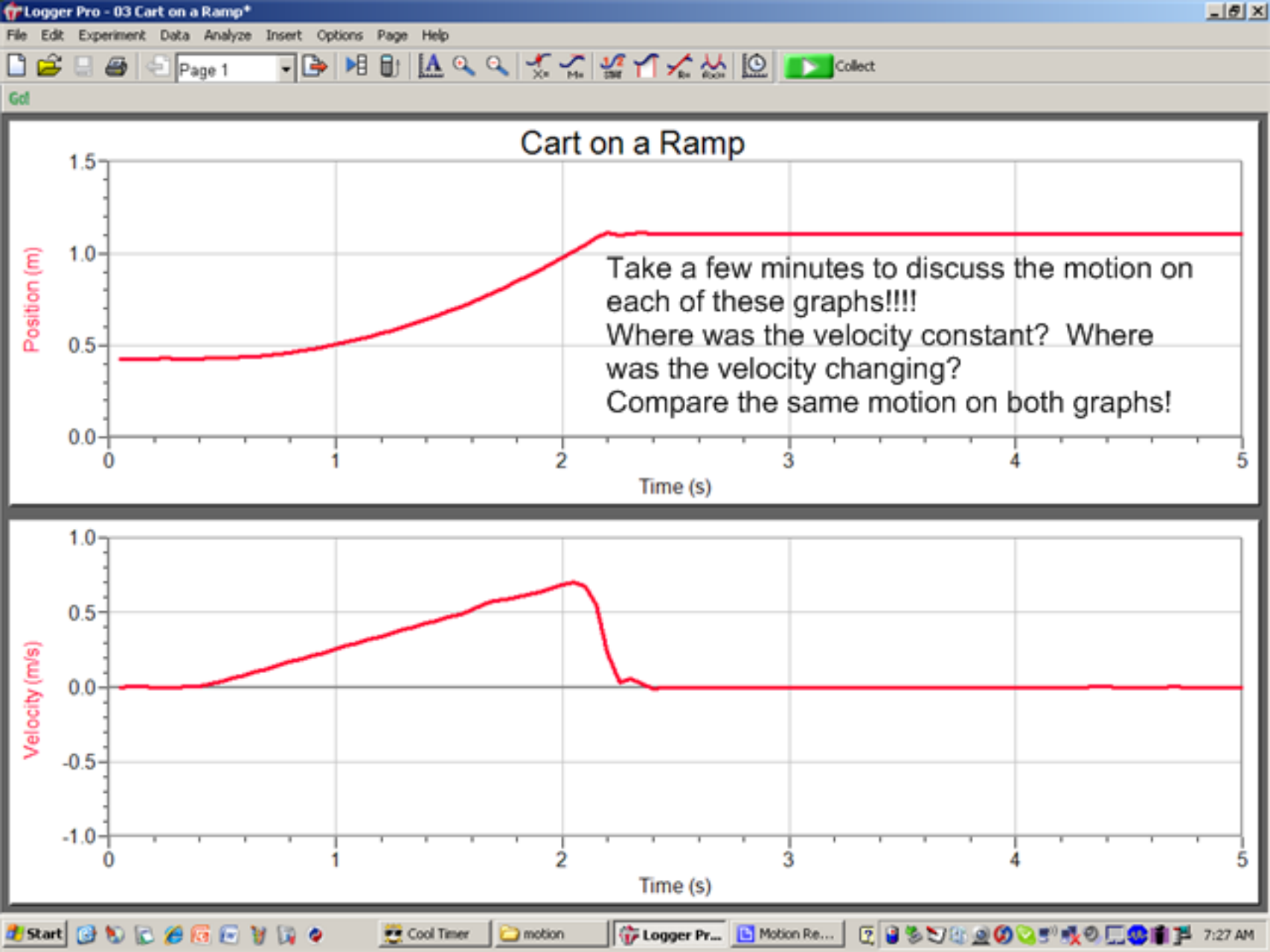
