

$$1 \quad 2^x = \frac{2^n}{\sqrt[3]{2}} \quad 2^y = (\sqrt{2})^5$$

Given that $x + y = 8$

work out the value of n .

$$2^x = \frac{2^n}{2^{\frac{1}{3}}} = 2^{n - \frac{1}{3}} \quad (1)$$

$$2^y = 2^{(\frac{1}{2}) \times 5} = 2^{\frac{5}{2}}$$

$$x = n - \frac{1}{3}$$

$$y = \frac{5}{2} \quad (1)$$

$$\therefore x + y = 8$$

$$(n - \frac{1}{3}) + \frac{5}{2} = 8$$

$$n - \frac{1}{3} = 8 - \frac{5}{2}$$

$$n = 8 - \frac{5}{2} + \frac{1}{3}$$

$$= \frac{35}{6} = 5\frac{5}{6} \quad (1)$$

$$\begin{array}{r} 5 \\ 6 \overline{) 35} \\ \underline{- 30} \\ 5 \end{array}$$

$$n = 5\frac{5}{6}$$

(Total for Question 1 is 3 marks)