

Unit 9 Multiplication and division

Five daily lessons

Primary
National Strategy

Year 3
Autumn term

Unit Objectives

Year 3

- Understand multiplication as repeated addition. Read and begin to write related vocabulary. Extend understanding that multiplication can be done in any order.
- To multiply by 10/100, shift the digits one/two places to the left.
- Use known number facts and place value to carry out mentally simple multiplications and divisions.

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This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

Resources needed to teach this unit:

- Resource sheet 9.1
- Resource sheet 9.2
- Resource sheet 9.3
- OHT 9.1
- OHT 9.2 or place value chart
- OHT 9.3
- Activity sheet 9.1
- Activity sheet 9.2
- Activity sheet 9.3
- Counting stick
- Whiteboards
- Large dry-wipe number line
- Individual dry-wipe number lines
- 'Slidey box' strips (strips of card with number sentences written on. A card flap is folded over the strip to hide one or two numbers)
- Number fans or digit cards
- OHP calculator
- Counters
- Two large foam dice

See Models and Images Charts:

- Understanding multiplication and division.

Link Objectives

Year 2

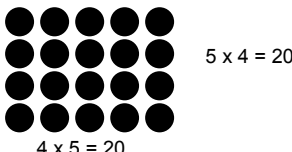
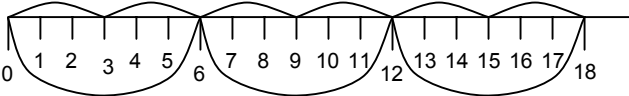
- **Understand the operation of multiplication as repeated addition or as describing an array**, and begin to understand division as grouping (repeated subtraction) or sharing. Use and begin to read the related vocabulary. Use the \times , \div and $=$ signs to record mental calculations in a number sentence, and recognise the use of a symbol such as \square or \triangle to stand for an unknown number.
- Use known number facts and place value to carry out mentally simple multiplications and divisions.

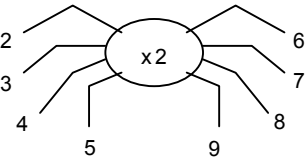
Year 4

- Extend understanding of the operations of \times and \div , and their relationship to each other and to $+$ and $-$. Understand the principles (not the names) of the commutative, associative and distributive laws as they apply to multiplication.
- Use known number facts and place value to multiply and divide integers, including by 10 and then 100 (whole-number answers).

(Key objectives in bold)

Planning sheet	Day One	Unit 9 <i>Multiplication and division</i>	Term: <i>Autumn</i>	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Count on and back in steps of 2, 5 and 10.</p> <p>VOCABULARY lots of groups of</p> <p>RESOURCES Counting stick Cut out grid from Resource sheet 9.1 Whiteboards</p>	<ul style="list-style-type: none"> Count on the counting stick forwards and backwards in each of the steps 2, 5 and 10 gaining speed as you repeat the count. Introduce 'flashing hands'. Ask the children to watch silently as 'fives' are flashed. They should count in fives in their heads and record the total on their whiteboards. Use the grid from Resource sheet 9.1. Fold it to show different numbers of 5p coins. Ask the children to count in 5s in their heads to work out the amount shown and write it on their whiteboards. <p>Q If you can see six 5p coins, how much money is that? How many coins are hidden? How much money is that?</p>	<p>Understand multiplication as repeated in addition and as an array.</p> <p>Read and begin to write the related vocabulary.</p> <p>VOCABULARY multiply multiplied by lots of groups of repeated addition array rows columns</p> <p>RESOURCES OHT 9.1 Whiteboards</p>	<ul style="list-style-type: none"> Revise multiplication as repeated addition by showing the socks illustration on OHT 9.1. <p>Q How many groups of two are there?</p> <p>Record this as a repeated addition sentence $2 + 2 + 2 + 2 = 8$ and then as a multiplication sentence, $2 \times 4 = 8$, and ask the class to copy on individual whiteboards. All say together '2 multiplied by 4 equals 8'. Explain that there are 2 in each group and we multiply this by 4 to get 8.</p> <p>Q Why did we say multiplied by 4 for this picture? What if I had seven pairs of socks, what would the sentence be then?</p> <ul style="list-style-type: none"> Repeat this time showing the groups of 5p coins on OHT 9.1. Ask the children to record repeated addition sentences and multiplication sentences on their whiteboards for each group of coins. Now show the array of 4 rows of 5 dots showing one row at a time, asking the children to count in fives. <p>Q How many in each row? How many rows?</p> <p>All write and read together as a repeated addition sentence; $5 + 5 + 5 + 5 = 20$ and as a multiplication sentence $5 \times 4 = 20$.</p> <ul style="list-style-type: none"> Using the next array, demonstrate building rows of 4s. <p>Q How many dots are in each row? How many rows?</p> <p>Record as a multiplication sentence $4 \times 5 = 20$.</p> <p>Q What do you notice about these two arrays/sentences?</p> <ul style="list-style-type: none"> Rotate the arrays through 90 degrees to reinforce the 'sameness'. Point out that 4×5 and 5×4 have the same answer. <p>Q What other arrays would have 20 counters in all?</p> <p>Q What arrays can you make for the number 24?</p> <ul style="list-style-type: none"> Challenge the children to work in pairs to find as many arrays with a total of 24 as they can. They should record each array and multiplication sentence in their books. 	<ul style="list-style-type: none"> Tell the class that you have written a multiplication sentence on a card (e.g. $4 \times 6 = 24$) which you are not going to show them. Say that you will draw a diagram to help them work out what it is. When they think they know, children should write the sentence on their whiteboards. <p>Draw an array e.g. 6 rows of 4.</p> <p>Q How did you decide on your sentence?</p> <ul style="list-style-type: none"> Show your 'hidden sentence'. <p>Explain that $6 \times 4 = 24$ and $4 \times 6 = 24$ are both right, depending whether you describe the rows or columns.</p> <ul style="list-style-type: none"> Ask the children to think of a multiplication sentence then draw the associated array on their whiteboards so that another child can guess their sentences. <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> record mental multiplication sentences using the \times and $=$ signs; understand multiplication as repeated addition and as describing an array. <p>(Refer to supplement of examples, section 5, page 47.)</p>

