AQA-Core 1

Chapter-wise Past Exam Questions

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Answers ***66-120***

Sample - Do not copy

Shalini Jain

Chapter 1- Surds

1 (a) (i) Express $\sqrt{48}$ in the form $k\sqrt{3}$, where *k* is an integer. (1)

(ii) Simplify $\dfrac{\sqrt{48}+2\sqrt{27}}{\sqrt{12}}$, giving your answer as an integer. (3)

(b) Express $\dfrac{1-5\sqrt{5}}{3+\sqrt{5}}$ in the form $m+n\sqrt{5}$, where *m* and *n* are integers. (4)

(Total 8 marks)

Sample - Do not copy

2 (a) Express $(3-\sqrt{5})^2$ in the form $m + n\sqrt{5}$, where m and n are integers. (2)

(b) Hence express $\dfrac{(3-\sqrt{5})^2}{1+\sqrt{5}}$ in the form $p + q\sqrt{5}$, where p and q are integers. (4)

(Total 6 marks)

Sample - Do not copy

3 (a) Express $\frac{7+\sqrt{5}}{3+\sqrt{5}}$ in the form $m + n\sqrt{5}$, where m and n are integers. (4)

(b) Express $\sqrt{45} + \frac{20}{\sqrt{5}}$ in the form $k\sqrt{5}$, where k is an integer. (3)

(Total 7 marks)

Sample - Do not copy

4 Solve each of the following inequalities:

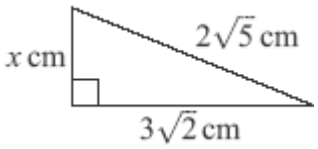
(a) $2(4 - 3x) > 5 - 4(x + 2)$; (2)

(b) $3(x - 1) > 3 - 5(x + 6)$; (3)

(Total 5 marks)

Sample - Do not copy

5 The diagram shows a right-angled triangle.



The hypotenuse has length $2\sqrt{5}$ cm. The other two sides have lengths $3\sqrt{2}$ cm and x cm. Find the value of x.

(3)

(Total 3 marks)

Sample - Do not copy

6 Simplify the following surds:

(a) $6\sqrt{10} \times 5\sqrt{2}$ (2)

(b) $(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$ (3)

(Total 5 marks)

Sample - Do not copy

ANSWERS

Sample - Not a copy

Mark Scheme - SURDS

4(a) $8 - 6x > 5 - 4x - 8$

multiplying out correctly and > sign used

M1

$11 > 2x$

$x < 5\frac{1}{2}$ $\left(\text{or } x < \frac{11}{2}\right)$

accept 5.5 > x OE

A1cso

2

(b) $3x - 3 > 3 - 5x - 30$

Multiplying out (condone one slip)

M1

$\Rightarrow 8x > -24$

Or correct equivalent eg $-8x < 24$

A1

$\Rightarrow x > -3$

(Penalise ≤ , ≥once only in (a) and (b))

A1

3

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5. $\left(2\sqrt{5}\right)^2 = 20$ *or* $\left(3\sqrt{2}\right)^2 = 18$

Either correct

B1

their $\left(2\sqrt{5}\right)^2 - \left(3\sqrt{2}\right)^2$

Condone missing brackets and x^2

M1

Sample - Do not copy

($x^2 = 20 - 18$)

$x^2 = 2 \Rightarrow$ B1, M1

$(\Rightarrow x = 2)\sqrt{2}$

$\pm\sqrt{2}$ scores A0
Answer only of 2 scores B0, M0
Answer only of $\sqrt{2}$ scores 3 marks

A1

3

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6. (a) $60\sqrt{5}$ 2

(b) 2 3

Sample - Do not copy