

1 Expression, equation or formula?

- a) Show that $5(x+2) - 3(x-4) \equiv 2(x+11)$ is an identity.
b) $4(x+a) - 3 \equiv bx + 17$. Find a and b .

a) $5x + 10 - 3x + 12 = 2x + 22 = 2(x + 11)$

b) $4x + 4a - 3 = bx + 17$, $b = 4$, $4a = 20$, $a = 5$

2 Solving two step equations

- a) Solve $7 - \frac{2x}{3} = 12$
b) The solution of $\frac{kx-4}{3} = 6$ is $x = 11$. Find k .

a) $\frac{2x}{3} = -5$, $2x = -15$, $x = -7.5$

b) $11k - 4 = 18$, $k = 2$

3 Two step equations: forming

Each interior angle of a regular polygon is $(5x + 30)^\circ$.
Each exterior angle is $(x - 6)^\circ$.

- a) Find x .
b) How many sides does the polygon have?

a) $6x + 24 = 180$, $x = 26$

b) exterior 20° , $360 \div 20 = 18$ sides

4 Equations with brackets

Solve

- a) $x(x+5) - (x-2)(x+3) = 26$
b) $(2x-3)^2 - 4x^2 = 33$

a) $x^2 + 5x - x^2 - x + 6 = 26$, $4x + 6 = 26$, $x = 5$

b) $-12x + 9 = 33$, $x = -2$

Linear equations revision mat answers

5 Equations: the unknown on both sides

Solve

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

a) $\times 6$: $4x + 2 - 3x + 12 = 6x - 6$, $x = 4$

b) $3(2x+1) = 5(x-2)$

$6x + 3 = 5x - 10$, $x = -13$

6 Unknown on both sides: forming

The sum of four consecutive odd numbers is 33 more than 3 times the smallest.

- a) Find the four numbers.
b) Prove that the sum of any four consecutive odd numbers is a multiple of 8.

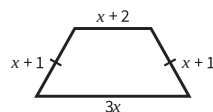
a) $4n + 12 = 3n + 33$, $n = 21$: 21, 23, 25, 27

b) $(2k+1) + (2k+3) + (2k+5) + (2k+7)$
 $= 8k + 16 = 8(k+2)$

7 Forming equations: perimeter

Its perimeter is 28 cm. Lengths are in cm.

- a) Find x .
b) Find the area of the isosceles trapezium.



Not drawn to scale

a) $6x + 4 = 28$, $x = 4$

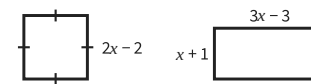
b) height $\sqrt{(5^2 - 3^2)} = 4$

$\frac{1}{2}(6 + 12) \times 4 = 36 \text{ cm}^2$

8 Forming equations: equal perimeters

A square and a rectangle. Lengths are in cm.

- a) Show that their perimeters can never be equal.
b) The rectangle's perimeter is 1.25 times the square's. Find x .



Not drawn to scale

a) $8x - 8$ and $8x - 4$: always 4 cm apart

b) $8x - 4 = 10x - 10$, $x = 3$