

Surds

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **30**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. Do **not** use a calculator.

1 Circle the expression equal to $3\sqrt{5}$

[1 mark]

$\sqrt{8}$

$\sqrt{15}$

$\sqrt{45}$

$\sqrt{75}$

2 Simplify fully $2\sqrt{63} - \sqrt{28}$

[2 marks]

Answer _____

3 Write $\frac{18}{\sqrt{6}} + \sqrt{54}$ in the form $a\sqrt{6}$, where a is an integer.

[2 marks]

Answer _____

4 Expand and simplify

(a) $(5 - 2\sqrt{3})(1 + \sqrt{3})$

[2 marks]

Answer _____

(b) $(\sqrt{7} - \sqrt{2})^2$

[2 marks]

Answer _____

5 Rationalise the denominator and simplify fully

$$\frac{6}{4 - \sqrt{10}}$$

[2 marks]

Answer _____

6 Simplify fully

$$\frac{\sqrt{112} - \sqrt{28}}{\sqrt{63}}$$

[3 marks]

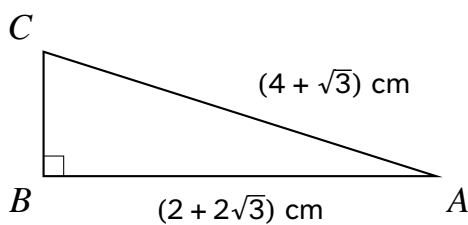
Answer _____

- 7 Solve $x^2 + 4x - 14 = 0$
Give your answers in the form $a \pm b\sqrt{c}$, where a , b and c are integers.

[3 marks]

Answer $x =$ _____

- 8 ABC is a right-angled triangle.



Not drawn accurately

- (a) Show that $BC = \sqrt{3}$ cm.

[3 marks]

- (b) Work out the area of triangle ABC .
Give your answer in the form $a + b\sqrt{3}$, where a and b are integers.

[2 marks]

Answer _____ cm^2

- 9 Rationalise the denominator and simplify fully $\frac{9 + 4\sqrt{3}}{2\sqrt{3} - 3}$
Give your answer in the form $a + b\sqrt{3}$, where a and b are integers.

[4 marks]

Answer _____

- 10 Solve $x\sqrt{5} + 3 = 2x + \sqrt{5}$
Give your answer in the form $a + b\sqrt{5}$, where a and b are integers.

[4 marks]

Answer $x =$ _____