Revisiting the fable of the tortoise and the hare can make you wonder who really won the race. The real story picks up after that first fabled contest. After losing that race, a rather embarrassed and angry Hare challenges Tortoise to run three more races; the winner will be the animal who wins two out of three races. In each case, the race will be 100 meters.

**Part A**

Tortoise leaves the starting line, "sprints" at the rate of 4 meters per minute, and runs a steady race. Hare leaves the starting line running at a rate of 20 meters per minute and runs steadily for 2 minutes. He then decides to take a break, as he knows he is so far ahead of Tortoise. Hare's break lasts 8 minutes, and then he runs back to the starting line (at 20 meters per minute again) to grab his towel that he had left behind. He does not stop but grabs the towel on the run and heads down the racecourse again. He then runs at a steady 20 meters per minute to the finish line. Draw a graph that shows the progress of the race. Use the same grid for both Tortoise and Hare. Show time on the horizontal axis; show distance on the vertical axis. Who wins the first race? Are Tortoise and Hare ever side by side in the race? How do you know?

**Part B**

Hare challenges Tortoise to a second race. Hare leaves the starting line 15 minutes after Tortoise. Hare runs at the rate of 20 meters per minute for 3 minutes, rests for 5 minutes, then runs for 1 minute at the same rate. He stops to tie his shoe (which takes 2 minutes) and then runs to the finish line at 20 meters per minute. Tortoise, unaffected by the results from the first race, sprints at a steady 4 meters per minute throughout this second race. Draw a graph that shows the progress of the race. Use the same grid for both Tortoise and Hare. Show time on the horizontal axis; show distance on the vertical axis. Who wins the second race? How do you know?

**Part C**

For the third race, Tortoise decides that he needs to pick up his speed just a bit, so he sprints at 5 meters per minute and runs yet another steady race. Hare leaves 5 minutes after Tortoise, because he changes his running shoes for a newer pair. After Hare runs for 3 minutes at a rate of 20 meters per minute, he stops for a 10-minute rest, knowing that he is far in the lead, as he had sped right past Tortoise a few minutes before. After his 10-minute nap, he resumes the race at his 20-meter-per-minute speed. Make another graph to show the progress of each racer. Who wins the third race? How do you know?