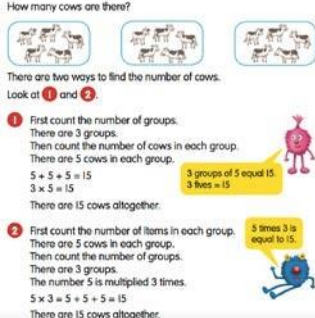


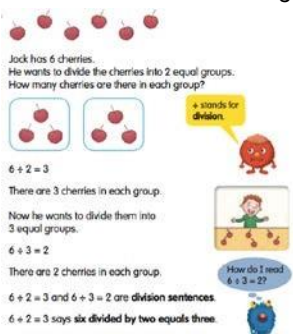

Progression of Key Concepts in *Inspire Maths*

Multiplication and division (making connections between the units) with reference to the pages in the Teacher's Guide

Inspire Maths 1	Inspire Maths 2	Inspire Maths 3	Inspire Maths 4	Inspire Maths 5	Inspire Maths 6
<p><b><u>Multiplication: TG1B Unit 14 p122</u></b>  <b>Key concept:</b> Multiplication is conceptualized as repeated addition. The × (times) symbol is introduced as another way of representing multiplication.</p> <ul style="list-style-type: none"> <li>Adding the same number, relate repeated addition to the multiplication concept: How many groups are there? How many are in each group?  <math>2 + 2 + 2 = 6</math>                      3 twos = 6                      3 groups of 2 = 6</li> <li>Making up stories</li> <li>Solving word problems</li> </ul> <p><b><u>Division: TG1B Unit 15 p143</u></b>  <b>Key concept:</b> Division is conceptualised as dividing a set of objects equally.</p> <ul style="list-style-type: none"> <li>Sharing equally</li> <li>Finding the number of groups</li> </ul> <p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>group: TG1A p32</li> <li>multiplication: TG1B p122</li> <li>multiplication stories: TG1B p125</li> <li>multiplication sentence: TG1B p125</li> <li>times (multiplication): TG1B p125</li> </ul>	<p><b><u>Multiplication and division: TG2A Unit 4 p131</u></b>  <b>Key concept:</b> Multiplying a fixed number of objects by a certain number of times.</p> <ul style="list-style-type: none"> <li>How to multiply: multiplication as the number of groups by the number of items; multiplying a set of items by number of times:</li> </ul>  <p>How many cows are there?      There are two ways to find the number of cows.      Look at 1 and 2.</p> <p>1 First count the number of groups. There are 3 groups. Then count the number of cows in each group. There are 5 cows in each group.  <math>3 \times 5 = 15</math>      3 groups of 5 equal 15. 3 fives = 15.</p> <p>2 First count the number of items in each group. There are 5 cows in each group. Then count the number of groups. There are 3 groups. The number 5 is multiplied 3 times.  <math>5 \times 3 = 5 + 5 + 5 = 15</math>      There are 15 cows altogether.</p> <p>3 times 3 is equal to 15.</p> <p><b>Key concept:</b> Sharing or dividing a set of items into equal groups so that each group has the same number of items. The ÷ (division) symbol is introduced as another way of representing multiplication.</p>	<p><b><u>Multiplying by 6, 7, 8 and 9: TG3A Unit 5 p118 Key concepts:</u></b> The 'group and item' concept is used for multiplication and repeated addition.</p> <ul style="list-style-type: none"> <li>Multiplying by 6: skip counting</li> <li>Multiplying by 7: skip counting</li> <li>Multiplying by 8: skip counting</li> <li>Multiplying by 9: skip counting</li> <li>Short cut method for multiplying by 6, 7, 8 and 9</li> </ul> <p><b>Key concepts:</b> Division is the inverse of multiplication. Division involves the distribution of a set of items equally into some groups by relating multiplication facts.</p> <ul style="list-style-type: none"> <li>Division: finding the number of items in each group</li> <li>Division: making equal groups</li> </ul>	<p><b><u>Whole Numbers (2): TG4A Unit 2 p42</u></b></p> <ul style="list-style-type: none"> <li>Factors</li> <li>Multiples</li> </ul> <p><b><u>Whole Numbers (3): TG4A Unit 3 p67</u></b>  <b>Key concepts:</b> The formal algorithm long multiplication is introduced as another strategy</p> <ul style="list-style-type: none"> <li>Multiply whole numbers (up to 4-digits) by a 1-digit number with or without regrouping</li> <li>Multiply a whole number (up to 3 digits) by 10 or tens using two different methods with or without regrouping</li> <li>Multiply a whole number (2 or 3-digits) by another 2-digit number with or without regrouping</li> <li>Divide a whole number (up to 4 digits) by a 1-digit number with or without regrouping and without remainder</li> <li>Divide a whole number (up to 4 digits) by a 1-digit number with or without regrouping and with remainder</li> <li>Solve up to 3-step whole number word problems involving the four operations</li> </ul> <p><b><u>Decimals (2): TG4B Unit 10 p77</u></b></p> <ul style="list-style-type: none"> <li>Multiply tenths by a 1-digit whole number</li> <li>Multiplication involving tenths and ones</li> </ul>	<p><b><u>Whole Numbers (2): TG5A Unit 2 p53</u></b></p> <ul style="list-style-type: none"> <li>Multiplying by 10</li> <li>Multiplying by tens</li> <li>Multiplying by 100 or 1000</li> <li>Multiplying by hundreds or thousands</li> <li>Dividing by 10</li> <li>Dividing by tens</li> <li>Dividing by 100 or 1000</li> <li>Dividing by hundreds or thousands</li> <li>Order of operations</li> </ul> <p><b>Key concepts:</b> Application of concepts and skills of the four operations to solving word problems.</p> <ul style="list-style-type: none"> <li>Word problems (1) and (2)</li> </ul> <p><b><u>Decimals: TG5B Unit 7 p6</u></b></p> <ul style="list-style-type: none"> <li>Multiplying by 10</li> <li>Multiplying by tens</li> </ul>	<p><b><u>Speed: TG6B Unit 7 p4</u></b></p> <p><b><u>Circles: TG6B Unit 8 p45</u></b></p> <ul style="list-style-type: none"> <li>Diameter</li> <li>Circumference</li> <li>Area of circle</li> </ul> <p><b><u>Volume: TG6B Unit 11 p140</u></b></p> <ul style="list-style-type: none"> <li>Volume = length × width × height</li> </ul> <p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>diameter: TG6B p46</li> <li>circumference: TG6B p46</li> </ul>

