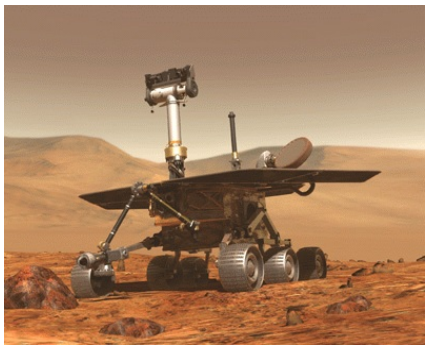
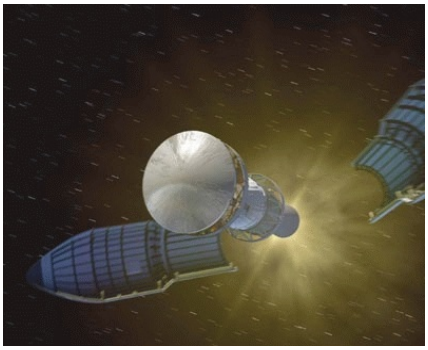
1. The Spirit and Opportunity robot rovers are still exploring the surface of Mars. The rovers' spacecraft and the rovers themselves travel at wildly different speeds.



   a. The Spirit rover can move across the Martian landscape at a maximum of 2.68 m/min. How many minutes would it take for it to travel 10.4 m, the width of Mr. M's classroom?



   b. Spirit journeyed to Mars in a spacecraft that traveled about 487 gigameters (487×10^9 m or 303 million miles) from Earth to Mars, averaging about 27,100 m/s (60,600 mi/h). Use the SI units to calculate how many Earth **days** it took for the spacecraft to complete its journey.

2. A runner in a 1.00×10^2 meter race passes the 40.0 meter mark with a speed of 5.00 m/s.

   a. If she maintains that speed, ***how far from the starting line*** will she be 3.00 seconds later?

   b. If 5.00 m/s was her top speed, what is the shortest possible time for her entire 1.00×10^2 m run?

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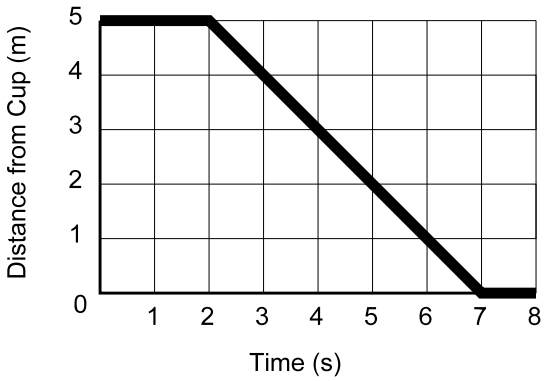


3. The graph above describes the motion of a golf ball. Note that it graphs *distance from a position*, **not** *distance traveled.* The ball is placed on the green at 5 meters from the cup at t=0 seconds.

   a. How far from the cup was the ball at t=1 second?

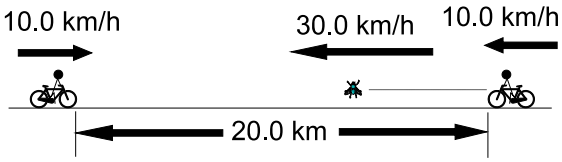
   b. What was the speed of the ball at t=1 second?

   c. How far from the cup was the ball at t=5 seconds?

   d. What was the speed of the ball as it moved towards the cup?

   e. What happened at t=7 seconds?

4. Two bicyclists are riding toward each other, and each has an average speed of 10.0 km/h. When their bikes are 20.0 km apart, a pesky fly begins flying from one wheel to the other at a steady speed of 30.0 km/h. When the fly gets to the wheel, it abruptly turns around and flies back to touch the first wheel, then turns around and keeps repeating the back-and-forth trip until the bikes meet, and the fly meets an unfortunate end.



   How many kilometers did the fly travel in its total back-and-forth trips?

