

$$1. a) 848925 \rightarrow 3 \times 3 \times 5 \times 5 \times 7 \times 7 \times 7 \times 11$$

$$b) 7007 \rightarrow 7 \times 7 \times 11 \times 13$$

$$2. a) 52 = 2 \times 2 \times 13$$

$$130 = 2 \times 5 \times 13$$

$$182 = 2 \times 7 \times 13$$

$$\begin{aligned} \text{GCF} &= 2 \times 13 \\ &= 26 \end{aligned}$$

$$b) 66 = 2 \times 3 \times 11$$

$$165 = 3 \times 5 \times 11$$

$$321 = 3 \times 107$$

$$\text{GCF} = 3$$

$$3. a) \quad 3528 = 2 \times 2 \times 2 \times 3 \times 3 \times 7 \times 7 = 2^3 \times 3^2 \times 7^2$$

$$37044 = 2 \times 2 \times 3 \times 3 \times 3 \times 7 \times 7 \times 7 =$$

$$2^2 \times 3^3 \times 7^3$$

$$\begin{aligned} \text{LCM} &= 2^3 \times 3^3 \times 7^3 \\ &= 8 \times 27 \times 343 \\ &= 74088 \end{aligned}$$

3 b)

$$75625 = 5 \times 5 \times 5 \times 5 \times 11 \times 11 = 5^4 \times 11^2$$

$$190575 = 5 \times 5 \times 3 \times 3 \times 7 \times 11 \times 11 = 3^2 \times 5^2 \times 7 \times 11^2$$

$$136125 = 3 \times 3 \times 5 \times 5 \times 5 \times 11 \times 11 = 3^2 \times 5^3 \times 11^2$$

$$\text{LCM} = 3^2 \times 5^4 \times 7 \times 11^2$$

$$9 \times 625 \times 7 \times 121$$

$$4764375$$

4. a) $1000 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$ Perfect Cube

change \rightarrow b) $729 = 3 \times 3 \times 3 \times 3 \times 3 \times 3$ Perfect Square and Cube

c) $1715 = 5 \times 7 \times 7 \times 7$ Neither

change \rightarrow d) $11025 = \underline{3 \times 3} \times \underline{5 \times 5} \times \underline{7 \times 7}$ Perfect Square.

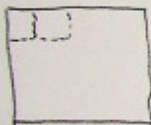
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range \rightarrow b) $729 = 3 \times 3 \times 3 \times 3 \times 3 \times 3$ Perfect Square and Cube

c) $1715 = 5 \times 7 \times 7 \times 7$ Neither

range \rightarrow d) $11025 = \underline{3} \times \underline{3} \times \underline{5} \times \underline{5} \times \underline{7} \times \underline{7}$ Perfect Square.

5.



2912m

$1820 = 2 \times 2 \times 5 \times 7 \times 13$
 $2912 = 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 13$

GCF = $2 \times 2 \times 7 \times 13$
 $= 364$

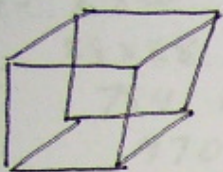
6.

$$\begin{aligned} 365 &= 5 \times 73 & = 5 \times 73 \\ 260 &= 2 \times 2 \times 5 \times 13 & = 2^2 \times 5 \times 13 \end{aligned}$$

$$\begin{aligned} \text{LCM} &= 2^2 \times 5 \times 13 \times 73 \\ &= 4 \times 5 \times 13 \times 73 \\ &= 18980 \end{aligned}$$

How Long in years?

$$\frac{18980}{365} = 52 \text{ years.}$$

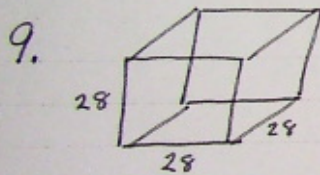
7. 

