

2. Algebra and graphs

Starter Quiz · 课前小测

IGCSE Mathematics

Name: _____ Score: _____

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

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

☐ $x/(x - 3)$

☐ $x/(x - 2)$

☐ $(x - 2)/(x - 3)$

☐ $x - 3$

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

☐ speed

☐ acceleration

☐ distance

☐ time

8. The roots of a graph are where it:

☐ crosses the x -axis ($y = 0$)

☐ crosses the y -axis

☐ is steepest

☐ turns around

9. Add $x/3 + (x-4)/2$ over a common denominator of 6.

☐ $(5x - 12)/6$

☐ $(2x - 4)/6$

☐ $(5x + 12)/6$

☐ $(x - 4)/6$

10. Solve $x^2 + 5x + 6 = 0$ by factorising.

☐ $x = -2$ or $x = -3$

☐ $x = 2$ or $x = 3$

☐ $x = -1$ or $x = -6$

☐ $x = 5$ or $x = 6$

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**

$(5x^3)^2 = 5^2 \times (x^3)^2 = 25x^6$, 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. **speed**

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

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

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

9. **$(5x - 12)/6$**

$2x/6 + 3(x-4)/6 = (2x + 3x - 12)/6 = (5x - 12)/6.$

10. **$x = -2$ or $x = -3$**

$(x + 2)(x + 3) = 0$, so $x = -2$ or $x = -3.$