

1.) It is important with questions like this to write out the actual range of each substance:

$$A \quad 51.0 - 51.2$$

$$B \quad 51.2 - 51.4$$

$$C \quad 51.4 - 51.6$$

$$D \quad 51.6 - 51.8$$

Now write out the range of the other substance:

$$51.0 - 51.4$$

So A, B, + C could all be possible because at least 2 part overlaps.

2.) a) The greatest mass comes from subtracting the highest mass from the lowest mass of the beaker.

$$\begin{array}{r} 154.6 \\ - 44.9 \\ \hline 109.7g \end{array}$$

b.) Use lowest mass of water, and ~~lowest~~ highest mass of beaker.

$$\begin{array}{r} 154.0 \\ - 45.5 \\ \hline 108.5g \end{array}$$

3.) a) 1.3×10^{-8}

c) 8.4×10^{11}

b) 1.2×10^{24}

d) 5.67×10^{-8}

$$4. \quad a) \quad 120 \cancel{\text{ dozen}} \times \frac{1 \text{ crate}}{12 \cancel{\text{ dozen}}} = 12 \text{ crates}$$

$$b) \quad 1 \cancel{\text{ crate}} \times \frac{12 \cancel{\text{ dozen}}}{1 \cancel{\text{ crate}}} \times \frac{12 \text{ eggs}}{1 \cancel{\text{ dozen}}} = 120 \text{ eggs}$$

$$5. \quad a) \quad 25 \cancel{\text{ mL}} \times \frac{1 \text{ L}}{10^3 \cancel{\text{ mL}}} = 25 \times 10^{-3} = 2.5 \times 10^{-2}$$

$$b) \quad \text{Use } F = \frac{9}{5} C + 32$$

$$F = \frac{9}{5} (13) + 32$$

$$F = 55.4^\circ$$

$$c) \quad 4.5 \cancel{\text{ mm}} \times \frac{1 \text{ km}}{10^6 \cancel{\text{ mm}}} = 4.5 \times 10^{-6} \text{ km}$$

$$d) \quad 5.60 \text{ g} \times \frac{1 \text{ Yg}}{10^{24} \text{ g}} = 5.60 \times 10^{-24} \text{ Yg}$$

e) not on quiz. BUT:

$$204 \text{ miles} \times \frac{5280 \text{ ft}}{1 \text{ mile}} \times \frac{12 \text{ inches}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} \times \frac{1 \text{ km}}{10^5 \text{ cm}} =$$

$$\boxed{328.3 \text{ km}}$$

$$f) \quad 46 \text{ in.} \times \frac{2.54 \text{ cm}}{1 \text{ in.}} = 116.84 \text{ cm}$$

$$g) \quad 4 \cancel{\text{kg}} \times \frac{10^{15} \cancel{\text{pg}}}{1 \cancel{\text{kg}}} = \boxed{4 \times 10^{15} \text{ pg}}$$

$$h) \quad F = \frac{9}{5} C + 32$$

$$45 = \frac{9}{5} C + 32$$

$$13 = \frac{9}{5} C$$

$$\boxed{7.2^\circ = C}$$

$$i) \quad 0.62 \cancel{\text{cm}} \times \frac{1 \cancel{\text{inches}}}{2.54 \cancel{\text{cm}}} \times \frac{1 \cancel{\text{ft}}}{12 \cancel{\text{inches}}} \times \frac{1 \cancel{\text{mile}}}{5280 \cancel{\text{ft}}} =$$

$$\boxed{3.85 \times 10^{-6} \text{ miles}}$$

$$6.) \quad 6.0 \cancel{\text{L}} \times \frac{10^3 \cancel{\text{mL}}}{1 \cancel{\text{L}}} \times \frac{8.0 \text{g}}{100 \cancel{\text{mL}}} = \boxed{480 \text{g}}$$

\uparrow convert to mL L.
 \uparrow from problem

$$7.) \quad \frac{100 \cancel{\text{g}}}{1 \cancel{\text{mL}}} \times \frac{10^3 \cancel{\text{mg}}}{1 \cancel{\text{g}}} \times \frac{10^3 \cancel{\text{mL}}}{1 \cancel{\text{L}}} = \boxed{1 \times 10^8 \text{ mg/L}}$$

\uparrow convert g \rightarrow mg
 \uparrow convert mL \rightarrow L