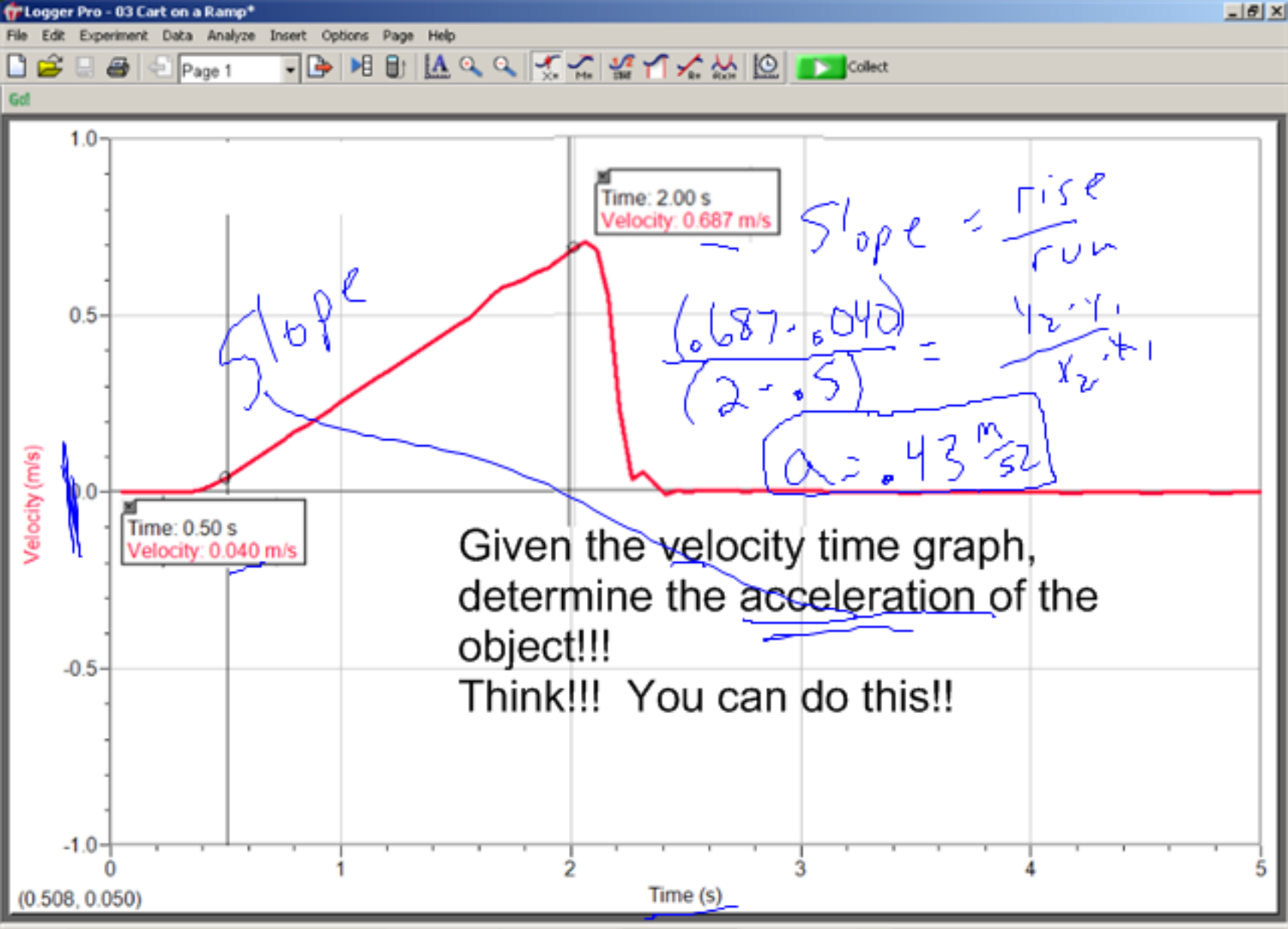
