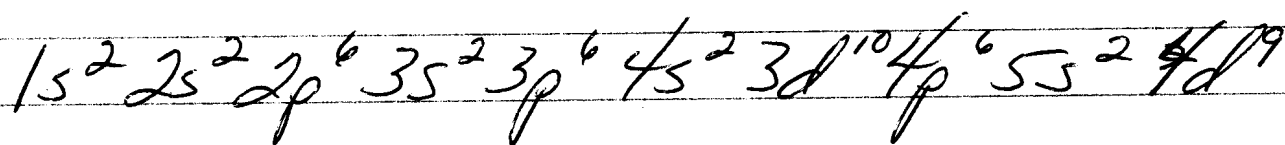


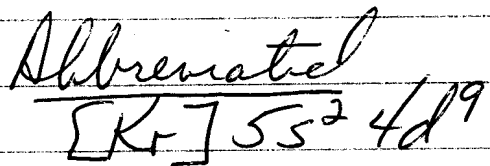
Chmy 121 (Ch-1-3) Extra Problems

1) Ag $Z=47$

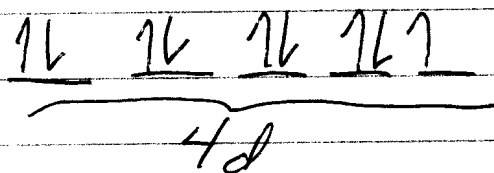
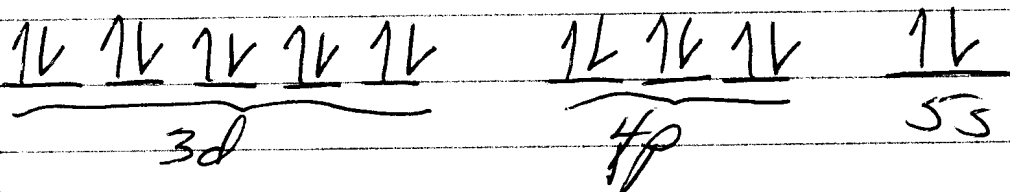
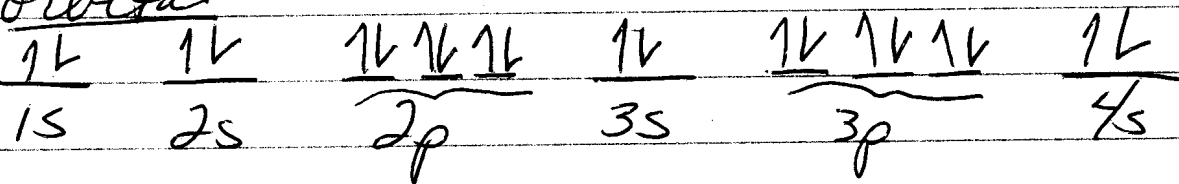
full



Abbreviated



orbital



- 2) A drug is dispensed in 7.50 mg tablets. You have a patient that weighs 165.5 lbs and has been prescribed the drug in a dosage of 250 $\mu\text{g}/\text{kg}$ body weight. How many tablets of the drug should you give the patient?

$$? \text{ tablets} = \left(\frac{1 \text{ tablet}}{7.50 \text{ mg}} \right) \left(\frac{250 \mu\text{g}}{\text{kg body wt}} \right) \left(\frac{1 \text{ kg}}{10^3 \mu\text{g}} \right) \left(\frac{1 \text{ kg}}{2.2 \text{ lbs}} \right) 165.5 \text{ lbs}$$

$$\approx 2.51 \text{ tablets}$$

- 3) The density of air is 1.19 g/L. What is the mass, in kg, of the air in a room measuring 12.5 ft by 4.7 m by 2.44 $\times 10^3$ mm?

need vol in cm^3 to connect to $\mu\text{L} \rightarrow \text{L}$ $D = \frac{M}{V}$ so $M = dV$

$$V = (12.5 \text{ ft}) \left(\frac{12 \text{ in}}{1 \text{ ft}} \right) (2.54 \text{ cm}) \left(\frac{1 \text{ in}}{2.54 \text{ cm}} \right) (4.7 \text{ m}) \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) (2.44 \times 10^3 \text{ mm}) \left(\frac{1 \text{ cm}}{10 \text{ mm}} \right) = 4.3693 \times 10^7 \text{ cm}^3$$

$$M = \left(\frac{1.19 \text{ g}}{\text{L}} \right) (4.3693 \times 10^7 \text{ cm}^3) \left(\frac{1 \text{ mL}}{1 \text{ cm}^3} \right) \left(\frac{1 \text{ L}}{10^3 \text{ mL}} \right) \left(\frac{1 \text{ kg}}{10^3 \text{ g}} \right) = 5.2 \times 10^4 \text{ kg}$$

- 4) If a hot water bottle contains 43.0 oz of water at 325 K, how much heat will it have supplied to a person's "aching back" by the time it has cooled to 37 $^\circ\text{C}$? The specific heat of water is 1.00 $\text{cal}/\text{g} \cdot ^\circ\text{C}$. Give your answer in scientific notation.

$$SH = \frac{\text{cal}}{\text{g} \cdot ^\circ\text{C}} \quad \text{cal} = SH \cdot g \cdot \Delta T$$

$$\text{cal} = \left(\frac{1.00 \text{ cal}}{\text{g} \cdot ^\circ\text{C}} \right) (43.0 \text{ oz}) \left(\frac{28 \text{ g}}{1 \text{ oz}} \right) (15^\circ\text{C}) = 1.8 \times 10^4 \text{ cal}$$

$$325 \text{ K} - 273 = 52^\circ\text{C} - 37^\circ\text{C} = 15^\circ\text{C}$$