

Negatives

SAME SIGN = POSITIVE

DIFFERENT SIGN = NEGATIVE

Examples

$$5 + 3 = 5 - 3 = 2$$

$$5 - 3 = 5 + 3 = 8$$

$$-5 \times 3 = -15$$

$$5 \times -3 = -15$$

$$-5 \times -3 = 15$$

$$-10 \div 2 = -5$$

$$10 \div -2 = -5$$

$$-10 \div -2 = 5$$

BIDMAS

The order in which you perform operations

1. Brackets ()

2. Indices $x^2 \sqrt{x}$

3. Division/Multiplication $\div \times$

4. Addition/Subtraction $+ -$

Examples

$$5 + 6 \times 2 - 3^2 = 5 + 12 - 9$$

$$= 17 - 9 = 8$$

$$3(5 - 2) + 6 \times 2 \div 3 = 3 \times 3 + 12 \div 3$$

$$= 9 + 4 = 13$$

If same importance, work from left to right

Factors, Multiples, HCF & LCM

FACTORS divide into the original

factor of 10 $\rightarrow 1, 2, 5, 10$

$$1 \times 10$$

HCF = highest common factor

$$\frac{15}{3 \times 5} \quad \frac{20}{4 \times 5} \quad \text{HCF} = 5$$

MULTIPLES multiply (in the times table)

first 6 multiples of 10 are 10 20 30 40 50 60

LCM = lowest common multiple

LCM of 7 and 5 = 35

5 10 15 20 25 30 35 The first number to appear in both lists

7 14 21 28 35

Prime Factorisation

Prime numbers have ONLY 2 factors

1 is NOT a prime number

First 10 primes are 2 3 5 7 11 13 17 19 23 29

Prime factorisation

Put number at top & split into factors

circle all the primes

$$280$$

$$2 \times 140$$

$$2 \times 70$$

$$2 \times 35$$

$$280 = 2 \times 2 \times 2 \times 5 \times 7$$

$$= 2^3 \times 5 \times 7 \rightarrow \text{index form}$$

Topic - Number

Fractions + / -

Denominators must be the same

+ / - the numerators ONLY

Remember: when ordering fractions, ALWAYS ensure denominators are the same

$$\frac{1}{3} + \frac{2}{7} = \frac{1 \times 7}{3 \times 7} + \frac{2 \times 3}{7 \times 3} = \frac{7}{21} + \frac{6}{21} = \frac{13}{21}$$

$$\frac{17}{3} = 17 \div 3 = 5 \text{ r } 2$$

$$= 5 \frac{2}{3} \div \text{by HCF}$$

$$2 \frac{3}{4} = 2 + \frac{3}{4} = \frac{8}{4} + \frac{3}{4} = \frac{11}{4}$$

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Rounding, Significant Figures & Estimating

Rounding

Identify the place value you want to look at the number to the right

0, 1, 2, 3, 4 $\rightarrow$ stays same

5, 6, 7, 8, 9 $\rightarrow$ increase by 1

Example round 8734 to 1SF 8734 $\approx$ 9000

3SF 8734 $\approx$ 8730

Significant Figures The first non-zero digit

Example round 8734 to 1SF 8734 $\approx$ 9000

3SF 8734 $\approx$ 8730

Estimating round every number to 1SF

$\rightarrow$ the calculate MUST round 1st

Error Intervals

Minimum = Rounded - half a unit

Maximum = Rounded + half a unit

Examples

$$430 \text{ rounded to nearest } 10$$

$$425 \leq x < 435$$

$$\text{units} = 10$$

$$\text{so half a unit} = \frac{10}{2} = 5$$

$$\text{Always in the form } \leq x <$$

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Standard Form

0 can be positive or negative

must be between 1 and 10 $1 \leq a < 10$

Examples places

34200 into standard form

= 3.42 $\times 10^4$ the 3 has increased

0.00381

= 3.81 $\times 10^{-3}$ the 3 has decreased

Laos of indices

(8 $\times 10^3$) $\times$ (4 $\times 10^3$)

= 8 $\times 4 \times 10^3 \times 10^3$

= 32 $\times 10^6$ = 3.2 $\times 10^6$

got 1 bigger

got 1 smaller

Grade 5