

6.2

$$v = 340 \text{ m/s}$$

$$t = 3 \text{ s}$$

$$x = ?$$

$$x = v_0 t + \frac{1}{2} a t^2$$

$$= (340)(3)$$

$$= \boxed{1,020 \text{ m}}$$

6.3

$$\bar{v} = \frac{x}{t} = \frac{0}{5} = \boxed{0}$$

6.4.



$$t = 30 \text{ s.}$$

$$x = 40 \text{ m}$$

$$d = 400 \text{ m}$$

$$\text{a) avg. speed} = \frac{\text{dist}}{t} = \frac{400}{30} = \boxed{\frac{40 \text{ m}}{3 \text{ s}}}$$

$$\text{b) avg. velocity } \bar{v} = \frac{x}{t} = \frac{40}{30} = \boxed{\frac{4 \text{ m}}{3 \text{ s}}}$$

6.5

$$\text{avg. speed } \bar{s} = \frac{d}{t} = \frac{d_1 + d_2}{t_1 + t_2}$$

$$v_1 = 6 \frac{\text{km}}{\text{h}}$$

$$t_1 = 4 \text{ min} \times \frac{1 \text{ h}}{60 \text{ min}} = \frac{1}{15} \text{ h} = 0.0667 \text{ h}$$

$$d_1 = v_1 t_1 = (6) \left(\frac{1}{15} \right) = \frac{6}{15} = 0.4 \text{ km}$$

$$v_2 = 4 \frac{\text{km}}{\text{h}}$$

$$t_2 = 10 \text{ min} \times \frac{1 \text{ h}}{60 \text{ min}} = \frac{1}{6} \text{ h} = 0.1667 \text{ h}$$

$$d_2 = v_2 t_2 = (4) \left(\frac{1}{6} \right) = \frac{2}{3} \text{ km} = 0.667 \text{ km}$$

$$\bar{s} = \frac{0.4 + 0.667}{0.0667 + 0.1667} = \boxed{4.57 \frac{\text{km}}{\text{h}}}$$