

End of Unit Test
Integers, Powers and Roots - HIGHER

Name: Answers



1. $2^m = 32$ and $9^p = 3^5$. Work out the values of m and p

$2^5 = 32$

$9^p = 3^5$

$(3^2)^p = 3^5$

$2p = 5$

$m = 5$ $p = 2.5$
(Total 4 marks)

2. (a) Circle the value of 3^{-2}

-6

$\frac{1}{6}$

$\frac{1}{9}$

-9

(1)

(b) Work out the value of $(-8)^0 + 8^{-\frac{2}{3}}$

$(-8)^0 = 1$

$8^{-\frac{2}{3}} = \frac{1}{4}$

Answer 1.25 or $\frac{5}{4}$
(3)

(Total 4 marks)

3. Work out the value of $5.4 \times 10^5 \times 2 \times 10^{-2}$
Give your answer in standard form.

$5.4 \times 2 \times 10^5 \times 10^{-2} = 10.8 \times 10^3$

$= 1.08 \times 10 \times 10^3$

Answer 1.08×10^4
(Total 2 marks)

4. Here is some information about tourism in 2012

Country visited	Number of tourists	Total spent by tourists (\$)
France	8.30×10^7	5.360×10^{10}
USA	6.20×10^7	1.262×10^{11}
Spain	5.77×10^7	5.590×10^{10}

21% of the total spent by tourists in the USA was by Canadians.

One third of tourists in the USA were Canadians.

Estimate the average amount spent per Canadian tourist in the USA.

$$20\% \text{ of } 1 \times 10^{11} = 0.2 \times 10^{11} = 2 \times 10^{10}$$

$$\frac{1}{3} \text{ of } 6 \times 10^7 = 2 \times 10^7$$

$$(2 \times 10^{10}) \div (2 \times 10^7) = 1 \times 10^3$$

Answer \$ 1000

(Total 3 marks)

5. Write this ratio in its simplest form $\sqrt{12} : \sqrt{48} : \sqrt{300}$

$$\sqrt{12} = \sqrt{4} \times \sqrt{3} = 2\sqrt{3} \qquad 2\sqrt{3} : 4\sqrt{3} : 10\sqrt{3}$$

$$\sqrt{48} = \sqrt{16} \times \sqrt{3} = 4\sqrt{3} \qquad 2 : 4 : 10$$

$$\sqrt{300} = \sqrt{100} \times \sqrt{3} = 10\sqrt{3}$$

Answer 1 : 2 : 5

(Total 3 marks)

6. (a) Rationalise the denominator and simplify $\frac{16}{\sqrt{2}}$

$$\frac{16\sqrt{2}}{2} = 8\sqrt{2}$$

Answer $8\sqrt{2}$

(2)

- (b) Expand and simplify $(5 - \sqrt{3})^2$ Give your answer in the form $a - b\sqrt{3}$

$$\begin{array}{|c|c|c|} \hline & 5 & -\sqrt{3} \\ \hline 5 & 25 & -5\sqrt{3} \\ \hline -\sqrt{3} & -5\sqrt{3} & 3 \\ \hline \end{array}$$

Answer $28 - 10\sqrt{3}$

(2)

(Total 4 marks)

(Total for test = 20 marks)