Algebra 3F Assessment	**THE ANSWERS**

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) $x^2 + 7x + 12$

_____ $(x + 3)(x + 4)$ _____ **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) $x^2 + 10x + 16 = 0$

$x =$ __-2__ , __-8__ **3**

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

$x =$ __-1__ , __6__ **3**

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

$x =$ __2__ , __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) $x^2 - 81 = 0$

$x =$ __9__ , __-9__ **3**

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

$x =$ __$\frac{2}{3}$__ , __$-\frac{2}{3}$__ **3**

5) Find the equation of each line.

$a :$ ___ $y = 2x$ ___ **2**

$b :$ ___ $y = \frac{1}{2}x + 2$ ___ **2**
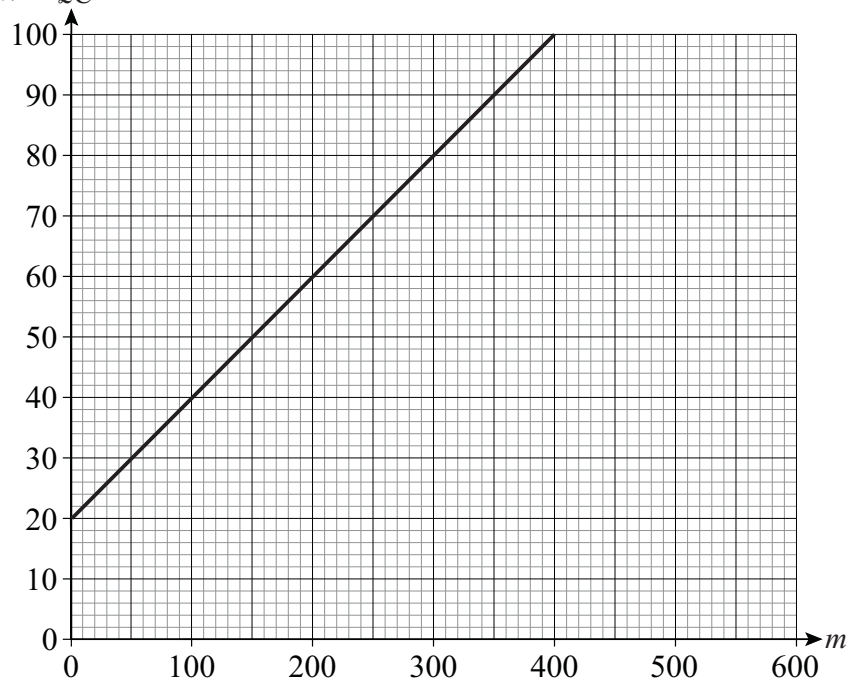
$c :$ ___ $y = -3x - 1$ ___ **2**
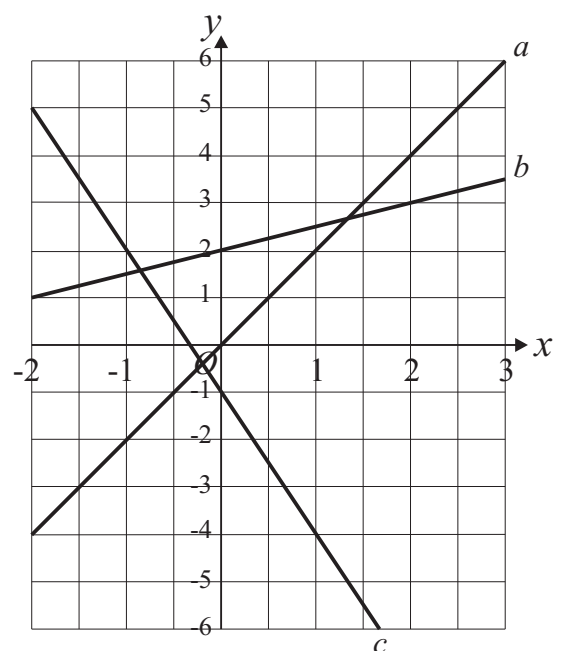
6) The graph shows the cost of hiring a car from HireMe.com.

£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.