$$SA = \frac{6534}{6 \text{ sides}}$$
$$= 1089 \text{ (Area of each side)}$$
$$\sqrt{1089} = 3 \times 3 \times 11 \times 11$$
$$= \frac{3 \times 11}{33}$$

Volume \rightarrow $L \times W \times H$
 $33 \times 33 \times 33$
 35937

$$8. \quad \begin{aligned} 40 &= 2 \times 2 \times 2 \times 5 = 2^3 \times 5 \\ 90 &= 2 \times 3 \times 3 \times 5 = 2 \times 3^2 \times 5 \end{aligned}$$

$$\text{LCM} = \begin{array}{l} 2^3 \times 3^2 \times 5 \\ 8 \times 9 \times 5 \\ 360 \end{array}$$



$$V = 21952$$

$$\sqrt[3]{21952} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7$$

$$2 \times 2 \times 7$$

$$28$$

$$\begin{aligned} SA &= L \times W \\ &28 \times 28 \\ &784 \times 6 \\ &4704 \end{aligned}$$

Surface Area

$SA = \cancel{6}(l \times w)$ ^{48 x 48}

$$\frac{13824}{6} = 2304 \text{ m}^2$$
$$\sqrt{2304} = (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (3 \times 3)$$
$$= 2 \times 2 \times 2 \times 2 \times 3$$
$$= 48 \text{ m edge length}$$
$$= l \times w \times h$$
$$\text{Volume} = 48 \times 48 \times 48$$
$$= 110592 \text{ m}^3$$

$$SA = \cancel{6}(l \times w)$$

11. Surface Area

$$\frac{1536}{6} = 256 \text{ m}$$

$$\sqrt{256} = (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (2 \times 2)$$

$$2 \times 2 \times 2 \times 2$$

12. Volume = 16m edge length

$$\begin{aligned} \text{Volume} &= 16 \times 16 \times 16 \\ &= 4096 \text{ m}^3 \end{aligned}$$

∴ Surface Area = 1176 m^2

$$\frac{1176}{6} = 196$$
$$\sqrt{196} = (2 \times 2) \times (7 \times 7)$$
$$= 14 \text{ m edge length}$$

$$\text{Volume} = 1728 \text{ cm}^3$$

$$\sqrt[3]{1728} = (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (3 \times 3 \times 3)$$

$$= 2 \times 2 \times 3$$

$$= 12 \text{ cm edge length}$$

14. Volume $\sqrt[3]{V} = \frac{s \times s \times s}{l \times w \times h} = 10648 \text{ m}^3$

$$\sqrt[3]{10648} = (2 \times 2 \times 2) \times (11 \times 11 \times 11)$$

$$= 2 \times 11$$

$$= 22 \text{ m}$$

SA = $6(l \times w)$

Surface Area = $A = L \times W$

$$22 \times 22$$

$$484 \text{ m}^2$$

$$\times 6$$

$$2904 \text{ m}^2$$

15. Surface Area = 1944 m^2
 $SA = \cancel{6} (l \times w)$

$$\frac{1944}{6} = 324 \text{ m}$$
$$\sqrt{324} = (2 \times 2) \times (3 \times 3) \times (3 \times 3)$$
$$= 2 \times 3 \times 3$$
$$= 18 \text{ m}$$

$$\text{Volume} = 18 \times 18 \times 18$$
$$= 5832 \text{ m}^3$$

16.

$$a) \quad 3375 \rightarrow (3 \times 3 \times 3) \times (5 \times 5 \times 5) \quad \text{Perfect Cube}$$

$$b) \quad 676 \rightarrow (2 \times 2) \times (13 \times 13) \quad \text{Perfect Square}$$

$$c) \quad 1089 \rightarrow (11 \times 11) \times (3 \times 3) \quad \text{Perfect Square.}$$

$$d) \quad 13824 \rightarrow (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (3 \times 3 \times 3) \\ \text{Perfect Cube.}$$