

Teaching for Mastery

Questions, tasks and activities
to support assessment

Year 1

Mike Askew, Sarah Bishop, Clare Christie,
Sarah Eaton, Pete Griffin and Debbie Morgan

Mastery Check

Please note that the following columns provide indicative examples of the sorts of tasks and questions that provide evidence for mastery and mastery with greater depth of the selected programme of study statements. Pupils may be able to carry out certain procedures and answer questions like the ones outlined, but the teacher will need to check that pupils really understand the idea by asking questions such as 'Why?', 'What happens if ...?', and checking that pupils can use the procedures or skills to solve a variety of problems.

Assessment Booklet.

Name:

Class:

D.O.B

Please note, the assessments contained within can all be found on the www.ncetm.com website.

Number and Place Value

Mastery

Compare amounts.

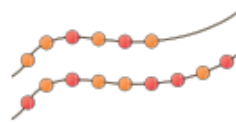
What's the same? What's different?

Children compare the bead strings and notice:

One has 9 beads and the other has 6 beads.

9 is 3 more than 6.

6 is 3 less than 9.



Pupils should be able to successfully respond to questions such as:

- Count forwards from 36, etc.
- Point to the third object in the line.
- Show me 8 cubes.

Pupils should demonstrate one to one correspondence, cardinality and conservation of number.

Mastery

Write the numbers in order of size.

15	16	5	71	50
----	----	---	----	----

What is one more than...?

What is one less than...?

Complete:

19		21	22		
----	--	----	----	--	--

Write 25 in the correct place on the number grid.

8	9	10	11	12	13
14	15	16	17		

Write the numbers missing from these sequences.

11		13	14	15
		33		
		43		

Notes:

Mastery

Write the missing number in each box.

19 $\xrightarrow{\text{is 1 less than}}$

33 $\xrightarrow{\text{is 1 less than}}$

54 $\xrightarrow{\text{is 1 less than}}$

59 $\xrightarrow{\text{is 1 less than}}$

Look at the grid. Choose a number and complete the second grid.

		50	
Count in 1s	49	50	51
Count in 10s	40	50	60

		?	
Count in 1s			
Count in 10s			

Mastery

Complete:

5	10				30
---	----	--	--	--	----

	4	6			12
--	---	---	--	--	----

			40	50	60
--	--	--	----	----	----

Notes:



Mastery with Greater Depth

I am going to count on from 20. Will I say the number 19? Convince me.

I am going to count on in twos from 3. Will I say an even number? Convince me.

I am going to count backwards from 20. How many steps will it take to reach 0? Convince me.

I am going to count backwards in twos from 20. How many steps will it take to reach 0? Convince me.

Mastery with Greater Depth



Use two of the digit cards to make a number greater than 50.

Use two of the digit cards to make a number less than 30.

Use two of the digit cards to make an odd/even number.

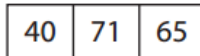
Use two of the digit cards to make a number between 47 and 59.

What is the smallest 2-digit number you can make?

What is the largest 2-digit number you can make?

Explain your reasoning.

Which number could be the odd one out? Why?

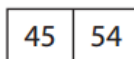


Pupils suggest their own reasoned ideas, for example 71 might be the odd one out because it's not a multiple of 5.

Sam says 40 is the odd one out. What reasons did she give?

Pupils suggest their own reasoned ideas, for example 40 might be the odd one out because it's not an odd number.

What's the same? What's different?



If Sam places these 5 numbers in order, starting with the smallest number, which number will be in fourth position?

46 64 24 42 50



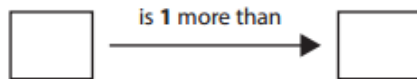
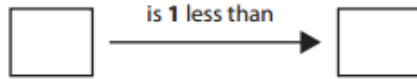
smallest

largest

Notes:

Mastery with Greater Depth

Complete:



Gemma thought of a number. One more than her number was 18.
What was her number?

Gemma thought of a number. Ten more than her number was 67.
What was her number?

Gemma thought of a number. Ten less than her number was 71.
What was her number?