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

3

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

$y = 2x - 1$

2

b) Work out the equation of the line which passes through $A\,(\text{-}2, \text{-}8)$ and $B\,(1, 1)$.
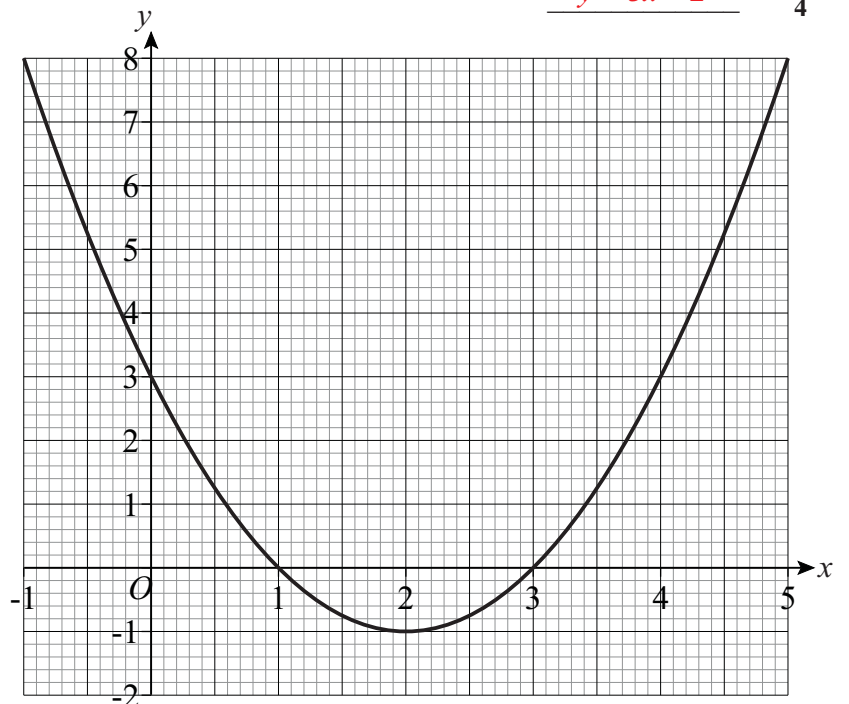
$y = 3x - 2$

4

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

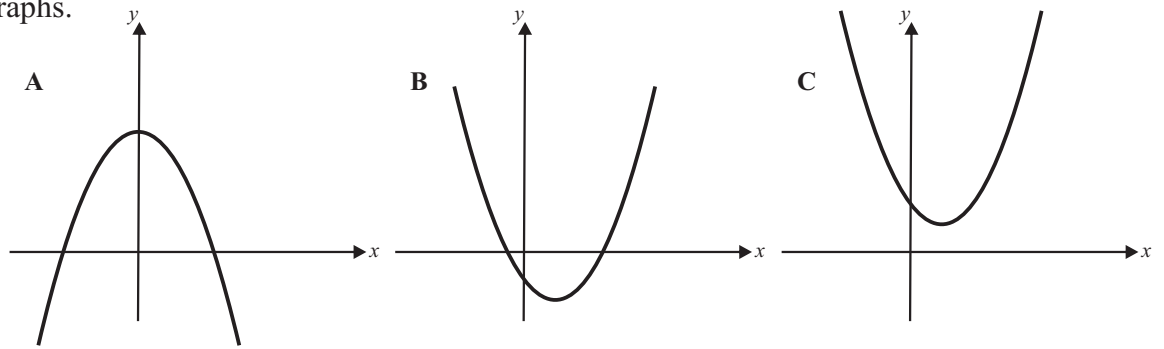a) Write down the coordinates of the turning point of the curve.

(_2_ , _-1_)   **1**

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

$x =$ _1_ , _3_   **2**

9) Here are three graphs.

A   B   C

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 $y = x^3 - 2x$ **2**

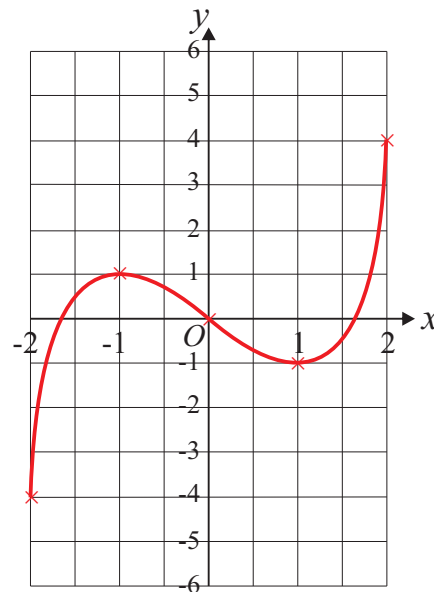| x	-2	-1	0	1	2
y	-4	1	0	-1	4

2

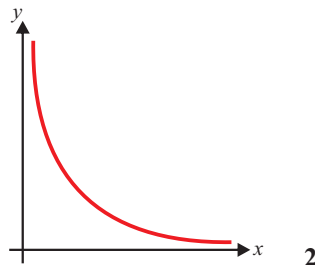b) Draw the graph of $y = x^3 - 2x$ **2**

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

__-0.8__ , __0.8__   **2**

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

2

12) Solve the simultaneous equations.

a) $2x + 3y = 8$ b) $4x + 3y = 6$ c) $6x - 4y = 39$
   $3x + 5y = 13$ $5x - 3y = 21$ $y = 6 - 2x$

$x = $ __1__ $x = $ __3__ $x = $ __4.5__
$y = $ __2__ **3** $y = $ __-2__ **3** $y = $ __-3__ **3**

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

a) What is the common ratio of the progression?

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

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

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

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

$\underline{\quad 1536 \quad}$ **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?

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

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

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