Solving Quadratic Equations

Question Paper

Course	Edexcel IGCSE Maths
Section	2. Equations, Formulae & Identities
Topic	Solving Quadratic Equations
Difficulty	Hard

Time allowed: 50

Score: /41

Percentage: /100

Question 1

Solve $x^2 - 6x - 8 = 0$

Write your answer in the form $a \pm \sqrt{b}$ where a and b are integers.

[3 marks]

Question 2

Alison is using the quadratic formula to solve a quadratic equation.
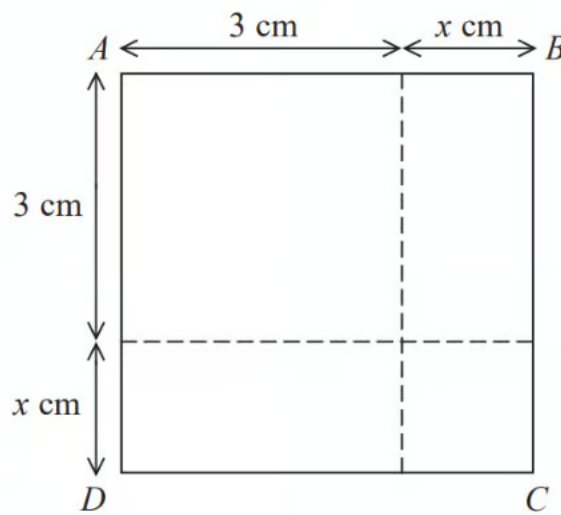She substitutes values into the formula and correctly gets.

$$x = \frac{-7 \pm \sqrt{49 - 32}}{4}$$

Work out the quadratic equation that Alison is solving.
Give your answer in the form $ax^2 + bx + c = 0$, where a, b and c are integers.

[3 marks]

Question 3

The area of square $ABCD$ is $10\,\text{cm}^2$.

Show that $x^2 + 6x = 1$

[3 marks]

Question 4

Solve $5x^2 = 10x + 4$

Give your answers to 2 decimal places.

[4 marks]

Question 5a

$2x^2 - 6x + 5$ can be written in the form $a(x - b)^2 + c$

where a, b and c are positive numbers.

Work out the values of a, b and c.

$a = $ ....
$b = $ ....
$c = $ ....

[3 marks]

Question 5b

Using your answer to part (a), or otherwise, solve $2x^2 - 6x + 5 = 8.5$

[3 marks]

Question 6a

Here are two pieces of work.

For each one, describe the error made and give the complete correct solution.

Question:

Solve by factorisation.

$$3x^2 - 2x - 5 = 0$$

Solution:

$$(3x + 5)(x - 1) = 0$$

Therefore $x = -5/3$ or $x = 1$

Error: ....

Correct solution:

[3 marks]

Question 6b

Question:

Solve, giving your answers correct to 3 significant figures.

$$2x^2 - 8x + 3 = 0$$

Solution:

$$x = -(-8) \pm \frac{\sqrt{(-8)^2 - 4 \times 2 \times 3}}{2 \times 2}$$

Therefore $x = 6.42$ or $x = 9.58$

Error: ....

Correct solution:

[3 marks]

Question 7

Solve by factorisation.

$$5x^2 + 7x + 2 = 0$$

$x = $ .... or $x = $ ....

[3 marks]

Question 8

Solve by factorisation.

$$2x^2 - 19x - 33 = 0$$

$x = $ .... or $x = $ ....

[3 marks]

Question 9

(i)

Write $x^2 + 4x - 16$ in the form $(x + a)^2 - b$.

[3]

(ii)

Solve the equation $x^2 + 4x - 16 = 0$.

Give your answers in surd form as simply as possible.

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

[7 marks]

Question 10

Solve by factorisation $10r^2 - 23r + 9 = 0$.

$r =$ .... or $r =$ ....

[3 marks]