Planning sheet	Day Two	Unit 9 <i>Multiplication and division</i>	Term: <i>Autumn</i>	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Understand multiplication as repeated addition and as an array.</p> <p>Explain methods and reasoning orally.</p> <p>VOCABULARY multiplied by</p>	<ul style="list-style-type: none"> Write a selection of multiplication sentences on the board from the 2, 5 and 10 x tables, some of which are correct and some of which are incorrect, e.g. $6 \times 10 = 16$, $5 \times 8 = 40$. Ask the children to discuss in pairs which are correct/incorrect and why. Work through the list as a class and take children's explanations and suggestions as to how the incorrect ones could be changed to make them correct. Ensure correct use of vocabulary 'multiplied by' etc. 	<p>Understand multiplication as repeated addition and as an array.</p> <p>Understand that multiplication can be done in any order.</p> <p>Read and begin to write the related vocabulary.</p> <p>VOCABULARY multiply multiplied by lots of groups of x sign repeated addition array row column product</p> <p>RESOURCES OHT 9.1 or OHP counters Large dry-wipe number line</p>	<ul style="list-style-type: none"> Revise learning from Day one in relation to the reading and writing of multiplication sentences. <p>Q What did we notice right at the end of the lesson about each array?</p> <ul style="list-style-type: none"> Use OHT 9.1 or OHP counters to demonstrate the completion of an array.  <p>Point out that $5 \times 4 = 4 \times 5$ depending on which way you look at the array i.e. counting the rows first or the columns, but the answer (known as the product) is the same. Explain the usefulness of this especially when multiplying by 2 e.g. 2×9; all count in twos to reach 18, or 9 multiplied by 2 and its link to double 9.</p> <ul style="list-style-type: none"> Write the multiplication fact $3 \times 6 = 18$ on the board. All read together. Ask the class to draw the array which they visualise when they see that sentence and then write the partner sentence $6 \times 3 = 18$ in their books. <p>Illustrate further by drawing six hops of 3 on a large number line.</p> <p>Q How many hops of 6 do you think will be equal to 18?</p>  <p>Invite a child to check on the number line, drawing the hops underneath the line.</p> <ul style="list-style-type: none"> Write the following numbers randomly on the board: 30, 12, 16, 12, 2, 6, 20, 10, 8, 3, 18, 4, 5, 24. Ask the class to look at the numbers and discuss in pairs how they might link three of them together to make a multiplication sentence. Take feedback on sentences and check using either hops on a number line or a quick sketch of an array. <p>Q Did anyone get a different sentence using those three numbers?</p> <ul style="list-style-type: none"> Ask the class to make as many multiplication sentences as they can by using three of the numbers on the board. Remind them of the usefulness of knowing that $6 \times 5 = 5 \times 6 = 30$. Ask the children to record a few sentences as hops on a number line or as an array to check their sentences. 	<p>Q Which did you find most helpful? Drawing hops on a number line or an array?</p> <ul style="list-style-type: none"> Take one of the sentences and discuss it in the context of making something three/four... times longer or larger. Emphasise the multiplying nature of this story. <p>E.g. Siân's plant is 2cm tall. Mandip's is three times as tall. So Mandip's plant is 6cm tall.</p> <p>A new born baby's foot is 8cm long. An eight-year-old's foot is three times as long, i.e. 24cm long.</p> <ul style="list-style-type: none"> Invite children to make up a multiplication story to share with the class. <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> understand that multiplication can be done in any order, for example $5 \times 8 = 8 \times 5$. <p>(Refer to supplement of examples, section 5, page 47.)</p>



