

# Unit 10 Multiplication & Division

Three daily lessons

North West Consultants

Year 3  
Spring Term

This Unit Plan is designed to guide your teaching.

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

## Unit Objectives Year 3

- Understand division as grouping or sharing.
- Read and begin to write the related vocabulary.
- Recognise division is inverse of multiplication.
- Use doubling and halving, starting from known facts.
- Say or write division o statement corresponding to multiplication statement.

Pages 46- 51

Pages 54-57

### Resources needed to teach this unit:

- Whiteboards and pens.
- OHT Counter
- Counters
- 10 sweets / cake
- Large no. line 0-30
- Dry wipe individual number line 0-30
- OHT 10:1; 10:2; 10:3
- R.S. 10:1; 10:2; 10:3; 1:-:4
- A.S. 10:1; 1:-:2
- ITP – Numberline, Grouping

## Link Objectives

Year 2

Year 4

- Understand division as grouping or sharing.
- Read the related vocabulary.
- Use  $\times$ ,  $\div$  and  $=$  sign to record mental calculations.
- Recognise and use  $\square$  to stand for an unknown number.
- Use known number facts and place value to divide mentally.

- Understand commutative and associative laws of multiplication.
- Divide a whole number of £ by 2, 4, 5 or 10 to give £ p.
- Use closely related facts e.g. derive  $\times 9$  or  $\times 11$  from  $\times 10$ , or derive  $\times 6$  from  $\times 4$  plus  $\times 2$ .
- Partition and multiply.
- Develop and refine written methods for  $TU \times U$ .

Planning Sheet	Day 1	Unit 10: Multiplication & Division	Term: Spring	Year Group: 3
<b>Oral and Mental</b>		<b>Main Teaching</b>		<b>Plenary</b>
<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Teaching Activities/Focus Questions</b>
		<p>Understand division as sharing.</p> <p>Read and begin to write related vocabulary.</p> <p>VOCABULARY equal groups of share share equally divide divide into left leftover</p> <p>RESOURCES Whiteboards OHT Counters Counters 10 sweets / cakes OHT pens</p>	<ul style="list-style-type: none"> <li>Put 12 counters on OHP and ask for a volunteer to put them into 2 equal groups.</li> </ul> <p><b>Q How many groups are there? How many in each group?</b></p> <p>Teacher models division sentence on board <math>12 \div 2 = 6</math> and reads it as 12 divided into 2 equal groups is 6.</p> <ul style="list-style-type: none"> <li>Repeat putting into 3 equal groups, 4 equal groups, 5 equal groups, 6 equal groups, ask the pupils to write a number sentence on their whiteboards each time.</li> </ul> <p><b>Q Why is 5 equal groups difficult?</b></p> <ul style="list-style-type: none"> <li>Discuss having 5 groups of 2 and 2 left over.</li> <li>Establish that 12 can be put into 2 equal groups, 3 equal groups, 4 equal groups and 6 equal groups. Some pupils may suggest one group of 12 and/or 12 groups of one.</li> <li>Ask the children to work in pairs with 8 counters recording a number sentence for each solution which has no counters left over.</li> <li>Take feedback establishing 1, 2, 4 8 are possible but 3, 5 and 7 are not?</li> </ul> <p><b>Q Why can't we put 8 into groups of three? How many more would we need to be able to make groups of 3?</b></p> <p>Ask the children to work in pairs using 20 counters (10 for less able – 24 for more able) writing a number sentence for each solution where there are none left over.</p>	<ul style="list-style-type: none"> <li>Use 10 sweets.</li> </ul> <p><b>Q How many children can share the sweets equally without having any left?</b></p> <p>Establish – 10 children, 5 children, 2 children, 1 child.</p> <p><b>Q Why not 3 children, 4 children, 7 children?</b></p> <p>Finally (if time) Say – Mother made 12 cakes. She shared them equally between her 3 children. How many did they each receive?</p> <p>Explain that <math>12 \div 3 = 4</math> is the number sentence for this problem. Ask them to make up a story about <math>20 \div 10 = 2</math>.</p> <div style="border: 1px solid black; padding: 5px;"> <p>By the end of the lesson the children should be able to</p> <ul style="list-style-type: none"> <li>Understand division as sharing equally.</li> <li>Begin to understand remainders.</li> <li>Be able to record division sentences using <math>\div</math> and <math>=</math> signs.</li> </ul> </div>

