# Algebra 3F Assessment

## Foundation Level

 *All questions*

| Clip | Grade | Title of clip | Question(s) | Marked out of | Score | % |
|---|---|---|---|---|---|---|
| 157 | 5 | Factorising and Solving Quadratics | 1 - 2 | 17 | ___ | ___ |
| 158 | 5 | The Difference of Two Squares | 3 - 4 | 13 | ___ | ___ |
| 159 | 5 | Finding the Equation of a Straight Line | 5 - 7 | 15 | ___ | ___ |
| 160 | 5 | Roots and Turning Points of Quadratics | 8 - 9 | 5 | ___ | ___ |
| 161 | 5 | Cubic and Reciprocal Graphs | 10 - 11 | 8 | ___ | ___ |
| 162 | 5 | Simultaneous Equations Algebraically | 12 | 9 | ___ | ___ |
| 163 | 5 | Geometric Progressions | 13 - 14 | 8 | ___ | ___ |

*Out of 75* TOTAL SCORE _____

Final Percentage [ ] %

1) Factorise:

a) $x^2 + 7x + 12$

_____ **2**

b) $x^2 + 4x - 12$

_____ **2**

c) $x^2 - 4x - 5$

_____ **2**

d) $x^2 - 8x + 15$

_____ **2**

2) Solve:

a) $x^2 + 10x + 16 = 0$

$x =$ _____ , _____ **3**

b) $x^2 - 5x - 6 = 0$

$x =$ _____ , _____ **3**

c) $x^2 - 7x + 10 = 0$

$x =$ _____ , _____ **3**

3) Factorise:

a) $x^2 - 36$

_____ **2**

b) $4x^2 - 25$

_____ **2**

c) $x^2 - 16y^2$

_____ **3**

4) Solve:

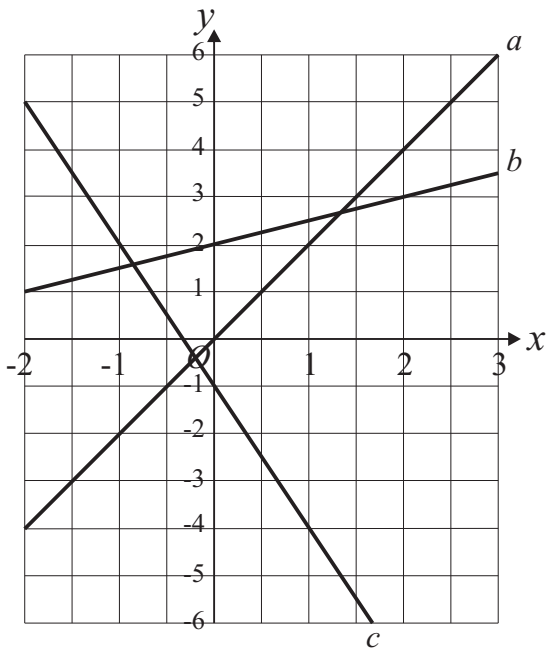
a) $x^2 - 81 = 0$

$x =$ _____ , _____ **3**

b) $9x^2 - 4 = 0$

$x =$ _____ , _____ **3**

5) Find the equation of each line.




