Name: Period:

Equations of Motion 6: *vf2 = vi2 + 2ad* (From rest or to rest)

*Show all work and include units*

1. A rock falls freely from rest near the surface of a planet where acceleration due to gravity is 4.0 meters per second per second. What is the speed of this rock after it falls 32 meters?

2. A ball is thrown straight up with a speed of 12 meters per second near the surface of Earth. What is the maximum height reached by the ball?

3. A roller coaster, traveling with an initial speed of 15 meters per second, decelerates uniformly at -7.0 meters per second2 to a full stop.

 Approximately how far does the roller coaster travel during its deceleration?

4. A 0.25-kilogram baseball is thrown upward with a speed of 30 meters per second. Ignoring friction, the maximum height reached by the baseball is approximately

5. A rock falls from rest off of a high cliff. How far has the rock fallen when its speed is 39.2 meters per second?

6. What is the speed of a 2.5-kilogram mass after it has fallen freely from rest through a distance of 12 meters?