Worked answers | Algebra

Substitution and rearranging formulas

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Evaluate $4a - 3b$ for $a = 5$, $b = 2$. [2 marks]

$4(5) - 3(2) = 20 - 6 = 14$.

Answer: 14

2. Evaluate $x^2 + 2x$ for $x = -4$. [2 marks]

$(-4)^2 + 2(-4) = 16 - 8 = 8$.

Answer: 8

3. Make w the subject of $P = 2l + 2w$. [2 marks]

Subtract $2l$, then divide by 2.

Answer: $w = \frac{P-2l}{2}$

4. Make r the subject of $C = 2\pi r$. [2 marks]

Divide by the non-zero constant 2π.

Answer: $r = \frac{C}{2\pi}$

5. The formula $s = ut$ relates distance s, constant speed u and time t, where $u \neq 0$. [3 marks]

(a) Make t the subject. [2 marks]

Divide both sides by u.

Answer: $t = \frac{s}{u}$

(b) Find t for $s = 84$ m and $u = 7$ m/s. [1 mark]

$84 \div 7 = 12$ s.

Answer: 12 s

6. Make x the subject of $ax + b = c$. State a restriction. [3 marks]

Subtract b, then divide by a.

The division requires $a \neq 0$.

Answer: $x = \frac{c - b}{a}$ for $a \neq 0$