

Name: \_\_\_\_\_ Block: \_\_\_\_\_

## Projectiles at an Angle #1

1. A ball is shot out of a slingshot with a velocity of  $10.0 \frac{\text{m}}{\text{s}}$  at an angle of  $40.0^\circ$  above the horizontal. How far away does it land?

10.05 m
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2. The 12 Pounder Napoleon Model 1857 was the primary cannon used during the American Civil War. If the cannon had a muzzle velocity of  $439 \frac{\text{m}}{\text{s}}$  and was fired at a  $5.00^\circ$  angle, what was the effective range of the cannon (the distance it could fire)? (Neglect air resistance.)

3415 m
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3. A physics teacher is designing a ballistics event for a science competition. The ceiling is 3.00 m high, and the maximum velocity of the projectile will be  $20.0 \frac{\text{m}}{\text{s}}$ .
- (a) What is the maximum initial velocity in the vertical direction that the projectile could have?

$$7.68 \frac{\text{m}}{\text{s}}$$

- (b) At what angle should the projectile be launched in order to achieve this maximum height?

$$22.6^\circ$$

- (c) What is the maximum horizontal distance that the projectile could travel?

$$28.9 \text{ m}$$