Planning sheet		Day Three	Unit 9 <i>Multiplication and division</i>	Term: <i>Autumn</i>	Year Group: 3
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Recall multiplication facts in the 2, 5 and 10 x tables.</p> <p>VOCABULARY multiply multiplied by</p> <p>RESOURCES Number fans or digit cards</p>	<ul style="list-style-type: none"> Draw three spiders on the board. Put $\times 2$, $\times 5$ or $\times 10$ in the body of each. At the end of each leg put a number from 2 to 9.  <ul style="list-style-type: none"> Ask children to use their number fans to quickly show the answer to the leg which you point to, multiplied by the number in the body. Ask children to say aloud the corresponding multiplication sentence e.g. seven multiplied by two equals fourteen. Repeat, pointing randomly to legs, building up speed. 	<p>Understand multiplication as repeated addition.</p> <p>Recognise the use of symbols to stand for unknown numbers.</p> <p>Use diagrams or mental strategies to solve missing number problems.</p> <p>VOCABULARY multiply multiplied by times groups of \times sign</p> <p>RESOURCES Activity sheet 9.1 Activity sheet 9.2 Large dry-wipe number line Individual dry-wipe number lines 'Slidey box' strips (strips of cards with number sentences written on. A card flap is folded over the strip to hide one or two numbers)</p>	<ul style="list-style-type: none"> Write the number sentence $10 \times 6 = 60$ on the board. <p>Q Why does $10 \times 6 = 60$?</p> <ul style="list-style-type: none"> Establish that six lots of or groups of ten would add up to sixty and demonstrate this by hopping on a number line ten jumps of six. <p>Q Can anyone give me a real life story involving six groups or lots of 10?</p> <ul style="list-style-type: none"> Collect answers and discuss these with the class. Show a 'slidey box' with a multiplication sentence on, but with one of the numbers hidden e.g. $4 \times \square = 20$. <p>Q What is this question asking us?</p> <p>Establish that you need to know how many groups of 4 equal 20. Ask a child to come and mark hops of 4 on the number line, the whole class counting with them as they do so. Establish that it is 5, then uncover the hidden number. Demonstrate how the sentence could be phrased as a division sentence. Read groups of $20 \div 4 = 5$ as 20 divided into groups of 4 equals 5 or how many 4s are in 20? Answer 5.</p> <ul style="list-style-type: none"> Repeat for $\square \times 3 = 15$. Discuss how you will work out what you are multiplying by 3 to equal 15 i.e. there are 3 hops but you don't know how big each hop is. Use trial and error first, then make links with earlier work yesterday on reversing the order of the sentence to help them. Finally invite children to come forward and write it as a division sentence. Finish with a double 'slidey box' as $\square \times \Delta = 40$. <p>Q Which numbers might we be multiplying here? Why?</p> <p>Ask children to use dry-wipe number lines to systematically try different hops.</p> <p>Q Is there more than one solution to this problem?</p> <p>List other possibilities then reveal the hidden numbers on the 'slidey boxes'.</p> <ul style="list-style-type: none"> Ask children to use the strategies demonstrated and number lines or arrays to solve the missing number problems on Activity sheet 9.1. 	<ul style="list-style-type: none"> Ask children to review their work in pairs and identify which question they found most difficult/easy and why. Take feedback and explanations. Check answers and work through solutions to the ones they found most difficult. <p>Q Did it make a difference which number was hidden?</p> <p>Q Was it easier if two of the numbers were hidden or just one? Why?</p> <p>Q Which diagram was useful to you, the drawing of an array, or the number line?</p> <ul style="list-style-type: none"> Invite children to come and write one of the sentences as a division sentence. <p>HOMEWORK – Ask the children to complete the missing numbers in the sentences on Activity sheet 9.2 and then to draw pictures to give real life examples of the sentence.</p> <p>Discuss situations where groups of things can be found i.e. bags of apples, packs of pens, paints in painting sets, eggs in boxes, wheels on cars etc.</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> with rapid recall $5 \times 2 = \square$; $10 \times \square = 80$; use diagrams such as arrays or number lines, $8 \times \square = 40$; $\square \times \Delta = 60$. <p>(Refer to supplement of examples, section 5, page 47.)</p>	

