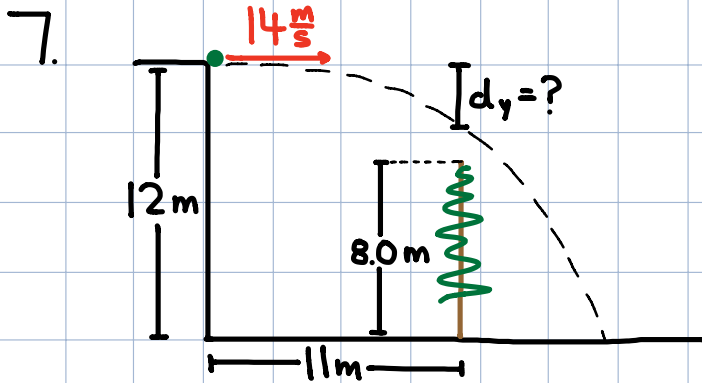


MORE PROJECTILE MOTION (HORIZONTALLY LAUNCHED) - SOLUTIONS

1. 1.8 m
2. 1.2 m
3. 180 m
4. $17 \frac{m}{s}$
5. a) 120 m
b) 150 m
6. 18 m



HORIZONTAL

given:

$$v = 14 \frac{m}{s}$$

$$d = 11 m$$

$$t = ?$$

$$d = vt$$

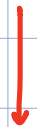
$$t = \frac{d}{v}$$

$$= \frac{11}{14}$$

$$= 0.7857 s$$

VERTICAL

GIVEN:



+

$$v_i = 0$$

$$a = 9.8 \frac{\text{m}}{\text{s}^2}$$

$$t = 0.7857 \text{ s}$$

$$d = ?$$

$$v_i = 0$$

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

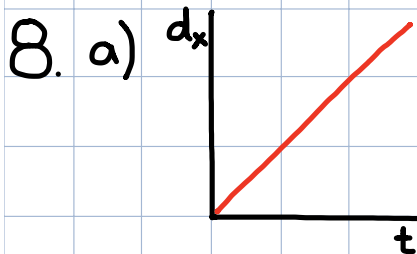
$$= \frac{1}{2} a t^2$$

$$= 3.025 \text{ m}$$

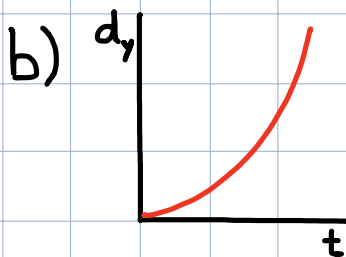
$$12 - 3.025 = 9 \text{ m ABOVE THE GROUND}$$

$$9 \text{ m} > 8.0 \text{ m}$$

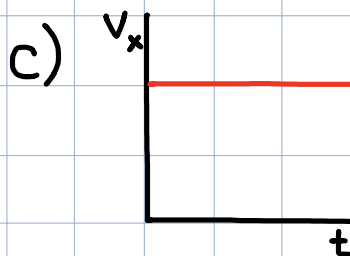
→ THE ROCK MAKES IT OVER THE TREE.



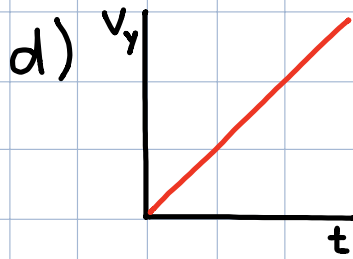
LINEAR
↳ CONSTANT VELOCITY →
CONSTANT SLOPE ON d-t GRAPH



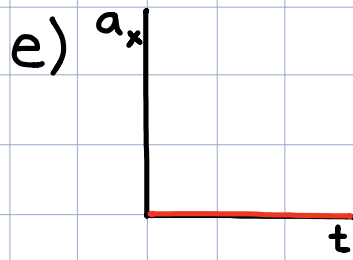
PARABOLIC
↳ $v_{yi} = 0$ → INITIAL SLOPE = 0
UNIFORM ACCELERATION →
INCREASING SLOPE ON d-t GRAPH



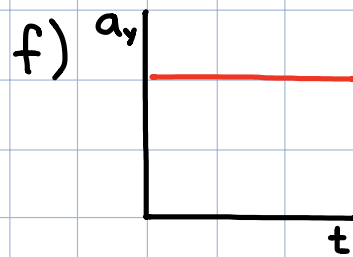
CONSTANT
↳ CONSTANT NON-ZERO VELOCITY



LINEAR
↳ CONSTANT ACCELERATION
↳ CONSTANT SLOPE ON $v-t$ GRAPH



CONSTANT
↳ NO ACCELERATION ($a = 0$)



CONSTANT
↳ CONSTANT ACCELERATION ($a = 9.8 \frac{m}{s^2}$)