Mastery with Greater Depth

Alin says, 'If I start at 5 and count in fives I will say the number 100.'
Is he correct?

Explain your reasoning.

Sita says, 'If I start at 17 and count in twos I will say the number 28.'
Is she correct?

Explain your reasoning.

Notes:

Addition and Subtraction

Mastery

Use the pattern to complete the number sentences.

 $0 + 5 = 5$

 $1 + \square = 5$

 $2 + \square = 5$

 $3 + \square = 5$

 $4 + \square = 5$

 $5 + \square = 5$

Now do the same for rows of 6 counters, 7 counters, 8 counters, 9 counters and 10 counters.

Children should be able to recall all number bonds to and within 10. Exposing the structure of the mathematics supports this process. They should then apply this to number bonds to 20, so if $5+3=8$, $15+3=18$

Complete:

$3 + \square = 10$

$10 - \square = 3$

$13 + \square = 20$

$20 - \square = 13$

$\square + 5 = 10$

$10 - 5 = \square$

$15 + \square = 20$

$20 - \square = 15$

$\square + \square = 10$

$10 - \square = \square$

$16 + \square = 20$

$20 - \square = 16$

What do you notice?

Children may 'know' number pairs totalling ten but are they able to use them to support other calculations? For example, when probed to say, 'If you know $3 + 7 = 10$, what else do you know?' They should reply with answers, such as $13 + 7 = 20$ or $4 + 7 = 11$

Notes:

Can you see these number sentences in the picture below?

$$3 + 2 = 5$$

$$2 + 3 = 5$$

$$5 - 3 = 2$$

$$5 - 2 = 3$$



Now write the four number sentences for the picture below:



Use the first number sentence to complete the second number sentence.

$$4 + 3 = \square \quad 7 + \square = 9$$

$$7 - \square = 4 \quad 9 - \square = 7$$

$$5 + 2 = \square \quad \square + 3 = 9$$

$$\square - \square = 2 \quad \square - \square = \square$$

Captain Conjecture says, 'If you add 0 to a number, the number stays the same.'

Do you agree?

Explain your reasoning.



Notes:

Complete:

$10 + \square = 10$

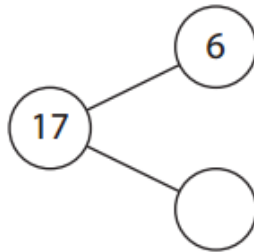
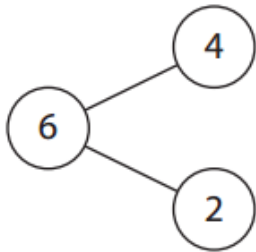
$6 + \square = 6$

$20 - \square = 20$

$16 - \square = 16$

What do you notice?

Complete:



Fill in the missing numbers:

$3 + 5 + \square = 10$

$1 + 5 + \square = 10$

Robert has 5 more cherries than John.

John has 11 cherries.

How many does Robert have?

Write a number sentence you would use to solve the problem.

$\square + \square = \square$

Notes:

Mastery with Greater Depth

I'm thinking of a number. I've subtracted 5 and the answer is 7. What number was I thinking of? Explain how you know.

I'm thinking of a number. I've added 8 and the answer is 19. What number was I thinking of? Explain how you know.

I know that 7 and 3 is 10. How can I find $8 + 3$? How could you work it out?

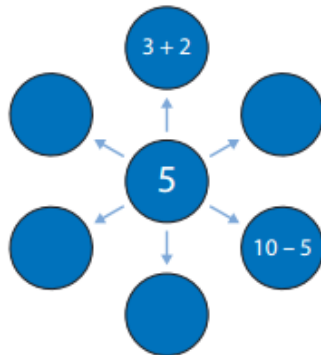
Show children a price list with items costing up to 20p.

I have 20p to spend. If I spend 20p exactly, which two items could I buy? And another two, and another two.

If I bought one of the items how much change would I have? And another one, and another one.

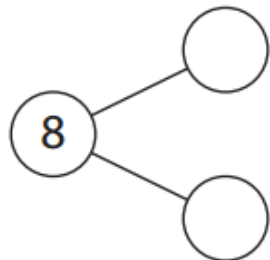
If you know one fact, what other facts do you know?

