Unit 2.5 Percentages

1. Write each of the following in percentage form
    a. 0.85

    b. 0.0047

    c. $\frac{5}{8}$

    d. $\frac{3}{4}$

2. Write each of the following percentages in fraction form (reduce if possible)

    a. 62% _____

    b. 150% _____

    c. 40% _____

    d. 2% _____

3. Find the following
    a. Find 32% of 40

    b. Find 23% of 256

    c. Find 2% of 631

4. Solve the following word problems

a. An instrumentation specialist was told that they would be given a bonus of 6% of any money his recommendations saved the company. How much would they have to save the company to earn a bonus of $1,200?

b. An ESTEC student missed 6 problems on their electronics test and received a grade of 85%. If all the problems were of equal value, how many problems were on the test?

c. A process control system uses a 15 foot tank to store water. If the tank is 34% full, what is the physical level in the tank measured in feet and inches. Round the answer to the nearest inch.

d. In a nuclear reactor, the nuclear reaction occurs from neutrons colliding with atoms which breaks them apart and release more neutrons. It is impossible to contain all of these neutrons and some escape from the fissionable material. Neutron Leakage is a percentage of the neutron population that DO NOT escape.

   Determine the number of neutrons that escaped the fissionable material if the Neutron Leakage percentage is 94% and there was a total neutron population of 36,500 neutrons.

e. An electronics salesperson monthly income is $3,025 salary plus 8% of their sales over $10,000. What was their income for a month in which their sales of electronic products was $14,575.32?

f. A pipe has 325 gallons per minute (gpm) flowing through it unobstructed. A valve is partially closed and restricts the flow rate to 176 gpm. What percentage does this represent?

g. A programmable logic controller (PLC) controls a normally-closed linear-motor-actuated valve with a 0V to 10V electrical signal. If the PLC output voltage is 7.3V, what percent is the valve open?

h. An Alternating Current (AC) motor's rotation speed per minute (rpm) is based upon the input frequency (Hz). For a given motor, it has been designed to turn 1800 rpm at 60Hz. If the speed of the motor needs to be decreased to 1000 rpm, determine the input frequency.

i. In instrumentation, a current to pressure transducer converts an electrical signal to a pneumatic (air pressure) signal. The input of the transducer is designed for 4 – 20mA and the output is designed for 3-15psi. If the input current is 12mA, determine the output pressure.