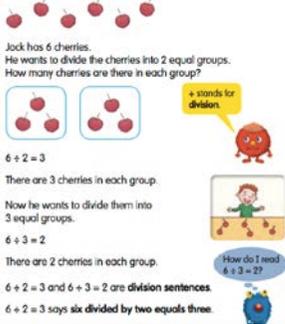# ⦿INSPIREMATHS

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
Multiplication: TG1B Unit 14 p122 **Key concept:** Multiplication is conceptualized as repeated addition. The × (times) symbol is introduced as another way of representing multiplication. • *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 twos = 6 3 groups of 2 = 6 • *Making up stories* • *Solving word problems* **_Division:_ TG1B Unit 15 p143** **Key concept:** Division is conceptualised as dividing a set of objects equally. • *Sharing equally* • *Finding the number of groups* **Key vocabulary** • *group: TG1A p32* • *multiplication: TG1B p122* • *multiplication stories: TG1B p125* • *multiplication sentence: TG1B p125* • *times (multiplication): TG1B p125*	**_Multiplication and division:_ TG2A Unit 4 p131** **Key concept:** Multiplying a fixed number of objects by a certain number of times. • *How to multiply: multiplication as the number of groups by the number of items; multiplying a set of items by number of times:* How many cows are there? There are two ways to find the number of cows. Look at ❶ and ❷. ❶ 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 × 5 = 15 There are 15 cows altogether. 3 groups of 5 equal 15. 3 fives = 15 ❷ 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 × 3 = 5 + 5 + 5 = 15 There are 15 cows altogether. 5 times 3 is equal to 15. **Key concept:** 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.	**_Multiplying by 6, 7, 8 and 9:_ TG3A Unit 5 p118** **Key concepts:** The 'group and item' concept is used for multiplication and repeated addition. • *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* **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. • *Division: finding the number of items in each group* • *Division: making equal groups*	**_Whole Numbers (2):_ TG4A Unit 2 p42** • *Factors* • *Multiples* **_Whole Numbers (3):_ TG4A Unit 3 p67** **Key concepts:** The formal algorithm long multiplication is introduced as another strategy • *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* **_Decimals (2):_ TG4B Unit 10 p77** • *Multiply tenths by a 1-digit whole number* • *Multiplication involving tenths and ones*	**_Whole Numbers (2):_ TG5A Unit 2 p53** • *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* **Key concepts:** Application of concepts and skills of the four operations to solving word problems. • Word problems (1) and (2) **_Decimals:_ TG5B Unit 7 p6** • *Multiplying by 10* • *Multiplying by tens*	**_Speed:_ TG6B Unit 7 p4** **_Circles:_ TG6B Unit 8 p45** • *Diameter* • *Circumference* • *Area of circle* **_Volume:_ TG6B Unit 11 p140** • *Volume = length × width × height* **Key vocabulary** • diameter: TG6B p46 • circumference: TG6B p46

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Inspire Maths 2	Inspire Maths 3	Inspire Maths 4	Inspire Maths 5
• *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:* **Multiplying by 2 and 3: TG2A Unit 5 p148** **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. • *Multiplying by 2: skip counting, using dot paper* • *Multiplying by 3: 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.	**Multiplication: TG3A Unit 6 p147** **Key concepts:** Vertical format introduced alongside the horizontal format. • *Multiply a 2-digit or 3-digit number by 2, 3, 4, or 5 without regrouping* • *Multiply a 2-digit or 3-digit number by 2, 3, 4, or 5 with regrouping in ones, tens and hundreds* • *Multiply 2-digit or 3-digit number by 2, 3, 4, or 5 with regrouping in ones, tens, hundreds and thousands* **Division: TG3A Unit 7 p 175** **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. • *Divide a 1-digit or a 2-digit number by 1-digit number without remainder* • *Divide a 1-digit or a 2-digit number by a 1-digit number with remainder* • *Divide a 2-digit number by a 1-digit number with no regrouping or remainder*	• *Multiplication involving tenths and hundredths* • *Division of tenths by a 1-digit whole number* • *Division involving tenths in which regrouping is necessary* • *Division involving ones, tenths and hundredths when regrouping is necessary* **Key concepts:** Application of the concepts of multiplication and division of a decimal by a whole number to solving word problems. • *Word problems up to 2 decimal places* **Key vocabulary** • 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	• *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* **Mean: TG5B Unit 9 p82** **Volume: TG5B Unit 14 p278** • - Volume = length × width × height **Key vocabulary** • 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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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 2	Inspire Maths 3
• *Sharing: finding the number of items in each group:* Sharing: Finding the number of items in each group ❶ Divide 12 pencil sharpeners into 2 equal groups. How many pencil sharpeners are there in each group? 12 ÷ 2 = ? 2 × 6 = 12 12 ÷ 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 ÷ 3 = ? 5 × 3 = 15 15 ÷ 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*	• *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