Complete:



Draw a bar model for $7 + 2 = 9$ and write four number sentences.

Complete and write the number sentences using this model.



Notes:

Write a pair of numbers in the boxes to add to 12.

$$\square + \square = 12$$

And another pair, and another, and another.

Can you find all possibilities? Convince me!

Captain Conjecture says,
'If you add together six 0s the answer is 6.'
Do you agree?

Explain your reasoning.



Complete:

$$3 + \square + 3 = 9$$

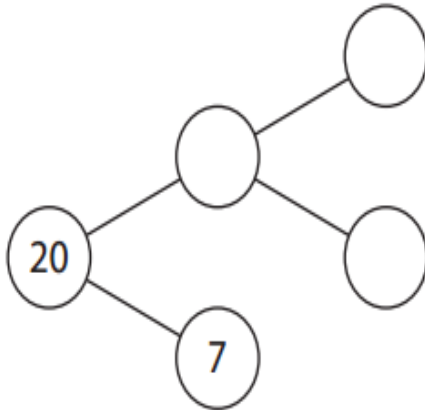
$$7 + \square + 1 = 10$$

$$6 + 3 + \square = 9$$

$$7 + 1 + \square = 11$$

Notes:

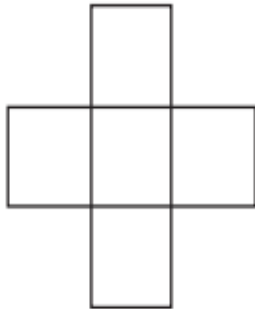
Complete:



Now create a similar diagram.

Can you extend your diagram?

Write the numbers 1 to 5 in the squares so that each row and column adds up to the same number, called the 'magic number'. What is the 'magic number'?



Together Sam and Tom have 19 football stickers.

Tom has 8 stickers. How many stickers does Sam have?

Write a number sentence you could use to solve the problem.

Notes:

Multiplication and Division.

Mastery

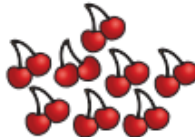
Ask pupils to use concrete objects to answer questions such as:

- What is double 4?
- What is half of 6?

Show pupils pictures or groups of objects like the examples below. Ask questions such as 'How many biscuits are there altogether?'

'How many cherries are there altogether?'

Observe how pupils count the objects. Do they count in twos, fives etc. or do they count in ones?



Sarah is filling party bags with sweets. She has 20 sweets altogether and decides to put 5 in every bag. How many bags can she fill?

Anna is counting in fives:

5, 10, , 20, , , ...

Fill in the missing numbers.

Anna says if she keeps on counting in fives she will say the number 54. Is she right or wrong?

Can you explain?

Notes:

I can see 10 wheels. How many bicycles?

Show 19p using only 2p, 5p and 10p coins.

Find three different ways to do it.



Ali buys 3 bags of apples. Each bag has 4 apples in it.
How many apples does he buy?

Notes:

Mastery with Greater Depth

Captain Conjecture says, 'I can double any number, but I can only halve some numbers.'

Do you agree?

Explain your reasoning.



If I start on 0 and count on in fives will I say the number 55?

If I start on 4 and count on in twos will I say the number 17?

If I start at 10 and count on in tens will I say 100?

Using only 2p, 5p and 10p coins, can you show 20p?

In how many different ways can you do this?

Are you sure you have got them all?

Explain how you know.

Lollies cost 5p each.

A pack of 3 lollies costs 13p.

How much money do you save when you buy a pack of 3 lollies instead of 3 single lollies?

Notes:

Mastery with Greater Depth

How else could 20 sweets be put into bags so that every bag had the same number of sweets?

How many bags would be packed each time?

If you counted back from 50 in tens, would you say 0?

Can you explain?

Toy aeroplanes have 5 wheels.

How many wheels would you need to make different numbers of aeroplanes?

Notes:

Fractions.

