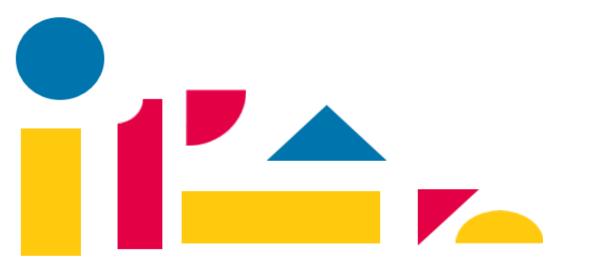# Year 2

At home materials
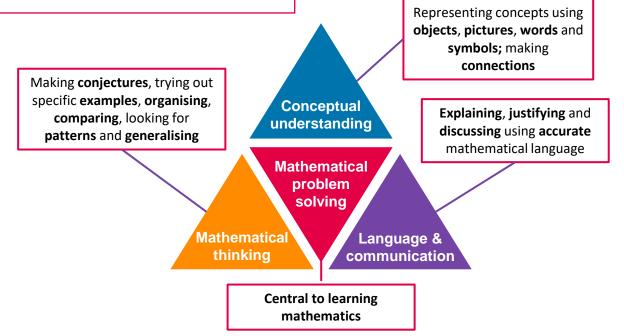
Task Bank

Mathematics Mastery

Mathematics Mastery

What is 'Mastery'?

The 'mastery approach' to teaching mathematics is the underlying principle of Mathematics Mastery. Instead of learning mathematical procedures by rote, we want your child to build a deep understanding of concepts which will enable them to apply their learning in different situations. To achieve this we aim to develop pupils' **Conceptual Understanding, Mathematical Thinking** and **Language and Communication** (see diagram).

Representing concepts using **objects**, **pictures**, **words** and **symbols;** making **connections**

Making **conjectures**, trying out specific **examples**, **organising**, **comparing**, looking for **patterns** and **generalising**

Conceptual understanding

Explaining, **justifying** and **discussing** using **accurate** mathematical language

Mathematical problem solving

Mathematical thinking

Language & communication

Central to learning mathematics

Success for all

At school we believe <u>all</u> pupils can achieve success in maths. We encourage pupils to have a belief that effort leads to success and that challenges are opportunities to learn.
Here are a few tips to encourage your children at home with maths:

- ✓ Talk to your children about everyday maths
- ✓ Play games with them
- ✓ Value mistakes as learning opportunities
- ✓ Recognise that there is more than one way to work things out
- ✓ Praise children for effort over outcome
- ✓ Avoid saying things like "I'm useless at maths"
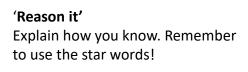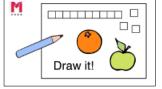
Mathematics Mastery

Ideas for Depth

We have developed ten ideas that challenge pupils to develop a depth of understanding within a concept and build up habits of thinking mathematically.. Each of the ten ideas is represented by a picture or symbol and you will see these throughout the task bank. Each is explained below.
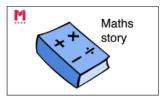
'Reason it'
Explain how you know. Remember to use the star words!

'Draw it'
Draw a picture to explain or demonstrate what you have worked out.

'Show me!'
Build something to convince me that you are right.

Maths story'
Make up a real-life story using your equation/numbers or shapes. Try to use the star words.

'What's wrong with this?'
Can you explain what is wrong with this and correct the error?

'What's the question?'
If this is the answer, what could the question have been?

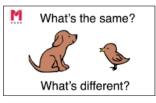**'What's the same? What's different?'**
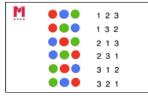Describe as many things as you can.

'Odd one out'
Find an odd one out and explain why it doesn't fit. Does your partner agree with you? Could another one be the odd one out? Why?

'Have you found all possibilities?'
Is there more than one way of completing this? Is there more than one answer? Have you found them all?

