Subject	Year	Month	
Mathematics	8	February	Balcarras From strength to strength

Topic:

MULTIPLIER METHOD

6 LESSONS

Content (Intent)

Prior Learning

Y7 Jan:

- Write '**a**' as a percentage of '**b**'
- percentage change (profit, loss)
  = actual change ÷ original amount x 100
- Non Calc method to Increase or decrease by an easy percentage

Y7 May:

- Apply the four operations to proper fractions, improper fractions and mixed numbers

Future Learning (GCSE)

Y9 (end of year), 10 and 11

- Find a percentage of a quantity using a multiplier
- Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used
- Find the original amount given the final amount after a percentage increase or decrease (reverse percentages), including VAT

Objectives

- Identify the multiplier for a percentage increase or decrease (incl. greater than 100%)
- Use calculators to increase an amount by a percentage (incl. greater than 100%)
- Solve **original value** problems when working with percentages
- Solve financial problems including **simple interest**
- Solve problems involving **percentage change (**= actual change ÷ original amount x 100)
- Solve problems that require exact calculation with fractions

For teaching purposes

Possible Questions

- Convince me that the multiplier for a 150% increase is 2.5
- Kenny buys a poncho in a 25% sale. The sale price is £40. Kenny thinks that the original is £50. Do you agree with Kenny? Explain your answer.
- Jenny thinks that increasing an amount by 200% is the same as multiplying by 3. Do you agree with Jenny? Explain your answer.

Misconceptions

- may think that the multiplier for a 150% increase is 1.5
- may think that increasing an amount by 200% is the same as doubling.
- may be able to solve original value problems confidently during a lesson in which this is the focus. However, when it is necessary to identify the type of percentage problem, many pupils will apply a method for a more simple percentage increase / decrease problem.

Pedagogical notes (implementation)

Use of CALCULATOR

Only **simple interest** should be explored in this unit. Compound interest will be developed later.

When adding and subtracting mixed numbers pupils are taught to convert to improper fractions as a general strategy

use the horizontal fraction bar notation at all times

Notation
Horizontal bar for fractions

How will understanding be assessed & recorded (Impact)

8BAM10 Percentages
End of term Assessment in March
End of Year Assessment in June

How can parents help at home?

MathsWatch clips (Qualification KS3 & GCSE)
R7, R9b, R12, N32, 109

Further reading/discussion

Reading / Enrichment

KM: Stick on the Maths: Proportional reasoning

KM: Stick on the Maths: Multiplicative methods

KM: Percentage identifying

NRICH: One or both

NRICH: Antiques roadshow

Literacy

Proper fraction, improper fraction, mixed number
Simplify, cancel, lowest terms
Percent, percentage
Percentage change
Original amount
Multiplier
(Simple) interest
Exact

Numeracy Links

Careers Links

Financial adviser
Bank Clerk
Entrepreneur
Car sales manager
Market Trader
Auctioneer
Sports Coach (performance data)
Chancellor of the Exchequer