Mastery

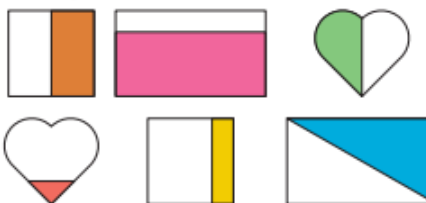
Colour half of each whole shape:



Which of these show half of each whole shape?

Explain your reasoning.

Children should talk about the two parts needing to be equal parts of the whole.



Check that pupils do not think that just dividing a shape into any two pieces is halving but understand that they need to be equal pieces.

Shade to show half of the whole shape.



Circle half of this group of strawberries.



There are 12 children in a class.
Sammy says half of the class is 7.
Do you agree?

Explain your reasoning.

Notes:

Mastery

Sam and Tom share the fruit equally. There are 4 apples, 4 oranges, 2 pears and 2 bananas.

How many of each fruit do they receive?

Complete the table below.



	Apples	Oranges	Bananas	Pears
Sam				
Tom				

Four children share a pizza equally. Draw a diagram to show how much pizza each child gets.

What fraction of the pizza does each child eat?

Four children share a bag of 12 marbles equally. Draw a diagram to show how many marbles each child gets.

What fraction of the bag of marbles does each child get?

Complete this halving wall.

20	
10	

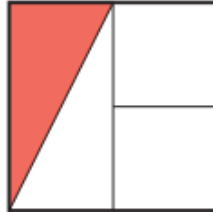
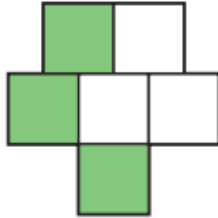
Choose any number and create your own halving wall.

Notes:

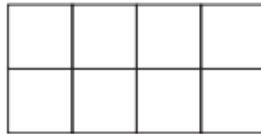
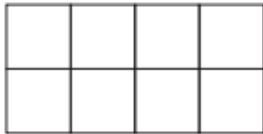
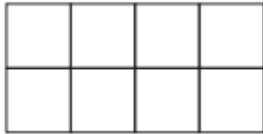
Mastery with Greater Depth

What fraction of the whole shape is shaded?

Explain your reasoning.



Shade each whole shape to show half in four different ways.



What is half of this amount?



Half the children at a party are girls.
How many children could be at the party?
Give four different answers.

Explain your reasoning.

Notes:

Mastery with Greater Depth

Sam and Tom share the fruit equally. There are 4 apples, 3 oranges, 1 pear and 1 banana.

How many of each fruit do they receive?

Complete the table below.



	Apples	Oranges	Bananas	Pears
Sam				
Tom				

Four children share 2 pizzas equally. Draw a diagram to show how much pizza each child gets.

What fraction of the pizzas does each child eat?

Four children share two bags of 8 marbles equally. Draw a diagram to show how many marbles each child gets.

What fraction of one bag of marbles does each child get?

Complete this halving wall.

What is the relationship between the top row and one part of your final row?

Explain your reasoning.

20			
10			

Choose any number and create your own halving wall.

Notes:

Measurement.

Mastery

LENGTH

Which line is longer?

Explain your reasoning.



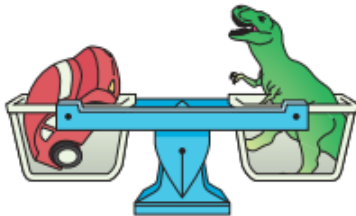
MASS

Here are three items.

Can you sort them from lightest to heaviest by feeling them with your hands?

Give pupils three items that are quite different in mass.

Which is heavier, a toy car or a toy dinosaur?



Which toy is heavier?



If you added a toy car to the teddy, what would happen to the scales?

Explain your reasoning.

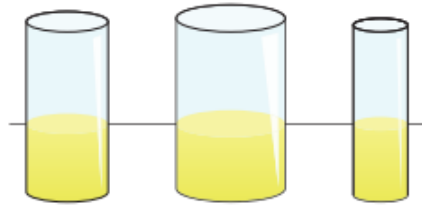
Notes:

Mastery

CAPACITY

Captain Conjecture says, 'All of the glasses contain the same quantity of lemonade.'

