Algebra 3H Assessment

Higher 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) $x^2 - 81 = 0$
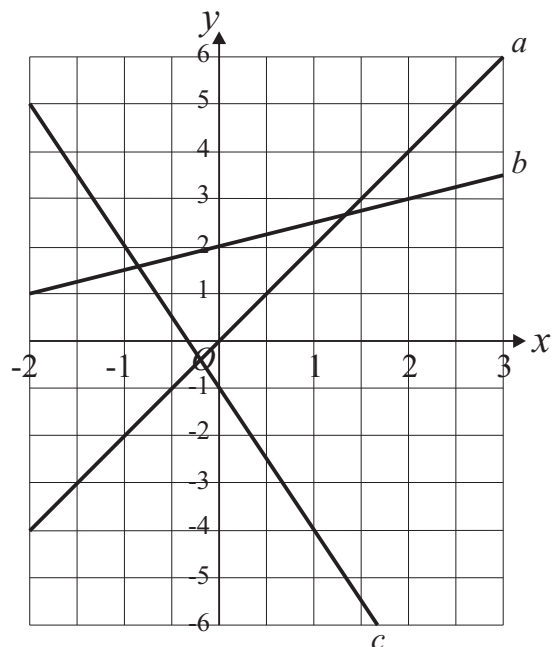
   $x =$ _____ , _____ **3**

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

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

5) Find the equation of each line.

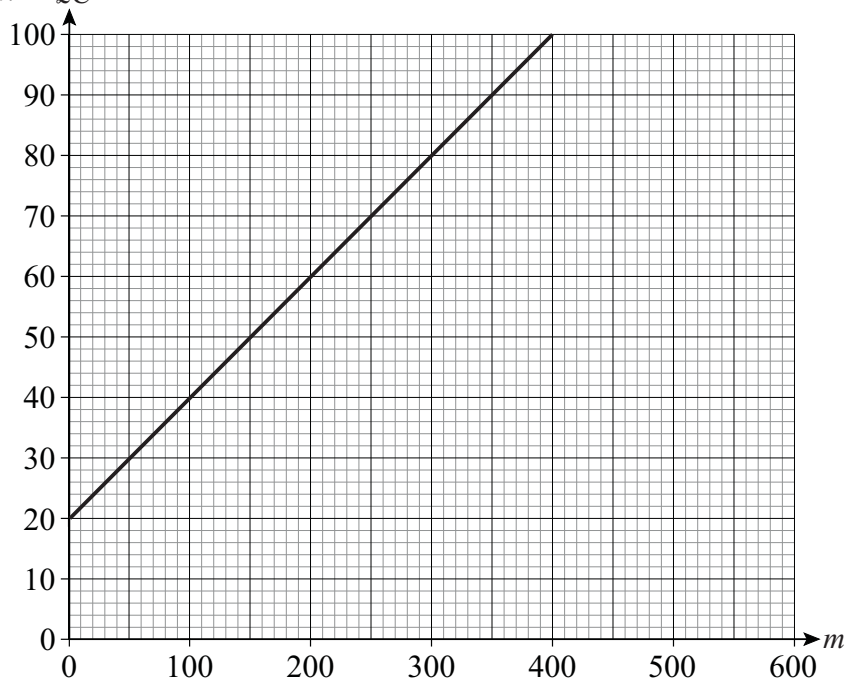 $a :$ _____ **2**

   $b :$ _____ **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 $B(1, 1)$.
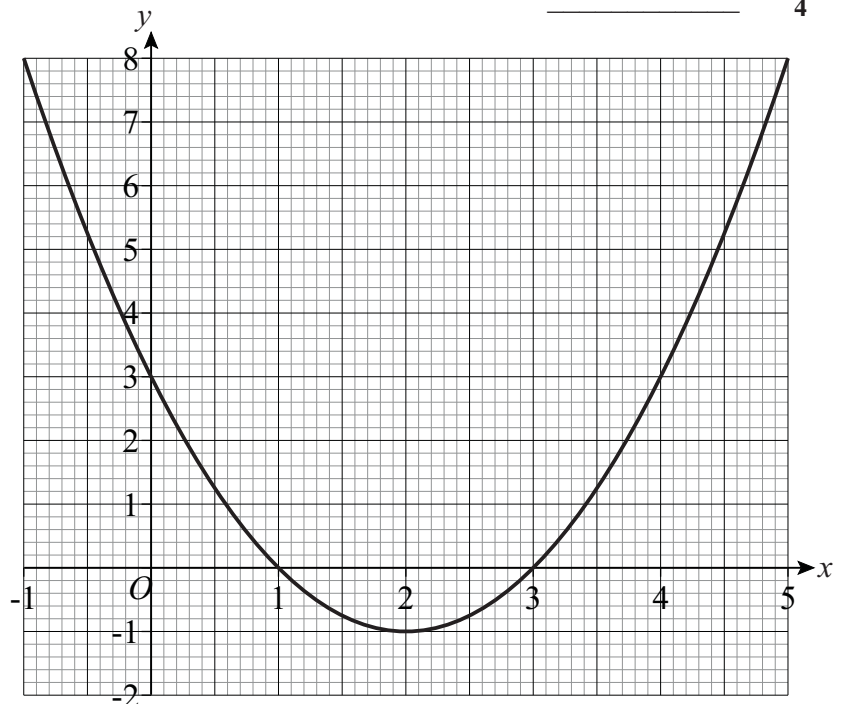
_____ **4**

