PHYSICS 12

FREE FALL AND PROJECTILE MOTION
In-Class Assignment

Only full solutions with diagrams and assumptions clearly stated will earn a full mark.

1. a) An object falls from a 350.0 m height. How much time does it need to land on the ground below?

b) What assumptions do you make?

2. a) Consider a 25.0-kg projectile shot at 40.0 m/s. If it lands at the same level it was shot from after 6.60 seconds, what is its initial velocity?

b) What is the range of the projectile?

3. a) A 10.0-kg object thrown strictly upwards with velocity of 15.0m/s [U] spends 10.0 s in the air. What is the acceleration due to gravity?

b) What assumptions do you make?

4. Where does an object land if it is shot at 50.0 m/s at 30° above horizontal and it takes 4.0 s for it to hit the ground?

5. If you triple the velocity an object is thrown strictly upwards, what happens to the object's maximum height and its time spent in the air? **Support your reasoning with calculations.**