

**Science 1206 - Physics**  
**Assignment 1**

1. For each of the following calculate the answer in the correct number of significant digits. Assume all values are measured values.
  - a.  $12.5\text{cm} + 12.00\text{cm}$
  - b.  $89\text{ L} \times 345.67\text{ kg/L}$
  - c.  $.0123\text{mL} \times 23.4\text{g/mL}$
  - d.  $78.3\text{ m} - 12.45\text{ dm}$
  - e.  $90.0\text{m}^2 \div .99\text{m}$
  - f.  $144.7\text{ kg} + 3466\text{ g}$
  - g.  $8\text{hm}^2 \div 3\text{hm}$
  - h.  $123.67\text{ m} \times 23.45\text{ m}$
  - i.  $16\text{ s} - 45.5\text{ s}$
  - j.  $87\text{ km}^2 \div 123.5\text{ km}$
  - k.  $198.67\text{mm} \times 12.5\text{mm}$
  - l.  $45.6\text{ cm} - 10.34\text{ mm}$
  - m.  $100\text{ cm/m} \times 20\text{ m}$
  - n.  $5\text{ g} \div 10\text{ mL}$
  
2. Express the following numbers in scientific notation with 3 significant digits.
  - a.  $76.43\text{ g}$
  - b.  $4508\text{ mL}$
  - c.  $750000\text{ m}$
  - d.  $0.000156\text{ s}$
  - e.  $0.4720\text{ kg}$
  - f.  $12.39\text{ min}$
  
2. Convert the following into the desired units.
  - a.  $10\text{ km}$  into metres
  - b.  $50\text{ m/s}$  into  $\text{m/min}$
  - c.  $90\text{ km/hr}$  into  $\text{km/s}$
  - e.  $100\text{ km/hr}$  into  $\text{mm/hr}$
  - f.  $300\text{ L}$  into  $\text{mL}$
  - g.  $455\text{ m/s}$  into  $\text{km/hr}$
  - h.  $.345\text{ s}$  into  $\text{min}$
  - i.  $12\text{ minutes}$  into  $\text{nanoseconds}$
  
3. What is the difference between average speed and instantaneous speed?
  
4. If light travels  $3.00 \times 10^8\text{ m/s}$ , how many minutes are required for light to cover the  $1.5 \times 10^8\text{ km}$  between the sun and the earth?
  
5. A person has a mass of  $70\text{ kg}$ , what is this mass in milligrams?
  
6. How many seconds are there in  $2.0\text{ weeks}$ ?
  
7. Suppose you wish to cut a rope into pieces of identical length. Each piece must be  $30\text{ cm}$  long. the length of the rope is  $5.40\text{ m}$ . How many pieces can be obtained?
  
8. If the price of gasoline is  $\$0.719/\text{L}$ , how much would it cost to fill a gas tank with a capacity of  $73\text{ L}$ ?
  
9. The fastest time for the Boston Marathon, a  $42.2\text{ km}$  Road Race, was set by Robert K. Cheruiyot of Kenya, who covered the distance in two hours, seven minutes and fourteen seconds. What was his average speed for the race?
  
10. A car travelled between the Village and Avalon Malls at a average speed of  $60\text{ km/hr}$ . How far are the two malls apart if it took  $8\text{ min}$  to travel the distance?
  
11. A person took  $1\text{ hour}$  and  $15\text{ minutes}$  to walk from the Gonzaga to the Village Mall and travelled a distance of  $7.2\text{ km}$ , what was the person's average speed?
  
12. A runner can cover  $1.6\text{ km}$  in  $3.8\text{ minutes}$ . What is the average speed of the runner in  $\text{km/hr}$  and  $\text{m/s}$ ?
  
13. Some cats can travel at an average speed of  $35\text{ km/hr}$ . If the cat ran for  $10\text{ seconds}$ , how far can the cat go in  $\text{m}$ .