

# Algebra 3H Assessment

## THE ANSWERS

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)  $x^2 + 7x + 12$

$(x + 3)(x + 4)$  2

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

$(x + 6)(x - 2)$  2

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

$(x - 5)(x + 1)$  2

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

$(x - 3)(x - 5)$  2

2) Solve:

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

$x = \underline{-2}, \underline{-8}$  3

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

$x = \underline{-1}, \underline{6}$  3

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

$x = \underline{2}, \underline{5}$  3

3) Factorise:

a)  $x^2 - 36$

$(x + 6)(x - 6)$  2

b)  $4x^2 - 25$

$(2x + 5)(2x - 5)$  2

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

$(x + 4y)(x - 4y)$  3

4) Solve:

a)  $x^2 - 81 = 0$

$x = \underline{9}, \underline{-9}$  3

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

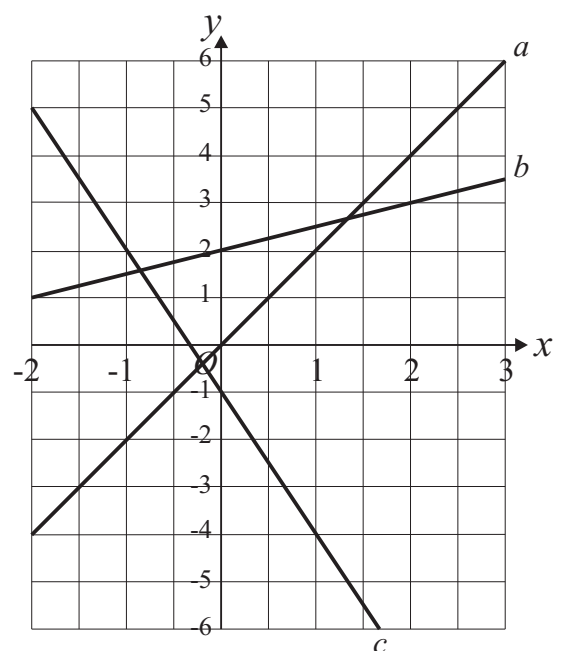
$x = \underline{\frac{2}{3}}, \underline{-\frac{2}{3}}$  3

5) Find the equation of each line.

a:  $y = 2x$  2

b:  $y = \frac{1}{2}x + 2$  2

c:  $y = -3x - 1$  2

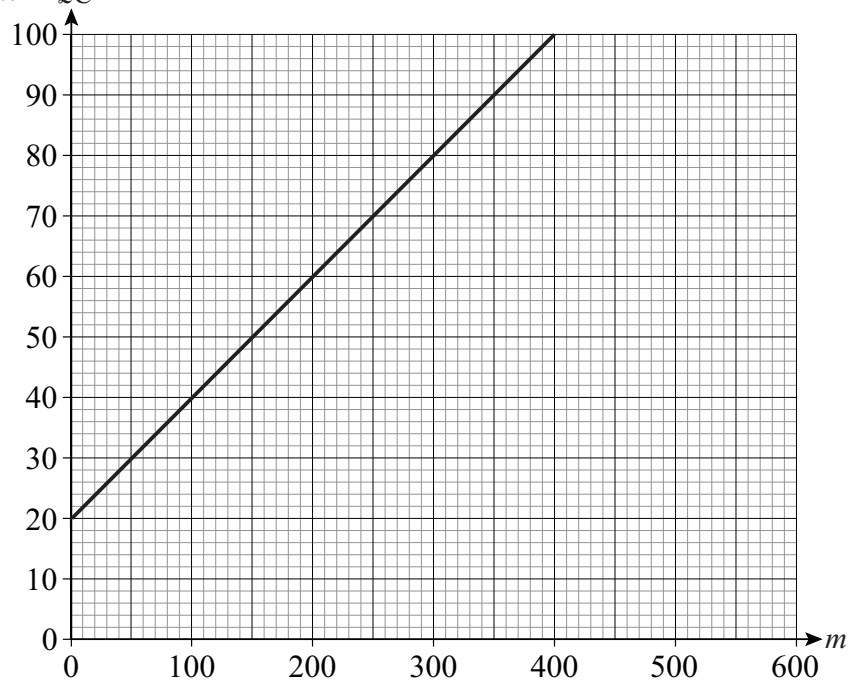


6) The graph shows the cost of hiring a car from HireMe.com.

£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  $m$ .