Planning sheet		Day Four (page 1 of 2)		Unit 9 <i>Multiplication and division</i>	Term: <i>Autumn</i>	Year Group: 3
Oral and Mental			Main Teaching			Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions		
<p>Add/subtract multiples of 10 and multiples of 100.</p> <p>VOCABULARY multiples of ten multiples of a hundred</p> <p>RESOURCES Large place value chart or OHT 9.2 Whiteboards</p>	<ul style="list-style-type: none"> Use a large place value chart or OHT 9.2. <p>Combine numbers from different rows, so you point to the 300, then the 50, then the 7, so the children say three hundred and fifty-seven.</p> <p>Now point to a number on each row, ask the children to combine them and write the answer on their whiteboards.</p> <ul style="list-style-type: none"> Cover selected rows or blocks of numbers and repeat, in order to encourage the children to visualise the patterns. Tell the class that you have chosen two numbers from the multiples of 10 row and added them together to make 70. <div>Q What might the two numbers be?</div> <p>Take responses on whiteboards.</p> <div>Q Which number facts did you use to work that out?</div> <ul style="list-style-type: none"> Repeat using numbers from the multiples of 100 row. <div>Q Which two numbers add together to make 500?</div> <div>Q Could there be three numbers added together to make 500?</div>	<p>To multiply by 10/100, shift the digits one/two places to the left.</p> <p>VOCABULARY multiply multiplied by ten times... digit units tens hundreds</p> <p>RESOURCES OHP calculator OHT 9.2 or place value chart OHT 9.3 Resource sheet 9.2 OHT of Resource sheet 9.2 Counters Whiteboards</p>	<ul style="list-style-type: none"> Discuss the pictures the children drew for homework. <div>Q Did you find it easiest to work out the numbers in the box in the first position, second or last?</div> <ul style="list-style-type: none"> Introduce the OHP calculator to the class and explain that you are going to use it to work out the answers to some simple multiplication sentences. <p>Enter 4 x 10 and ask the class to say the answer together before pressing =.</p> <ul style="list-style-type: none"> Focus the class on what has happened to the digit 4 i.e. it has moved one place to the left. Remind the class of what multiplying by 10 means (from the previous day's work). Say that the 4 now stands for 4 tens, i.e. 40, not 4 ones. Ask the class to predict what would be the answers if other single-digit numbers were multiplied by 10 and write their predictions on their whiteboards. Show the top half of OHT 9.3 with such facts as sentences. <div>Q Can you see a pattern when we multiply a number by 10. Why do you think that happens?</div> <ul style="list-style-type: none"> Take responses discouraging children from saying 'add a zero', but encouraging them to see the digits shifting to the left. Illustrate with large place value cards if necessary. <p>Refer to the multiples of 10 rows on a large place value chart or OHT 9.2. Point out how clearly it shows the digit having moved one place to the left, compared to the units row.</p> <div>Q Using what we have just discovered, what do you think the answer would be to 12 x 10?</div> <ul style="list-style-type: none"> Take answers and then invite a child to test them on the OHP calculator. Repeat some or all of the above to establish how the digits move two places to the left when multiplying by 100. Draw attention to this by showing the lower part of OHT 9.3. Introduce the dartboard on Resource sheet 9.2 and explain that the children will be using what they have just learned about multiplying numbers by 10 or 100 to help with the game. 	<ul style="list-style-type: none"> Collect the children's results and discuss the strategies they used to get as close as possible to the targets. <div>Q Did you choose where to place your counters in any particular order? e.g. multiplying by 100 first to get as close as possible.</div> <div>Q Can anyone suggest what might happen if I wanted to divide 60 by 10 i.e. make it 10 times smaller?</div> <ul style="list-style-type: none"> Try to establish the moving of the digits to the right by one place. Encourage the children to think aloud to check on a mental number line. I have 60 in hops of 10, so 60 divided into groups of 10 is 6. The 6 now stands for 6 ones not tens. Repeat for dividing 700 by 100. 		



Planning sheet	Day Four (page 2 of 2)	Unit 9 <i>Multiplication and division</i>	Term: <i>Autumn</i>	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
			<ul style="list-style-type: none"> Show an OHT of Resource sheet 9.2 and explain the scoring. <div>Q Where would you place three counters to score a total close to 800?</div> <ul style="list-style-type: none"> Discuss children's answers. Record solutions such as: $5 \times 100 = 500$ $2 \times 100 = 200$ $9 \times 10 = 90$ $500 + 200 + 90 = 790$ This total score is 10 from 800. Refer to large class number line up to 1000 marked in hundreds. Ask the children to play the game in pairs. They should get a total close to 300, 700 and 100 using three counters and record the calculations for each in their books as demonstrated. 	<div> By the end of the lesson, children should be able to: <ul style="list-style-type: none"> observe and describe the effect of multiplying by 10 using an OHP calculator; multiply a single digit by 10 or 100, for example 7×10, and 4×100. </div> <div>(Refer to supplement of examples, section 5, pages 55 and 57.)</div>