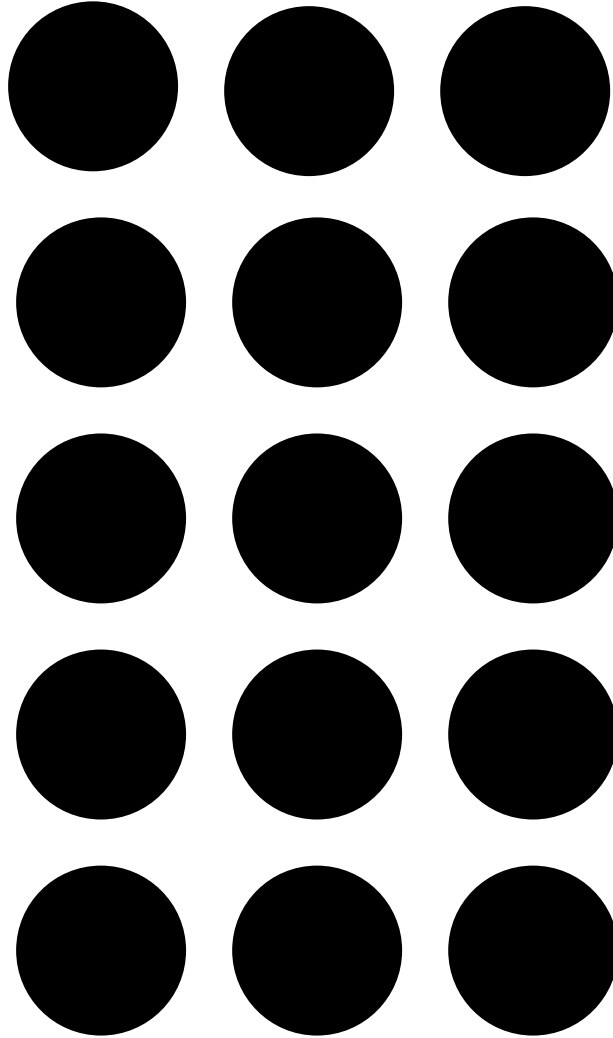
Planning Sheet	Day 2	Unit 10: Multiplication & Division		Term: Spring	Year Group: 3
Oral and Mental		Main Teaching			Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions	
		<ul style="list-style-type: none"> <li>Understand division as grouping.</li> <li>Read and begin to write related vocabulary.</li> </ul> <p>VOCABULARY group in pairs, threes, tens share, share equally divide divide into row, column array</p> <p>RESOURCES OHT counters ITP Grouping (optional) Large 0-30 number line Dry wipe number lines to 20/30. RS 10:1 – Cut up into tiles for each table. AS 10:1 – Number line 0 - 30</p>	<p>Write <math>15 \div 3 =</math> on the board. Ask the children to read it to each other. Take answers</p> <p>Establish that it can be read as Fifteen divided into 3 equal groups Or Fifteen shared by 3 equals.</p> <p>Ask the children to make up a story about sharing 15 by 3, and tell their partner. Take answers and discuss.</p> <ul style="list-style-type: none"> <li>Explain that there is another way of reading this <math>15 \div 3 =</math> Divide 15 into groups of 3 Fifteen divided into groups of 3 How many groups of 3 make 15?</li> </ul> <p>Demonstrate 5 groups of 3, 5 jumps of 3 on the number line (or use ITP Grouping).</p> <p>Write <math>10 \div 2 =</math></p> <p><b>Q Who can read this number sentence</b></p> <p><b>Q How many groups do you think this will be? Tell your partner.</b></p> <ul style="list-style-type: none"> <li>Check by drawing on the number line (or use ITP)</li> <li>Ask pupils to work together on the dry wipe number lines to solve <math>14 \div 2 =</math></li> <li>Take feedback and ensure pupils understand 'equal jumps along the number line.'</li> </ul> <p>Ask the children to find answers to the number sentences on individual tiles on their desk, first on the dry wipe number line and then on AS 10:1.</p>	<p>Discuss <math>15 \div 5 =</math> Ask the children to read it to their partners. Accept How many groups of 5 make 15? Or Divide 15 into groups of 5 15 divided into groups of 5</p> <p><b>Q How many groups do you think there will be?</b></p> <p>Establish the answer is 3 by demonstrating hops of 5 along the number line.</p> <p><b>Q Do you remember how many groups of 3 make 5?</b></p> <ul style="list-style-type: none"> <li>Draw this on the same number line as <math>15 \div 5 = 3</math> and <math>15 \div 3 = 5</math> Using 15 OHT counters ask for a volunteer to make them into an array. Examine the array and show that the 15 counters are in 3 rows of 5 or 5 columns of 3. Examine other arrays if there is time.</li> </ul> <p>By the end of the lesson, children should be able to Understand division as grouping Be able to read division number sentences in several different ways . e.g. <math>16 \div 2 = 8</math> 16 divided into 2 16 shared by 2 16 divided between 2 16 divided into groups of 2</p>	