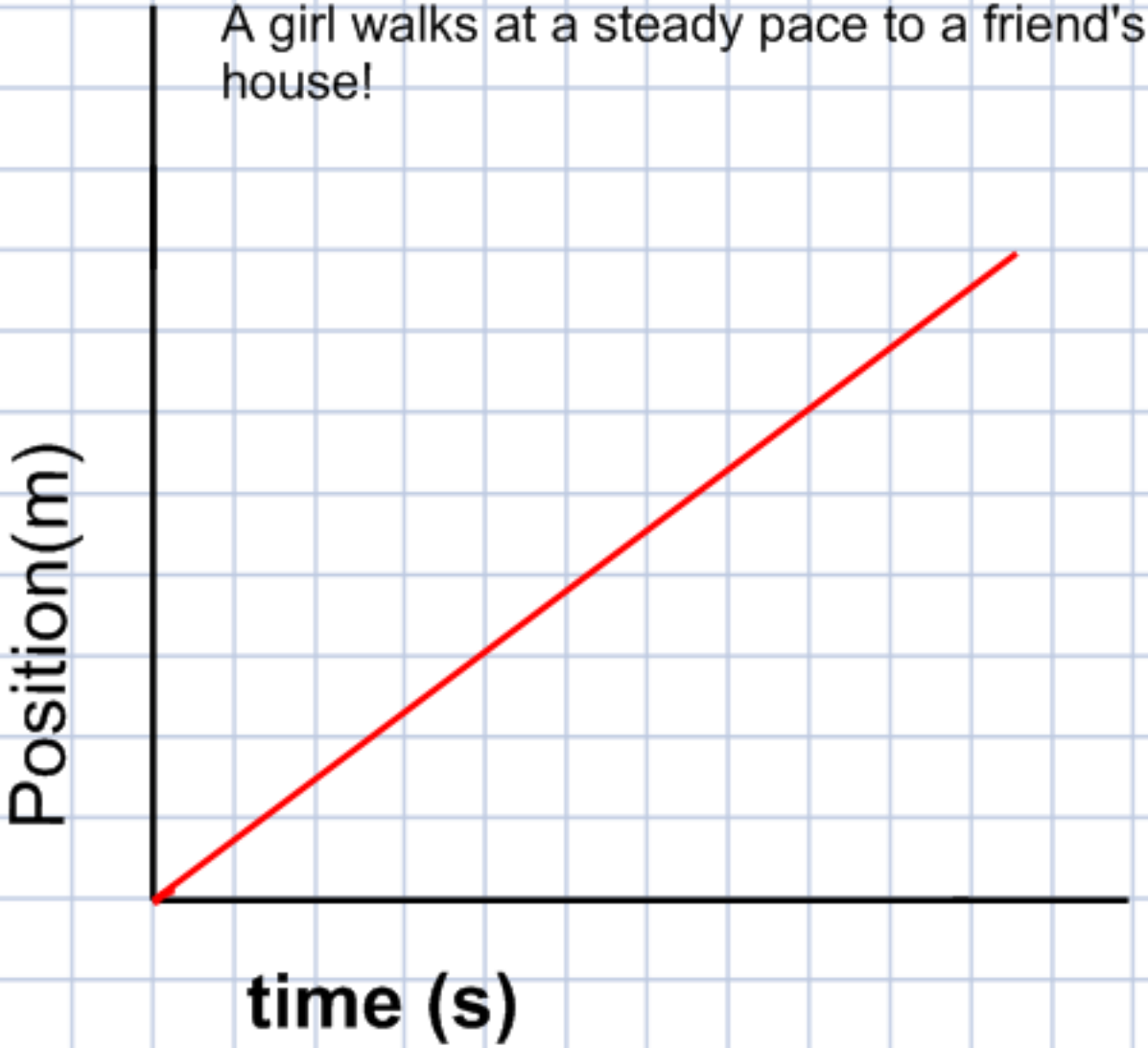
