Name: Period:

Equations of Motion 4: *d = vit + ½at2* (From rest or to rest)

*Show all work and include units*

1. A 1.0-kilogram ball is dropped from the roof of a building 40 meters tall. What is the approximate time of fall?

2. A rocket initially at rest on the ground lifts off vertically with a constant acceleration of 2.0 × 101 meters per second2. How long will it take the rocket to reach an altitude of 9.0 × 103 meters?

3. A rock falls from rest a vertical distance of 0.72 meter to the surface of a planet in 0.63 second. The magnitude of the acceleration due to gravity on the planet is

4. A clam dropped by a seagull takes 3.0 seconds to hit the ground. What is the seagull's approximate height above the ground at the time the clam was dropped?

5. A ball dropped from a bridge takes 3.0 seconds to reach the water below. How far is the bridge above the water?

6. A stone is dropped from a bridge approximately 45 meters above the surface of a river. Approximately how many seconds does the stone take to reach the water's surface?

7. How far will a brick starting from rest fall freely in 3.0 seconds?

8. A basketball player jumped straight up to grab a rebound. If she was in the air for 0.80 second, how high did she jump?