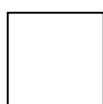
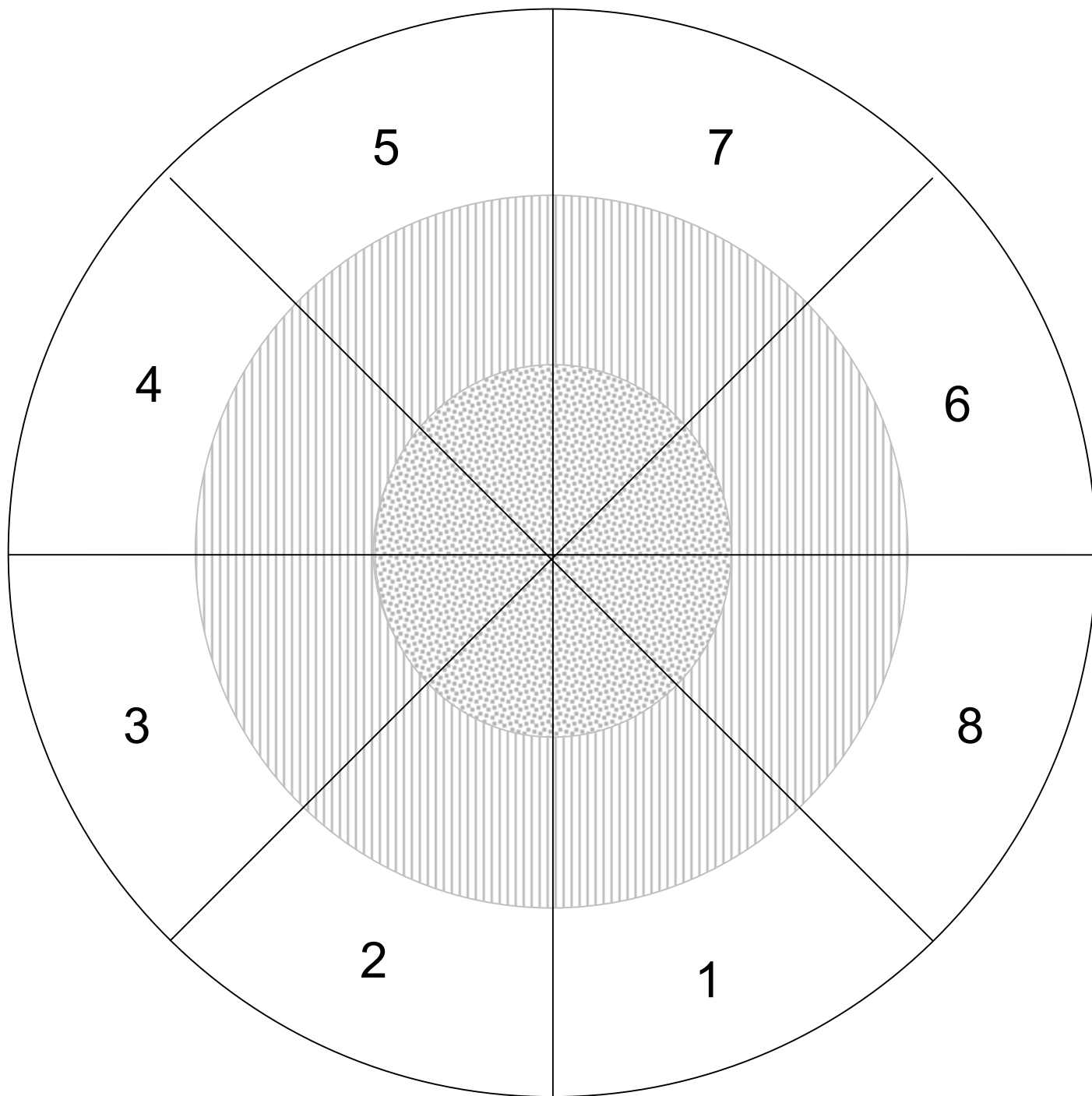
Planning sheet		Day Five	Unit 9 <i>Multiplication and division</i>	Term: <i>Autumn</i>	Year Group: 3
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Multiply a single digit by 10 or 100.</p> <p>VOCABULARY multiply by</p> <p>RESOURCES Two large foam 1-6 dice Multiplication cards from Resource sheet 9.3 Whiteboards</p>	<ul style="list-style-type: none"> Have the children seated in a circle with whiteboards. Hand each child a card which has either x1, x10 or x100 on it from Resource sheet 9.3 and ask them to keep it secret. Explain that you are going to roll the two dice together in the middle of the circle and that everyone must add the two scores to get a total. <p>They must then look at what their card tells them to do the total and carry out the operation. So if Sandip has x10 and the dice total is 7, she must multiply 7 by 10.</p> <p>Q What does the digit 7 stand for now?</p> <p>After each go children should show their answers on their whiteboards and the whole class should discuss what the dice total has been multiplied by.</p> <p>Q How did you work that out?</p> <p>Q What would happen if the dice total was 10? 11? 12?</p> <p>Q How do you know he/she multiplied by 10?</p> <ul style="list-style-type: none"> Encourage the children to use the language explaining the movement of the digits. Ask everyone to pass their multiplication cards around the circle three places to possibly get different ones. Repeat several times by rolling the two dice again. 	<p>To shift the digits of a number one/two places to the left to multiply by 10/100.</p> <p>Solve mathematical puzzles and problems by breaking the problem down into smaller steps.</p> <p>VOCABULARY multiply multiplied by ten times... digit units tens hundreds</p> <p>RESOURCES Activity sheet 9.3</p>	<ul style="list-style-type: none"> Explain that today's problem is going to require them to think about all of the things they have learned this week. <p>Q What have we learned about multiplication?</p> <p>Discuss children's responses.</p> <ul style="list-style-type: none"> Write on the board this 'number journey': <div style="text-align: center;"> <div style="display: inline-block; border: 1px solid black; width: 30px; height: 30px; margin: 0 5px;"></div> \longrightarrow <div style="display: inline-block; border: 1px solid black; width: 30px; height: 30px; margin: 0 5px;"></div> \longrightarrow <div style="display: inline-block; border: 1px solid black; width: 30px; height: 30px; margin: 0 5px;"></div> </div> <p>Put a 3 in the first box and 600 in the third box.</p> <p>Explain that the children have to insert multiplication operations above the two arrows which will convert the first number into the last. Write the options on the board.</p> <div style="text-align: center;"> x3 x2 x5 x4 x1 x10 x100 </div> <p>Explain that they can choose from the first four choices for the first arrow and the last three choices for the second arrow.</p> <p>Q What would be a good choice for the first arrow? Why x2?</p> <p>Q How will you work out what you need to multiply 6 by now to get to 600?</p> <p>Discuss children's calculations and record them on the board.</p> <div style="text-align: center;"> <div style="display: inline-block; border: 1px solid black; width: 30px; height: 30px; margin: 0 5px; text-align: center;">3</div> $\xrightarrow{x2}$ <div style="display: inline-block; border: 1px solid black; width: 30px; height: 30px; margin: 0 5px; text-align: center;">6</div> $\xrightarrow{x100}$ <div style="display: inline-block; border: 1px solid black; width: 30px; height: 30px; margin: 0 5px; text-align: center;">600</div> </div> <ul style="list-style-type: none"> Repeat, this time putting 4 in the first box and 120 in the third box. Ask the children to choose from the same options to arrive at 120. After a few minutes take feedback on the decisions made. <p>Q What did you look for first? How did you know it would be x3?</p> <p>Q Why is it x10 and not x100?</p> <p>Draw out the movement of the digits and reference to place value.</p> <ul style="list-style-type: none"> Ask the children to solve the other journey problems on Activity sheet 9.3. 	<ul style="list-style-type: none"> Bring the class back together to focus on the last two 'journeys'. <p>Q Have we got more than one solution? Why?</p> <p>Q How could we check if we have got all of the solutions?</p> <ul style="list-style-type: none"> Check this by working systematically from 1 to 10 either accepting or rejecting them as being possible or not. Pose the final challenge of the week. <p>Q Can we start with 400 and get back to 2 using division by 1, 10 or 100, then dividing by 2, 3, 4 or 5?</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> multiply a single digit by 1, 10 or 100; solve a problem involving multiplication facts and missing numbers/operations. <p>(Refer to supplement of examples, section 5, pages 57 and 63.)</p>	