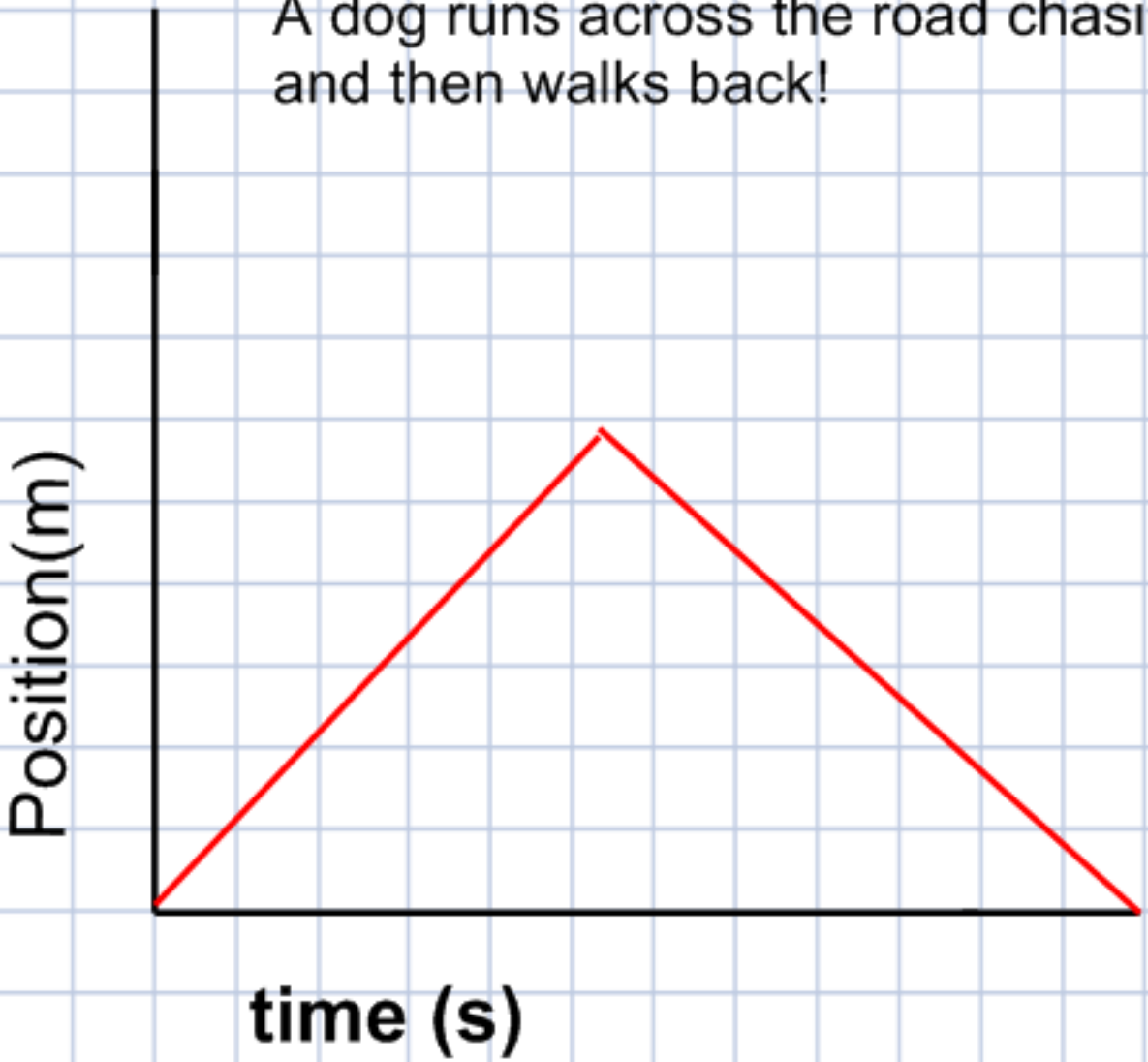