Progression of Key Concepts in *Inspire Maths*

Multiplication and division (making connections between the units) with reference to the pages in the Teacher's Guide

Inspire Maths 2	Inspire Maths 3	Inspire Maths 4	Inspire Maths 5
<p>• <i>How to divide: sharing a number of items equally between a number of groups; dividing a set of items into groups given a fixed number of items in each group:</i></p>  <p>Jack has 6 cherries. He wants to divide the cherries into 2 equal groups. How many cherries are there in each group?  <math>6 \div 2 = 3</math>          There are 3 cherries in each group.          Now he wants to divide them into 3 equal groups.  <math>6 \div 3 = 2</math>          There are 2 cherries in each group.  <math>6 \div 2 = 3</math> and <math>6 \div 3 = 2</math> are division sentences.  <math>6 \div 2 = 3</math> says six divided by two equals three.</p> <p><b>Multiplying by 2 and 3: TG2A Unit 5 p148</b>  <b>Key concepts:</b> Multiplication is interpreted as repeated addition and as groups of items. The multiplication concept is 'groups of' or 'multiplying by'. The skip-count strategy helps to find the times table facts.</p> <p>• <i>Multiplying by 2: skip counting, using dot paper</i>          • <i>Multiplying by 3: skip counting, using dot paper</i>  <b>Key concepts:</b> Division is the inverse of multiplication. Division involves the distribution of a set of items equally into some groups by relating multiplication facts.</p>	<p><b>Multiplication: TG3A Unit 6 p147</b>  <b>Key concepts:</b> Vertical format introduced alongside the horizontal format.</p> <p>• <i>Multiply a 2-digit or 3-digit number by 2, 3, 4, or 5 without regrouping</i>          • <i>Multiply a 2-digit or 3-digit number by 2, 3, 4, or 5 with regrouping in ones, tens and hundreds</i>          • <i>Multiply 2-digit or 3-digit number by 2, 3, 4, or 5 with regrouping in ones, tens, hundreds and thousands</i></p> <p><b>Division: TG3A Unit 7 p 175</b>  <b>Key concepts:</b> The long division format is used to divide and find the quotient (number of items each group will contain) and remainder. The divisor is the number of groups.</p> <p>• <i>Divide a 1-digit or a 2-digit number by 1-digit number without remainder</i></p> <p><math>8 \div 2 = ?</math></p>  <p>8 ones <math>\div</math> 2 = 4 ones with no remainder          Quotient = 4 ones          Remainder = 0 ones</p> <p>Each child gets 4 buckets.          There are no buckets left.</p> <p><math display="block">\begin{array}{r} 4 \\ 2 \overline{) 8} \\ \underline{8} \\ 0 \end{array}</math></p> <p>• <i>Divide a 1-digit or a 2-digit number by a 1-digit number with remainder</i>          • <i>Divide a 2-digit number by a 1-digit number with no regrouping or remainder</i></p>	<p>• <i>Multiplication involving tenths and hundredths</i>          • <i>Division of tenths by a 1-digit whole number</i>          • <i>Division involving tenths in which regrouping is necessary</i>          • <i>Division involving ones, tenths and hundredths when regrouping is necessary</i>  <b>Key concepts:</b> Application of the concepts of multiplication and division of a decimal by a whole number to solving word problems.</p> <p>• <i>Word problems up to 2 decimal places</i></p> <p><b>Key vocabulary</b>          • factor: TG4A p42          • multiple: TG4A p47          • decimal: TG4B p6          • decimal place: TG4B p34          • exactly (division): TG4A p42          • common factor: TG4A p44          • common multiple: TG4A p48          • calculate: TG4A p71          • ratio: TG5A p248          • equivalent ratio: TG5A p253</p>	<p>• <i>Multiplying by 100 or 1000</i>          • <i>Multiplying by hundreds or thousands</i>          • <i>Dividing by 10</i>          • <i>Dividing by tens</i>          • <i>Dividing by 100 or 1000</i>          • <i>Dividing by hundreds or thousands</i></p> <p><b>Mean: TG5B Unit 9 p82</b>  <b>Volume: TG5B Unit 14 p278</b>          • <i>Volume = length <math>\times</math> width <math>\times</math> height</i></p> <p><b>Key vocabulary</b>          • numbers one ten thousand to nine ten thousands (counting on in ten thousands): TG5A p6          • hundred thousand (place value): TG5A p6</p>

