draw a tally mark each time you put one in to help you remember.

estimate ☐ **measure** ☐

What to do next:

What else can you find to measure with animals?



Volume and capacity – measure with solids

You will need:  a partner  different boxes

 unifix or multilink cubes  beads or geoshapes

What to do:

a Can you find a box that 25 cubes will fit into without too much space left over? Draw it.

b Is it the size you thought it would be?

What to do next:

a Estimate how many unifix cubes will fit into a lunchbox. Pack the box and make tally marks as you go to keep count.

estimate ☐ **measure** ☐

b Pack the lunchbox with beads.

estimate ☐ **measure** ☐

c Which do you think is bigger? A cube or a bead? Why do you think so?