

Worksheet #2

Client 14

Fall 2009

1. Calculate the mass of 0.260 moles of phosphorus (30.97 g/mol)?

$$\text{mass} = \frac{0.260\text{ mol}}{1\text{ mol}} \times 30.97\text{ g} = 8.05\text{ g}$$

The answer should have 3 significant figures.

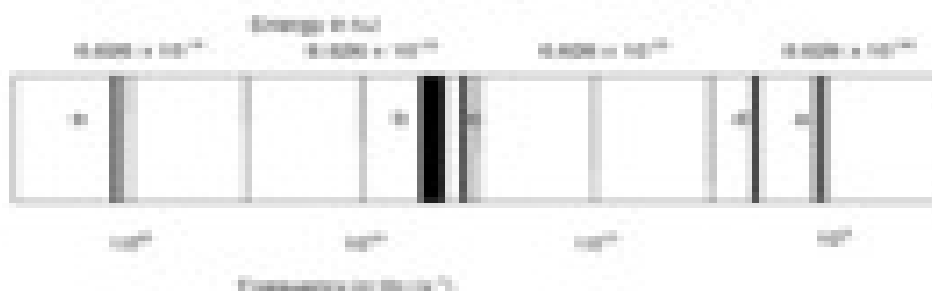
2. How many atoms are in 2.87 g of aluminum (molar mass = 26.98)?

$$2.87\text{ g} = \frac{1\text{ mol}}{26.98\text{ g}} \times 6.022 \times 10^{23}\text{ atoms} = 6.53 \times 10^{22}\text{ atoms}$$

The answer should have 3 significant figures.

3. Locate the following examples of electromagnetic radiation on the figure below. Draw a vertical line for each frequency of radiation and label it.

- The radiofrequency of 100.7 MHz (FM radio) ($100.7\text{ MHz} = 1.007 \times 10^8\text{ Hz}$)
- Blue light radiation (wavelength, 475–495 nm) ($475\text{--}495\text{ nm} = 4.75 \times 10^2\text{--}4.95 \times 10^2\text{ m}$)
- Yellow light, first ion ($5.00 \times 10^{14}\text{ Hz}$)
- The 2.3 GHz radiation of a microwave oven ($2.3\text{ GHz} = 2.3 \times 10^9\text{ Hz}$)
- Cobalt-60 gamma radiation, approximately $3 \times 10^{10}\text{ Hz}$.



- Arrange the five examples above in order of increasing wavelength, from shortest to longest wavelength.
- Arrange the five examples above in order of increasing energy, from lowest to highest wavelength.