



Calculating fractions, decimals and percentages

Calculating fractions, decimals and percentages.	Content of the Unit	Assumed prior learning (tested at the beginning of the unit)
<p>Number of lessons (between 6 & 9)</p>	<ul style="list-style-type: none"> • Recognise when a fraction (percentage) should be interpreted as a number • Recognise when a fraction (percentage) should be interpreted as a operator • Identify the multiplier for a percentage increase or decrease when the percentage is greater than 100% • Use calculators to increase an amount by a percentage greater than 100% • Solve problems involving percentage change • Solve original value problems when working with percentages • Solve financial problems including simple interest • Understand the meaning of giving an exact solution • Solve problems that require exact calculation with fractions 	<ul style="list-style-type: none"> • Identify if a fraction is terminating or recurring • Recall some decimal and fraction equivalents (e.g. tenths, fifths, eighths) • Write a decimal as a fraction • Write a fraction in its lowest terms by cancelling common factors • Identify when a fraction can be scaled to tenths or hundredths • Convert a fraction to a decimal by scaling (when possible) • Use a calculator to change any fraction to a decimal • Write a decimal as a percentage • Write a fraction as a percentage
Assessment points and tasks	Written feedback points	Learning Outcomes (tested at the end and related to subject competences)
<p>Pre- test Post- test (half term exams/ mock exams)</p>	<p>Diagnostic marking (TF)-(green sticker)-(PF)/(SF) Traffic lighting of exam papers For diagnostic marking use the topics in the adjacent 'Learning Outcomes' box. Use diagnostic marking in revision lesson.</p>	<p>Pupils can:</p> <ul style="list-style-type: none"> • Recognise when a fraction (percentage) should be interpreted as a number • Recognise when a fraction (percentage) should be interpreted as a operator • Identify the multiplier for a percentage increase or decrease when the percentage is greater than 100% • Use calculators to increase an amount by a percentage greater than 100% • Solve problems involving percentage change • Solve financial problems including simple interest • Understand the meaning of giving an exact solution



Lesson	Clear learning intentions	Clear success criteria	Hook	Presentation of content	Guided practice	Independent practice (homework)	Closure
1	One number as a Fraction/ percentage of another number.	Be able to write one number as a Fraction/percentage of another number.	Warm up GCSE FOUNDATION P104	Discuss example 10 Page 104 GCSE FOUNDATION OR P269 example 12,13 and 14 Collins Foundation GCSE	GCSE FOUNDATION P104 Q7, Q10-14	Mathswatch old clip 53 and 54	Reasoning GCSE FOUNDATION Page 113 Q11
2	To be able to calculate percentages of amounts.	To be able to calculate percentages with an appropriate decimal multiplier. E.g. 110% - multiply by 1.1 Through decimal-percentage conversion, be able to calculate percentages of amounts (both greater than and less than 100%)	Warm up GCSE FOUNDATION Q1-5	BOARDWORKS KS3 N7 S29-38 GCSE FOUNDATION P106-107 Key Point 10	GCSE FOUNDATION P106-107 Q6-20	Active learn Homework practice and support: Foundation 4.7 OR Mathswatch old Clip 51 and 52	Plenary with mini whiteboards associating percentages with the appropriate decimal multiplier.
3 a n d 4	To be able to calculate percentage increases and decreases. (Two lessons)	Can associate a percentage increase / decrease with the appropriate decimal multiplier. Can see the link between the above LO and the previous lesson's work (e.g. 15% increase is 115% of a given amount) Can solve percentage change problems.	Fluency GCSE FOUNDATION p108 Q1 Page 109.	BOARDWORKS KS3 N7 S46-57 GCSE FOUNDATION P109-110 Key point 12 and 13 Q2-11	GCSE FOUNDATION P109-110 Q1-11	Mathswatch old clip 93	Exit ticket: GCSE FOUNDATION P109-110 Q12
5 a n d 6	Solve financial problems involving simple interest and VAT	Understand simple interest Be able to tackle worded financial problems involving interest	Recap of decimal multipliers. Convert both ways between a set of given percentages and decimal multipliers (e.g 105% and 1.05)	GCSE FOUNDATION p108 Key point 11 & Example 11	GCSE FOUNDATION p108 Q21-25 and Q14 -19 for VAT		Design their own simple interest real life worded problem. Swap books with partner and answer each other's question.



7	Solve financial percentage change problems involving income tax and value added tax	To be able to tackle worded problems involving percentage change To relate percentage problems to tangible problems involving VAT and income tax	Match percentage changes to appropriate decimal multipliers (e.g. 5% increase to 1.05)	BOARDWORKS KS3 N7 S46-57 GCSE Foundation p110	GCSE Foundation p110 Q13-19		Design their own percentage change real life worded problem. Swap books with partner and answer each other's question.
8	Homework & Feedback	Mark and go through set homework. Tackle any misconceptions Give yellow and orange stickers for peer and self-feedback,					
9	Feedback response and Revision	Students respond to given teacher feedback green stickers. Students revise according to their needs using GCSE FOUNDATION and/or mathswatch questions.			Practise working out decimal multipliers for a percentage increase / decrease. Ask students to write five percentage increase or decrease questions on a sheet of paper (for example, increase an amount by 43%). Pass the sheet on to a different person in the class. This student works out the decimal multipliers for the questions (e.g. 1.43 in the question above), writes five more questions, then passes the paper to another, different student. The third student		Discuss Which question did you find easiest/hardest and why? Could you (or should you) have used a different method? How do you approach really wordy questions? Discuss student responses. <i>What real-life things appreciate in value and why? What things depreciate in value and why?</i>



					<p>checks the answers for the first five questions, answers the second five questions and writes five more questions. Repeat until the paper has reached the fifth student. Encourage students to use a mixture of increase and decrease questions.</p> <p>Now put students into groups of three or four for them to check and discuss the answers on the sheets of paper.</p> <p>Then discuss strategies for dealing with difficult questions as a class.</p>		
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