

Friday April 15,2011

graphing velocity

Warm -Up

1. Tree sloths are the slowest moving mammals. On average, their velocity is 0.743 m/s. How long does it take a tree sloth moving at this velocity to travel 22.3 m?



2. The cheetah, the fastest of land animals, can run a distance of 274 m in 8.65 seconds at its top speed. What is the cheetah's top velocity?

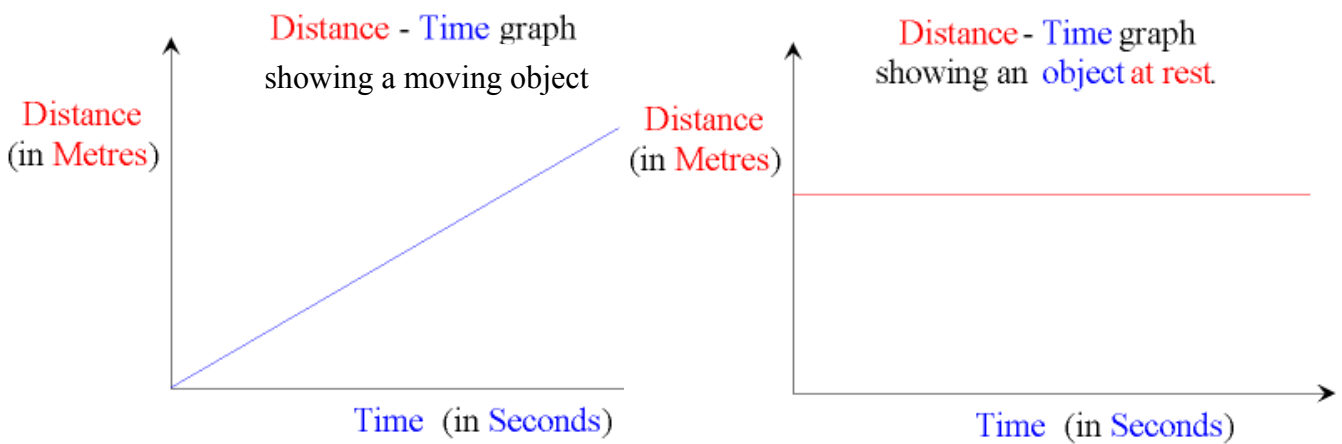


Distance- Time Graphs

shows the relationship between distance and time.

distance is plotted on the y axis and is the dependent variable

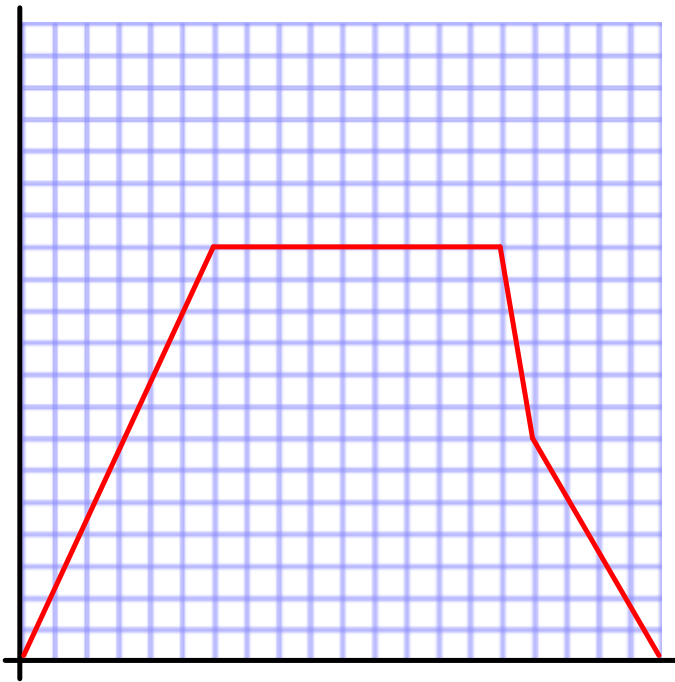
time is plotted on the x axis and is the independent variable





Label the graph.