Find a pattern'
Can you see a pattern? Continuing this pattern, what would happen if...? What came before? What comes next? Explain how you know
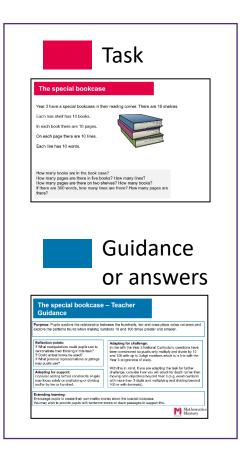
Contents

Task banks are organised by the following topics and we recommend exploring one topic per week.

Aim to complete one task per day. There is a range of tasks to choose from each week.

Task

The special bookcase

Year 3 have a special bookcase in their reading corner. There are 10 shelves.

Each has shelf has 10 books.

In each book there are 10 pages.

On each page there are 10 lines.

Each line has 10 words.

How many books are in the book case?
How many pages are there in five books? How many lines?
How many pages are there on two shelves? How many books?
If there are 300 words, how many lines are there? How many pages are there?

Guidance or answers

The special bookcase – Teacher Guidance

Purpose: Pupils explore the relationship between the hundreds, ten and ones place value columns and explore the patterns found when making numbers 10 and 100 times greater and smaller.

Reflection points:
? What manipulatives could pupils use to demonstrate their thinking in this task?
? Could actual books be used?
? What pictorial representations or jottings may pupils use?

Adapting for support:
Consider adding further constraints. Pupils may focus solely on multiplying or dividing and/or by ten or hundred.

Adapting for challenge:
In line with the Year 3 National Curriculum, questions have been constrained so pupils only multiply and divide by 10 and 100 with up to 3-digit numbers which is in line with the Year 3 programme of study.

With this in mind, if you are adapting the task for further challenge, consider how you will adjust for depth rather than moving onto objectives beyond Year 3 (e.g. avoid numbers with more than 3-digits and multiplying and dividing beyond 100 or with decimals).

Extending learning:
Encourage pupils to create their own maths stories about the special bookcase.
You may wish to provide pupils with sentence stems or cloze passages to support this.

Mathematics Mastery

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Mathematics Mastery

Crazy capacities

Collect five different empty containers from around the house.
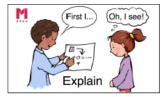
Which one do you think has the greatest capacity?

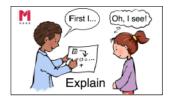Investigate to see whether you were correct!

Tip: You may want to use one container as your unit of measure, for example count how many cups of water fit into each container

How close were you to your estimates?

Crazy capacities 2

Collect five different empty containers from around the house.

Estimate their capacity and arrange them in an order.

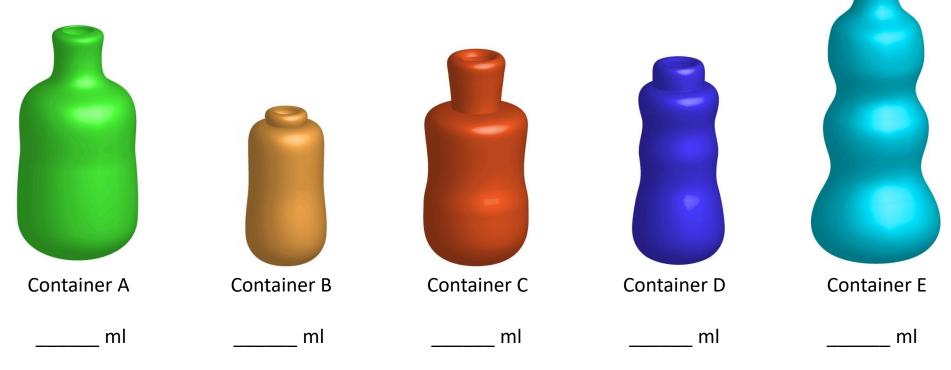Explain how you've chosen to order them to someone else.

Now test your estimates by filling out and measuring using a jug the actual capacity.

