Motion #2

Velocity Sara, an amazingly well-rounded athlete, participates in a grueling race. Use the information to determine the answers to each question.

1. Sara begins the race by running 5000 m from the starting line to checkpoint 1 in 1240 s. What is her velocity?

2. Next, Sara swims 500 m from checkpoint 1 to checkpoint 2 with a velocity of 1.1 m/s. How long does it take her?

3. From checkpoint 2 she rides a bike with a velocity of 4.9 m/s for 3600 s. What is the displacement from checkpoint 2 to checkpoint 3?

4. Sara must now run all the way back to the starting line to finish the race. Completely exhausted, Sara decides to get launched by a large cannon that can blast her to the beginning. What is her velocity to go from checkpoint 3 to the starting line if it takes her 1157 s to travel the displacement?

5. Calculate Sara's **distance** for the entire race. Also calculate her **displacement**.

6. Calculate Sara's **average speed** and **average velocity**.

Acceleration A brand new ride has opened at King's Island. Use the information provided to answer the questions.

7. The ride starts at rest and then gets up to a speed of 50 m/s in 1.9 s. What is its acceleration?

8. Once it is traveling at 50 m/s, it accelerates at a rate of $-9.2\,\mathrm{m/s^2}$ for 3.0 s. What is its velocity after this time?

9. The ride now maintains a constant velocity for 10 s. What is its acceleration during this time?

10. Finally, the ride comes to an abrupt a stop in 0.88 s. What is its acceleration?