



Speeder - constant velocity of 24 m/s

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

$$\Delta d = v \Delta t$$

$$d - 0 = (24 \text{ m/s})(t - 0)$$

$$d = (24 \text{ m/s})t$$

$$(y = mx + b)$$

Using Substitution:

$$24t = 1.05t^2$$

$$0 = 1.05t^2 - 24t$$

$$0 = t(1.05t - 24)$$

$$t = 0 \text{ and } 1.05t - 24 = 0$$

$$1.05t = 24$$

$$t = \frac{24 \text{ m/s}}{1.05 \text{ m/s}^2}$$

Sub $t = 23 \text{ s}$ into

$$t = 23 \text{ s}$$

$$d = (24 \text{ m/s})(23 \text{ s})$$

$$d = 548.57 \text{ m}$$

$$d = 5.5 \times 10^2 \text{ m}$$

Police car - constant acceleration

$$a = 2.1 \text{ m/s}^2 \quad (v_i = 0)$$

$$d = v_i \Delta t + \frac{1}{2} a \Delta t^2$$

$$d = \frac{1}{2} (2.1 \text{ m/s}^2) t^2$$