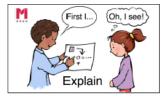| Container	Estimated capacity	Actual capacity	Difference

How close were your estimates? Calculate the difference between your estimates and the actual capacity
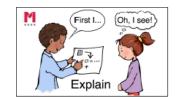
Calling all containers

- Container A holds 1000 ml
- Container B has half the capacity of D
- Container C holds 100 ml more than B but 150 ml less than D
- Container D holds half as much as A
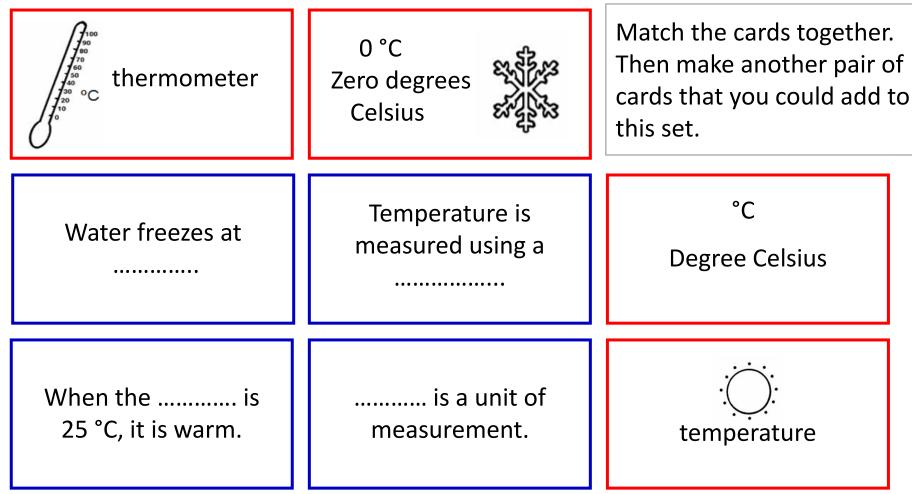- Container E has a capacity of one and half litres

Container A

Container B

Container C

Container D

Container E

_____ ml

_____ ml

_____ ml

_____ ml

_____ ml

Use the clues to work out the capacity of each container.

Temperature

thermometer	0 °C Zero degrees Celsius	Match the cards together. Then make another pair of cards that you could add to this set.
Water freezes at …………..	Temperature is measured using a ………………	°C Degree Celsius
When the …………. is 25 °C, it is warm.	………… is a unit of measurement.	temperature

If you have a thermometer, place it for a day in different places around the house and track how the temperature changes across the week. How will you record this?

Volume levels

Either in the bath or in a tub outside, grab some containers and play around filling them with water or sand.

Will the volume of water or sand from one container fill another container?

Which one has the greatest volume?

Which container has the smallest volume?

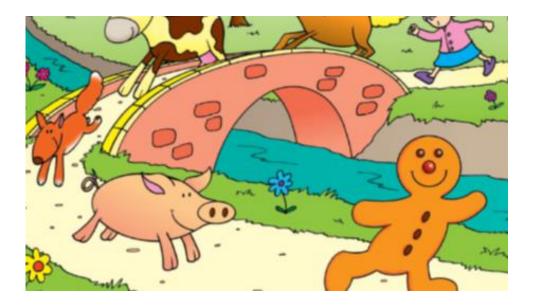What can you do to change this?

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Making gingerbread men

Work with an adult to prepare ingredients to make gingerbread men.

- 200 g plain flour
- 150 g light soft brown sugar
- 100 g butter
- 1 medium egg
- 5 dessert spoons golden syrup
- 1 teaspoon bicarbonate of soda
- 2 teaspoons ground ginger
- 1 teaspoon cinnamon

Making gingerbread men - full recipe

This makes about 10 gingerbread biscuits.

