

(recap)

Solving Equations

$$2x + 7 = 20$$

$$2x = 20 - 7$$

$$2x = 13$$

$$x = 6.5$$

$$3(x + 8) = 33$$

$$3x + 24 = 33$$

$$3x = 33 - 24$$

$$3x = 9$$

$$x = 3$$

$$3x + 5 = 21 - x$$

$$6x - 2 = 1$$

$$6x = 1 + 2$$

$$6x = 3$$

$$x = \frac{1}{2}$$

$$12 - 2x = 10$$

$$12 = 10 + 2x$$

$$4x = 21 - 5$$

$$4x = 16$$

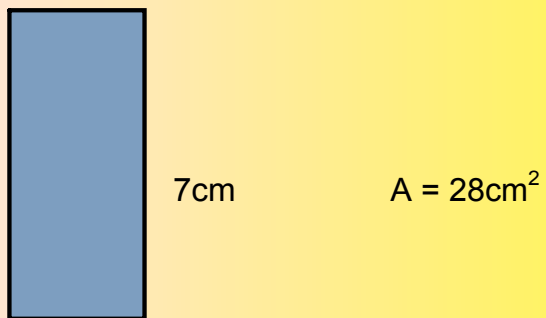
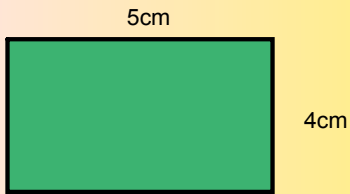
$$x = 4$$

$$12 - 10 = 2x$$

$$2 = 2x$$

$$1 = x$$

Rearranging Formulae



$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

Find the

- speed, if $d = 30\text{km}$ and $t = 2\text{hrs}$
- distance, if $\text{speed} = 50\text{km/h}$ and $t = 2\text{hrs}$
- time if $s = 45\text{km/h}$ and $d = 135\text{km}$

video (14 mins)



Changing the Subject of a formula

$$y = x + 3$$

In this equation y is the subject

$$y - 3 = x \quad \leftarrow x \text{ is the subject}$$

$$x = y - 3$$

$$y = x - 5$$

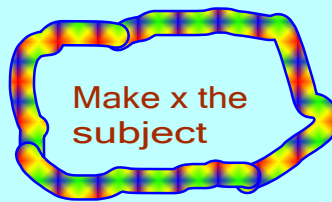
$$y + 5 = x$$

$$4y = 2x$$

$$2y = x$$

$$4y = 2x$$

$$\frac{4y}{2} = x \quad (4y \div 2)$$



$$2y = 3x - 1$$

$$2y + 1 = 3x$$

$$\frac{2y + 1}{2} = x$$

$$x = \frac{2y + 1}{3}$$

$$4t + 5 = 3x - 1$$

$$4t + 6 = 3x$$

$$\frac{4t + 6}{3} = x$$

$$x = \frac{14\pi}{4} = \frac{7\pi}{2}$$

$$14\pi = 4x$$

$$\frac{14\pi}{4} = x$$

$$3(x + 7) = 42$$

Make x the subject:

$$1) \quad y + x = 6 \\ x = 6 - y$$

$$2) \quad y + 2x = 6 \\ 2x = 6 - y \\ x = \frac{6 - y}{2}$$

$$3) \quad 2y + 2x = 6$$

$$2x = 6 - 2y$$

$$x = \frac{6 - 2y}{2} = 3 - y$$

$$4) \quad 2y - 2x = 6$$

$$2y - 6 = 2x$$

$$y - 3 = x$$

$$5) \quad x + y = z \\ x = z - y$$

$$6) \quad x - z = y$$

$$x = y + z$$

Solving equations

Fill in the blanks

$$2x + 3 = 9$$

$$2x = 9 - 3$$

$$2x = 6$$

$$x = 6 \div 2 = \frac{6}{2}$$

$$x = 3$$

$$10x - 15 = 10$$

$$10x = 10 + 15$$

$$10x = 25$$

$$x = 25 \div 10$$

$$x = 2.5$$

$$12 - 2x = 6$$

$$12 = 6 + 2x$$

$$12 - 6 = 2x$$

$$6 = 2x$$

$$3 = x$$

A new look at your abc

$$a+b=c$$

$a=c-b$
 $b=c-a$



The diagram shows the equation $b = c + a$. Each plus sign is enclosed in a blue square with a white border, which is itself set within a larger grey square. The variables b , c , and a are in green.

$$q+w=e$$



A diagram illustrating the equation $q+w=e$. It features three blue squares, each containing a white plus sign (+), set against a light gray background. The first square is followed by the letter 'q' in green. The second square is followed by the letter 'w' in green. An equals sign (=) in green follows. The third square is followed by the letter 'e' in green.

Changing the subject

20th March

Using cards make

i) x the subject

ii) y the subject

iii) z the subject

1. $x + y = z$

2. $x - y = z$

3. $x + z = y$

4. $z - x = y$

5. $y - z = x$

6. $y - x = z$

i) $x = z - y$

ii) $y = z - x$

iii) $z = x + y$

Changing the Subject

Make a the subject:

$$1) a + b = c \quad a = c - b$$

$$2) 2a + b = c \quad 2a = c - b$$

$$a = \frac{c - b}{2}$$

$$3) 2a + 2b = c$$

$$4) 2a - 3b = 4c \quad 3) 2a = c - 2b$$

$$a = \frac{c - 2b}{2}$$

$$5) 5b - 2a = c$$

$$4) 2a - 3b = 4c$$

$$2a = 4c + 3b$$

$$5) 5b - 2a = c$$

$$5b = c + 2a \quad a =$$

$$5b - c = 2a$$

$$\frac{5b - c}{2} = a$$

Using values to check:

eg $a=1, b=2$

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$$\frac{4c + 3b}{2}$$

Changing the Subject

Make a the subject:

1) $a - b = c$

$$a - b = c$$
$$a = c + b$$

2) $2a - b = c$

$$2a = c + b$$

$$a = \frac{c + b}{2}$$

3) $2b - 6a = c$

4) $2a + 3b = 4c$

$$2a + 3b = 4c$$

$$2a = 4c - 3b$$

5) $4b - 7a = c$

$$4b = c + 7a$$

$$4b - c = 7a$$

$$\frac{4b - c}{7} = a$$

$$a = \frac{4b - c}{7}$$

$$a = \frac{4c - 3b}{2}$$

Using values to check:

eg $a=1, b=2$

$$4b - 7a = c$$

$$8 - 7 = c$$

$$1 = c$$

$$a = \frac{8 - 1 \cdot 7}{7} = \frac{1}{7} = 1$$
