


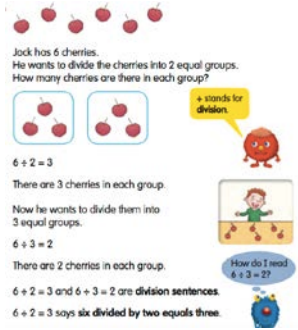

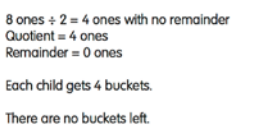
Progression of Key Concepts in *Inspire Maths*

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

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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><u>Multiplying by 2 and 3: TG2A Unit 5 p148</u></p> <p>Key concepts: 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> <ul style="list-style-type: none"> • <i>Multiplying by 2: skip counting, using dot paper</i> • <i>Multiplying by 3: skip counting, using dot paper</i> <p>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.</p>	<p><u>Multiplication: TG3A Unit 6 p147</u></p> <p>Key concepts: Vertical format introduced alongside the horizontal format.</p> <ul style="list-style-type: none"> • <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><u>Division: TG3A Unit 7 p 175</u></p> <p>Key concepts: 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> <ul style="list-style-type: none"> • <i>Divide a 1-digit or a 2-digit number by 1-digit number without remainder</i>   <ul style="list-style-type: none"> • <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> 	<ul style="list-style-type: none"> • <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> <p>Key concepts: Application of the concepts of multiplication and division of a decimal by a whole number to solving word problems.</p> <ul style="list-style-type: none"> • <i>Word problems up to 2 decimal places</i> <p><u>Key vocabulary</u></p> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • <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><u>Mean: TG5B Unit 9 p82</u></p> <p><u>Volume: TG5B Unit 14 p278</u></p> <ul style="list-style-type: none"> • - Volume = length × width × height <p><u>Key vocabulary</u></p> <ul style="list-style-type: none"> • numbers one ten thousand to nine ten thousands (counting on in ten thousands): TG5A p6 • hundred thousand (place value): TG5A p6

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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?



$12 \div 2 = ?$



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

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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