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

   _____

6. The nth 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 $x = 6$

IGCSE Mathematics

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) → 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: $-1 \le 3x < 9$; divide by 3: $-1/3 \le x < 3$.

6. **29**

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

7. **speed**

   Distance ÷ 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.