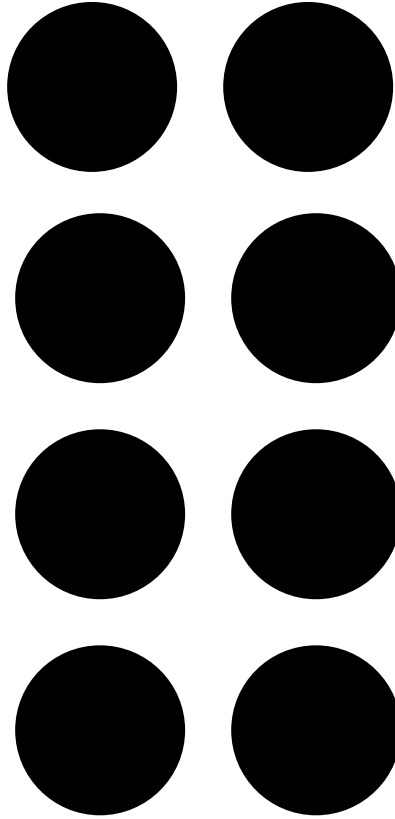
Planning Sheet	Day 3	Unit 10: Multiplication & Division	Term: Spring	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<ul style="list-style-type: none"> <li>Use doubling and halving, starting from known facts.</li> <li>Understand that doubling and halving are inverse operations.</li> </ul> <p>VOCABULARY double, halve twice as much multiply by 2 divide by 2 Inverse</p> <p>RESOURCES whiteboards large coins coins multilink cubes RS 10:2</p>	<ul style="list-style-type: none"> <li>Ask the children to double some numbers less than 10 e.g. double 5, what is 2 times 4 etc.</li> </ul> <p>Establish that doubling is multiplying by 2.</p> <ul style="list-style-type: none"> <li>Ask the children to halve even numbers 20 or less. Ask them to share solutions with their partner. Establish that halving is dividing by 2.</li> <li>Ask the children to halve 5 and tell their partner the answer and how they did it. Take feedback. Discuss methods/ideas. Establish that it is easier to halve even numbers than odd ones. Use multilink to show why (or cakes, or apples etc.).</li> <li>Using large coins demonstrate how to double 5p, 6p, 7p etc. to 100 (Use 5p and 1p coins only). e.g. 6p doubled is <math>2 \times 5</math> and <math>2 \times 1p</math> Repeat for 8p – asking the children to work in pairs using their coins, following step by step to double it. Repeat with other numbers less than 10 if necessary.</li> <li>When children are ready move on to 11p. Ask children to Take out 11p.</li> </ul> <p>Q What coins do you have? Are there any other ways of making 12p.</p> <p>Establish that the smallest number of coins to make 11p is 1 x 10p and 2 x 1p. Ask them to double it. Share responses. Point out that if we know double 10 and double on.</p> <p>Q What did you do to find the answer?</p> <p>Teacher to model methods / replies. <math>10 \times 2 = 20p</math> <math>2p \times 2 = 4p</math> that is 24p altogether.</p> <ul style="list-style-type: none"> <li>Repeat 13p and 23p. Taking feedback each time and modelling recording.</li> <li>Ask pupils to work in pairs to find the doubles of numbers in the circle (balloon?) on RS sheet 10:2. These numbers can be differentiated for less and more able pupils.</li> </ul>	<p>Discuss some of the answers. Together double 24 using 10p and 1p coins and two pupils to hold them. Put them together.</p> <p>Q If 48p is double 24p What is half of 48p?</p> <p>Work through halving by making 2 equal groups.</p> <p>Take out 26p and ask the children what half of 26p</p> <p>Q How do you know? What did you do?</p> <p>Establish that halving is the inverse of doubling.</p> <p>Finally take out 3 x 10p and ask the children to discuss with their partners hw to find half of 30p.</p> <p>Take feedback and building on pupils' ideas develop the idea of halving to "cut one 10p in half".</p> <p>By the end of the lesson, children should be able to: Double 2-digit numbers by partitioning them and using known facts Know that doubling and halving are inverse operations.</p>