*a* : _____ **2**

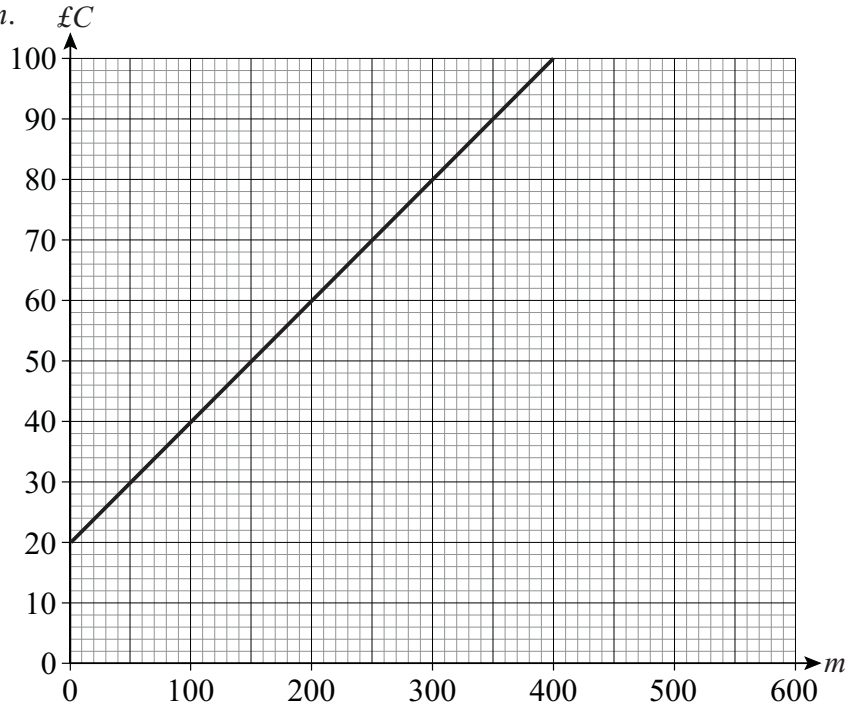
*b* : _____ **2**

*c* : _____ **2**

6) The graph shows the cost of hiring a car from HireMe.com.

£$C$ is the initial cost of hiring the car and $m$ is the mileage done with the car.

Write down a formula for $C$ in terms of $m$.




_____

**3**

7) a) Work out the equation of the line passing through (0, -1) and parallel to the line $y = 2x + 4$.

_____ **2**

b) Work out the equation of the line which passes through $A$ (-2, -8) and $B$ (1, 1).

_____ **4**

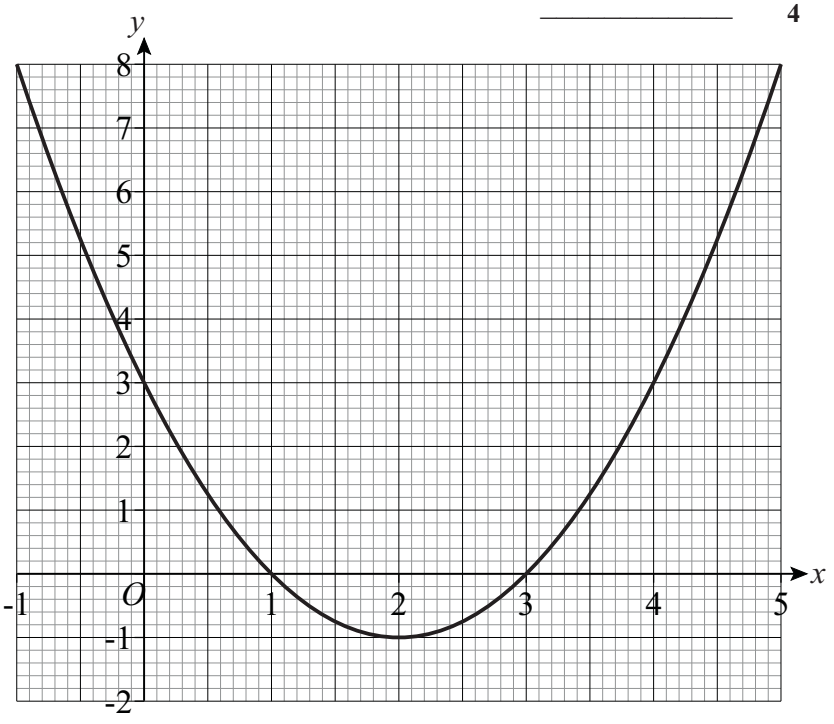
8) The graph of $y = x^2 - 4x + 3$ is shown.

a) Write down the coordinates of the turning point of the curve.

