

Maths Knowledge Organiser

Year 9 Number



Fraction, decimals and percentages

$$32\% \rightarrow \frac{32}{100} \rightarrow \frac{8}{25}$$

$$\frac{5}{8} \rightarrow 5 \div 8 \rightarrow 8 \overline{) 5.0000} \rightarrow 0.625$$

$$32\% \rightarrow 32 \div 100 = 0.32$$

$$0.6 \rightarrow 0.6 \times 100 = 60\%$$

Fraction of an amount

Divide by the denominator and multiply by the numerator

$$\frac{2}{5} \text{ of } 65 \rightarrow 65 \div 5 = 13 \rightarrow 13 \times 2 = 26$$

Percentage of an amount

$$10\% \rightarrow \div 10$$

$$1\% \rightarrow \div 100$$

$$34\% \text{ of } 120$$

$$10\% = 12$$

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$$10\% = 12$$

$$1\% = 1.2$$

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$$1\% = 1.2$$

$$1\% = 1.2$$

$$34\% = 40.8$$

To increase/decrease work it out then add/subtract it from original amount.

Standard form

A scientific way of writing large/small numbers $a \times 10^b$

$$450200 = 4.502 \times 10^5$$

To the power of 5 as there are 5 numbers after the first

$$0.00507 = 5.07 \times 10^{-3}$$

To the power of -3 as there are 3 zeros at the start

Ordering and comparing fractions

Make denominator the same

$$\frac{1}{3} \frac{2}{5} \frac{1}{10} \rightarrow \frac{10}{30} \frac{12}{30} \frac{3}{30} \text{ In order } \frac{1}{10} \frac{1}{3} \frac{2}{5}$$

Adding and subtract fractions

Make denominator the same

$$\frac{4}{5} + \frac{2}{3} = \frac{12}{15} + \frac{10}{15} = \frac{22}{15} = 1 \frac{7}{15}$$

Multiplying and dividing fractions

When dividing, flip second fractions and multiply

To multiply just multiply top and bottom numbers

$$\frac{2}{3} \div \frac{1}{5} = \frac{2}{3} \times \frac{5}{1} = \frac{10}{3} = 3 \frac{1}{3}$$

Repeat percentage change

Change percentage to decimal and multiply

Increase 450 by 30% then decrease by 12%

$$130\% \rightarrow 1.3 \quad 88 \rightarrow 0.88$$

$$450 \times 1.3 \times 0.88 = 514.8$$

Compound interest

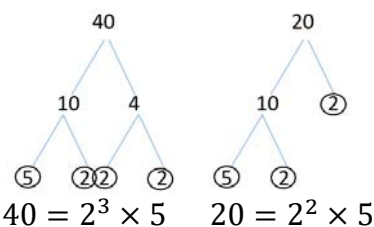
Is the same as repeat percentage but there is a shortcut. I invest £4000 in bank account which earns 4% interest for 7 years.

$$4000 \times 1.04^7 = 5263.73$$

Prime factors, HCF/LCM

Split a number into any 2 numbers which multiply together to make number above, then circle the prime numbers

Prime numbers - 2,3,5,7,11,13,17,19,23,29...



HCF = middle
 $2 \times 2 \times 5 = 20$
 LCM = All numbers
 $2 \times 2 \times 2 \times 5 = 40$