Logger Pro - 03 Cart on a Ramp*
File Edit Experiment Data Analyze Insert Options Page Help
Page 1
Collect
Cart on a Ramp
Position (m)
1.5
1.0
0.5
0.0
0
1
2
3
4
5
Time (s)
Take a few minutes to discuss the motion on each of these graphs!!!!
Where was the velocity constant? Where was the velocity changing?
Compare the same motion on both graphs!
Velocity (m/s)
1.0
0.5
0.0
-0.5
-1.0
0
1
2
3
4
5
Time (s)
Start
Cool Timer
motion
Logger Pr...
Motion Re...
7:27 AM

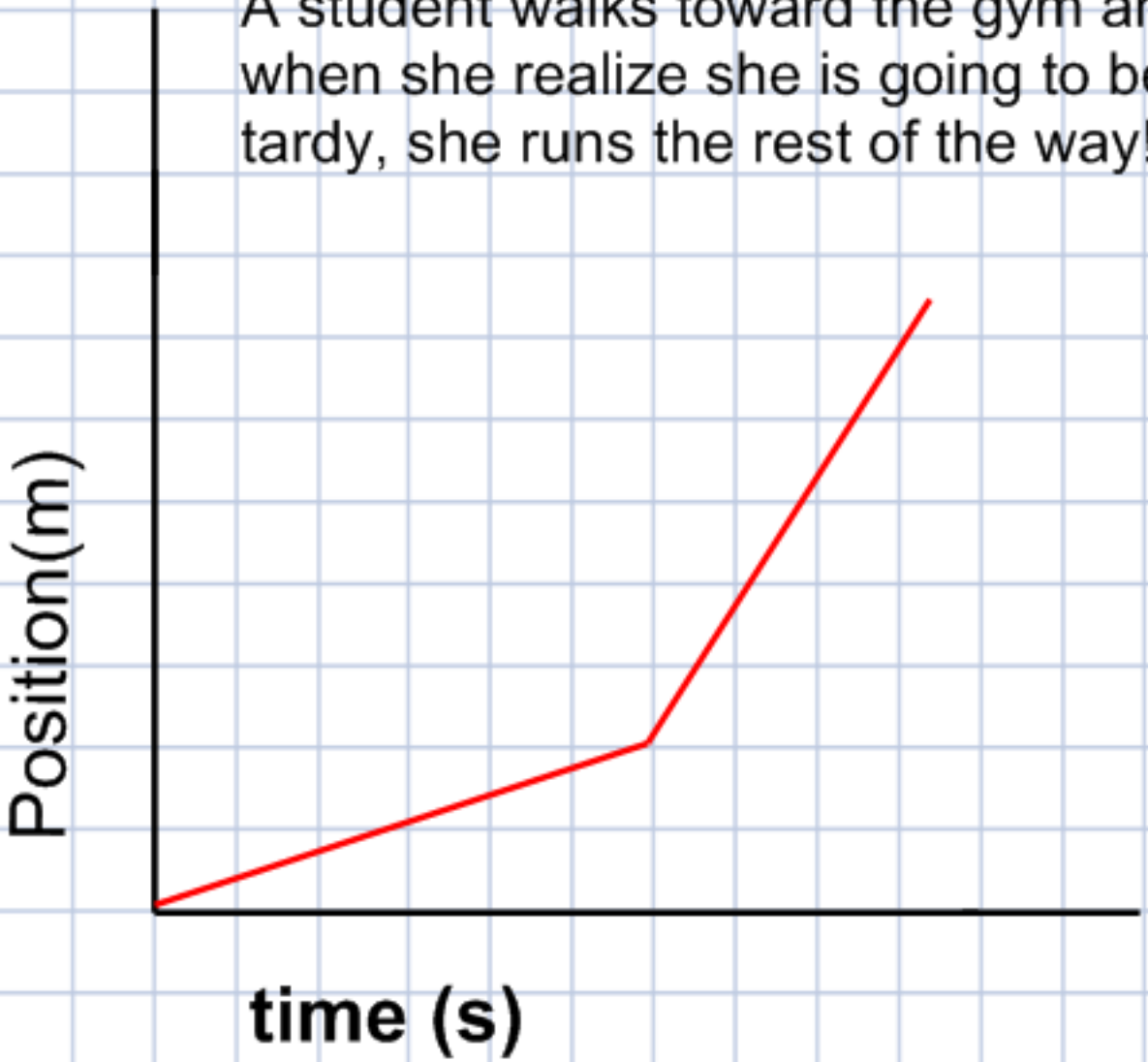

Logger Pro - 03 Cart on a Ramp*
File Edit Experiment Data Analyze Insert Options Page Help
Page 1
Collect
Time: 2.00 s
Velocity: 0.687 m/s
Time: 0.50 s
Velocity: 0.040 m/s
Slope
Slope = rise / run
(.687 - .040) / (2 - .5) = y2 - y1 / x2 - x1
a = .43 m/s2
Given the velocity time graph, determine the acceleration of the object!!!
Think!!! You can do this!!
Velocity (m/s)
Time (s)
1.0
0.5
0.0
-0.5
-1.0
0
1
2
3
4
5
(0.508, 0.050)


A girl walks at a steady pace to a friend's house!
Position(m)
time (s)

