1 Class Handout - Projectile Motion

1. Throw a rock off a cliff that is 125 m high with a horizontal velocity of $20 \frac{m}{s}$. Assume $g = 10 \frac{m}{s^2}$.
   - How long does it take for the rock to hit the ground?
   - How far does the rock travel from the base of the cliff?

2. Throw a baseball with an initial velocity of $40 \frac{m}{s}$ at an angle of 60 degrees with respect to the horizontal. Assume $g = 10 \frac{m}{s^2}$.
   - What is the acceleration at the top of its flight?
   - How long does it take to reach the top of its flight?
   - How high does it get?
   - What is the total flight time?
   - What is its range?

3. Throw a baseball with an initial velocity of $40 \frac{m}{s}$ straight up. Assume $g = 10 \frac{m}{s^2}$.
   - What is the acceleration at the top of its flight?
   - How long does it take to reach the top of its flight?
• How high does it get?

• What is the total flight time?

• What is its range?

4. Throw a baseball with an initial velocity of $40\text{ m/s}$ at an angle of $30$ degrees with respect to the horizontal. Assume $g = 10\text{ m/s}^2$.

• What is the acceleration at the top of its flight?

• How long does it take to reach the top of its flight?

• How high does it get?

• What is the total flight time?

• What is its range?