

Sample Questions Chapter 3: Projectile Motion

- 1) Chad punts a football with a resultant velocity of 18 m/s at an angle of 48° . The ball leaves the foot at a height of 0.8 m. If the ball experiences a constant vertical acceleration of -9.8 m/s^2 while it is in the air, what will the ball's position be after 1.5 s?

- 2) Phil is trying to dunk a basketball and leaves the ground with a vertical velocity of 3.5 m/s.
 - a. What is Phil's vertical acceleration immediately after takeoff?

 - b. What is the peak height Phil's center of gravity will attain if it started at 1.2m?

 - c. How much time elapses before Phil will reach his peak height?

- 3) A football is thrown by Steve with a vertical velocity of 2 m/s and a horizontal velocity of 20 m/s. Ignoring the effect of air resistance, what will be:
 - a. The flight time until the ball returns to the height it was thrown?

 - b. The vertical velocity when the ball returns to the height it was thrown?

 - c. The distance downfield Aaron needs to be to catch the ball at the height it was thrown?

- 4) A shot put leaves the thrower's hand at 15m/s at an angle of 42° and a height of 1.3m.
 - a. What will be the shot's maximum height?

 - b. What will be the shot's flight time?

 - c. How far will the shot travel from the thrower's hand before it lands (think about why this may be different from the measured distance)?