


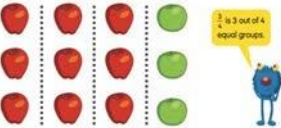

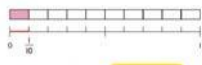

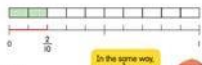


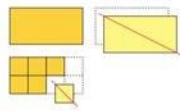

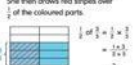


Progression of Key Concepts in Inspire Maths

Fractions, percentages and decimals (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	Inspire Maths 6																																				
<ul style="list-style-type: none"> Compare and order two or more fractions with the same denominator using rectangular strips or model drawings of the same size: <p>Mrs Hill has 3 cakes, all the same size. She cuts each cake into 8 equal parts. Jack eats $\frac{3}{8}$ of a cake, Tai eats $\frac{2}{8}$ of a cake and Miya eats $\frac{5}{8}$ of a cake.</p> <p>Who eats the most? Who eats the least?</p> <p>Jack: $\frac{3}{8}$ is greater than Tai eats more than Jack.</p> <p>Tai: $\frac{2}{8}$ is smaller than $\frac{3}{8}$ and $\frac{5}{8}$. Jack eats less than Tai and Miya.</p> <p>Miya: $\frac{5}{8}$ is greater than Tai eats more than Tai.</p> <p>Miya eats the most. Jack eats the least.</p> Compare and order two or more fractions with different denominators using rectangular strips or model drawings of the same size. Adding and subtracting like fractions. Solving word problems by recalling and applying 'part-whole' and 'adding on' concepts in addition of two fractions using model drawing. Recalling and applying 'part-whole' and 'taking away' concepts in subtraction of fractions using model drawing. 	<ul style="list-style-type: none"> Comparing fractions using the equivalent fraction method: <p>Ruby had $\frac{1}{2}$ of a pie.</p> <p>Peter had $\frac{3}{4}$ of an identical pie.</p> <p>Omar had $\frac{1}{4}$ of another identical pie.</p> <p>Peter had a bigger portion than Ruby. $\frac{3}{4}$ is greater than $\frac{1}{2}$.</p> <p>Omar had a smaller portion than Ruby. $\frac{1}{4}$ is smaller than $\frac{1}{2}$.</p> Adding related fractions (the related fractions are changed to like fractions first). Subtracting related fractions (the related fractions are changed to like fractions first). <p>Key vocabulary</p> <ul style="list-style-type: none"> numerator: TG3B p116 denominator: TG3B p116 equivalent fraction: TG3B p117 simplest form: TG3B p122 portion: TG3B p123 common denominator: TG3B p126 common numerator: TG3B p127 express: TG3B p129 	<ul style="list-style-type: none"> Conversion of fractions relating improper fractions to mixed numbers and converting between the two by separating an improper fraction into a whole and part of a whole, or by division, or by multiplication: <p>Change $\frac{13}{4}$ to a mixed number.</p> <p>$\frac{13}{4}$ is an improper fraction.</p> <p>$\frac{13}{4} = 3$ thirds = 1 third</p> <p>$= \frac{12}{4} + \frac{1}{4}$</p> <p>$= 3 + \frac{1}{4}$</p> <p>$= 3\frac{1}{4}$</p> Adding and subtracting fractions: add two or three related fractions, subtract two related fractions, subtract a fraction from a whole number: <p>Anna and Sarah have an apple each. Anna eats $\frac{2}{3}$ of her apple and Sarah eats $\frac{1}{3}$ of her apple. What fraction of apples do they eat altogether?</p> <p>Anna: $\frac{2}{3}$</p> <p>Sarah: $\frac{1}{3}$</p> <p>They eat $1\frac{1}{3}$ apples altogether.</p> <p>Find the sum of $\frac{1}{2}$ and $\frac{1}{3}$.</p> <p>Always write mixed number and fraction answers in the simplest form.</p> 	<ul style="list-style-type: none"> Subtracting unlike fractions by making a systematic list of the multiples of the denominator and by drawing a model Fractions and division: a whole number when divided by another whole number can result in a whole number with or without a remainder, a proper fraction or a mixed number: <p>2 identical pizzas are shared equally among 3 pupils. What fraction of a pizza will each pupil get?</p> <p>Each pizza is divided into 3 parts equally. Each part is $\frac{1}{3}$ of a pizza.</p> <p>$2 \div 3 = \frac{2}{3}$</p> <p>Each pupil will get $\frac{2}{3}$ of a pizza.</p> <p>2 divided by 3 is the same as $\frac{2}{3}$.</p> Converting fractions to decimals: converting tenths, hundredths and thousandths, converting using long division, converting improper fractions and mixed numbers <p>Express $\frac{2}{10}$ as a decimal.</p> <p>$\frac{2}{10} = \frac{2 \div 10}{10 \div 10} = \frac{0.2}{1} = 0.2$</p> <p>Express $\frac{30}{100}$ as a decimal.</p> <p>$\frac{30}{100} = \frac{30 \div 10}{100 \div 10} = \frac{3}{10} = \frac{3 \div 10}{10 \div 10} = \frac{0.3}{1} = 0.3$</p> <p>Express $\frac{1}{4}$ as a decimal.</p> <p>$\frac{1}{4} = \frac{1 \div 100}{4 \div 100} = \frac{0.25}{1} = 0.25$</p> <p>1 is a factor of 1000. If $1000 \div 1000 = 1$. By converting $\frac{1}{1000} = \frac{1000}{1000000}$ we can express the fraction as a decimal easily.</p> 	<ul style="list-style-type: none"> Comparing ratios: <p>Mr Smith made five mixtures of orange and pineapple juice using different amounts of juice. He recorded them in a table.</p> <table border="1"> <thead> <tr> <th>Mixture</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td>Amount of orange juice (ml)</td> <td>300</td> <td>450</td> <td>600</td> <td>750</td> <td>900</td> </tr> <tr> <td>Amount of pineapple juice (ml)</td> <td>200</td> <td>300</td> <td>400</td> <td>500</td> <td>600</td> </tr> </tbody> </table> <p>Find the ratio of the amount of orange juice to the amount of pineapple juice in each mixture.</p> <table border="1"> <thead> <tr> <th>Mixture</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td>Amount of orange juice : Amount of pineapple juice</td> <td>3:2</td> <td>3:2</td> <td>3:2</td> <td>3:2</td> <td>3:2</td> </tr> </tbody> </table> <p>What can you say about the ratios? We say that the ratio of the amount of orange juice used to the amount of pineapple juice used is the same in each mixture.</p> <p>We can also say that the amount of orange juice used and the amount of pineapple juice used are in a fixed ratio.</p> Word problems (2) <p>Percentage: TG6A Unit 6 p197</p> <ul style="list-style-type: none"> Finding percentages: express a fraction or a decimal as a percentage and vice versa, analyze the parts and whole to express the percentage giving the number of parts: <p>Let's recall.</p> <p>The big square is divided into 100 equal parts. 34 parts are shaded. The shaded parts can be expressed in the following ways:</p> <table border="1"> <thead> <tr> <th>As a fraction</th> <th>As a Decimal</th> <th>As a Percentage</th> </tr> </thead> <tbody> <tr> <td>$\frac{34}{100}$</td> <td>0.34</td> <td>34%</td> </tr> </tbody> </table> Word problems (1) Word problems (2) 	Mixture	A	B	C	D	E	Amount of orange juice (ml)	300	450	600	750	900	Amount of pineapple juice (ml)	200	300	400	500	600	Mixture	A	B	C	D	E	Amount of orange juice : Amount of pineapple juice	3:2	3:2	3:2	3:2	3:2	As a fraction	As a Decimal	As a Percentage	$\frac{34}{100}$	0.34	34%
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Progression of Key Concepts in *Inspire Maths*

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Inspire Maths 2	Inspire Maths 4	Inspire Maths 5	Inspire Maths 6
<p>Key vocabulary:</p> <ul style="list-style-type: none"> fractions: TG2B p56 equal part: TG2B p56 unequal: TG2B p56 whole: TG2B p57 fractional parts: TG2B p61 fractions (one-half to onetwelfth): TG2B p61 fraction story: TG2B p67 like fractions: TG2B p74 	<ul style="list-style-type: none"> Fractions of a set: <p>There are 4 apples. 3 out of the 4 apples are red.</p>  <p>How many of the apples are red? Give your answer as a fraction. $\frac{3}{4}$ of the apples are red.</p> <p>Here is a set of 12 apples. The set of apples is divided into 4 equal groups. 3 out of the 4 groups of apples are red.</p>  <p>$\frac{3}{4}$ is 3 out of 4 equal groups.</p> <p>How many of the apples are red? Give your answer as a fraction. $\frac{3}{4}$ of the apples are red.</p> Word problems Decimals (1): TG4B Unit 9 p6 Understanding tenths: <p>Each whole is divided into ten equal parts. Each part is $\frac{1}{10}$ (one-tenth). We write $\frac{1}{10}$ as 0.1 as a decimal.</p>   <p>0.1 is 1 tenth written as a decimal.</p> <p>decimal point We read 0.1 as zero point one. Its value is 1 tenth.</p>   <p>Two parts is $\frac{2}{10}$ (two-tenths). We write $\frac{2}{10}$ as 0.2 as a decimal.</p> <p>In the same way: $\frac{3}{10}$ as 0.3 and $\frac{4}{10}$ as 0.4.</p> Understanding hundredths Understanding thousandths Comparing and ordering decimals 	<ul style="list-style-type: none"> Adding mixed numbers with or without regrouping Subtracting mixed numbers with or without regrouping <p>Tai bought $2\frac{3}{4}$ m of material. He cut $1\frac{1}{4}$ m to make a bag. How much material did he have left?</p>  <p>To subtract, change $\frac{3}{4}$ and $\frac{1}{4}$ to like fractions first.</p>  $2\frac{3}{4} - 1\frac{1}{4} = 2\frac{6}{4} - 1\frac{1}{4} = 1\frac{5}{4} \text{ m}$ <p>Tai had $1\frac{5}{4}$ m of material left.</p>  Word problems Fractions (2): TG5A Unit 4 p168 Product of proper fractions: multiplying two fractions is the same as finding the fractional part of another fraction; conceptualizing the meaning of multiplying two proper fractions with concrete representation; use of the cancellation (simplification) method to compute the product of two proper fractions; exploring and comparing the product of two whole numbers and the product of two proper fractions <p>Ella draws a rectangle and colours $\frac{2}{3}$ of it blue.</p>  <p>She then draws red stripes over $\frac{1}{3}$ of the coloured parts.</p>  $\frac{2}{3} \text{ of } \frac{1}{3} = \frac{2}{3} \times \frac{1}{3} = \frac{2 \times 1}{3 \times 3} = \frac{2}{9}$ <p>Jack draws an identical rectangle and colours $\frac{2}{3}$ of it blue.</p>  <p>He then draws red stripes over $\frac{1}{3}$ of the coloured parts.</p>  $\frac{2}{3} \text{ of } \frac{1}{3} = \frac{2}{3} \times \frac{1}{3} = \frac{2 \times 1}{3 \times 3} = \frac{2}{9}$ Word problems (1) 	<p>Key vocabulary</p> <ul style="list-style-type: none"> unitary method: TG6A p175

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Inspire Maths 4

- Rounding decimals to the:
 - nearest whole number
 - nearest tenth - nearest hundredth:

The height of a statue is about 8.6 m. Round 8.6 to the nearest whole number.

8.6 is between 8 and 9. It is nearer to 9 than to 8. 8.6 is 9 when rounded to the nearest whole number. So 8.6 = 9.

The mass of these potatoes is 35.2 kg. What is their mass to the nearest kilogram?

35.2 is between 35 and 36. It is nearer to 35 than to 36. 35.2 is 35 when rounded to the nearest whole number. So 35.2 = 35. The mass of potatoes to the nearest kilogram is 35 kg.

- Fractions and decimals: expressing a fraction (whose denominator is a factor of 10 or 100) as a decimal and express a decimal as a fraction in its simplest form:

Express the fraction $\frac{1}{5}$ as a decimal.

So $\frac{1}{5}$ is 0.2 as a decimal.

Here is another way to show $\frac{1}{5} = 0.2$. Look at the fraction bar and the number line.

Express $\frac{1}{4}$ as a decimal.

So $\frac{1}{4}$ is 0.25 as a decimal.

Inspire Maths 5

- Product of an improper fraction and a proper or improper fraction:

Find the product of $\frac{6}{5}$ and $\frac{3}{4}$.

$$\frac{6}{5} \times \frac{3}{4} = \frac{6 \times 3}{5 \times 4} = \frac{18}{20} = \frac{9}{10}$$

- Product of a mixed number and a whole number:

There are 6 children in the Walker family. Each child is given $1\frac{1}{2}$ sandwiches. How many sandwiches did they get altogether?

$$6 \times 1\frac{1}{2} = 6 \times \frac{3}{2} = \frac{6 \times 3}{2} = \frac{18}{2} = 9$$

9 groups of 1

- Word problems (2)
- Dividing a fraction by a whole number:

Half of a cottage pie is shared equally among 3 children. What fraction of the cottage pie will each child get?

Method 1

$$\frac{1}{2} \div 3 = \frac{1}{6}$$

The model above shows that each child will get $\frac{1}{6}$ of the cottage pie.

Method 2

$$\frac{1}{2} \div 3 = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

Each child will get $\frac{1}{6}$ of the cottage pie.

Method 3

$$\frac{1}{2} \div 3 = \frac{1}{2} \times \frac{2}{2} \times \frac{1}{3} = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

Each child will get $\frac{1}{6}$ of the cottage pie.

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Inspire Maths 4	Inspire Maths 5
<p><u>Decimals (2): TG4B Unit 10 p77</u></p> <ul style="list-style-type: none"> Refer to addition and subtraction progression document Refer to multiplication and division progression document <p><u>Key vocabulary</u></p> <ul style="list-style-type: none"> mixed number: TG4A p137 simplify: TG4A p141 cancellation: TG4A p141 improper fraction: TG4A p142 conversion: TG4A p146 	<ul style="list-style-type: none"> Word problems (3) <p><u>Decimals: TG5B Unit 7 p2 p28</u></p> <ul style="list-style-type: none"> Converting fractions to decimals: converting tenths and hundredths, converting thousandths • Using a calculator Word problems <p><u>Decimals: TG5B Unit 7 p6</u></p> <ul style="list-style-type: none"> Refer to multiplication and division progression document <p><u>Measurement: TG5B Unit 8 p53</u></p> <ul style="list-style-type: none"> Converting a measurement from a larger unit to a smaller unit • Converting a measurement from a smaller unit to a larger unit <p><u>Percentage: TG5B Unit 10 p108</u></p> <ul style="list-style-type: none"> Per cent Converting more fractions to percentages Percentage of a quantity Word problems <p><u>Key vocabulary</u></p> <ul style="list-style-type: none"> unlike fractions: TG5A p116 proper fractions: TG5A p116 per cent: TG5B p108