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

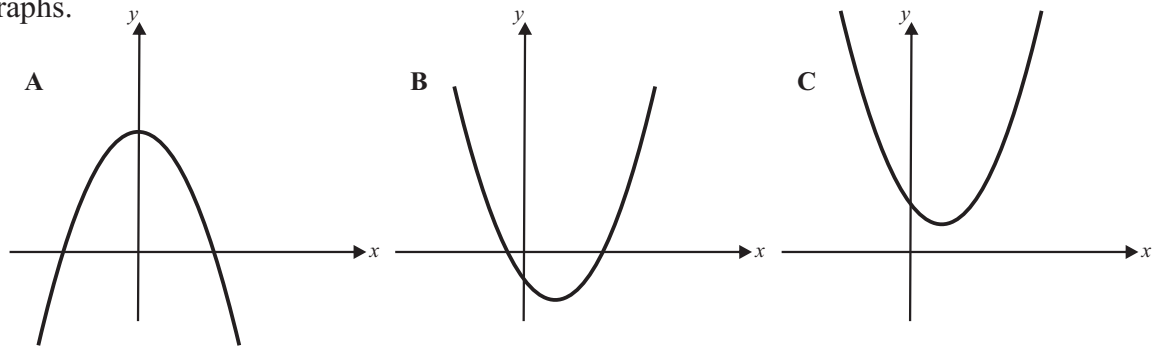a) Write down the coordinates of the turning point of the curve.

(___ , ___) **1**

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

$x =$ _____ , _____ **2**

9) Here are three graphs.

A

B

C

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 $y = x^3 - 2x$

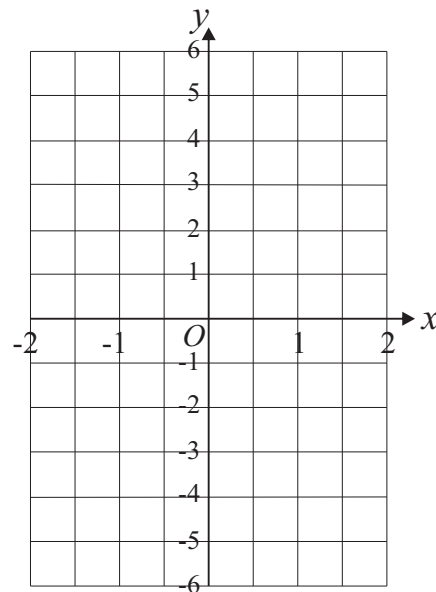| x	-2	-1	0	1	2
y		1			

2

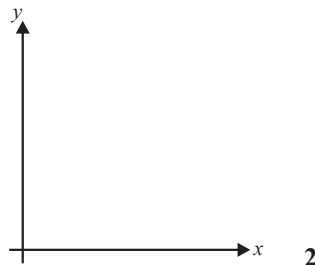b) Draw the graph of $y = x^3 - 2x$ **2**

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

_____ , _____   **2**

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

2

12) Solve the simultaneous equations.

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

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

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

$x =$ ____
$y =$ ____   **3**

$x =$ ____
$y =$ ____   **3**

$x =$ ____
$y =$ ____   **3**

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

    a) What is the common ratio of the progression?

$$r = \underline{\hspace{2em}} \qquad \textbf{1}$$

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

$$\underline{\hspace{2em}} \qquad \textbf{1}$$

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

$$\underline{\hspace{2em}} \qquad \textbf{2}$$

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

    a) What is the common ratio of the progression?

$$r = \underline{\hspace{2em}} \qquad \textbf{2}$$

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

$$\underline{\hspace{2em}} , \underline{\hspace{2em}} , \underline{\hspace{2em}} , \underline{\hspace{2em}} , \underline{\hspace{2em}} \qquad \textbf{2}$$