Click here for the answer



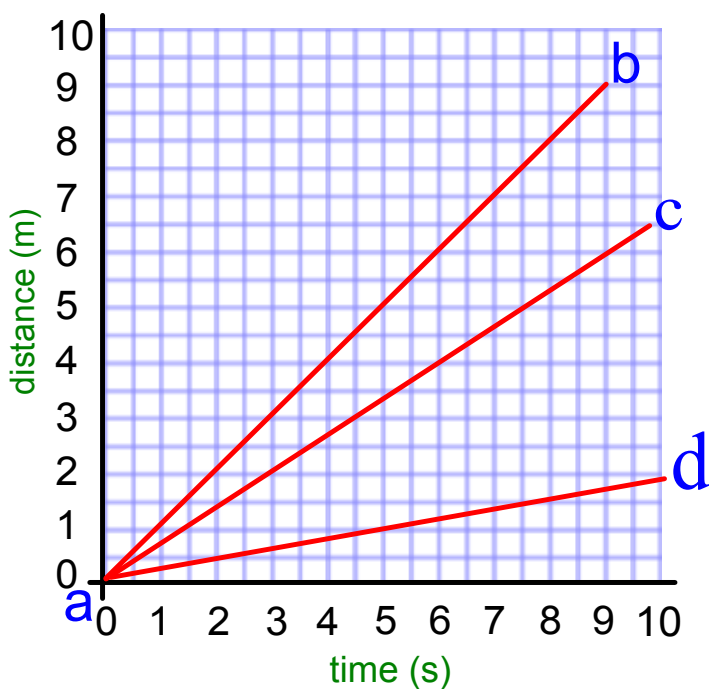
distance

time

moving

stationary

Constant Speed



If an object has a constant speed, it shows as a straight line on a distance-time graph.

The slope of a line on a distance time graph represents the speed.

If you increase the speed the slope will become steeper.

a-b = bike

a-c = run

a-d = walk

Based on the following graph which is the fastest way to travel?

Calculating Speed

To calculate the actual speed on a distance time graph you calculate the slope using two points on the graph and the following formula:

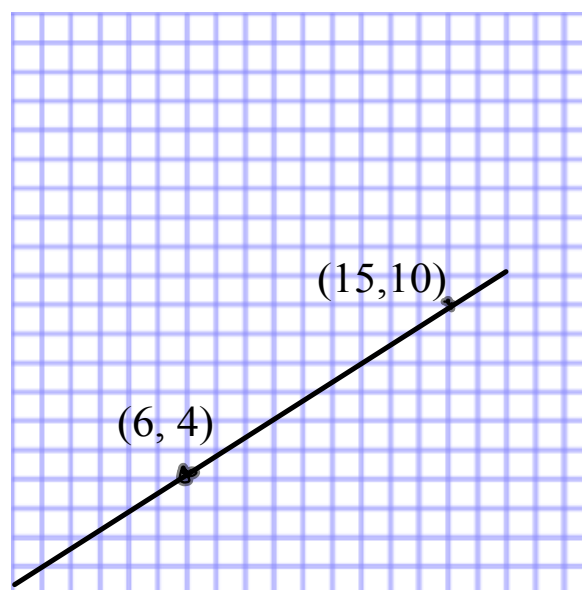
$$v = \frac{\Delta d}{\Delta t} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{i.e. } v = \frac{10\text{m} - 4\text{m}}{15\text{s} - 6\text{s}}$$

$$v = \frac{6\text{m}}{9\text{s}}$$

$$v = 0.6\text{m/s}$$

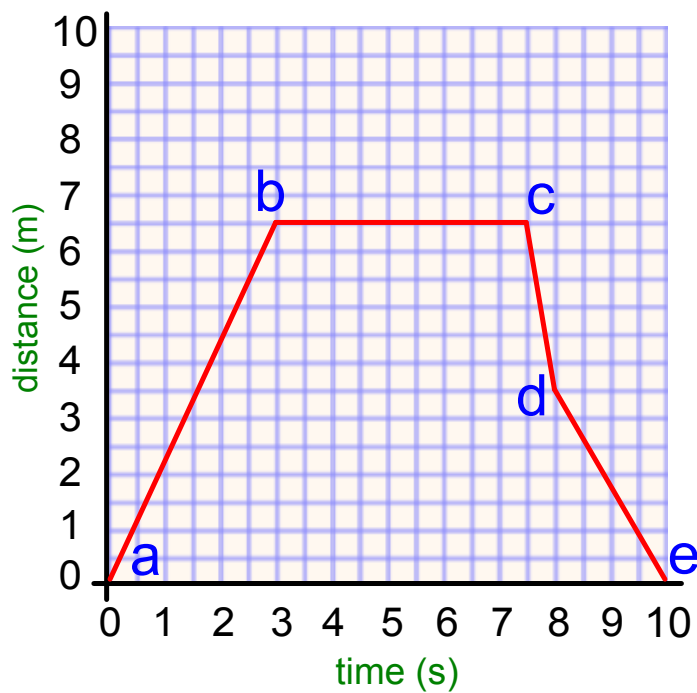
distance (m)



time (s)



