

Motion Worksheet #3

- ① speed - direction does not matter
velocity - direction is important
- ② speed. A speedometer does not tell you what direction you are going.
- ③ gas pedal; brake
- ④ steering wheel. Velocity is speed and direction, since we do not want to change the speed, we must change the direction

$$\textcircled{5} \quad v = \frac{d}{t} = \frac{602 \text{ m}}{2.5 \text{ s}} = \underline{240.8 \text{ m/s}}$$

$$240.8 \frac{\text{m}}{\text{s}} \left(\frac{3600}{1000} \right) = \underline{867 \text{ km/h}}$$

$$\textcircled{6} \quad v = \frac{d}{t} = \frac{0.001 \text{ m}}{0.004 \text{ s}} = \underline{0.25 \text{ m/s}}$$

$$\textcircled{7} \quad v = \frac{d}{t}$$

$$130000 = \frac{1}{t}$$

$$t = \frac{1}{130000} = \underline{7.7 \times 10^{-6} \text{ s}} \quad (0.0000077)$$

$$\textcircled{8} \quad 2.7 \text{ days} \times 24 = 64.8 \text{ hours}$$

$$v = \frac{d}{t}$$

$$32000 = \frac{d}{64.8}$$

$$\underline{d = 2\,073\,600 \text{ km}}$$

$$\textcircled{9} \quad v = \frac{d}{t}$$

$$51.5 = \frac{20}{t}$$

$$t = \frac{20}{51.5} = \underline{0.39 \text{ s}}$$

$$\textcircled{10} \quad \begin{aligned} \text{Total displacement} &= 10 \text{ km} + 18 \text{ km} + 9.8 \text{ km} = 37.8 \text{ km} \\ \text{Total time} &= 7.5 \text{ min} + 14.40 \text{ min} + 5.8 \text{ min} = 27.7 \text{ min} \div 60 = 0.46 \text{ h} \end{aligned}$$

$$v = \frac{d}{t} = \frac{37.8 \text{ km}}{0.46 \text{ h}} = \underline{82.2 \text{ km/h}}$$

$$\textcircled{11} \quad v = \frac{d}{t}$$

$$1 \text{ km/yr} = \frac{10000 \text{ km}}{t}$$

$$t = \frac{10000 \text{ km}}{1 \text{ km/yr}} = 10000 \text{ yrs} \div 100 = \underline{100 \text{ centuries}}$$