Knowledge Organiser: Percentages

What you need to know:

Percentage of an amount – Non calculator

To calculate any percentage it is useful to start with 10%.

30% of 120: 10% = 120 ÷ 10 = 12
30% = 3 x 12 = 36

To find 10% we divide by 10.

To find 30% we multiply 10% by 3.

45% of 80: 10% = 80 ÷ 10 = 8 5% = 8 ÷ 2 = 4
40% = 4 x 8 = 32
45% = 40% + 5% = 32 + 4 = 36

5% is half of 10% so we divide by 2.

To find 1% we divide the starting amount by 100.
1% of 30 = 30 ÷ 100 = 0.3.

Percentage of an amount – Calculator

When we have a calculator we can use a multiplier; this is the decimal equivalent of the percentage.

80% of 120: 80% = 0.80
80% of 120 = 0.80 x 120 = 96

Change the percentage to a decimal and then multiply.

33% of 90: 33% = 0.33
33% of 90 = 0.33 x 90 = 29.7

Be careful if the percentage is less than 10.

4% of 88: 4% = 0.04
4% of 88 = 0.04 x 88 = 3.52

Take care using decimal percentages, still divide by 100.

12.5% of 42: 12.5% = 0.125
12.5% of 42 = 0.125 x 42 = 5.25

Key Terms:

Percentage: Out of one hundred.
Decimal: A decimal is a fraction written in a special form e.g. 0.6.
Multiplier: This is used to calculate percentages when we have a calculator.
Increase: When an amount goes up.
Decrease: When an amount goes down.
Simple interest: The amount of interest is fixed over period of time.
Compound interest: The interest earned over time will continue to increase.

Maths watch clip numbers

Percentage of Amount: 86, 87

Percentage Increase/Decrease: 108

Simple and Compound Interest: 111, 164

You need to be able to:

- Calculate a percentage of an amount.
- Use a multiplier to calculate a percentage of an amount.
- Calculate a percentage increase.
- Calculate a percentage decrease.
- Calculate simple interest.
- Calculate compound interest.

Knowledge Organiser: Percentages

What you need to know:

Percentage increase and decrease

Increase: To calculate a percentage increase we calculate the percentage and add the value on to the original amount.

Non Calculator: Increase 70 by 65%

10% = 70 ÷ 10 = 7 5% = 7 ÷ 2 = 3.5

60% = 6 x 7 = 42

65% = 60% + 5% = 42 + 3.5 = 45.5

Calculate 65% by splitting into 10% and 5% and then add the answer on to the original amount.

70 + 45.5 = **115.5**

Calculator: Increase 130 by 26%

Calculate 26% using a multiplier and add this answer onto the original amount.

26% of 130 = 0.26 x 10 = 33.8

130 + 33.8 = **163.8**

Decrease: To calculate a percentage decrease we calculate the percentage and subtract the value off the original amount.

Non Calculator: Decrease 20 by 35%

10% = 20 ÷ 10 = 2 5% = 2 ÷ 2 = 1

30% = 3 x 2 = 6

35% = 30% + 5% = 6 + 1 = 7

Calculate 35% by splitting into 10% and 5% and then subtract the answer off the original amount.

20 - 7 = **13**

Calculator: Decrease 65 by 14%

Calculate 14% using a multiplier and subtract this answer off the original amount.

14% of 65 = 0.14 x 65 = 9.1

65 – 9.1 = **55.9**

Simple interest

To calculate simple interest we start by calculating the percentage and multiplying it by the period of time.

Example: £250 is in a bank account which is paying 5% simple interest per year. How much will be in the bank account at the end of 3 years?

5% = 0.05

0.05 x 250 = £12.50

Multiply by 3 because the question asks for 3 years.

3 x £12.50 = £37.50.

Add your answer to the original amount in the question.

£250 + £37.50 = £287.50

Compound interest

To calculate compound interest we use powers as the amount changes at the end of each year.

Example: £250 is in a bank account which is paying 4% compound interest per year. How much will be in the bank account at the end of 5 years?

Interest means an increase so 100% + 4% = 104% which as a multiplier is 1.04

4% increase = 1.04

Power of 5 because the questions asks for 5 years.

1.04^5 x 250 = £304.16

This is the final answer