$$C = \frac{1}{5}m + 20$$



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

$$y = 2x - 1 \quad 2$$

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

$$y = 3x - 2 \quad 4$$

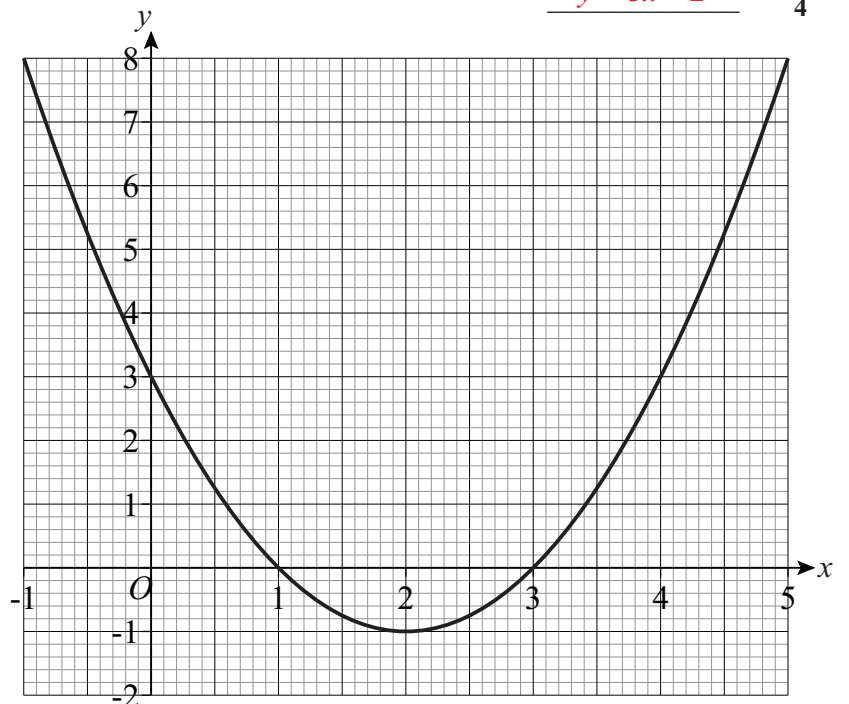
8) The graph of  $y = x^2 - 4x + 3$  is shown.

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

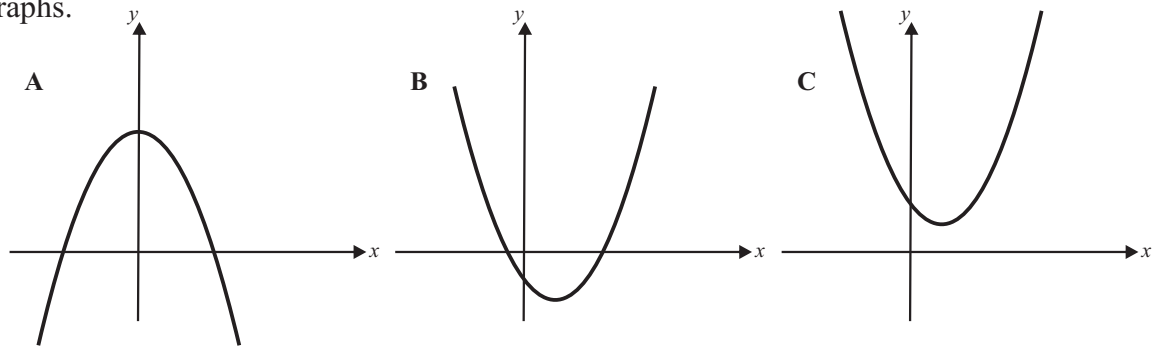
$$(2, -1) \quad 1$$

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

$$x = 1, 3 \quad 2$$



9) Here are three graphs.



Complete the following statements:

$y = 2x^2 - 2x + 3$  matches graph C ,  $y = -x^2 + 6$  matches graph A ,  $y = (x + 1)(x - 2)$  matches graph B

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

x	-2	-1	0	1	2
y	-4	1	0	-1	4

2

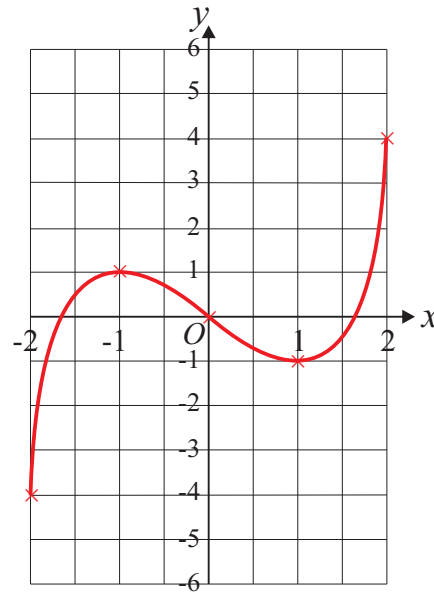
b) Draw the graph of  $y = x^3 - 2x$

2

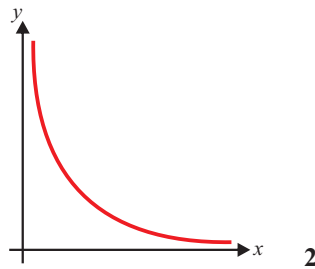
c) Estimate the x-coordinates of the turning points of the curve.

-0.8 , 0.8

2



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



2

12) Solve the simultaneous equations.

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

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

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

$x = \frac{1}{3}$   
 $y = \frac{2}{3}$

$x = \frac{3}{2}$   
 $y = -\frac{2}{3}$

$x = \frac{4.5}{2}$   
 $y = -\frac{3}{2}$

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

a) What is the common ratio of the progression?

$$r = \underline{2} \quad 1$$

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

$$\underline{48} \quad 1$$

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

$$\underline{1536} \quad 2$$

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

a) What is the common ratio of the progression?

$$r = \underline{3} \quad 2$$

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

$$\underline{1}, \underline{3}, \underline{9}, \underline{27}, \underline{81} \quad 2$$