

NOTE: YOUR GRADE IS: SCORE X 2.5. OFFICIALLY MAXIMUM IS 25 POINTS
IF YOU GET ALL CORRECT: 12 X 2.5 = 30 POINTS (A BONUS OF 5 PTS)

(1) **E** 6; Answer: there are 6 sig figures.

(2) **D** ; The most scientific is: Observing whether adding fertilizer increases flowering in plants.

(3) **D** a gas; (others don't contain atoms; light is massless)

(4) **A** 2000; Answer: # mLs = 2 L (1000 mL/L) = 2000 mL

(5) **A** solid; Answer: First, express °F in °C: $^{\circ}\text{C} = (75-32)\times(1/1.8) = 43/1.8 = 24^{\circ}\text{C}$. That is below the melting point ($24^{\circ}\text{C} < 56^{\circ}\text{C}$). Therefore it must be a **solid**.

(6) **C** ; Dalton of course knew nothing of the atomic numbers.

(7) **D** $1.00 \times 10^3 \text{ kg/m}^3$; Answer: # $\text{kg/m}^3 = 1.00 \text{ g/mL} (1\text{kg}/10^3\text{g}) (1\text{mL}/1 \text{ cm}^3)(10^2\text{cm/m})^3 = 1.00 \times 10^3 \text{ kg/m}^3$

(8) **A** 2; Answer: #L/sec = $(60 \text{ gal}/2\text{min})(3.785 \text{ L}/\text{gal})(1\text{min}/60 \text{ sec}) = 1.8925 = 2$ (1 sig fig)

(9) **C** Li_3N ; Answer: There must be 3 Li^+ cation's per 1 N^{3-} anion. Write the cation first:

(10) **D** 18; Answer: # electrons in $n=3$ orbit = $2n^3 = 2(3)^3 = 18$ electrons.

(11) **D** 115; Answer; $A = n+Z$, so $n = A-Z = 192-77 = 115$

(12) **C** -1; Answer: if $Z = 17$, then the electron configuration would be: $1s^2 2s^2 2p^6 3s^2 3p^5$. Gaining 1 more electron would complete the outer (i.e. valence) shell and make it $1s^2 2s^2 2p^6 3s^2 3p^6$. The resulting ion has a charge of -1.