Do you agree?



Explain your reasoning.

Sid has a full bottle of drink. He pours it into a jug.

Which has the greater capacity, the bottle or the jug?



Notes:

TIME

Match the clocks to the following times:



half past nine

five o'clock

half past two

seven o'clock

Sam leaves for school at 8 o'clock. Jay leaves half an hour later than Sam.

Circle the clock which shows when Jay leaves for school.

Explain your reasoning.



Circle the times which are shorter than 1 week.

1 year

1 day

1 minute

1 hour

1 month

Draw nine o'clock on this clock face:



Draw half past one on this clock face:



Notes:

Mastery with Greater Depth

A long brick is twice the length of a short brick.

Which is longer:

2 long bricks or 3 short bricks?

3 long bricks or 5 short bricks?

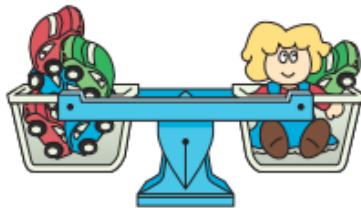


Here are four items.

Can you sort them from lightest to heaviest using these balance scales?

Give pupils four items that are quite similar in mass.

Look at these balance scales. There are five cars on one side. The doll weighs the same as how many cars?



Which of these statements is true?

- The dinosaur is lighter than the robot.
- The robot is lighter than the dinosaur.
- The dinosaur and robot weigh the same.



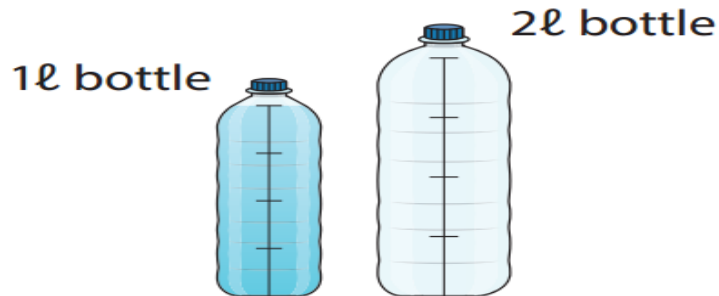
Explain your reasoning.

Notes:

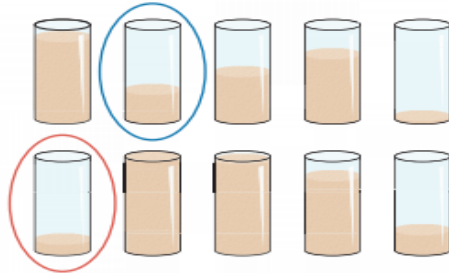
Mastery with Greater Depth

Dave has a 1 litre and a 2 litre bottle. He pours the water from the small bottle into the large bottle.

Mark where the water comes to on the large bottle.



Point to a glass which is about half as full as the glass in the red oval?
Can you point to a glass which is about twice as full as the glass in the blue oval?



Jackie is looking forward to the events marked on the calendar.

January						
Sun	Mon	Tue	Weds	Thurs	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Use the clues to identify the date that she carried out each activity.

Jackie is going to a party at the weekend. This is January.

She is visiting her aunty on a Tuesday. This is January.

Three days after the party she is going swimming. This is January.

Near the end of the month she is going to the cinema. This is January.

Notes:

Mastery with Greater Depth

I walk to school every day. On Monday my journey takes 10 minutes.

On Tuesday I walk more slowly. Does my journey take more or less time than on Monday?

Explain your answer.

On Wednesday it takes me 8 minutes to walk to school.

On which of the 3 days do I walk quickest?

On which of the 3 days do I walk slowest?

Explain your reasoning.

Here are some clocks where the minute hand has broken off.

Use the hour hand to work out what time it is.



Notes:

Geometry.

Mastery

Sort a range of 3-D objects into groups:



Explain how you have sorted them using mathematical names for the shapes.

Just knowing the correct mathematical names of shapes doesn't constitute mastery. Pupils should be able to recognise shapes and describe their properties.

