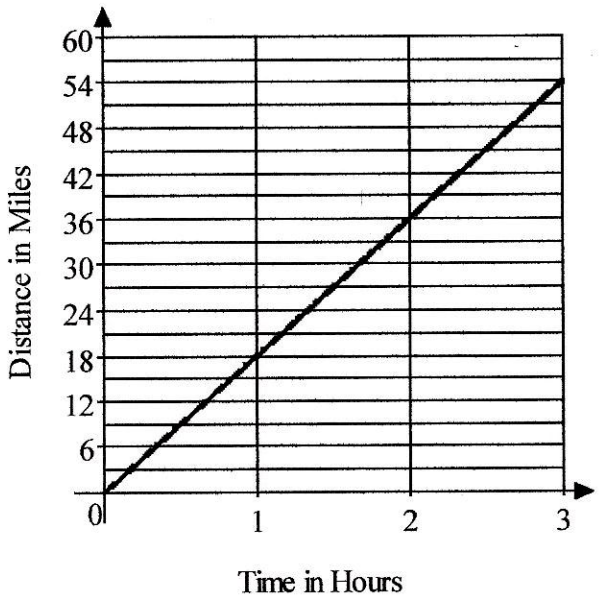
Average Rate of Change (a.k.a Slope)

1. Al is an avid cyclist. On a recent ride in the country, he traveled at a constant speed throughout the trip. Use the graph of Al's distance traveled to answer the questions.

Distance vs. Time for Al's Trip



a. How far did Al travel in 3 hours?

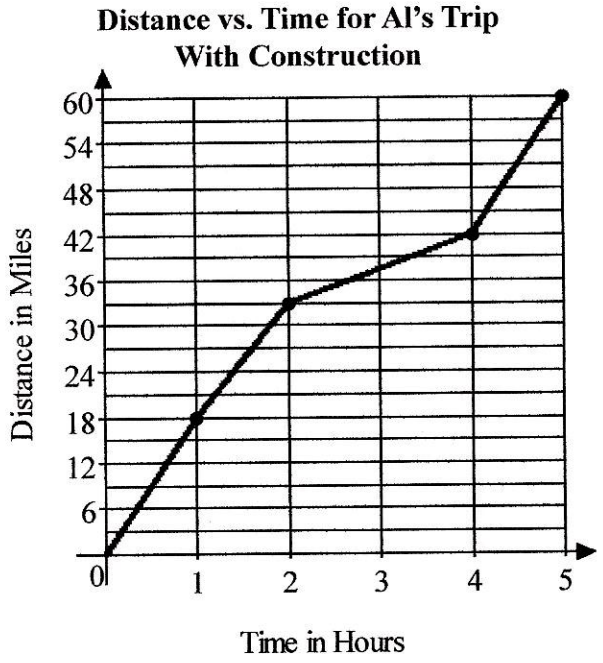
b. Does the graph represent the path on which Al is traveling? Explain.

c. What is Al's average speed in miles per hour for the time interval $0 \leq t \leq 3$?

d. What is Al's average speed in miles per hour for the time interval $1 \leq t \leq 2$?

e. Is Al's average speed increasing, decreasing, or remaining constant?

2. On another recent trip, there was some road construction. Due to the construction, his speed varied. Use the graph to answer the following questions.



a. What is Al's average speed for the time interval $0 \leq t \leq 5$?

b. What is Al's average speed for the time interval $0 \leq t \leq 1$?

c. What is Al's average speed for the time interval $1 \leq t \leq 2$?

d. What is Al's average speed for the time interval $2 \leq t \leq 4$?

e. What is Al's average speed for the time interval $4 \leq t \leq 5$?

f. According to the graph, when was Al cycling the fastest? Explain your answer in terms of the graph.

g. According to the graph, when was Al cycling the slowest? Explain your answer in terms of the graph.

3. The table gives the populations for two cities for five different years.

Year	1990	1995	1998	2000	2002
Population in City A	42,000	52,000	62,000	72,000	82,000
Population in City B	75,000	70,000	65,000	60,000	55,000

Determine the average rate of change of the population for each city for the given time intervals. Use units in your work and answers.

	City A	City B
a. 1990 to 2000		
b. 1995 to 1998		
c. 1995 to 2002		

d. What do you notice about the average rate of change of each population? Explain what the average rate of change tells you about each population.