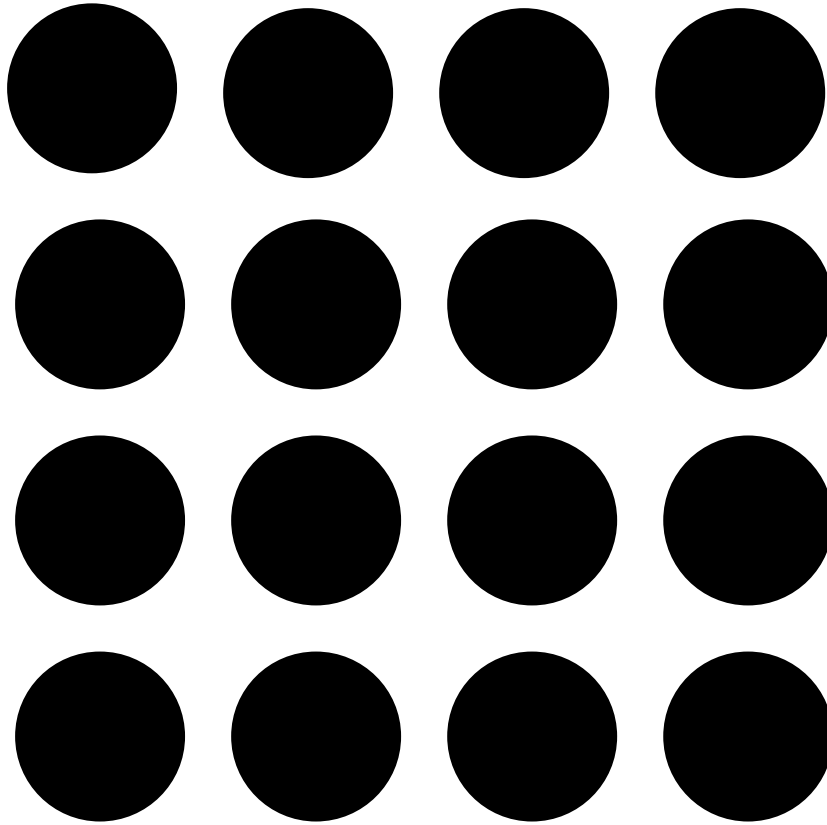
Planning Sheet	Day 4	Unit 10: Multiplication & Division		Term: Spring	Year Group: 3
Oral and Mental		Main Teaching			Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions	
		<ul style="list-style-type: none"> <li>Using doubling and halving, starting from known facts.</li> <li>Begin to know 4 times table.</li> </ul> <p>VOCABULARY double, halve twice and much multiply by 2 divide into 2 inverse</p> <p>RESOURCES Board (Number line ITP – possibly)</p>	<p>Write 1 to 10 across the board. Ask children to count in 2s. Record beneath the nos 1 – 10 (ITP number line can be used). Discuss multiplication facts eg. <math>6 \times 2 = 12</math>. Point out the link. Ask the children to count in 4s. Record beneath the 2 to 20.</p> <p><u>Q What do you notice?</u></p> <p>Take feedback. Ensure that children realise that to find 4x we double 2x, so we double twice to find 4x.</p> <p><u>Q Who knows the answer to <math>12 \times 4</math>? How did you work it out?</u></p> <ul style="list-style-type: none"> <li>Repeat for <math>20 \times 4</math>. When children are confident ask them to find the answers to <math>11 \times 4</math>, <math>21 \times 4</math></li> <li>Take feedback and discuss answers. Write <math>15 \times 2</math> on the board.</li> </ul> <p><u>Q How can we find the answer to this?</u></p> <p>Take feedback and develop the idea of partitioning 15 into 10 and 5. (Could refer to coins). Record <math>10 \times 2 = 20</math>, <math>5 \times 2 = 10</math>, <math>15 \times 2 = 30</math></p> <p><u>Q What do you think <math>15 \times 4</math> will be?</u></p> <p>Take feedback. Develop the idea of doubling and doubling again. Write 13 on the board.</p> <p><u>Q How can we find 13 multiplied by 4? 13 times 4?</u></p> <p>Take feedback. Encourage partitioning into 10 and 3 to find the first double <math>10 \times 2 = 20</math>; <math>3 \times 2 = 6</math>; <math>13 \times 2 = 26</math>. Then ask what we do next (partition the 26 and double it). Record <math>20 \times 2 = 40</math>; <math>6 \times 2 = 12</math></p> <p><u>Q Why is this more difficult?</u></p> <ul style="list-style-type: none"> <li>Take discussion.</li> <li>Work through <math>24 \times 4</math> with the children by doubling 24 and doubling again.</li> </ul> <p>Ask them to work in pairs, choosing number drawn in a circle on the board (14, 16, 17, 18, 19, 23, 25)</p>	<p>Discuss doubling 3 digit multiples of 10 e.g. 130, 240</p> <p><u>Q How can we double 130?</u></p> <p>Develop partitioning into 100 and 30 and doubling.</p> <p>Repeat for 240.</p> <ul style="list-style-type: none"> <li>Now ask them to find 120 multiple by 4.</li> </ul> <p>Discuss methods. Promote doubling twice as a method (partitioning).</p> <p>100 doubled is 200, 20 doubled is 40 120 doubled is 240</p> <p><math>100 \times 2 = 200</math> <math>20 \times 2 = 40</math></p> <ul style="list-style-type: none"> <li>If time repeat for 210 or ask the children if <math>4 \times 2 = 8</math> and <math>4 \times 4 = 16</math> what is <math>4 \times 8</math>?</li> </ul> <div style="border: 1px solid black; padding: 5px;"> <p>By the end of the lesson the children should be able to</p> <ul style="list-style-type: none"> <li>Use doubling twice to calculate the answer to 4 times a number.</li> <li>Begin to know the 4 x table.</li> </ul> </div>	

