

QQQ – Pure Year 1 – Chapter 1 – Surds (Version 1)

Total Marks: 23

(23 = Platinum, 21 = Gold, 18 = Silver, 16 = Bronze)

1. Write

$$\sqrt{(75)} - \sqrt{(27)}$$

in the form $k\sqrt{x}$, where k and x are integers.

(2)

(Total 2 marks)

Edexcel C1 June 2010 Q1

2. In this question you must show detailed reasoning.

Express $\frac{1 + 4\sqrt{3}}{2 + \sqrt{3}}$ in the form $a + b\sqrt{3}$, where a and b are integers to be determined.

[3]

(Total 3 marks)

OCR MEI June 2024 Paper 2 Q4

3.

(i) Express

$$(5 - \sqrt{8})(1 + \sqrt{2})$$

in the form $a + b\sqrt{2}$, where a and b are integers.

(3)

(ii) Express

$$\sqrt{80} + \frac{30}{\sqrt{5}}$$

in the form $c\sqrt{5}$, where c is an integer.

(3)

(Total 6 marks)

Edexcel C1 January 2013 Q3

4. In this question you must show detailed reasoning.

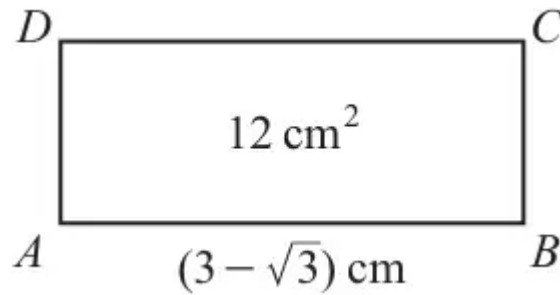
Solve the equation $x\sqrt{5} + 32 = x\sqrt{45} + 2x$. Give your answer in the form $a\sqrt{5} + b$, where a and b are integers to be determined.

[4]

(Total 4 marks)

OCR A June 2023 Paper 2 Q2

5. In this question you must show detailed reasoning.



The diagram shows the rectangle $ABCD$ where $AB = (3 - \sqrt{3}) \text{ cm}$.

The area of $ABCD$ is 12 cm^2 .

Find the perimeter of $ABCD$. Give your answer in the form $(a + b\sqrt{3}) \text{ cm}$, where a and b are integers to be determined. [4]

(Total 4 marks)

OCR A June 2025 Paper 2 Q2

6.

(a) Show that

$$\frac{1}{\sqrt{k} + \sqrt{k+1}} \equiv \sqrt{k+1} - \sqrt{k} \quad k > 0$$

[2 marks]

(b) Using the result from part (a) find the exact value of

$$\frac{1}{\sqrt{1} + \sqrt{2}} + \frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}}$$

Fully justify your answer.

[2 marks]

(Total 4 marks)

AQA June 2025 Paper 2 Q10