(enlarge to A3)

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		5p	5p
5p	5p	5p	
5p	5p	5p	5p





Score equal the number written.

















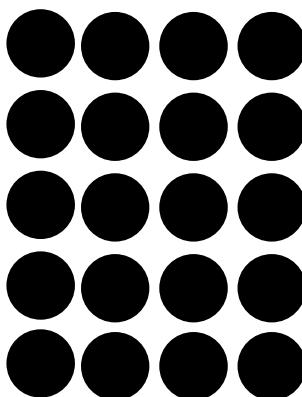
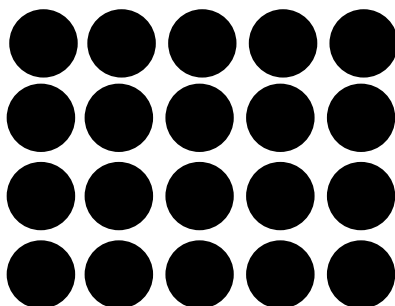
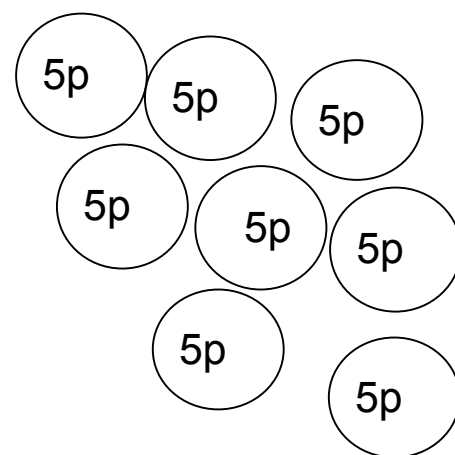
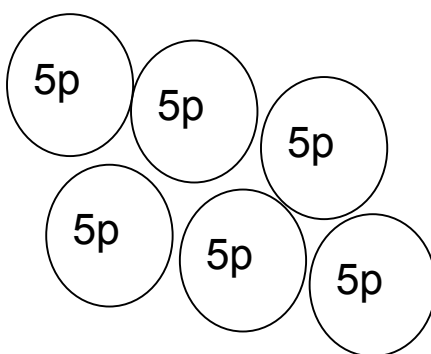
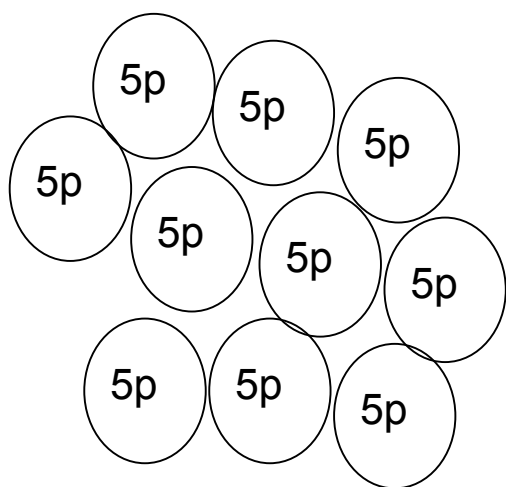
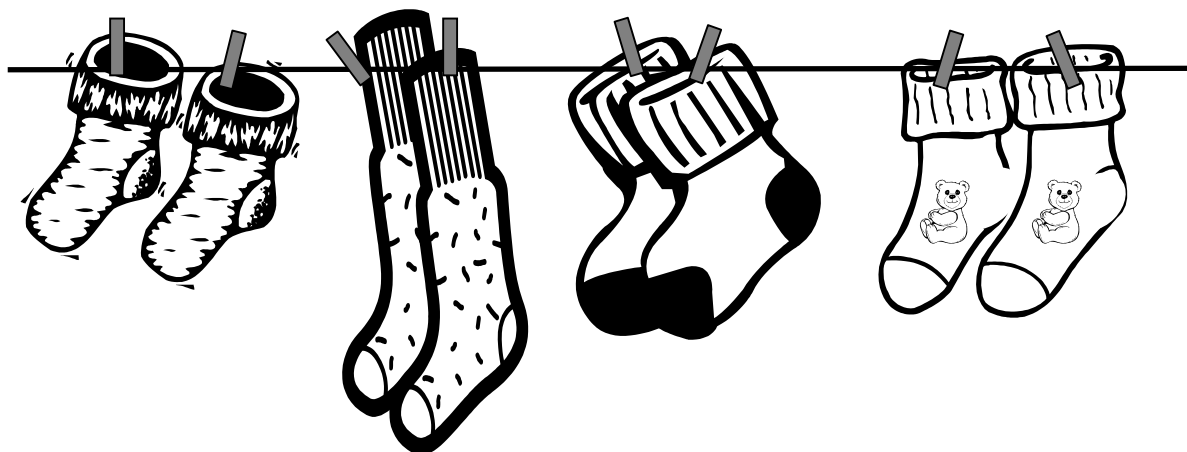
Score equal 10 times the outer number.



