

1 Class Handout - Projectile Motion

1. Throw a rock off a cliff that is $125m$ high with an initial velocity of $20\frac{m}{s}$ at an angle of 45° with respect to the horizontal.. 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. An object thrown at an angle of 30° with respect to the horizontal lands $850m$ away. What was its initial velocity?

3. If you are attempting to throw a baseball as far as possible, what angle with respect to the horizontal will lead to the largest range (assume the same initial speed for any throw)? Assume $g = 10\frac{m}{s^2}$.

4. A daredevil jumps a canyon $20m$ wide. To do so, he drives a car up a 15° incline.

- What minimum speed must he achieve to clear the canyon?

- If the daredevil jumps at this minimum speed, what will his speed be when he reaches the other side?