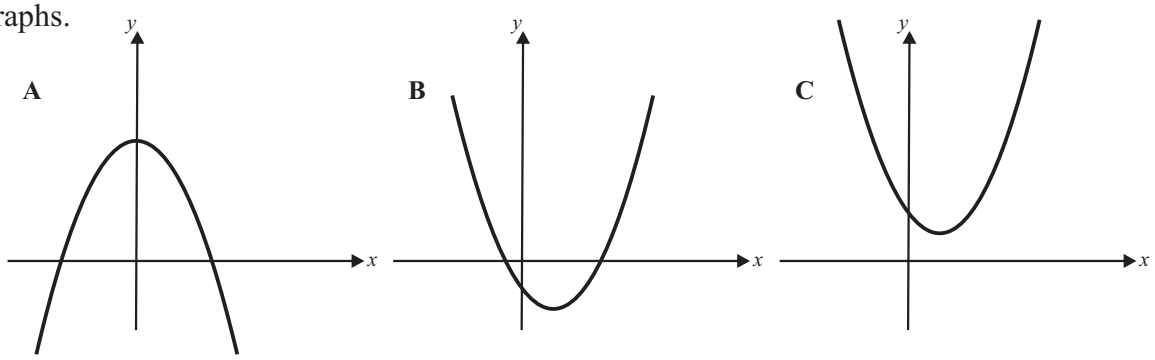
( ___ , ___ ) **1**

b) Write down the solutions of $x^2 - 4x + 3 = 0$

$x$ = ____ , ____ **2**



9) Here are three graphs.




Complete the following statements:

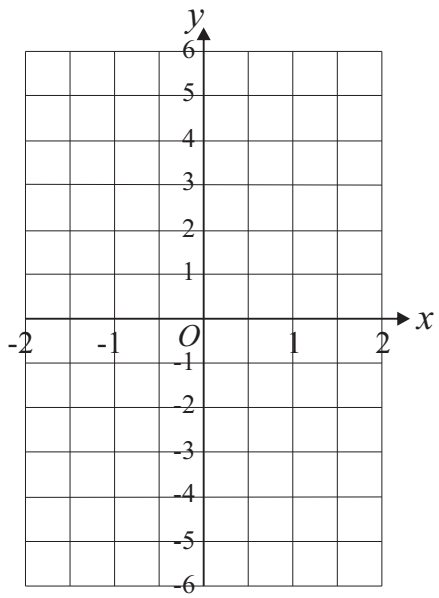
$y = 2x^2 - 2x + 3$ matches graph ___ , $y = -x^2 + 6$ matches graph ___ , $y = (x + 1)(x - 2)$ matches graph ___ **2**

10) a) Complete the table of values for $y = x^3 - 2x$

| x | -2 | -1 | 0 | 1 | 2 |
|---|---|---|---|---|---|
| y | | 1 | | | |

**2**

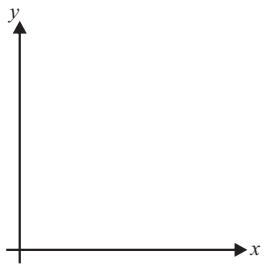
b) Draw the graph of $y = x^3 - 2x$ **2**




c) Estimate the x-coordinates of the turning points of the curve.

_____ , _____ **2**

11) Sketch the graph of $y = \frac{1}{x}$ on the axes.




**2**

12) Solve the simultaneous equations.

a) $2x + 3y = 8$
$3x + 5y = 13$

$x =$ ___
$y =$ ___ **3**

b) $4x + 3y = 6$
$5x - 3y = 21$

$x =$ ___
$y =$ ___ **3**

c) $6x - 4y = 39$
$y = 6 - 2x$

$x =$ ___
$y =$ ___ **3**

13) The first four terms of a geometric progression are 3, 6, 12, 24...

a) What is the common ratio of the progression?

$r =$ _____ **1**

b) What is the 5th term of the progression?

_____ **1**

c) What is the 10th term of the progression?

_____ **2**

14) The first and third terms of a geometric sequence are 1 and 9, respectively.

a) What is the common ratio of the progression?

$r =$ _____ **2**

b) Write down the first five terms of the progression.

_____ , _____ , _____ , _____ , _____ **2**