Quadratic Equations

Question Paper 2

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Algebra and Graphs
Sub-Topic	Solving Equations – Quadratic Equations
Booklet	Question Paper 2

Time Allowed: **63 minutes**

Score: **/52**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1 Expand and simplify.

$$x(2x + 3) + 5(x - 7)$$

Answer ..... [2]

2 $f(x) = x^2 + 4x - 6$

(a) $f(x)$ can be written in the form $(x + m)^2 + n$.

Find the value of m and the value of n.

Answer(a) m = ...

n = ... [2]

(b) Use your answer to **part (a)** $x^2 + 4x - 6 = 0$.

Answer(b) x = ... [2]

3 Factorise completely.

$9x^2 - 6x$

Answer ..... [2]

4 Factorise $2x^2 - 5x - 3$.

Answer ..... [2]

5 Solve the equation.

$$2x^2 + x - 2 = 0$$

Show your working and give your answers correct to 2 decimal places.

Answer x = ... or x = ... [4]

6 **(a)** Jamil, Kiera and Luther collect badges.
Jamil has x badges.
Kiera has 12 badges more than Jamil.
Luther has 3 times as many badges as Kiera.
Altogether they have 123 badges.

Form an equation and solve it to find the value of x.

Answer(a) $x =$ ..... [3]

(b) Find the integer values of t which satisfy the inequalities.

$$4t + 7 < 39 \leqslant 7t + 2$$

Answer(b) ..... [3]

(c) Solve the following equations.

(i) $\dfrac{21 - x}{x + 3} = 4$

Answer(c)(i) $x =$ ..... [3]

(ii) $3x^2 + 7x - 5 = 0$

Show all your working and give your answers correct to 2 decimal places.

Answer(c)(ii) x = ... or x = ... [4]

7 **(a)** Expand and simplify.

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

Answer(a) ..... [3]

(b) Factorise the following completely.

(i) $6w + 3wy - 4x - 2xy$

Answer(b)(i) ..... [2]

(ii) $4x^2 - 25y^2$

Answer(b)(ii) ..... [2]

(c) Simplify.

$$\left(\frac{16}{9x^4}\right)^{-\frac{3}{2}}$$

Answer(c) ..... [2]

(d) n is an integer.

(i) Explain why $2n - 1$ is an odd number.

Answer(d)(i) .....

..... [1]

(ii) Write down, in terms of n, the next odd number after $2n - 1$.

Answer(d)(ii) ..... [1]

(iii) Show that the difference between the squares of two consecutive odd numbers is a multiple of 8.

Answer(d)(iii)

[3]

8 Make x the subject of the formula.

$$y = ax^2 + b$$

Answer $x =$ ..... [3]

9 Solve the equation $5x^2 - 6x - 3 = 0$.
Show all your working and give your answers correct to 2 decimal places.

Answer $x =$ ..... or $x =$ ..... [4]

10 Solve the equation $3x^2 + 4x - 5 = 0$.
Show all your working and give your answers correct to 2 decimal places.

Answer $x =$ ..... or $x =$ ..... [4]