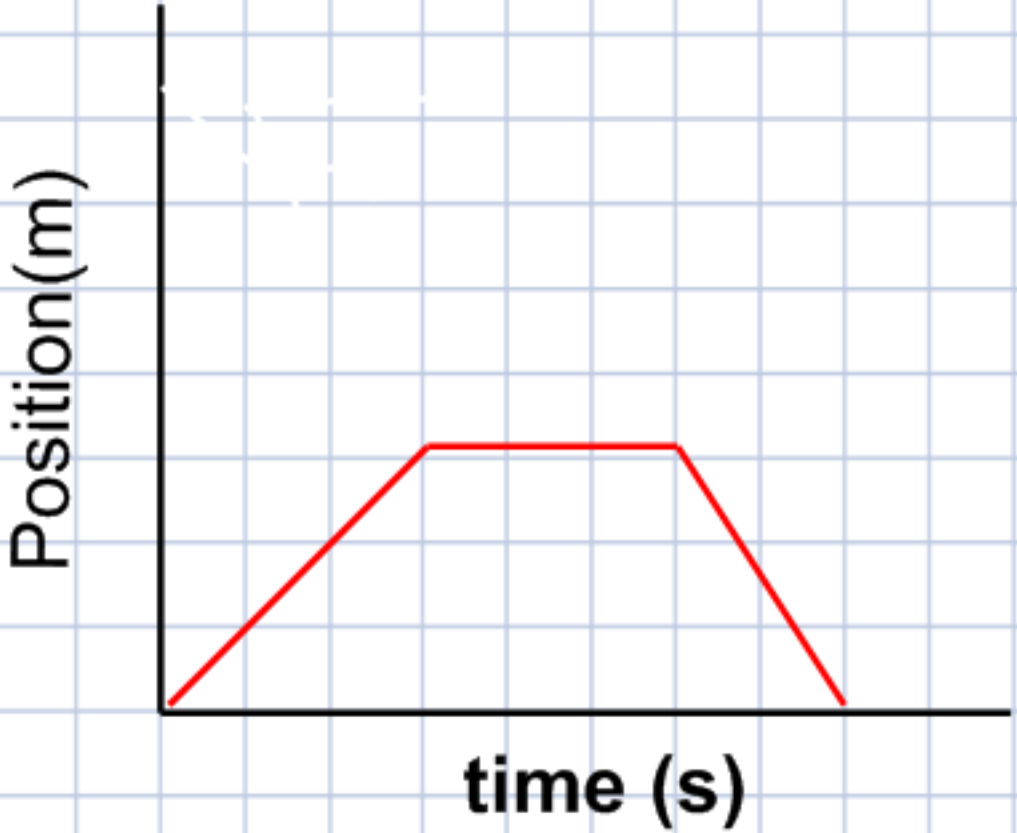
A dog runs across the road chasing a cat and then walks back!



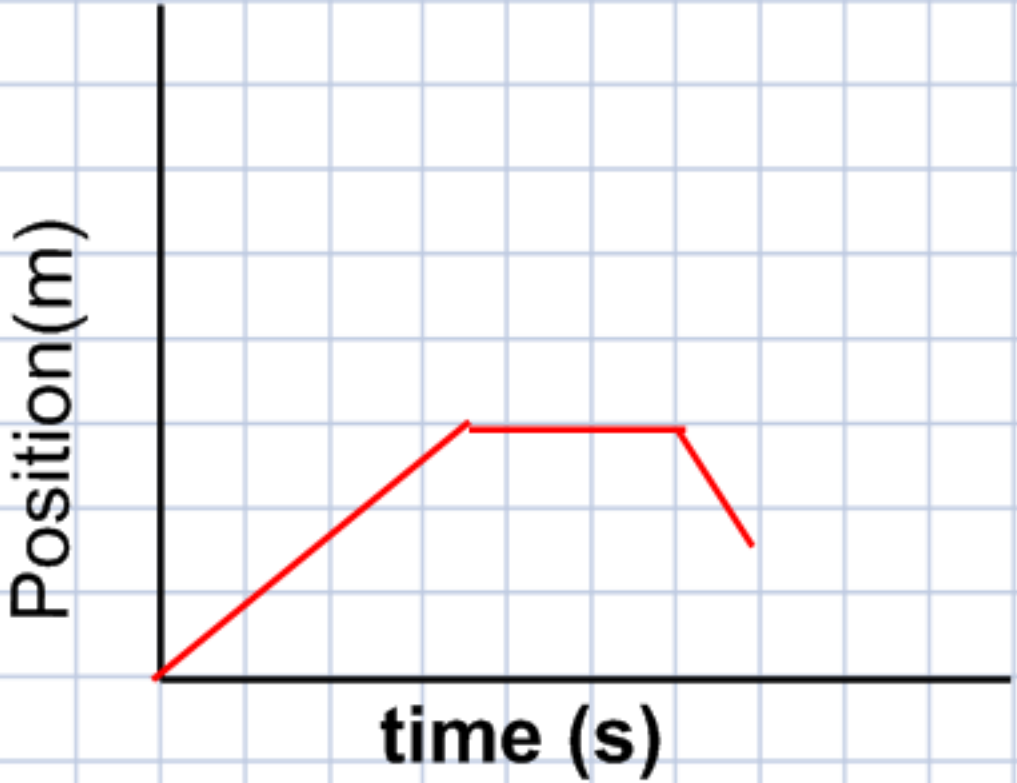
A student walks toward the gym and when she realize she is going to be tardy, she runs the rest of the way!