Planning Sheet		Day 5	Unit 10: Multiplication & Division	Term: Spring	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"> <li>Say or write a division statement corresponding to a multiplication statement.</li> <li>Read and begin to write the related vocabulary.</li> </ul> <p>VOCABULARY Array rows, column divided by divided into multiplied by</p> <p>RESOURCES OHT 10:1, 10:2, 10:3 Number sentences with sliders made from RS 10:3 OHT Counters As 10:2 RS 10:3 RS 10:4</p>	<p>Display either OHT 10:1 or an array 3 by 5 on OHP.</p> <p>Q What can you see here?</p> <p>Q How many rows / columns are there?</p> <p>Q What do we call this arrangement of counters?</p> <ul style="list-style-type: none"> <li>Establish that there are 3 rows of 5 spots, and 5 columns of 3 spots.</li> <li>Rote the array Establish that there are now 5 rows of 3 spots and 3 columns of 5 spots. Point out that this shows 3 groups of 5; five multiplied by 3; 3 multiplied by 5; 5 three times; 3 5 times. Write the number sentences <math>5 \times 3</math> and <math>3 \times 5</math> (on OHT).and establish that <math>5 \times 3</math> is the same as <math>3 \times 5</math>.</li> </ul> <p>Q How many spots are there altogether?</p> <p>Establish there are 15.</p> <p>Q How many fives make 15? How many threes make 15?</p> <p>Q What is 15 divided into 3? Into 5?</p> <p>In pairs discuss how to write fifteen divided into 3 in a number sentence? Write it on your whiteboard <math>15 \div 3 = 5</math> Share responses. Record on OHT near the array. Ensure everyone can read the number sentence in several ways. <math>15</math> divided into 3 is 5; <math>15</math> divided by 3 is 5 How many 3s are equal to 15? Repeat process.</p> <p>Q Can you write a number sentence for 15 divided by 5 is 3?</p> <p>Record this near the array.</p> <p>Q How many are multiplication? division?</p> <p>Q Where is the largest number in each number sentences</p>	<p>Take feedback.</p> <ul style="list-style-type: none"> <li>Ask the children to use their whiteboards to write a division sentence for <math>6 \times 2 = 12</math> (on flashcard). Work through other examples from the flashcards.</li> <li>Put a slider on <math>3 \times 2 = 6</math> covering the 2 i.e. <math>3 \times \square = 6</math> Ask the children what the space could be.</li> </ul> <p>Q What are we trying to find?</p> <p>Establish – how many 3s make 6. (Find out with steps along a number line) Repeat using <math>3 \times \square = 18</math></p> <p>Q What are we trying to find?</p> <p>Establish how many 3s make 18 using the number line.</p> <div style="border: 1px solid black; padding: 5px;"> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> <li>write a division statement derived from a multiplication statement.</li> <li>Read division statements in a number of different ways.</li> </ul> </div>	