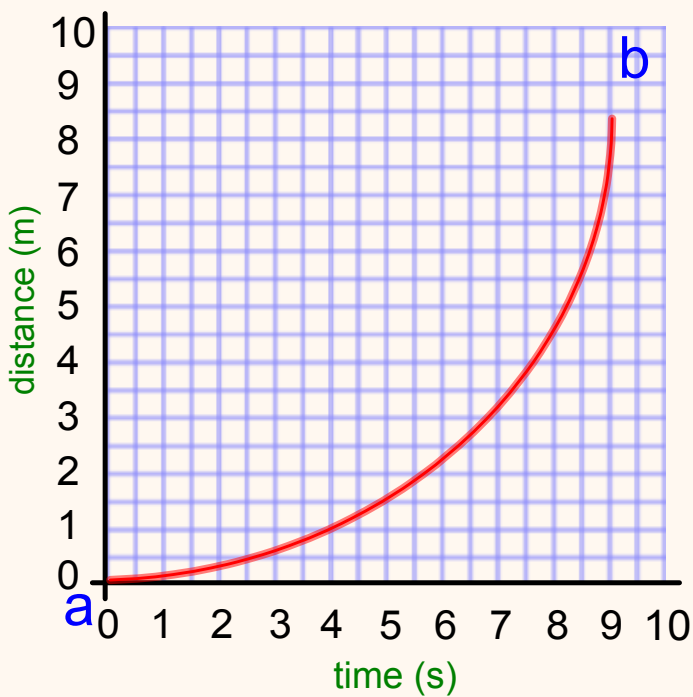
Answer the questions in your exercise books.



1. What is the average speed between a and b?
2. Which line shows the vehicle is stationary?
3. Which line shows the greatest speed?

Click here for the answer

Non- Constant Velocity



If the velocity of an object changes, it will show as a curve on a distance-time graph.

To find the velocity, work out the slope at any given point.

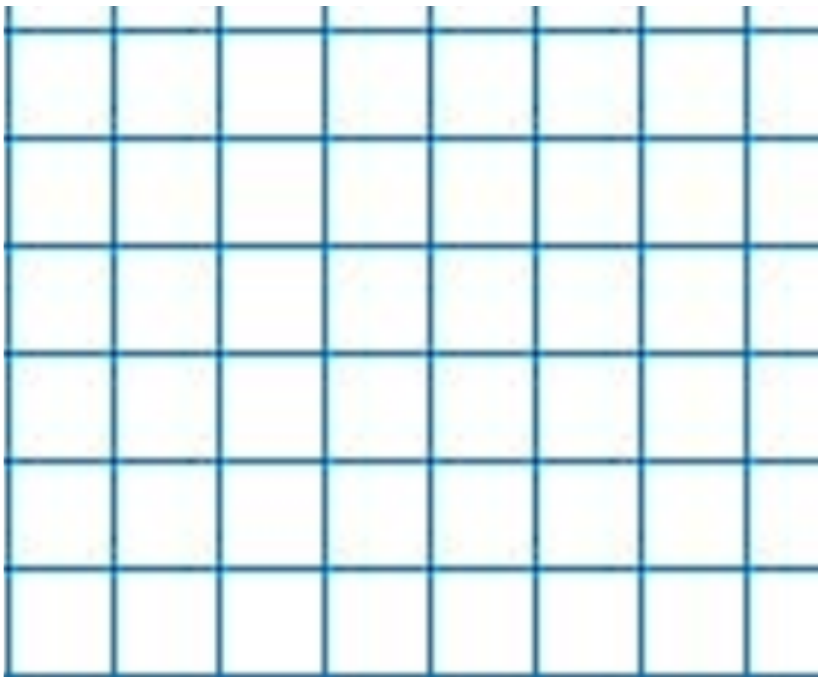
Plotting a Graph

Bus Movement

Distance (km)	Time (min)
0	0
10	15
20	30
30	45
40	60
50	75
60	90

When asked to plot a graph you will be given a data table. Using this data table you will create a distance vs time graph.

- Step 1: Label your graph (x axis, y axis and graph title)
- Step 2: Decide on scale
- Step 3: Place numbers on x and y axis
- Step 4: Plot the point from the data table
- Step 5: Connect the points using a straight edge.



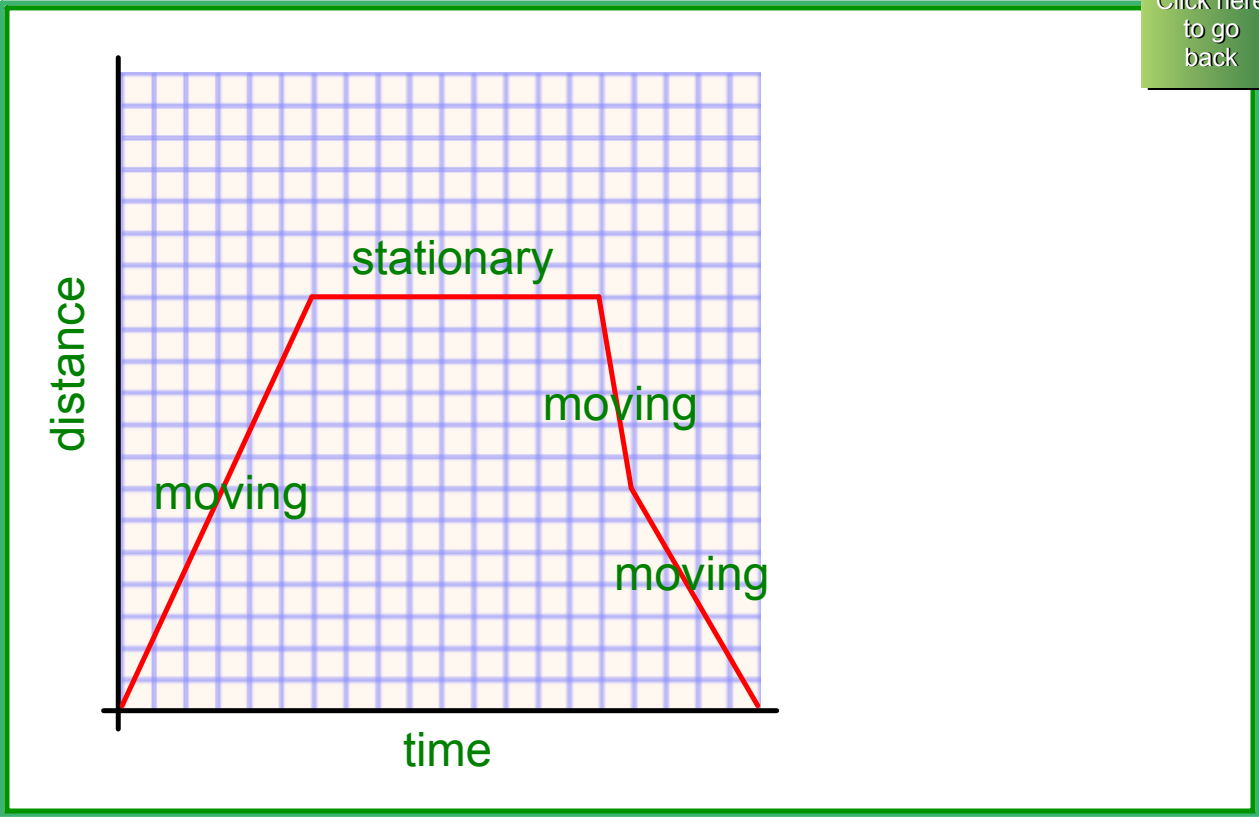
Complete the following questions:
pg 365 #2, 3, 5, 6

The following pages are answers to the tasks in the lesson activity.



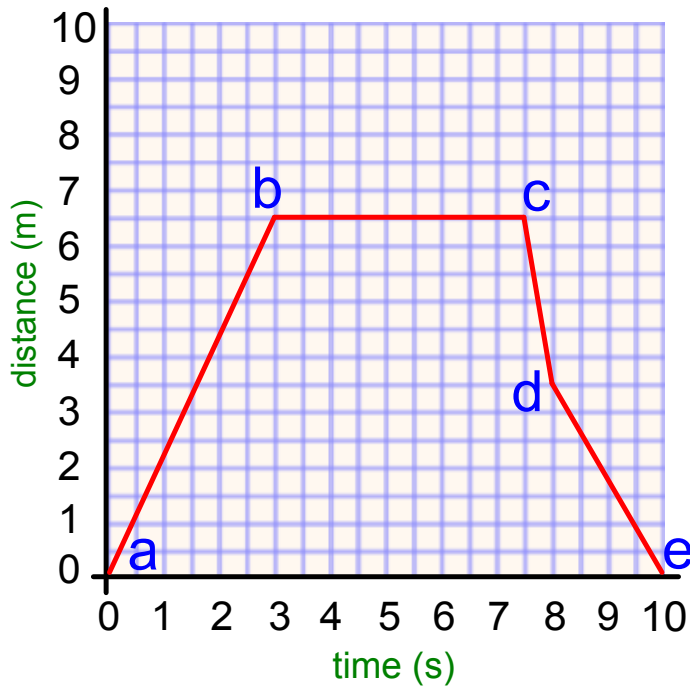
Label the graph

[Click here to go back](#)





Answer the questions in your exercise books.



1. What is the average speed between a and b? 2.1 m/s
2. Which line shows the vehicle is stationary? bc
3. Which line shows the greatest speed? cd

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Attachments

average speed ex 1.notebook

average speed ex 2 answers.notebook