Y8 Maths Knowledge Organiser Topic 11: Percentages 2

What must I be able to do?

You may need to revise the following:

- Year 7 Topic 10: Percentages 1

New content:

- ☐ Use percentages greater than 100%
- ☐ Express one quantity as a percentage of another
  - ➢ Mathswatch N39a
- ☐ Compare values using percentages
  - ➢ Mathswatch N39b
- ☐ Use multipliers to find a percentage of a number
- ☐ Use multipliers to increase and decrease by a percentage
  - ➢ Mathswatch R9b
- ☐ Reverse percentages: find the original quantity after a percentage increase or decrease
  - ➢ Mathswatch 110 (GCSE)

Key vocabulary

Multiplier	The decimal value you can multiply a number by to quickly calculate a percentage, or percentage increase and decrease.
Reverse percentage	Working backwards after a percentage change to find the original value.

Writing one number as a percentage of another

Divide the first number by the second to turn into a decimal then multiply by 100 to change into a percentage.

e.g. Simon scores 30 out of 75 in a test. What percentage is this?

$$\frac{30}{75} \times 100 = 40\%$$

Comparing values using percentages

e.g. Mark took 2 exams. In Maths he scored 45 out of 80 and in English he scored 20 out of 38. In which exam did he do best?

Maths: $\frac{45}{80} \times 100 = 56.25\%$

English: $\frac{20}{38} \times 100 = 52.6\%$

He scored higher in the Maths exam.

Multipliers

To quickly find a percentage of something, change the percentage into a decimal by dividing by 100. This is the multiplier. Then multiply your value by this decimal.

e.g. Find 18% of 320.

Multiplier: $18 \div 100 = 0.18$

$0.18 \times 320 = 57.6$ ← This is 18% of 320

e.g. Decrease 1820 by 75%

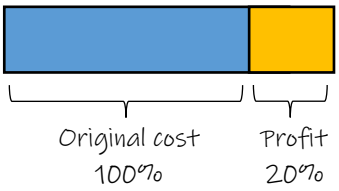
Multiplier: $25 \div 100 = 0.25$ ← If you decrease 100% by 75% there is 25% left

$0.25 \times 1820 = 455$

Reverse percentages

First work out what percentage is given in the question. Then scale to 1% and back to 100% to find the original amount.

e.g. A car is sold for £4500. This is a 20% profit. How much was the car bought for originally?



In total we have 120%.

120% = £4500

÷ 120 ÷ 120

1% = £37.50

× 100 × 100

100% = £3750

e.g. A pair of jeans is bought in a 30% off sale and cost £39.20. How much did they cost originally?

The sale price must represent 70% of the original price.

70% = £39.20

÷ 70 ÷ 70

1% = £0.56

× 100 × 100

100% = £56