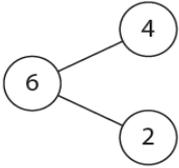
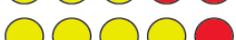
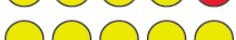


Addition and Subtraction Mastery Document

This document provides example questions for Mastery and Mastery with greater depth for children who would like a challenge when learning about addition and subtraction. This is from the NCETM.

Addition and Subtraction	
<p>Selected National Curriculum Programme of Study Statements</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ■ represent and use number bonds and related subtraction facts within 20 ■ add and subtract 1-digit and 2-digit numbers to 20, including 0 	
<p>The Big Ideas</p> <p>Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given $8 + 7$, thinking of 7 as $2 + 5$ and adding the 2 to 8 to make 10 and then the 5 to total 15.</p> <p>Thinking of part whole relationships is helpful in linking addition and subtraction. For example, where the whole is 6, and 4 and 2 are parts. This means that 4 and 2 together form the whole, which is 6 and 6 subtract 4 leaves the 2 and 6 subtract 2 leaves the 4.</p>	
	
<p>Mastery Check</p> <p>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.</p>	
Mastery	Mastery with Greater Depth
<p>Use the pattern to complete the number sentences.</p> <p>  $0 + 5 = 5$  $1 + \square = 5$  $2 + \square = 5$  $3 + \square = 5$  $4 + \square = 5$  $5 + \square = 5$ </p> <p>Now do the same for rows of 6 counters, 7 counters, 8 counters, 9 counters and 10 counters.</p> <p><i>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 $5+3 = 8$, $15+3 = 18$</i></p>	<p>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.</p> <p>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.</p> <p>I know that 7 and 3 is 10. How can I find $8 + 3$? How could you work it out?</p> <p>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.</p> <p>If I bought one of the items how much change would I have? And another one, and another one.</p>

Mastery

Complete:

$3 + \square = 10$	$10 - \square = 3$	$13 + \square = 20$	$20 - \square = 13$
$\square + 5 = 10$	$10 - 5 = \square$	$15 + \square = 20$	$20 - \square = 15$
$\square + \square = 10$	$10 - \square = \square$	$16 + \square = 20$	$20 - \square = 16$

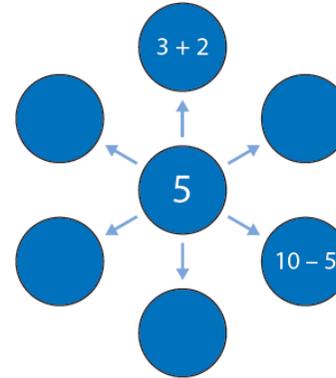
What do you notice?

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 $4 + 7 = 11$

Mastery with Greater Depth

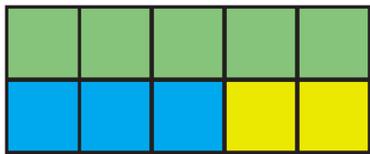
If you know one fact, what other facts do you know?

Complete:

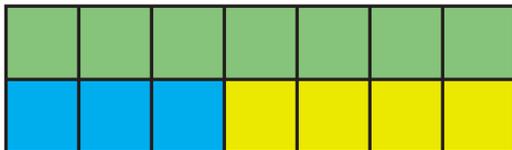


Can you see these number sentences in the picture below?

$3 + 2 = 5$
 $2 + 3 = 5$
 $5 - 3 = 2$
 $5 - 2 = 3$

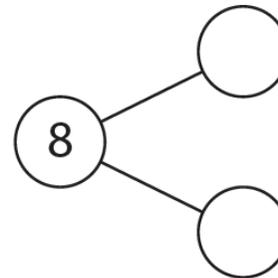


Now write the four number sentences for the picture below:



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

Complete and write the number sentences using this model.

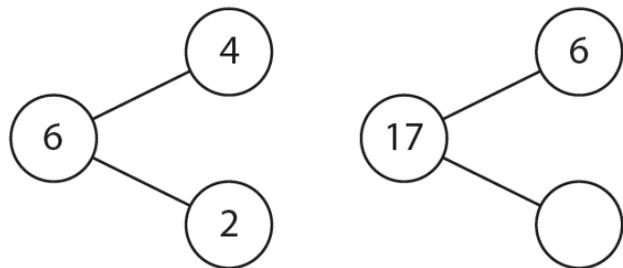


Mastery	Mastery with Greater Depth
<p>Use the first number sentence to complete the second number sentence.</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $4 + 3 = \square$ $7 + \square = 9$ $7 - \square = 4$ $9 - \square = 7$ </div> <div style="border: 1px solid black; padding: 5px;"> $5 + 2 = \square$ $\square + 3 = 9$ $\square - \square = 2$ $\square - \square = \square$ </div>	<p>Write a pair of numbers in the boxes to add to 12.</p> $\square + \square = 12$ <p>And another pair, and another, and another.</p> <p>Can you find all possibilities? Convince me!</p>
<p>Captain Conjecture says, 'If you add 0 to a number, the number stays the same.'</p> <p>Do you agree?</p> <p>Explain your reasoning.</p>	<p>Captain Conjecture says, 'If you add together six 0s the answer is 6.'</p> <p>Do you agree?</p> <p>Explain your reasoning.</p>
<p>Complete:</p> $10 + \square = 10$ $6 + \square = 6$ $20 - \square = 20$ $16 - \square = 16$ <p>What do you notice?</p>	<p>Complete:</p> $3 + \square + 3 = 9$ $7 + \square + 1 = 10$ $6 + 3 + \square = 9$ $7 + 1 + \square = 11$



Mastery

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.

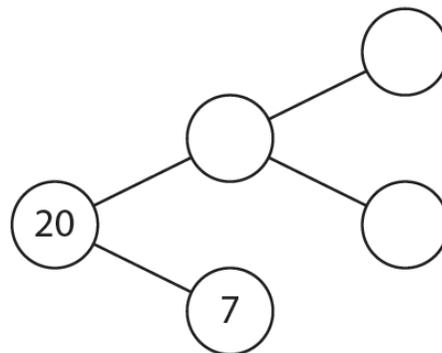
How many does Robert have?

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

$$\square + \square = \square$$

Mastery with Greater Depth

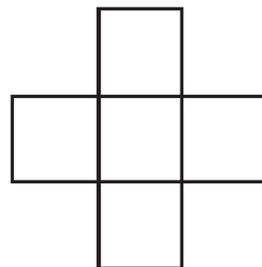
Complete:



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.