

Surds

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **24**

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 $\sqrt{50}$

[1 mark]

$25\sqrt{2}$

$5\sqrt{2}$

$2\sqrt{5}$

$10\sqrt{5}$

2 Simplify fully

(a) $\sqrt{12} + \sqrt{27}$

[2 marks]

Answer _____

(b) $\sqrt{45} - \sqrt{20}$

[2 marks]

Answer _____

(c) $\sqrt{8} \times \sqrt{18}$

[1 mark]

Answer _____

- 3** A rectangle has length $\sqrt{12}$ cm and width $\sqrt{8}$ cm.
Show that the area of the rectangle is $4\sqrt{6}$ cm².

[2 marks]

- 4** Simplify fully $\sqrt{75} + \sqrt{108} - \sqrt{48}$

[3 marks]

Answer _____

- 5** The edges of a cuboid have lengths $\sqrt{10}$ cm, $3\sqrt{2}$ cm and $\sqrt{20}$ cm.
Work out the volume of the cuboid.
Give your answer as an integer.

[3 marks]

Answer _____ cm³

6 Expand and simplify

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

[2 marks]

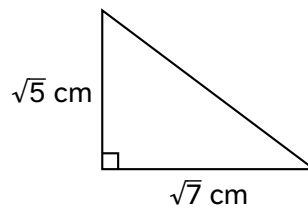
Answer _____

(b) $(\sqrt{5} + 2)^2$

[2 marks]

Answer _____

7 Here is a right-angled triangle.



Not drawn accurately

Work out the length of the hypotenuse.

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

[3 marks]

Answer _____ cm

- 8** $(2\sqrt{3} + a)^2 = b + 8\sqrt{3}$
 a and b are integers.
Work out the values of a and b .

[3 marks]

Answer $a =$ _____ $b =$ _____