

# AP Physics 1

## Projectile Motion Practice Answers

- 1.) a.)  $t = 3.64 \text{ s}$     b.)  $\Delta x = 43.7 \text{ m}$     c.)  $\bar{v} = 37.7 \frac{\text{m}}{\text{s}} \angle -71.4^\circ$
- 2.) a.) No, she only travels about 6.3 m    b.)  $\bar{v}_i = 7.7 \frac{\text{m}}{\text{s}} \angle 0$
- 3.) a.)  $t = 3.19 \text{ s}$     b.)  $\bar{v}_i = 266 \frac{\text{m}}{\text{s}} \angle 0$
- c.)  $v_x = 266 \frac{\text{m}}{\text{s}}$      $v_y = -31.3 \frac{\text{m}}{\text{s}}$      $v = 268 \frac{\text{m}}{\text{s}}$      $\theta = -6.7^\circ$
- 4.) a.)  $\bar{v} = 144 \frac{\text{m}}{\text{s}} \angle 0$     b.)  $t = 19.6 \text{ s}$     c.)  $y = 1882 \text{ m}$
- d.)  $v_x = 144 \frac{\text{m}}{\text{s}}$      $v_y = -192 \frac{\text{m}}{\text{s}}$      $v = 240 \frac{\text{m}}{\text{s}}$      $\theta = -53.13^\circ$
- e.)  $\Delta x = 5645 \text{ m}$
- 5.) a.)  $y = 52.3 \text{ m}$
- b.)  $v_x = 16 \frac{\text{m}}{\text{s}}$      $v_y = -32.0 \frac{\text{m}}{\text{s}}$      $v = 35.8 \frac{\text{m}}{\text{s}}$      $\theta = -63.5^\circ$
- c.)  $t = 4.49 \text{ s}$     d.)  $\Delta x = 71.8 \text{ m}$
- 6.) a.)  $t = 5.5 \text{ s}$     b.)  $y_i = 16.2 \text{ m}$
- 7.)  $\bar{v}_i = 45 \frac{\text{m}}{\text{s}} \angle 61^\circ$
- 8.)  $\bar{v}_i = 22.1 \frac{\text{m}}{\text{s}} \angle 57.0^\circ$
- 9.) a.)  $y = 3.90 \text{ m}$  and ball clears the crossbar by 0.84 m    b.) ball is falling when crossing the crossbar
- 10.) a.)  $t = 1.43 \text{ s}$     b.)  $\bar{v}_i = 16.3 \frac{\text{m}}{\text{s}} \angle 59.1^\circ$     c.)  $y = 7.5 \text{ m}$