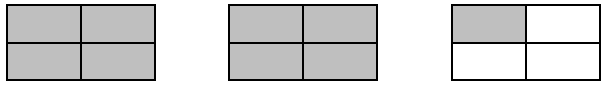
MATHEMATICS Unit 12: Calculating fractions, decimals and percentages	Year Group: 8 set 4-5

Key Vocabulary

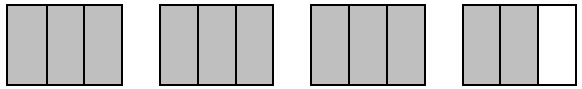
Proper fraction	A fraction where the numerator is smaller than the denominator e.g. 2/3
Improper fraction	A fraction where the numerator is bigger than the denominator e.g. 5/2 Also known as a vulgar or top-heavy fraction
Mixed Number	A whole number and fraction together, e.g. 2 ½ Improper fractions can be changed to mixed numbers and back again. 5/2 = 2 ½
Equivalent Fractions	Two fractions that represent the same amount. Multiplying or dividing the top and bottom of a fraction by the same number gives an equivalent fraction. Dividing gives a simpler fraction
Percentage	A value out of 100. E.g. 23% = 23/100 = 0.23
Increase	Make a value bigger by a given fraction or percentage
Decrease	Make a value smaller by a given fraction or percentage
Multiplier	A decimal that can be used to multiply a given value to give the result of a percentage increase or decrease

Key facts / Diagrams



2 ¼ = 9/4
2x4 = 8 8+1 = 9
Total = 9 quarters = 9/4

Change 11/3 to a mixed number:
11 ÷ 3 = 3 remainder 2 = 3 2/3



50%	= ½	= ÷ 2
25%	= ¼	= ÷ 4
75%	= ¾	= ÷ 4 then x 3
10%	= 1/10	= ÷ 10
20%	= 1/5	= either ÷ 5 or find 10% and x 2
5%	= 1/20	= either ÷ 20 or find 10% and ÷ 2

20% increase = original 100% + 20% = 120%
20% decrease = original 100% - 20% = 80%

¼ increase = original + ¼ = 5/4
¼ decrease = original – ¼ = ¾

Common misconceptions

- You can't have more than 100%. Not realising that while in real life contexts over 100% might not make sense, but through a percentage increase you can have over 100%.
- When asked to multiply a fraction by a whole number, e.g. multiply ¾ by 2, multiplying top and bottom by 2 and just getting an equivalent fraction.
  Proper method: $2 \times \frac{3}{4} = \frac{2 \times 3}{1} = \frac{6}{4} = \frac{3}{2} = 1\frac{1}{2}$
- When multiplying two fractions, thinking you need to start by changing them to fractions with the same denominator.

Worked examples

Increase £200 by 1/4 :
Find ¼ of £200 = £200 ÷ 4 =£50
£200 + £50 = £250
OR: £200 x 5 ÷ 4 = £1,000 ÷ 4 = £250
OR: £200 ÷ 4 x 5 = £50 x 5 = £250

Decrease £300 by 20%
This leaves 80%.
Find 10%: £300 ÷ 10 = £30
80% = £30 x 8 = £240
OR: £300 x 0.8 = £240

Increase 40m by 30%
Multiplier = 1.3
40 X 1.3 = 52m