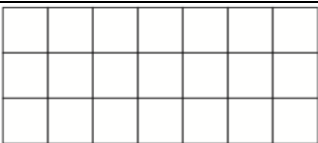
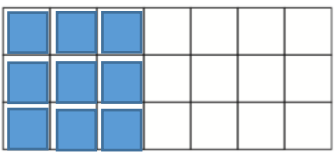


Topic: Fractions, Decimals, Percentages

Topic/Skill	Definition/Tips	Example
Fraction	A mathematical expression representing the division of one integer by another. Fractions are written as two numbers separated by a horizontal line .	$\frac{2}{7}$ is a 'proper' fraction. $\frac{9}{4}$ is an 'improper' or 'top-heavy' fraction.
Numerator	The top number of a fraction.	In the fraction $\frac{3}{5}$, 3 is the numerator.
Denominator	The bottom number of a fraction.	In the fraction $\frac{3}{5}$, 5 is the denominator.
Unit Fraction	A fraction where the numerator is one and the denominator is a positive integer.	$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ etc. are examples of unit fractions.
Fraction of a shape	Count parts of the shape equal to the denominator of the fraction and shade in parts equal to the numerator . Repeat this process until all parts of the shape have been counted.	Shade $\frac{3}{7}$ of:  There are 7 boxes per row so we shade in 3 boxes per row: 
Reciprocal	The reciprocal of a number is 1 divided by the number . The reciprocal of x is $\frac{1}{x}$ When we multiply a number by its reciprocal we get 1. This is called the 'multiplicative inverse'.	The reciprocal of 5 is $\frac{1}{5}$ The reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$, because $\frac{2}{3} \times \frac{3}{2} = 1$
Mixed Number	A number formed of both an integer part and a fraction part .	$3\frac{2}{5}$ is an example of a mixed number.
Simplifying Fractions	Divide the numerator and denominator by the highest common factor.	$\frac{20}{45} = \frac{4}{9}$
Equivalent Fractions	Fractions which represent the same value .	$\frac{2}{5} = \frac{4}{10} = \frac{20}{50} = \frac{60}{150} \text{ etc.}$
Comparing Fractions	To compare fractions, they each need to be rewritten so that they have a common denominator .	Put in to ascending order: $\frac{3}{4}, \frac{2}{3}, \frac{5}{6}, \frac{1}{2}$. Equivalent: $\frac{9}{12}, \frac{8}{12}, \frac{10}{12}, \frac{6}{12}$

	Ascending means smallest to biggest . Descending means biggest to smallest .	Correct order: $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$
Fraction of an Amount	Divide by the bottom , times by the top	Find $\frac{2}{5}$ of £60 $60 \div 5 = 12$ $12 \times 2 = 24$
Adding or Subtracting Fractions	Find the LCM of the denominators to find a common denominator. Use equivalent fractions to change each fraction to the common denominator . Then just add or subtract the numerators and keep the denominator the same .	$\frac{2}{3} + \frac{4}{5}$ Multiples of 3: 3, 6, 9, 12, 15.. Multiples of 5: 5, 10, 15.. LCM of 3 and 5 = 15 $\frac{2}{3} = \frac{10}{15}$ $\frac{4}{5} = \frac{12}{15}$ $\frac{10}{15} + \frac{12}{15} = \frac{22}{15} = 1\frac{7}{15}$
Multiplying Fractions	Multiply the numerators together and multiply the denominators together. Then simplify .	$\frac{3}{8} \times \frac{2}{9} = \frac{6}{72} = \frac{1}{12}$
Dividing Fractions	'Keep it, Flip it, Change it – KFC' Keep the first fraction the same Flip the second fraction upside down Change the divide to a multiply Multiply by the reciprocal of the second fraction.	$\frac{3}{4} \div \frac{5}{6} = \frac{3}{4} \times \frac{6}{5} = \frac{18}{20} = \frac{9}{10}$
Mixed number arithmetic	Use the same rules for adding , subtraction , multiplying , and dividing fractions but convert the mixed numbers to improper fractions first.	$2\frac{1}{3} + 1\frac{1}{5}$ $\frac{7}{3} + \frac{6}{5} = \frac{35}{15} + \frac{18}{15}$ $\frac{53}{15} = 3\frac{8}{15}$
Percentage	Number of parts per 100.	31% means $\frac{31}{100}$
Finding 10%	To find 10% , divide 100% by 10	10% of £36 = $36 \div 10 = £3.60$
Finding 1%	To find 1% , divide 100% by 100	1% of £8 = $8 \div 100 = £0.08$
Percentage Change	$\frac{\text{Difference}}{\text{Original}} \times 100\%$	A games console is bought for £200 and sold for £250. $\% \text{ change} = \frac{50}{200} \times 100 = 25\%$

