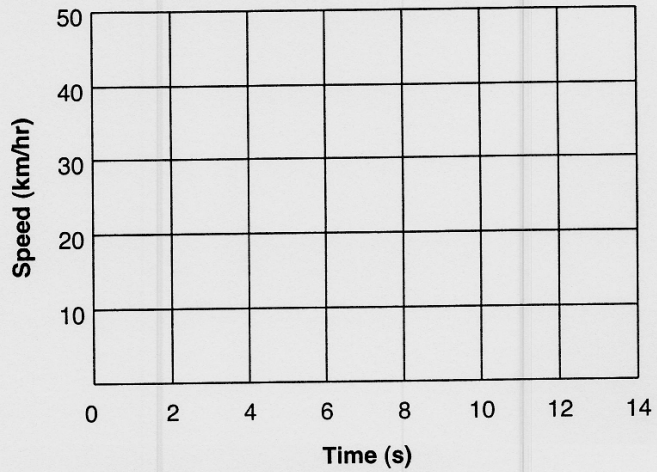
GRAPHING SPEED VS. TIME

Plot the following data on the graph and answer the questions below.

Speed (km/hr)	Time (s)
0.0	0
10.0	2
20.0	4
30.0	6
40.0	8
50.0	10



1. As time increases, what happens to the speed? _____
2. What is the speed at 5 s? _____
3. Assuming constant acceleration, what would be the speed at 14 s? _____
4. At what time would the object reach a speed of 45 km/hr? _____
5. What is the object's acceleration? _____
6. What would the shape of the graph be if a speed of 50.0 km/hr is maintained from 10 s to 20 s? _____
7. Based on the information in Problem 6, calculate the acceleration from 10 s to 20 s. _____
8. What would the shape of the graph be if the speed of the object decreased from 50.0 km/hr at 20 s to 30 km/hr at 40 s? _____
9. What is the acceleration in Problem 8? _____

GRAPHING DISTANCE VS. TIME

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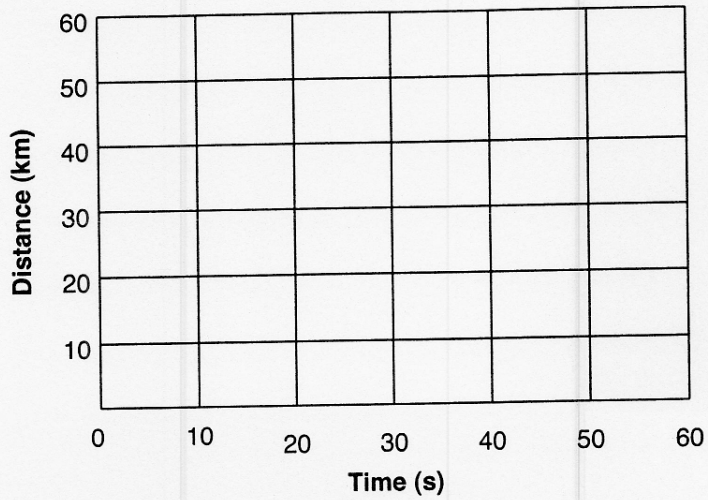
Plot the following data on the graph and answer the questions below.

Distance (km)	Time (s)
0	0
5	10
12	20
20	30
30	40
42	50
56	60

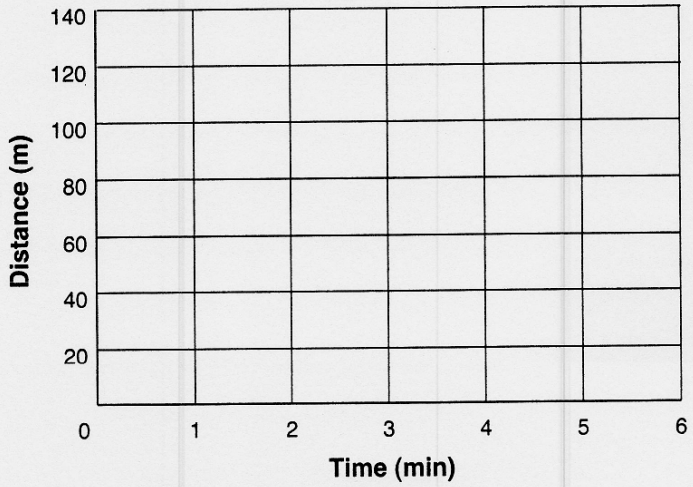


1. What is the average speed at t = 20 s? _____
2. What is the average speed at t= 30 s? _____
3. What is the acceleration between 20 s and 30 s? _____
4. What is the average speed at t = 40 s? _____
5. What is the average speed at t = 60 s? _____
6. What is the acceleration between 40 s and 60 s? _____
7. Is the object accelerating at a constant rate? _____

CALCULATING AVERAGE SPEED

Graph the following data on the grid below and answer the questions at the bottom of the page.

Time (min)	Distance (m)
0	0
1	50
2	75
3	90
4	110
5	125



$$\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

1. What is the average speed after two minutes? _____
2. After three minutes? _____
3. After five minutes? _____
4. What is the average speed between two and four minutes? _____
5. What is the average speed between four and five minutes? _____

DETERMINING SPEED (VELOCITY)

Speed is a measure of how fast an object is moving or traveling. Velocity is a measure of how fast an object is traveling in a certain direction. Both speed and velocity include the distance traveled compared to the amount of time taken to cover this distance.

$$\text{speed} = \frac{\text{distance}}{\text{time}} \qquad \text{velocity} = \frac{\text{distance}}{\text{time}} \text{ in a specific direction}$$

Answer the following questions.

1. What is the velocity of a car that traveled a total of 75 kilometers north in 1.5 hours? _____
2. What is the velocity of a plane that traveled 3,000 miles from New York to California in 5.0 hours? _____
3. John took 45 minutes to bicycle to his grandmother's house, a total of four kilometers. What was his velocity in km/hr? _____
4. It took 3.5 hours for a train to travel the distance between two cities at a velocity of 120 miles/hr. How many miles lie between the two cities? _____
5. How long would it take for a car to travel a distance of 200 kilometers if it is traveling at a velocity of 55 km/hr? _____
6. A car is traveling at 100 km/hr. How many hours will it take to cover a distance of 750 km? _____
7. A plane traveled for about 2.5 hours at a velocity of 1200 km/hr. What distance did it travel? _____
8. A girl is pedaling her bicycle at a velocity of 0.10 km/min. How far will she travel in two hours? _____
9. An ant carries food at a speed of 1 cm/s. How long will it take the ant to carry a cookie crumb from the kitchen table to the ant hill, a distance of 50 m? Express your answer in seconds, minutes and hours. _____
10. The water in the Buffalo River flows at an average speed of 5 km/hr. If you and a friend decide to canoe down the river a distance of 16 kilometers, how many hours and minutes will it take? _____