Free Fall Problems

1. You are standing on the edge of a cliff by the sea and drop a rock. It falls for 4 seconds, and splashes into the water.
   a. What is the velocuty of the rock just as it hits the water? What about the speed?

   b. How high was the cliff?

2. A worker on the edge of a building drops a hammer. It falls for 2.3 seconds before hitting the ground.
   a. How fast is the hammer going just as it hits the ground?

   b. How tall was the building?

3. A seagull drops a clam onto some rocks in order to crack the shell. The clam falls for 1.25 seconds.
   a. What is the velocity of the clam just as it hits the ground?

   b. How high up was the seagull?

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4. A 1.5 kg ball is dropped and falls for 2 meters before hitting the ground.
   a. How many seconds did it take to fall?

   b. What is the velocity of the ball just as it hits the ground?

5. A painter drops a paintbrush while painting the side of a building. The brush falls 12.8 meters.
   a. How many seconds does it take to fall?

   b. How fast is the brush going just as it hits the ground?

6. Someone <u>throws</u> a rock straight down with an initial speed of 7 m/s. It falls for 1.5 seconds.
   a. What is its velocity when it hits the ground? (*Hint: what is the initial velocity?)*

   b. How far did the rock travel?

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Answers:

1. a) –40 m/s (and 40 m/s)	*b) 80 m*
2. a) 23 m/s	*b) 26.5 m*
3. a) –12.5 m/s	*b) 7.8 m*
4. a) 0.63 s	*b) –6.3 m/s*
5. a) 1.6 s	*b) 16 m/s*
6. a) –22 m/s	*b) 21.8 m*