

1. Find the value of $3x^2 - 2y$ when $x = 4$ and $y = 5$.

2. Simplify $(x^2 - 2x)/(x^2 - 5x + 6)$.

☐ $x - 3$

☐ $(x - 2)/(x - 3)$

☐ $x/(x - 2)$

☐ $x/(x - 3)$

3. $(5x^3)^2 = k \cdot x^6$. What is the coefficient k ?

4. Solve $2x + y = 7$ and $3x - y = 8$. What is x ?

5. Solve $-3 \leq 3x - 2 < 7$. The solution is $-1/3 \leq x < ?$ What is the upper bound?

6. The n th term of 2, 5, 8, 11, ... is $3n - 1$. What is the 10th term?

7. Inverse proportion $y \propto 1/x$ means:

☐ $y = kx^2$

☐ $y = k/x$

☐ $y = x + k$

☐ $y = kx$

8. On a distance–time graph, the gradient represents the:

☐ acceleration

☐ speed

☐ time

☐ distance

9. The roots of a graph are where it:

☐ crosses the x -axis ($y = 0$)

☐ crosses the y-axis

☐ turns around

☐ is steepest

10. For $f(x) = 2x$ and $g(x) = x + 3$, $gf(x)$ and $fg(x)$ give the same result.

☐ True ☐ False

1. **38**

$$3 \times 4^2 - 2 \times 5 = 3 \times 16 - 10 = 48 - 10 = 38.$$

2. **$x/(x-3)$**

Factorise: $x(x-2) / [(x-2)(x-3)]$, cancel $(x-2) \rightarrow x/(x-3)$.

3. **25**

$$(5x^3)^2 = 5^2 \times (x^3)^2 = 25x^6, \text{ so } k = 25.$$

4. **3**

Adding the equations: $5x = 15$, so $x = 3$ (then $y = 1$).

5. **3**

Add 2: $-1 \leq 3x < 9$; divide by 3: $-1/3 \leq x < 3$.

6. **29**

$$3 \times 10 - 1 = 30 - 1 = 29.$$

7. **$y = k/x$**

Inverse proportion: as x rises, y falls, given by $y = k/x$.

8. **speed**

Distance $\div$ time = speed, which is the gradient.

9. **crosses the x-axis ($y = 0$)**

Roots are the x -values where $y = 0$ – where the curve meets the x -axis.

10. **False**

$gf(x) = 2x + 3$, but $fg(x) = 2(x+3) = 2x + 6$. The order matters.