Check that pupils:

- a) can recognise shapes in different orientations;*
- b) are able to describe what is special about certain shapes (e.g. a triangle has 3 sides and 3 corners or vertices).*

Have a range of shapes in a 'feely bag'.

Can you feel for the triangle, the square, the rectangle?

Explain how you know.

Children should describe the shapes, using their properties.

Notes:

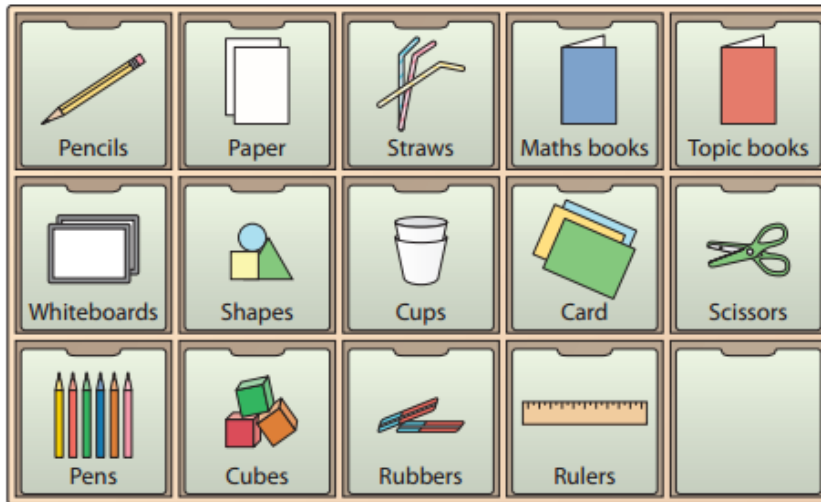
Mastery

Identify the position of each item.

Top, middle or bottom?

First, second or third?

Left or right?



The cups are in the middle row and third from the left.

The shapes are in the row and from the left.

The rulers are in the row and from the right.

The maths books are in the row and from the right.

Describe the position of other items.

Notes:

Mastery with Greater Depth

What's the same and what's different about these shapes?



Which could be the odd one out and why?

Could each one be the odd one out?

Explain your reasoning.

Provide children with a variety of 3-D shapes and ask:

What's the same and what's different between these shapes?

Children make comparisons, drawing out the properties of shape and using language such as straight, curved, number of vertices.

Tom says, 'My shape has 4 rectangular faces and 2 square faces. What is my shape?'

Sam says, 'My shape has 2 triangular faces and 3 rectangular faces. How many vertices does my shape have?'

Notes:

Mastery with Greater Depth

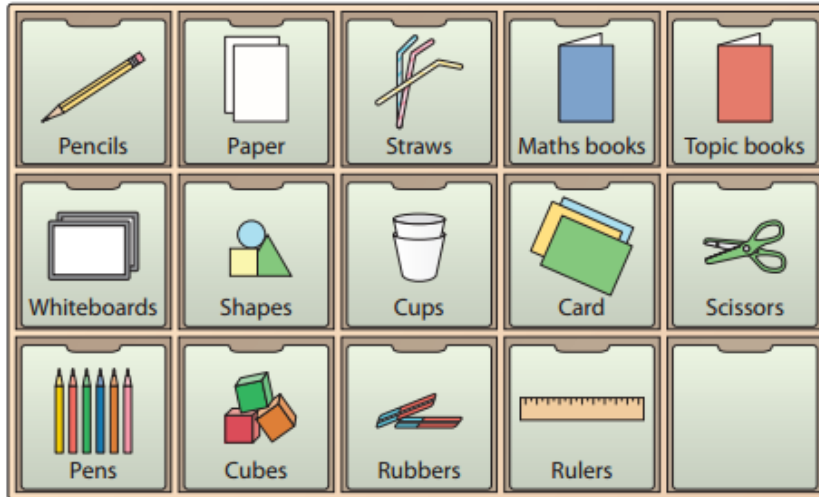
Which drawer will Ziggy open?

You may ask him four questions to identify the drawer.

He can only answer 'Yes' or 'No'.

Which four questions would you ask?

Explain your reasoning.



Notes:

