
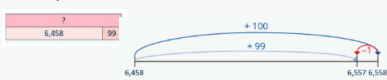
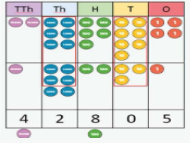

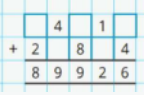

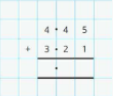
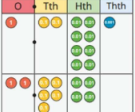

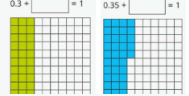
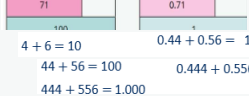

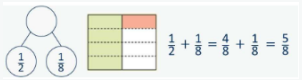

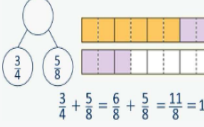


## Progression of Addition

Year 4	Year 5	Year 6
Add 1s, 10s and 100s to a 4-digit number Add up to two 4-digit numbers Add decimal numbers in the context of money Add fractions and mixed numbers with the same denominator beyond 1 whole	Add using mental strategies Add whole numbers with more than 4 digits Add decimals with up to 2 decimal places Complements to 1 Add fractions with denominators that are a multiple of one another	Add integers up to 10 million Add decimals with up to 3 decimal places Order of operations Negative numbers Add fractions

## Addition

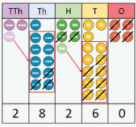


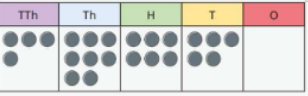


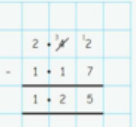
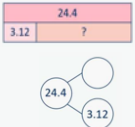
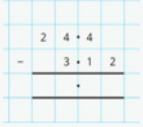
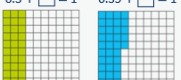
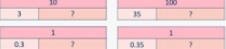

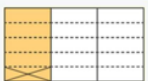

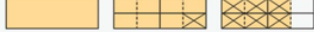

<b>Year 5</b>	Add whole numbers with more than 4 digits, including using formal written methods. Add numbers mentally with increasingly large numbers. Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 Add fractions with the same denominator, and denominators that are multiples of the same number.	
<b>Progression of skills</b>	<b>Key representations</b>	
<b>Add using mental strategies</b> Add 1s, 10s, 100s, etc. to any number. Use number bonds and related facts.	 $48,650 + 300 = 48,950$	To add ..., I can add ... then subtract ... 
<b>Add whole numbers with more than 4 digits</b> Encourage children to estimate and use inverse operations to check answers to calculations.	I can exchange 10 ... for 1 ...   	
<b>Add decimals with up to 2 decimal places</b> Progress from the same number of decimal places to a different number of decimal places, and from no exchange to exchange.	I do/do not need to make an exchange because ... I can exchange 10 ... for 1 ...    	
<b>Complements to 1</b> Pairs of numbers with up to 3 decimal places which total 1 Encourage children to make links with bonds to 10 and complements to 100 and 1,000	  	
<b>Add fractions with denominators that are a multiple of one another</b> Encourage children to convert fractions to the same denominator before adding. Progress from adding fractions within 1 whole to adding fractions beyond 1 whole.	The denominator has been multiplied by ... so the numerator needs to be multiplied by ... for the fractions to be equivalent.   	

## Progression of Subtraction

Year 4	Year 5	Year 6
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Subtract 1s, 10s and 100s from a 3-digit number Subtract two numbers (no exchange) Subtract two numbers across a 10 or 100 Complements to 100 Subtract fractions with the same denominator within 1 whole	Subtract whole numbers with more than 4 digits Subtract using mental strategies Subtract decimals with up to 2 decimal places Complements to 1 Subtract fractions with denominators that are a multiple of one another	Subtract integers up to 10 million Subtract decimals with up to 3 decimal places Order of operations Negative numbers Subtract fractions
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## Subtraction

<b>Year 5</b>	Subtract whole numbers with more than 4 digits. Subtract numbers mentally with increasingly large numbers. Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 Subtract fractions with the same denominator, and denominators that are multiples of the same number.	
<b>Progression of skills</b>	<b>Key representations</b>	
<b>Subtract whole numbers with more than 4 digits</b> Encourage children to estimate and use inverse operations to check answers to calculations.	I can exchange 1 ... for 10 ...   	
<b>Subtract using mental strategies</b> Subtract 1s, 10s, 100s etc from any number. Use number bonds and related facts.	 $48,650 - 300 =$ $48,650 - 30,000 =$ $48,650 - 30 =$	To subtract ..., I can subtract ... then add ... 
<b>Subtract decimals with up to 2 decimal places</b> Progress from the same number of decimal places to a different number of decimal places and from no exchange to exchange.	   	
<b>Complements to 1</b> Encourage children to make links with bonds to 10 and complements to 100 and 1,000 when finding a missing part or subtracting from 1	$0.3 + \square = 1$ $0.35 + \square = 1$    $10 - 4 = 6$ $1 - 0.4 = 0.6$ $100 - 44 = 56$ $1 - 0.44 = 0.56$ $1,000 - 444 = 556$ $1 - 0.444 = 0.556$	
<b>Subtract fractions with denominators that are a multiple of one another</b> Convert fractions to the same denominator before subtracting. Progress from subtracting fractions within 1 whole to subtracting from a mixed number.	The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.   $\frac{2}{3} - \frac{2}{9} = \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$  	

## Progression of Skill

Year 4	Year 5	Year 6
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<ul style="list-style-type: none"> <li>•Times-table facts to 12</li> <li>•Multiply by 1 and 0</li> <li>•Multiply 3 numbers</li> <li>•Factor pairs</li> <li>•Multiply by 10 and 100</li> <li>•Related facts</li> <li>•Mental strategies</li> <li>•Multiply a 2 or 3-digit number by a 1-digit number</li> <li>•Scaling</li> <li>•Correspondence problems</li> </ul>	<ul style="list-style-type: none"> <li>•Multiples and factors</li> <li>•Square and cube numbers</li> <li>•Multiply numbers up to 4 digits by a 1-digit number</li> <li>•Multiply numbers up to 4 digits by a 2-digit number</li> <li>•Multiply by 10, 100 and 1,000</li> <li>•Mental strategies</li> <li>•Multiply fractions by a whole number</li> <li>•Multiply mixed numbers by a whole number</li> <li>•Find the whole</li> </ul>	<ul style="list-style-type: none"> <li>•Multiply numbers up to 4 digits by a 2-digit number</li> <li>•Multiply by 10, 100 and 1,000</li> <li>•Order of operations</li> <li>•Multiply decimals by integers</li> <li>•Multiply fractions by fractions</li> <li>•Find the whole</li> <li>•Calculations involving ratio</li> </ul>
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## Multiplication

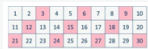

**Year 5**

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)
- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- Multiply numbers mentally drawing upon known facts.
- Multiply whole numbers and those involving decimals by 10, 100 and 1000
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.


**Progression of skills**      **Key representations**

**Multiples and factors**  
Encourage children to notice patterns and make links with known facts.


... is a multiple of ... because  
... × ... = ...

... is a factor of ... because  
... × ... = ...



1 × 8



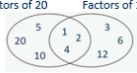
2 × 4

1, 2, 4 and 8 are factors of 8

The common factors of ... and ... are ...

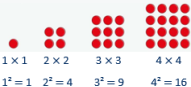
Factors of 20: 1, 2, 4, 5, 10, 20

Factors of 12: 1, 2, 3, 4, 6, 12



**Square and cube numbers**


... squared means ... × ...



1 × 1    2 × 2    3 × 3    4 × 4

1² = 1    2² = 4    3² = 9    4² = 16

... cubed means ... × ... × ...




1 × 1 × 1    2 × 2 × 2    3 × 3 × 3

1³ = 1    2³ = 8    3³ = 27

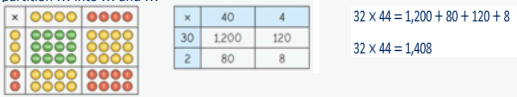
**Multiply numbers up to 4 digits by a 1-digit number**  
This builds on the short multiplication method introduced in Y4

To multiply a 4-digit number by ..., I multiply the ones by ..., the tens by ..., the hundreds by ... and the thousands by ...



**Multiply numbers up to 4 digits by a 2-digit number**  
Numbers are first partitioned using an area model then long multiplication is introduced for the first time.


I can partition ... into ... and ...



32 × 44 = 1,200 + 80 + 120 + 8

32 × 44 = 1,408

First, I multiply by the ... Then I multiply by the ...



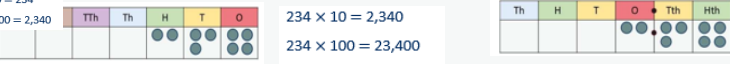
300 + 90 + 20 + 6 = 416

**Multiply by 10, 100 and 1,000**  
Some children may over-generalise that multiplying by a power of 10 always results in adding zeros. This will cause issues later when multiplying decimals.

2.34 × 10 = 23.4      00/1,000, I move all the digits ... places to the left. ... is 10/100/1,000 times the size of ...

2.34 × 100 = 234

2.34 × 1,000 = 2,340



2.34 × 10 = 23.4

2.34 × 100 = 234

2.34 × 1,000 = 2,340

**Mental strategies**  
Children continue to use efficient mental strategies such as partitioning and knowledge of factor pairs and related facts to multiply.

The most efficient strategy to calculate ... × ... is ... To calculate ... × 12, I can do ... × ... × ...

For example: 121 × 12

I could calculate 100 × 12 plus 20 × 12 plus 1 × 12

I could calculate 121 × 10 plus 121 × 2

I could calculate 121 × 6 × 2

I could calculate 121 × 4 × 3

**Multiply fractions by a whole number**  
To multiply a fraction by an integer, I multiply the numerator by the integer and the denominator remains the same.

<p>Make links with repeated addition. E.g. <math>1/5 \times 4 = 1/5 + 1/5 + 1/5 + 1/5</math></p>	<p><math>1/7 \times 4 = 1/7 + 1/7 + 1/7 + 1/7 = 4/7</math></p>	<p><math>1/5 \times 6 = 6/5 = 1 \frac{1}{5}</math></p>	<p><math>2/5 \times 3 = 6/5 = 1 \frac{1}{5}</math></p>
<p><b>Multiply mixed numbers by a whole number</b></p>	<p>I can partition <math>\square</math> into <math>\square</math> and <math>\square</math></p> <p><math>2 \frac{2}{3} \times 3</math>  <math>2 \times 3 = 6</math>   <math>2/3 \times 3 = 2</math>  <math>2 \frac{2}{3} \times 3 = 6 + 2 = 8</math></p>	<p><b>Find the whole</b> Children multiply to find the whole from a given part.</p> <p>If <math>\frac{1}{\square}</math> is ... , then the whole is ... <math>\times</math> ...</p> <p><math>\frac{1}{5}</math> of ... = 6      <math>5 \times 6 = 30</math>  <math>\frac{1}{5}</math> of 30 = 6</p> <p>If <math>\frac{1}{\square}</math> is ... , then <math>\frac{1}{\square}</math> is ... and the whole is ... <math>\times</math> ...</p> <p><math>\frac{1}{7} = 24 \div 4 = 6</math>  <math>7 \times 6 = 42</math>  <math>\frac{4}{7}</math> of 42 = 24</p>	

### Progression of Division

Year 4	Year 5	Year 6
Division facts to 12 12 Divide a number by 1 and itself Related facts Divide a 2 or 3-digit number by a 1-digit number Divide by 10 and 100	Mental strategies Divide numbers up to 4 digits by a 1-digit number Divide by 10, 100 and 1,000 Fraction of an amount	Short division Mental strategies Long division Order of operations Divide by 10, 100 and 1,000 Divide decimals by integers Decimal and fraction equivalents Divide a fraction by an integer Fraction of an amount Calculate percentages Calculations involving ratio

### Division

	<p>Divide numbers mentally drawing upon known facts.          Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.  <b>Year 5</b>          Divide whole numbers and those involving decimals by 10, 100 and 1,000</p>		
<b>Progression of skills</b>	<b>Key representations</b>		
<b>Mental strategies</b>	<p>I can partition ... into ... and ... to help me to divide more</p>	<p>I can show groups of ... on a number line.</p>	<p>To divide by ..., I can divide by ... and then divide the result by ...</p> <p><math>436 \div 4 = 436 \div 2 \div 2</math>  <math>436 \div 2 = 218</math>  <math>218 \div 2 = 109</math></p>
<b>Divide numbers up to 4 digits by a 1-digit number</b> The short division method is introduced for the first time.	<p>There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ...</p>	<p>To divide by 10/100/1,000, I move all the digits ... places to the right. ... is one-tenth/one-hundredth/one-thousandth the size of ...</p> <p><math>120 \div 10 = 12</math>  <math>120 \div 100 = 1.2</math>  <math>120 \div 1,000 = 0.12</math></p>	
<b>Fraction of an amount</b> Bar models support children to understand that to find a fraction of an amount, we divide by the denominator and multiply by the numerator.	<p>to find <math>\frac{1}{\square}</math> of ... , I need to divide by ... and multiply by ...</p> <p><math>\frac{1}{5}</math> of 20 = 4  <math>\frac{3}{5}</math> of 20 = 12</p> <p><math>\frac{1}{4}</math> of 84 = 21  <math>\frac{3}{4}</math> of 84 = 63</p>	<p>If <math>\frac{1}{\square}</math> is ... , then the whole is ... <math>\times</math> ...</p> <p><math>\frac{1}{5}</math> of ... = 6      <math>\frac{4}{7}</math> of ... = 24</p>	