LAMC Physical Science 1 Homework #1 Solution

Ch 1

Matching

a. 5 (metric system)

b.17(centi)

c.23 (significant figures)

j. 1(Science)

q. 20(Derived Units)

s.15(mega-)

v. 13(mks)

Multiple choice

2.b

4.b

6.b

10.c

13.a

Fill in the blank

2. experiment

5. Limitations

6. greater

8. fundamental

10. 10^6

Ch 1 (d)

Exercises

4. Conversion factor for liter to cm^3 can be found on page 13.

$$\frac{1\,L}{1000\,cm^3}$$

and we know $1\,m = 100\,cm$.
We will use these two conversion factors

$$1\,m^3 \times \frac{100\,cm \times 100\,cm \times 100\,cm}{1\,m \times 1\,m \times 1\,m} \times \frac{1\,L}{1000\,cm^3}$$

$$= \frac{1000000}{1000}\,L$$

$$= 1000\,L$$

$$\boxed{1\,m^3 = 1000\,L.}$$

8. (a) 40,000,000 bytes

$= 40 \times 1000,000$ bytes * Remember Mega $= 10^6$

$$\boxed{= 40\,Mb}$$

Or You can use a conversion factor.

$$40,000,000 \text{ bytes} \times \frac{1 \text{ Mb}}{1,000,000 \text{ bytes}}$$

$$= \frac{40,000,000}{1000,000} \text{ Mb}$$

$$= 40 \text{ Mb.}$$

8. (d) 5,500 bucks

$$= 5,500 \text{ bucks} \times \frac{1 \text{ kilobucks}}{1000 \text{ bucks}} \quad (\text{kilo} = 10^3)$$

$$= \frac{5,500}{1000} \text{ kilobucks}$$

$$= 5.5 \text{ kilobucks}$$

14. $1 \text{ ft} = 0.305 \text{ m}$

We will convert m^2 to square foot (ft^2).

$$40 \text{ m}^2 \times \frac{1 \text{ ft} \times 1 \text{ ft}}{0.305 \text{ m} \times 0.305 \text{ m}}$$

$$= 530 \text{ ft}^2$$

Typical size of a bedroom is $100 \sim 200 \text{ ft}^2$.

Thus, this room is huge!!

This is not reasonable size of a dorm room.

22. (a) $0.00995 \rightarrow 0.0100$ or 1.00×10^{-2}

(b) $644.73 \rightarrow 645$ or 6.45×10^{2}

(c) $0.010599 \rightarrow 0.0106$ or 1.06×10^{-2}

(d) $8429.55 \rightarrow 8430.$ or 8.43×10^{3}

25. $$\frac{3.15\ m \times 1.53\ \cancel{m}}{0.78\ \cancel{m}}$$

For multiplication and division, the answer must contain the same number of significant figures as in the measurement that has the least number of significant figures.

In this problem, 0.78 has the least number of significant figures (2)

$$\frac{3.15\ m \times 1.53\ \cancel{m}}{0.78\ \cancel{m}} = 6.1788\ldots$$

Round the answer to two significant figures

$$\boxed{= 6.2}$$

26. $2.15 \times \pi = 6.75442 42\ldots$

2.15 has three significant figures.

$\Rightarrow \boxed{6.75}$