Instructions

1. Sift together the flour, bicarbonate of soda, ginger and cinnamon and pour into the bowl of a food processor. Add the butter and blend until the mix looks like breadcrumbs. Stir in the sugar.
2. Lightly beat the egg and golden syrup together, add to the food processor and pulse until the mixture clumps together. Tip the dough out, knead briefly until smooth, wrap in cling film and leave to chill in the fridge for 15 minutes.
3. Preheat the oven to 180C/160C Fan/Gas 4. Line two baking trays with greaseproof paper.
4. Roll the dough out to a 0.5cm/¼in thickness on a lightly floured surface. Using cutters, cut out the gingerbread men shapes and place on the baking tray, leaving a gap between them.
5. Bake for 12–15 minutes, or until lightly golden-brown. Leave on the tray for 10 minutes and then move to a wire rack to finish cooling. When cooled decorate with the writing icing and cake decorations, if using..

Ingredients

- 200 g plain flour
- 150 g light soft brown sugar
- 100 g butter
- 1 medium egg
- 5 dessert spoons golden syrup
- 1 teaspoon bicarbonate of soda
- 2 teaspoons ground ginger
- 1 teaspoon cinnamon
- icing for decorating
- raisins for decorating

Mathematics Mastery

Fruity mass

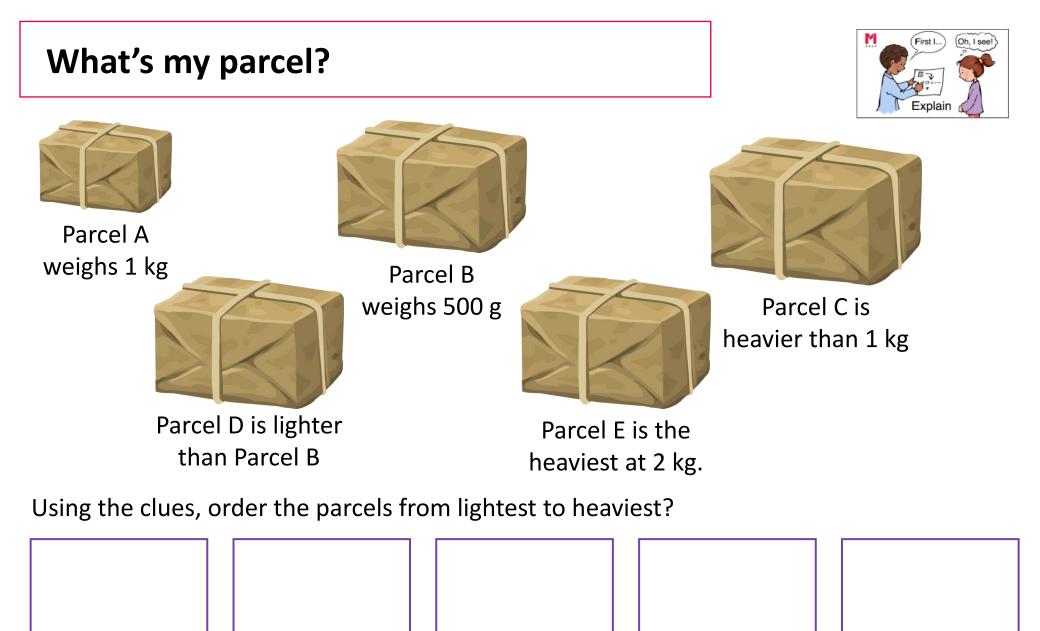Look through your fruit bowl or kitchen cupboards.

Select 5 items to compare mass.

Can you order them from lightest to heaviest?

Use the following sentence stems to create sentences about your items:

The _____is the heaviest item.

The _____is heavier than the _____.

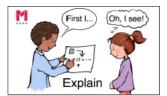The _____ is lighter than the _____.

The _____ is the lightest item.

What's my parcel?

Parcel A
weighs 1 kg

Parcel B
weighs 500 g

Parcel C is
heavier than 1 kg

Parcel D is lighter
than Parcel B

Parcel E is the
heaviest at 2 kg.

Using the clues, order the parcels from lightest to heaviest?

lightest   heaviest

Mass matters?

Look around your house and find some objects that
prove whether these statements are true or false.

A large object has a smaller mass than a small object.	Two similar sized objects have different masses.

Now convince someone else you are correct.

Have a go at writing your own statements for someone else to investigate.