

4) How many times larger is 4.06×10^4 than 3.2×10^2 ?

$$\frac{4.06 \times 10^4}{3.2 \times 10^2} = \frac{4.06}{3.2} \times 10^2$$
$$= 1.26875 \times 10^2$$

or ≈ 127 times larger

Solving Linear Equations

Steps: Get rid of fractions.
Expand brackets
Combine like terms
Variables on the same side solve

Examples:

1) $\frac{4x}{5} = 8$

$$4x = 40$$

$$x = 10$$

2) $\frac{5x}{3} - 4 = 6$

$$\frac{5x}{3} = 10$$

$$x = 10 \times \frac{3}{5}$$
$$x = 6$$

3) $6 - 2x = 8$
 $-2x = 2$
 $x = -1$

4) $3(x + 9) - 8 = 9$
 $3x + 27 - 8 = 9$
 $3x = -10$
 $x = \frac{-10}{3}$

5) $5x + 5 = 3 - 2x$
 $7x + 5 = 3$
 $7x = -2$
 $x = \frac{-2}{7}$

Equations with Fractions

- Find the lowest common denominator
- Make each fraction have the same denominator
- Multiply to get rid of the fractions.

Examples:

$$1) \frac{n}{3} + \frac{n}{4} = 5$$

$$\frac{n}{3} \times \frac{4}{4} + \frac{n}{4} \times \frac{3}{3} = 5 \quad \text{turn into } \frac{1}{12}\text{'s}$$

$$\frac{4n}{12} + \frac{3n}{12} = 5 \quad \times 12$$

$$4n + 3n = 60$$

$$7n = 60$$

$$n = \frac{60}{7} \text{ or } 8.57 (2.d.p.)$$

$$2) \frac{5b-2}{4} + 3 = \frac{1}{2}$$

$$\frac{5b-2}{4} + 3 = \frac{1}{2} \times \frac{2}{2} \quad \text{make into } \frac{1}{4}\text{'s}$$

$$\frac{5b-2}{4} + 3 = \frac{2}{4} \quad \times 4 \text{ both sides}$$

$$5b - 2 + 12 = 2$$

$$5b + 10 = 2$$

$$5b = -8$$

$$b = \frac{-8}{5} \text{ or } -1.6$$

$$3) \frac{7}{3m} = 6 - \frac{5}{m}$$

$$\frac{7}{3m} = 6 - \frac{5}{m} \times \frac{3}{3} \quad \text{make into } \frac{1}{3m} \text{'s.}$$

$$\frac{7}{3m} = 6 - \frac{15}{3m} \quad \times 3m \text{ both sides}$$

$$7 = 18m - 15$$

$$22 = 18m$$

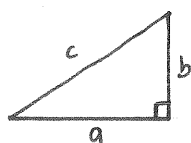
$$m = \frac{22}{18} \text{ or } 1.2$$

Right Angled Trigonometry and Pythagoras

In a right angled triangle, the hypotenuse is the side opposite the right angle. It is the longest side.

Finding the Hypotenuse

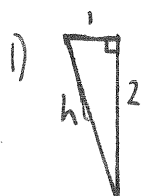
Use Pythagora's relation, for a right angled triangle



$$a^2 + b^2 = c^2$$

$$c^2 = a^2 + b^2$$

Examples:

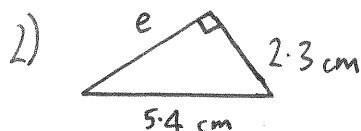


$$h^2 = 1^2 + 2^2$$

$$h^2 = 5$$

$$h = \sqrt{5} \text{ exact}$$

$$h = 2.24 \text{ (2 dp) rounded}$$



$$5.4^2 = e^2 + 2.3^2$$

$$e^2 = 5.4^2 - 2.3^2$$

$$e^2 = 23.87$$

$$e = \sqrt{23.87}$$

$$e = 4.9 \text{ cm (1 dp)}$$