			<p>Repeat process with OHT 10:2 until all four number sentences have been arrived at. Ascertain that there are four number sentences for this array. Display OHT 10:3.</p> <p><u>Q How many spots here? How do you know?</u></p> <p><u>Q How many rows? How many columns?</u></p> <p><u>Q What do you notice?</u></p> <p>Ask the children to work with a partner to write some number sentences for this array. What do you notice?</p> <p><u>Q Why are there only 2 number sentences?</u></p> <ul style="list-style-type: none"><li>• Establish that the array is not a rectangle this time.</li><li>• Using 16 counters move the counters from 4 x 4 to 8 x 2 and ask for examples of number sentences for this array.</li><li>• Establish that there are now four even though we have the same number of counters.</li></ul> <p>Ask the children to work in pairs to write as many number sentences as possible for the arrays on AS 10:2.</p>	
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$8 \div 2$

$12 \div 3$

$10 \div 5$

$14 \div 7$

$20 \div 5$

$24 \div 4$

$30 \div 10$

$18 \div 3$

$$3 \times 2 = 6$$

$$9 \times 2 = 18$$

$$3 \times 6 = 18$$

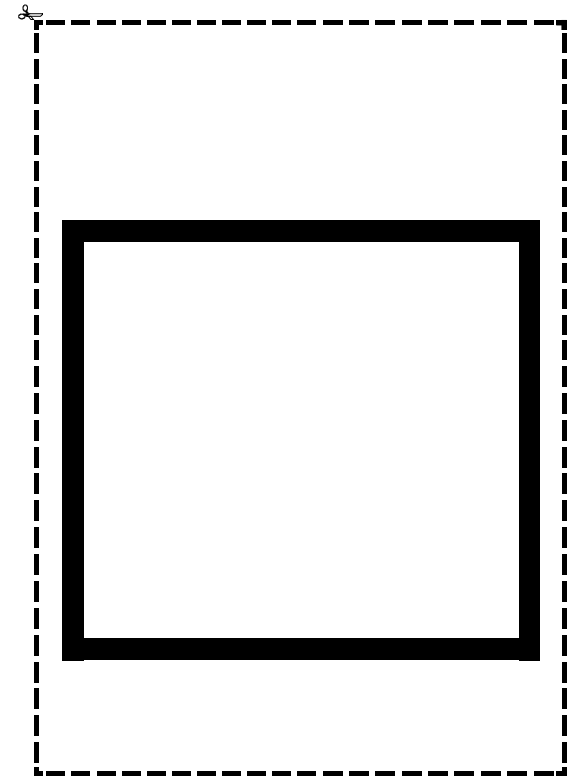
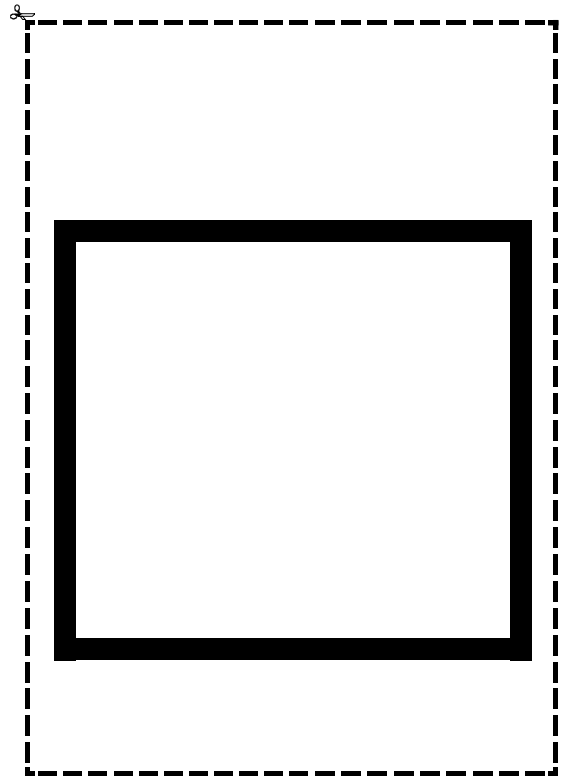
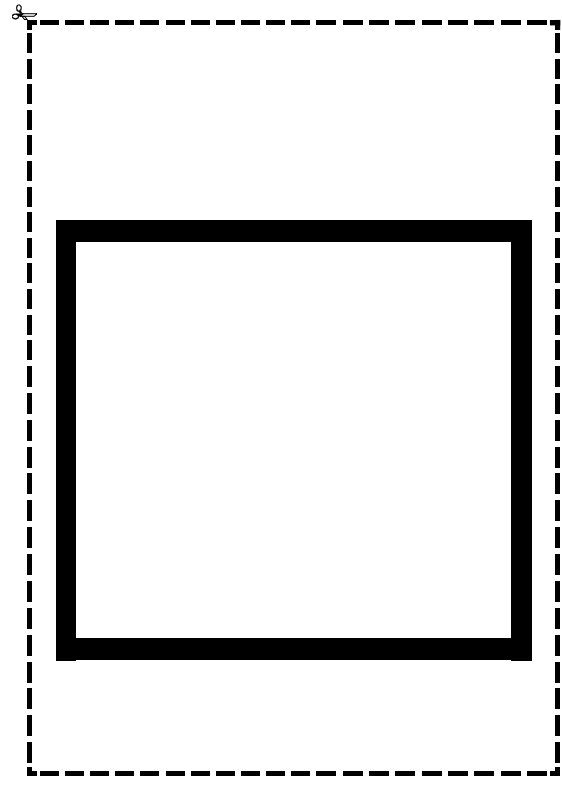
$$6 \times 2 = 12$$

$$5 \times 4 = 20$$

$$6 \times 5 = 30$$

**Unit 10 Year Three (Spring Term)**

**Resource Sheet 10.4**



Unit 10 Year Three (Spring Term)

Activity Sheet 10.1

