Thursday Feb 16, 2012

Pass in assignment
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?

v = 0.743m/s $t = \dfrac{d}{v}$ = $\dfrac{22.3\ m}{0.743 m/s}$ = 30.0 s
d = 22.3 m
t = ?

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?

d = 274 m $v = \dfrac{d}{t}$ = $\dfrac{274m}{8.65s}$ = 31.7m/s
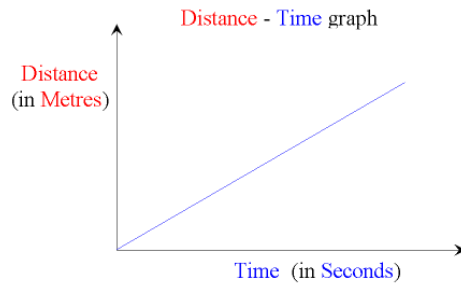t = 8.65 s
v = ?

Distance- Time Graphs

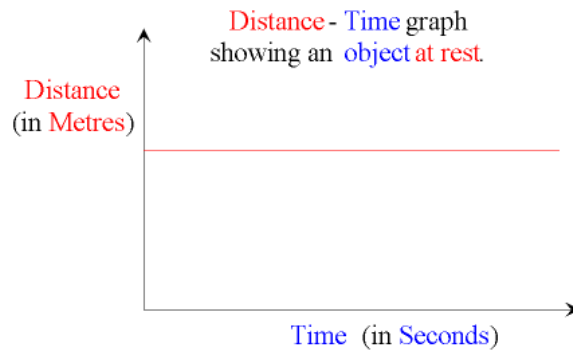shows the relationship between distance and time.

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

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

Sketch what you think a graph for an object in motion would look like.

Distance - Time graph

Distance
(in Metres)

Time (in Seconds)

Sketch what you think a graph would look like for an object not in motion.

Distance - Time graph
showing an object at rest.

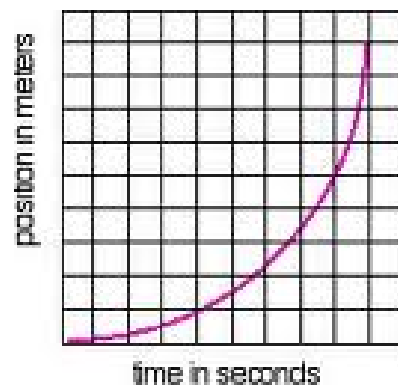Distance
(in Metres)

Time (in Seconds)

Constant vs Non-Constant Velocity

Constant Velocity

If the speed of an object remains the same, it will show as a straight line on a distance-time graph

Distance
(km)   (Constant speed)

Time (h)
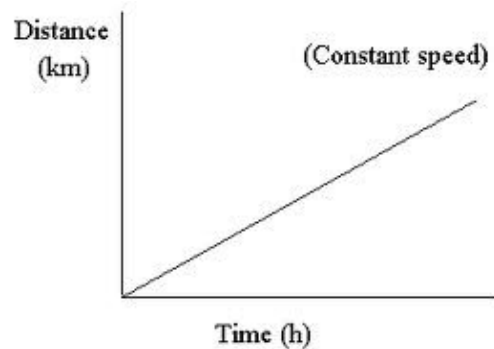
Non- Constant Velocity

If the speed of an object changes (non-constant), it will show as a curve on a distance-time graph.
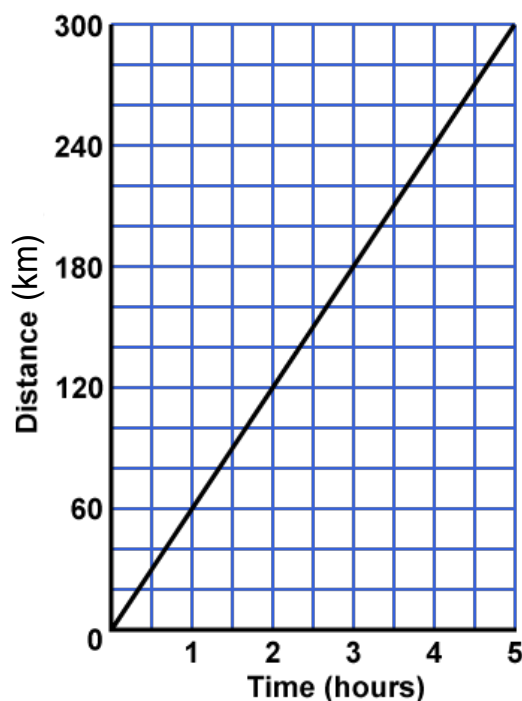
position in meters

time in seconds

Calculating Speed

To calculate the actual speed on a distance time graph you calculate the slope. Slope can be calculated using the following formula(s).

$$v = \frac{\text{rise}}{\text{run}} = \frac{d_2 - d_1}{t_2 - t_1} = \frac{y_2 - y_1}{x_2 - x_1}$$

The steeper the slope the faster the object is travelling.

Interpreting a distance-time graph

How long did it take to drive 300 kilometers?

ANSWER

How far did the car travel in 3 1/2 hours.

ANSWER

What was the average speed for the journey?

ANSWER

Attachments

average speed ex 1.notebook

average speed ex 2 answers.notebook