

Math Lab: Analyzing Slope Possible Solutions

1. a. It took the first runner 37.5 s to run the first leg of 200 m.

b.
$$\text{slope} = \frac{200 \text{ m}}{37.5 \text{ s}}$$
$$= 5.33 \text{ m/s}$$

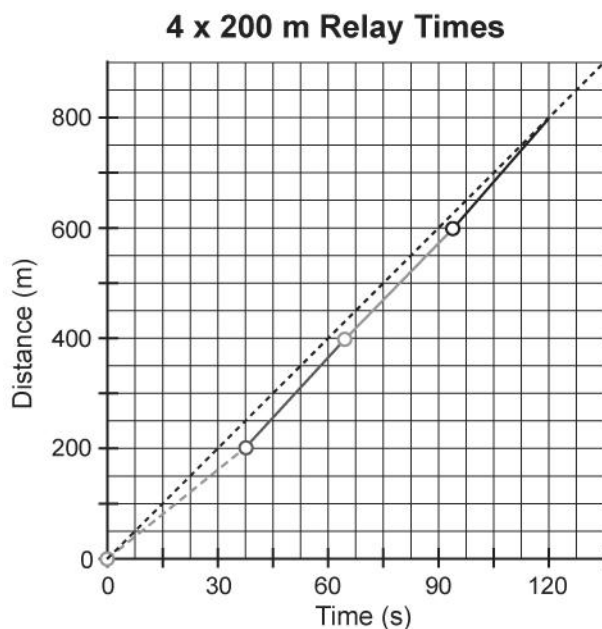
The slope of the line segment for the first leg is 5.33 m/s.

- c. The slope of the line segment for the first leg represents the speed of the first runner.

2. a. The first leg has the slowest runner.

- b. This is because the slope of the line segment for the first leg is the least steep of all of the line segments.

3. a. The graph should look like the following.



b.
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(800 - 0) \text{ m}}{(120 - 0) \text{ s}}$$
$$= \frac{800}{120} \text{ m/s}$$
$$= 6.67 \text{ m/s}$$

- c. The slope of this line represents the average speed of the relay team.

- d. Use (30, 200) and (90, 600).

$$\begin{aligned}
 m &= \frac{y_2 - y_1}{x_2 - x_1} \\
 &= \frac{(600 - 200) \text{ m}}{(90 - 30) \text{ s}} \\
 &= \frac{400}{60} \text{ m/s} \\
 &= 6.67 \text{ m/s}
 \end{aligned}$$

The slope is the same as the one calculated using the two endpoints.

- e. The extended line passes through the point (135, 900). This point suggests that if the race was to be extended, the next runner would be at the 900-m mark of the race after 135 s.

