

## 6.3 Answers

### A-Level Pure Mathematics : Year 1 GCSE (Grades 8 and 9)

#### Algebra of Surds and Indices I

#### 6.3.1 Solutions (6.1 Introductory Example)

$$\begin{aligned}2\sqrt{15} \times 4\sqrt{10} &= 2\sqrt{3} \sqrt{5} 4\sqrt{2} \sqrt{5} \\ &= 40\sqrt{6}\end{aligned}$$

[ 2 marks ]

#### 6.3.2 Solutions (6.2 Exercise)

##### Answer 1

( i )  $165\sqrt{14}$

( ii )  $30\sqrt{35}$

( iii )  $80\sqrt{33}$

( iv )  $60\sqrt{22}$

[ 8 marks ]

##### Answer 2

( i )  $\frac{\sqrt{3}}{2}$

( ii )  $\frac{3\sqrt{5}}{20}$

( iii )  $3\sqrt{7}$

( iv )  $\frac{6\sqrt{3}}{11}$

[ 8 marks ]

##### Answer 3

( i )  $2 + \sqrt{3}$

( ii )  $\frac{\sqrt{5} - \sqrt{3}}{2}$

[ 3, 3 marks ]

##### Answer 4

( i )  $252 = 2^2 3^2 7$

( ii )  $6\sqrt{7}$  That is,  $x = 6$

##### Answer 5

( i )  $882 = 2 3^2 7^2$

( ii )  $21\sqrt{2}$  That is,  $y = 21$

[ 3, 3 marks ]

##### Answer 6

$126\sqrt{14}$

[ 2 marks ]

##### Answer 7

( i )  $\frac{6\sqrt{5} - 3}{19}$

( ii )  $\frac{6 + \sqrt{2}}{17}$

[ 4, 4 marks ]

**Answer 8**

$$(i) \quad 2541 = 3 \cdot 7 \cdot 11^2 \quad \therefore \sqrt{2541} = 11\sqrt{21}$$

$$(ii) \quad 3024 = 2^4 \cdot 3^3 \cdot 7 \quad \therefore \sqrt{3024} = 12\sqrt{21}$$

$$(iii) \quad 23\sqrt{21}$$

[ 1, 1, 2 marks ]

**Answer 9**

$$(i) \quad 3146 = 2 \cdot 11^2 \cdot 13 \quad \therefore \sqrt{3146} = 11\sqrt{26}$$

$$(ii) \quad 936 = 2^3 \cdot 3^2 \cdot 13 \quad \therefore \sqrt{936} = 6\sqrt{26}$$

$$(iii) \quad 5\sqrt{26}$$

[ 1, 1, 2 marks ]

**Answer 10**

$$15 + 12\sqrt{15}$$

[ 4 marks ]