Score equal 100 times the outer number.



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	x 1	x 10	x 100
	x 1	x 10	x 100
	x 1	x 10	x 100
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	x 1	x 10	x 100



100	200	300	400	500	600	700	800	900
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10	20	30	40	50	60	70	80	90
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1	2	3	4	5	6	7	8	9
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$$1 \times 10 = 10$$

$$2 \times 10 = 20$$

$$3 \times 10 = 30$$

$$4 \times 10 = 40$$

$$5 \times 10 = 50$$

$$6 \times 10 = 60$$

$$7 \times 10 = 70$$

$$8 \times 10 = 80$$

$$9 \times 10 = 90$$

$$1 \times 100 = 100$$

$$2 \times 100 = 200$$

$$3 \times 100 = 300$$

$$4 \times 100 = 400$$

$$5 \times 100 = 500$$

$$6 \times 100 = 600$$

$$7 \times 100 = 700$$

$$8 \times 100 = 800$$

$$9 \times 100 = 900$$

$$4 \times \text{[shape]} = 20$$

$$\text{[shape]} \times 9 = 45$$

$$5 \times 3 = \text{[shape]}$$

$$\text{[shape]} \times 5 = 30$$

$$\text{[shape]} \times 8 = 40$$

$$6 \times \text{[shape]} = 60$$

$$3 \times \text{[shape]} = 27$$

$$10 \times \text{[shape]} = 80$$

$$\text{[shape]} \times \text{[shape]} = 50$$

$$\text{[shape]} \times \text{[shape]} = 24$$

Draw a picture to represent each number sentence.

$$10 \times 3 =$$

$$\times 2 = 12$$

$$5 \times$$

$$= 50$$

$$4 \times$$

$$= 20$$

$$\times 5 = 15$$

$$10 \times 6 =$$

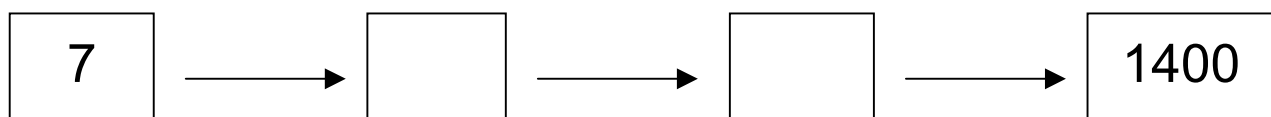
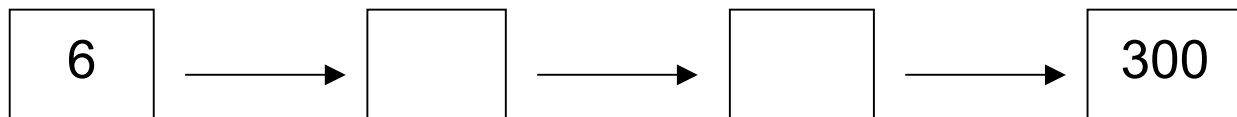
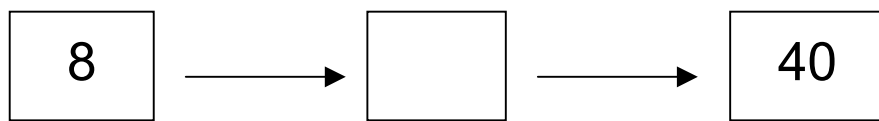
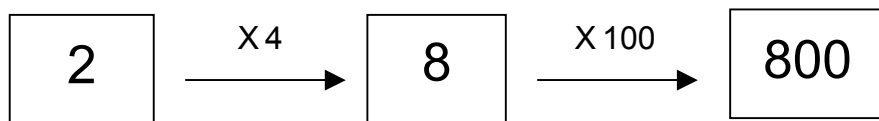
Choose one of these operations for the first box.

Choose one of these operations for the second box.