A child walks away from her house, stops for a rest, then turns and walks back home!



A child walks away from his house, stops for a rest, then turns and walks halfway back home!



A ball rolls down a hill accelerating from rest!!!

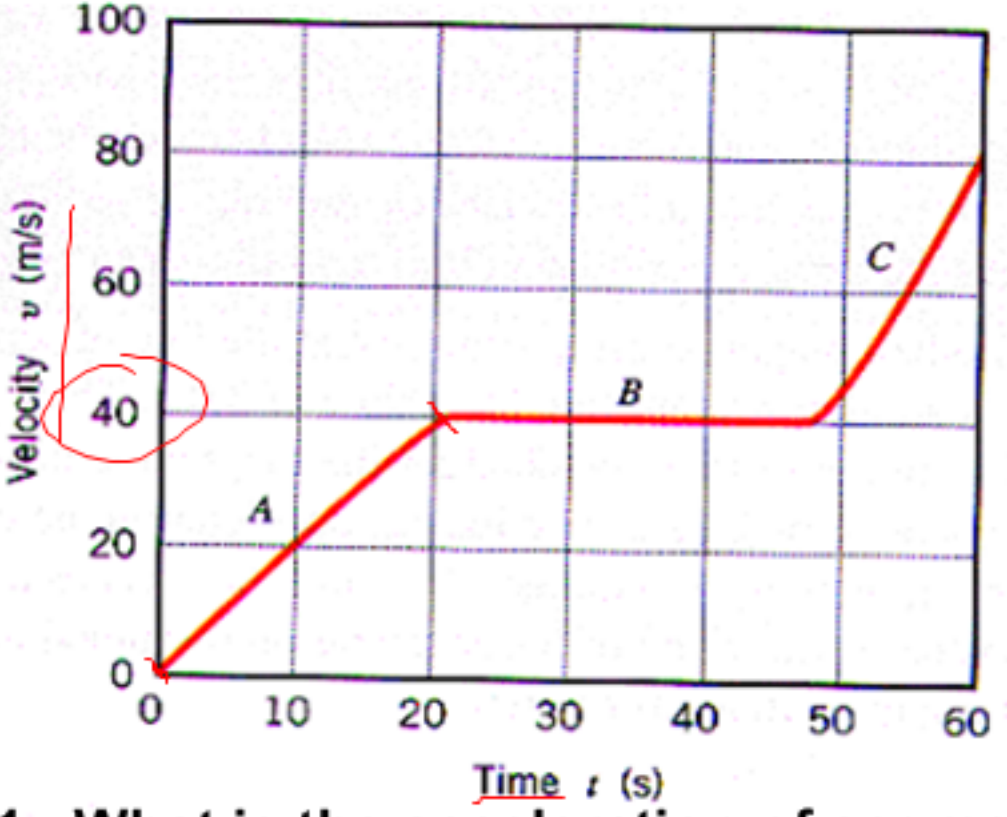
A ball rolls up a hill and comes to rest before it gets to the top!!!

Find the average velocity!!

Slope

$\frac{20}{2} = 10\ m/s$

$\frac{50}{5} = 10\ m/s$



1. What is the acceleration of segment A?
2. What is the acceleration of segment B?
3. Is the object moving during segment B?

A car moves 200 m in 13.5 s. Find the average velocity of the car during this time.

$d = 200\,m$

$t = 13.5\,s$

$V = ?$

$$V = \frac{d}{t}$$

$$= \frac{200}{13.5}$$

$$V = 14.8\,\frac{m}{s}$$

A car travels at a velocity of 15 m/s for 27s. How far does the car move during that time?

$V = 15 \frac{m}{s}$

$t = 27s$

$d = ?$

$V = \frac{d}{t}$

$d = V \cdot t$

$= 15(27)$

$d = 405m$

A world class athlete can run a 400 m dash at an average velocity of 9 m/s. How long will it take the runner to complete the race?

$d = 400\text{m}$

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

$t = ?$

$$\frac{400}{9} = 44.44\text{s}$$

A car's velocity increases from 10 m/s to 30 m/s in 4.5 s. What is the acceleration of the car?

