

SECTION

1

Enrichment

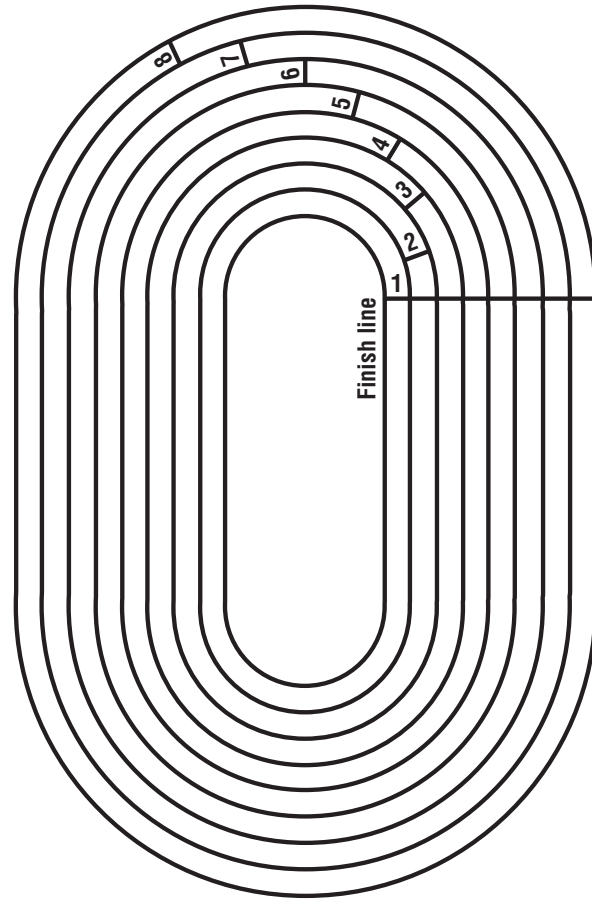
The 400 Meter Dash

One of the most popular races in track and field athletic events is the 400 m dash. Athletes like the talented Michael Johnson have made this a favorite race of spectators.

The 400 m sprint, or dash, is a foot race that is equal to one lap around the running track. The required distance of an official track is 400 m from start to finish on the inside (near the center) portion of the track. To complete the distance of 400 m on a standard running track, the starting positions of the runners are staggered, with one runner actually starting at the finish line.

At the sound of a starting pistol, the athletes take off from their fixed positions and speed up to advance beyond the other runners. Some runners have a strong “kick,” or an ability to increase their velocity at the end of the race.

The diagram on the right shows the starting positions for eight racers in a 400 m race. Look at the diagram and answer the questions below.



1. The starting positions indicated on the diagram are typical for a 400 m dash. Why are the runners not all starting together in a straight line?

2. At the completion of a race, what is the displacement of the runner in lane 1? Is this the same for all the runners? Explain your answer.

3. If a male runner in the fourth starting position ran the 400 m race in 44.40 s, how would you calculate his average speed? Explain your answer.