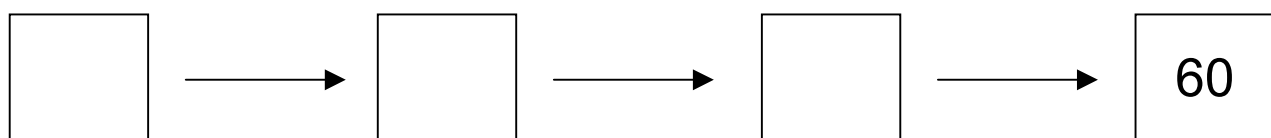
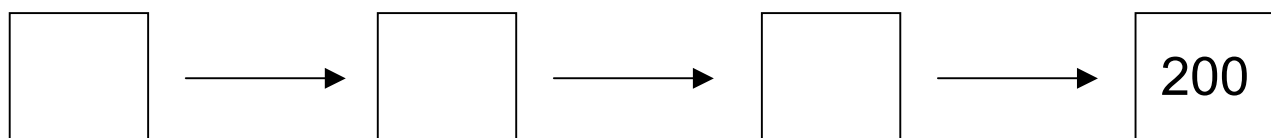
$\times 3$ $\times 2$ $\times 5$ $\times 4$

$\times 1$ $\times 10$ $\times 100$

Can you complete the number journey?



Choose your own start number:



Year 3 Unit 9 (Autumn term) Support Session 1

Multiplication

Objectives

Understand multiplication as an array.

Use the \times and $=$ sign to record multiplication sentences.

Vocabulary

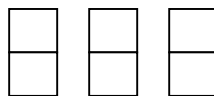
multiplied by
multiply
groups of
array

Resources

Interlocking cubes
Whiteboards

Oral and mental starter

Show the group 3 towers of 2 cubes. Push them next to each other to form a 2 by 3 block.



Say: $2 + 2 + 2 = 6$. All together say 2 multiplied by 3 equals 6.

Ensure that the children see the relationship between $2 + 2 + 2$ and 2×3 .

Write the multiplication sentence: $2 \times 3 = 6$. Repeat with other numbers of towers of two cubes.

Repeat using towers of 5. Gradually ask the children to write the multiplication sentences on whiteboards.

Main activity

Give the children 15 cubes each and ask them to make 5 towers.

Q. How big is each tower?

Q. How would we write this as a multiplication sentence?

Ask the children to push their towers together to make an array with 5 rows of 3 cubes. Say 'we have got 5 in each row and we have multiplied that by 3', that gives us 15 altogether.

Write $5 + 5 + 5 = 15$ and then $5 \times 3 = 15$.

Remind the children that we can start with the columns. Together, count 3 in each column and establish that there are 5 of them, again altogether making 15.

Write $3 + 3 + 3 + 3 + 3 = 15$ and then $3 \times 5 = 15$.

Give children 12 cubes to build an array and write the two multiplication sentences that go with that array.

Ask them to describe their arrays to the rest of the group.

Q. Can we make a different array using 12 cubes?

Give the children four more cubes and ask them to make a different array, and write the corresponding multiplication sentences.

Q. Can we make a different array?

Plenary

Write the following list of multiplication sentences and next to each quickly sketch an array.

$2 \times 4 = 8$; $5 \times 2 = 10$; $10 \times 4 = 40$; $7 \times 2 = 14$.



Invite children to write the 'partner' multiplication sentence for each array.

Year 3 Unit 9 (Autumn term) Support Session 2

Multiplication

Objectives

Count in 2s, 5s and 10s.

Understand multiplication as repeated addition.

Use the \times and $=$ sign.

Vocabulary

count

lots of

repeated addition

lots of groups of

multiplied by

Resources

Digit cards 2, 5 and 10

1-6 dice

Dry-wipe number lines to 100.

Oral and mental starter

Count together in 2s, then 5s, then 10s as you draw the hops on a number line.

Encourage children to hold fingers up as they count, one finger for each hop.

Ask the group to count to 12 hops of 2 and then stop, using their fingers as a tally of how many 2s they have counted.

Repeat for 4 hops of 10, 8 hops of 5.

Main activity

Q. How many hops of 2 did it take to get to 10? 14? 8?

Rephrase and write on the board 5 hops of 2 to get to 10 so

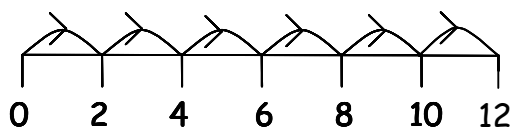
$2 + 2 + 2 + 2 + 2 = 10$; $2 \times 5 = 10$.

Invite the children to draw hops of 5 on their number lines to show how many hops it takes to get to 20. Record 4 hops of 5 to get to 20 and then the multiplication sentence: $5 \times 4 = 20$.

Repeat with hops of 10 to 60. Record in words and as a multiplication sentence.

Q. How many hops of 5 do you need to take?

Select a card and roll the dice. Say that the number on the card is the size of hop, e.g. 2, and they should multiply this by the number on the dice, e.g. 6, i.e. draw 6 hops of 2. Ask them to each draw this on their number lines, and to help their partners.



Ask them to record this on paper as a multiplication sentence:
 $2 \times 6 = 12$.

Repeat several times.

Plenary

Pose a couple of missing number problems linked to the sentences which they have just written; $5 \times \square = 35$.

Q. What is this question asking? How many hops of 5 are needed to get to 35?

Q. How could we check?

Take hopping on a number line as a response, but also remind them about using an array. Repeat for $\square \times 5 = 15$. Discuss possibilities and then reverse to see how many hops of 5 are in 15.