Fractions to Decimals	Divide the numerator by the denominator using the bus stop method.	$\frac{3}{8} = 3 \div 8 = 0.375$
Decimals to Fractions	Write as a fraction over 10, 100 or 1000 and simplify.	$0.36 = \frac{36}{100} = \frac{9}{25}$
Percentages to Decimals	Divide by 100	$8\% = 8 \div 100 = 0.08$
Decimals to Percentages	Multiply by 100	$0.4 = 0.4 \times 100\% = 40\%$
Fractions to Percentages	Percentage is just a fraction out of 100. Make the denominator 100 using equivalent fractions. When the denominator doesn't go in to 100, use a calculator and multiply the fraction by 100.	$\frac{3}{25} = \frac{12}{100} = 12\%$ $\frac{9}{17} \times 100 = 52.9\%$
Percentages to Fractions	Percentage is just a fraction out of 100. Write the percentage over 100 and simplify.	$14\% = \frac{14}{100} = \frac{7}{50}$
Recurring Decimal to Fraction	Set the decimal equal to x. Multiply x by a multiple of 10 until you have two x values with the same recurring decimal. Subtract the two x values from one another and divide by the number of xs left.	$x = 0.1212121212\dots$ $100x = 12.1212121212\dots$ $100x - x = 12.121212 - 0.121212$ $99x = 12$ $x = \frac{12}{99} = \frac{4}{33}$
Increase or Decrease by a Percentage	Non-calculator: Find the percentage and add or subtract it from the original amount. Calculator: Find the percentage multiplier and multiply.	<u>Increase 500 by 20% (Non Calc):</u> $10\% \text{ of } 500 = 50$ so $20\% \text{ of } 500 = 100$ $500 + 100 = 600$ <u>Decrease 800 by 17% (Calc):</u> $100\% - 17\% = 83\%$ $83\% \div 100 = 0.83$ $0.83 \times 800 = 664$
Percentage Multiplier	The number you multiply a quantity by to increase or decrease it by a percentage .	The multiplier for increasing by 12% is 1.12 The multiplier for decreasing by 12% is 0.88 The multiplier for increasing by 100% is 2.
Reverse Percentage	Find the correct percentage given in the question , then work backwards to find 100%	A jumper was priced at £48.60 after a 10% reduction. Find its original price.

	Look out for words like ' before ' or ' original '	$100\% - 10\% = 90\%$ $90\% = £48.60$ $1\% = £0.54$ $100\% = £54$
Simple Interest	Interest calculated as a percentage of the original amount.	$£1000$ invested for 3 years at 10% simple interest. $10\% \text{ of } £1000 = £100$ $\text{Interest} = 3 \times £100 = £300$
Compound interest	Interest calculated as a percentage of the current amount. Find the multiplier for the increase/decrease and raise it to the power of the number of times this interest is applied. Then multiply the original value by this.	$£1000$ invested for 3 years at 10% compound interest. Multiplier for 10% increase is 1.1 $£1000 \times 1.1^3 = 1331$

Where else is the FDP topic used:

Algebra Probability

Ratio and Proportion

Links to other subjects: