

All work must be shown to receive credit. Use correct significant figures.

1. (5 points) A barrel contains 50.0 L of vegetable oil. If the oil has a density of 0.843 g/ml, how many kg of vegetable oil are in the barrel?

$$? \text{ kg oil} = 50.0 \text{ L oil} \times \frac{1000 \text{ mL oil}}{1 \text{ L oil}} \times \frac{0.843 \text{ g oil}}{1 \text{ mL oil}} \times \frac{1 \text{ kg oil}}{1000 \text{ g oil}} = 42.5 \text{ kg oil}$$

2. (5 points) A bottle of lemon juice contains 5.88% citric acid by mass. How many grams of lemon juice contain 65.0 grams of citric acid?

$$? \text{ g lemon juice} = 65.0 \text{ g citric acid} \times \frac{100 \text{ g lemon juice}}{5.88 \text{ g citric acid}} = 1110 \text{ g lemon juice}$$

3. (6 points) When a clean platinum wire is heated in a flame it changes from a lustrous silver color to a dull red color. When the wire is removed from the flame it returns to a lustrous silver color. Is the change that occurs a physical or chemical change? Explain your reasoning.

Physical change

Physical changes can be observed without changing the identity of the substance. After heating the platinum wire and cooling, it regains its original properties, meaning that there has been no change in composition.

4. (4 points) Name the following compounds.

a. C_3H_6 tricarbon hexahydride

b. Na_2S sodium sulfide

All work must be shown to receive credit. Use correct significant figures.

1. (5 points) A barrel contains 50.0 L of vegetable oil. If the oil has a density of 0.782 g/ml, how many kg of vegetable oil are in the barrel?

$$? \text{ kg oil} = 50.0 \text{ L oil} \times \frac{1000 \text{ mL oil}}{1 \text{ L oil}} \times \frac{0.782 \text{ g oil}}{1 \text{ mL oil}} \times \frac{1 \text{ kg oil}}{1000 \text{ g oil}} = 39.1 \text{ kg oil}$$

2. (5 points) A bottle of lemon juice contains 7.02% citric acid by mass. How many grams of lemon juice contain 65.0 grams of citric acid?

$$? \text{ g lemon juice} = 65.0 \text{ g citric acid} \times \frac{100 \text{ g lemon juice}}{7.02 \text{ g citric acid}} = 926 \text{ g lemon juice}$$

3. (6 points) When a clean platinum wire is heated in a flame it changes from a lustrous silver color to a dull red color. When the wire is removed from the flame it returns to a lustrous silver color. Is the change that occurs a physical or chemical change? Explain your reasoning.

Physical change

Physical changes can be observed without changing the identity of the substance. After heating the platinum wire and cooling, it regains its original properties, meaning that there has been no change in composition.

4. (4 points) Name the following compounds.

a. C_2H_4 dicarbon tetrahydride

b. Na_3P sodium phosphide