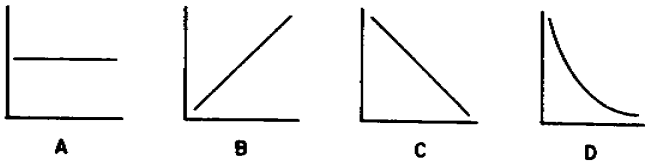
Name: **Period:**

Free Fall 1

1. A rock is dropped from a bridge. What happens to the magnitude of the acceleration and the speed of the rock as it falls? [Neglect friction.]

   A) Acceleration remains the same and speed increases.
   B) Both acceleration and speed increase.
   C) Both acceleration and speed remain the same.
   D) Acceleration increases and speed decreases.

2. Base your answer to the following question on the graphs below which represent various phenomena in physics. [Note: A graph may be used more than once.]



   Which graph best represents the relationship between speed and time for an object in free fall near the Earth's surface?

   A) *A* B) *B* C) *C* D) *D*

3. A freely falling object near the Earth's surface travels downward at a constant

   A) acceleration of 1.00 m/s^2
   B) acceleration of 9.81 m/s^2
   C) velocity of 1.00 m/s
   D) velocity of 9.81 m/s

4. A 4.0-kilogram rock and a 1.0-kilogram stone fall freely from rest from a height of 100 meters. After they fall for 2.0 seconds, the ratio of the rock's speed to the stone's speed is

   A) 1:1 B) 1:2 C) 2:1 D) 4:1

5. A baseball dropped from the roof of a tall building takes 3.1 seconds to hit the ground. How tall is the building? [Neglect friction.]

6. An object dropped from rest will have a velocity of approximately 30. meters per second at the end of

7. An object, initially at rest, falls freely near the Earth's surface. How long does it take the object to attain a speed of 98 meters per second?

8. A rock dropped off a bridge takes 5 seconds to hit the water. Approximately what was the rock's velocity just before impact?

9. A ball is thrown vertically upward with an initial velocity of 29.4 meters per second. What is the maximum height reached by the ball? [Neglect friction.]

10. An object falls freely from rest near the surface of Earth. What is the speed of the object after having fallen a distance at 4.90 meters?