**Progression of Key Concepts in Inspire Maths**

**Multiplication and division (making connections between the units) with reference to the pages in the Teacher's Guide**

**Inspire Maths 2**

- *Sharing: finding the number of items in each group:*

*Sharing: Finding the number of items in each group*

- 1 Divide 12 pencil sharpeners into 2 equal groups.  
How many pencil sharpeners are there in each group?



$12 \div 2 = ?$



$2 \times 6 = 12$   
 $12 \div 2 = 6$

There are 6 pencil sharpeners in each group.

- *Grouping: making equal groups:*

Divide 15 jelly beans into equal groups.  
There are 3 jelly beans in each group.  
How many groups are there?

$15 \div 3 = ?$

$5 \times 3 = 15$   
 $15 \div 3 = 5$



**Multiplying by 4, 5 and 10: TG2A Unit 6 p182**

**Key concepts:** Multiplication is conceptualized as repeated addition, groups of items, or multiplying. The multiplication concept is 'groups of' or 'multiplying by'. The skip-count strategy helps to find the times table facts.

- *Multiplying by 4: skip counting, using dot paper*
- *Multiplying by 5: skip counting, using dot paper*
- *Multiplying by 10: skip counting, using dot paper*

**Key concepts:** Division is the inverse of multiplication. Division involves the distribution of a set of items equally into some groups by relating multiplication facts.

- *Sharing: finding the number of items in each group*
- *Grouping: making equal groups*

**Inspire Maths 3**

- *Divide a 2-digit number by a 1-digit number with regrouping from tens to ones, with or without remainder*
- *Divide a 3-digit number by a 1-digit number with regrouping from hundreds to tens then from tens to ones with or without remainder*

**Solving word problems 2: Multiplication and division: TG3A Unit 8 p205**

**Key concept:** solve one-step word problems on multiplication using model drawing.

**Mental calculations: TG3A Unit 9 p240**

**Key concept:** Commutative rule –reversing the order of groups and items in multiplication concept produces the same product.

- *Mental multiplication*

**Key concept:** Division is the inverse of multiplication.

- *Mental division*

**Solving word problems: length, mass and volume: TG3B Unit 12 p67**

**Key vocabulary**

- thousands (place value): TG3A p10
- remainder, quotient: TG3A p175
- horizontally: TG3A p191
- vertically: TG3A p191
- finger counting method: TG3A p125
- short cut method: TG3A p128
- product: TG3A p147
- one-step word problems: : TG3A p205
- double: TG3A p207
- to begin with: TG3A p208
- thrice: TG3A p213

**Progression of Key Concepts in Inspire Maths**

Multiplication and division ([making connections between the units](#)) with reference to the pages in the Teacher's Guide

Inspire Maths 2

**Using models: Multiplication and division: TG2A Unit 7 p224**

**Key concept:** Represent the 'group and item' using models either with paper strips or drawing bars to find the number of items or groups.

**Length: TG2A Unit 8 p254**

**Key concept:** draw models to help solve word problems.

- *Multiplication and division of length*

**Mass: TG2A Unit 9 p291**

- *Multiplication and division of mass*

**Money: TG2B Unit 11 p36**

- *Word problems: multiplication and division.*

**Volume: TG2B Unit 14 p150**

- *Multiplication and division of volumes*

**Key vocabulary**

- grouping: TG2A p135
- skip-counting: TG2A p148
- division: TG1B p143
- equally: TG1B p143
- divide: TG1B p143
- sharing / share: TG2A p133
- division sentence: TG2A p133
- times table: TG2A p155