$V_i = 10 m/s$

$V_f = 30 m/s$

$t = 4.5 s$

$a = ?$

$$a = \frac{V_f - V_i}{t}$$

$$= \frac{30 - 10}{4.5}$$

$$a = 4.4 m/s^2$$

A cheetah can accelerate from rest to 25 m/s in 2.9 s. What is the acceleration of the cheetah?

$V_i = 0$

$V_f = 25\ m/s$

$t = 2.9$

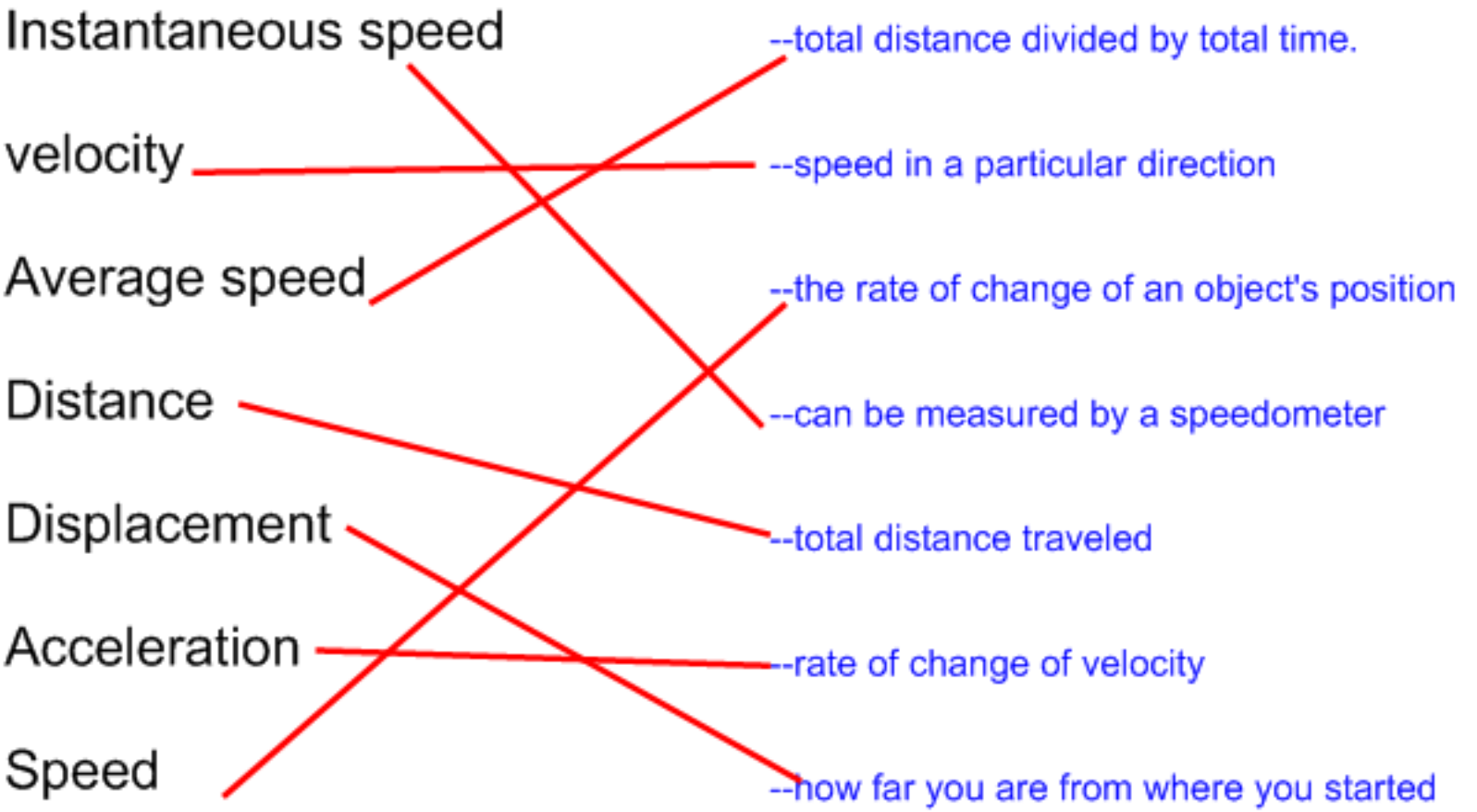
$a =$

$a = \frac{V_f - V_i}{t}$

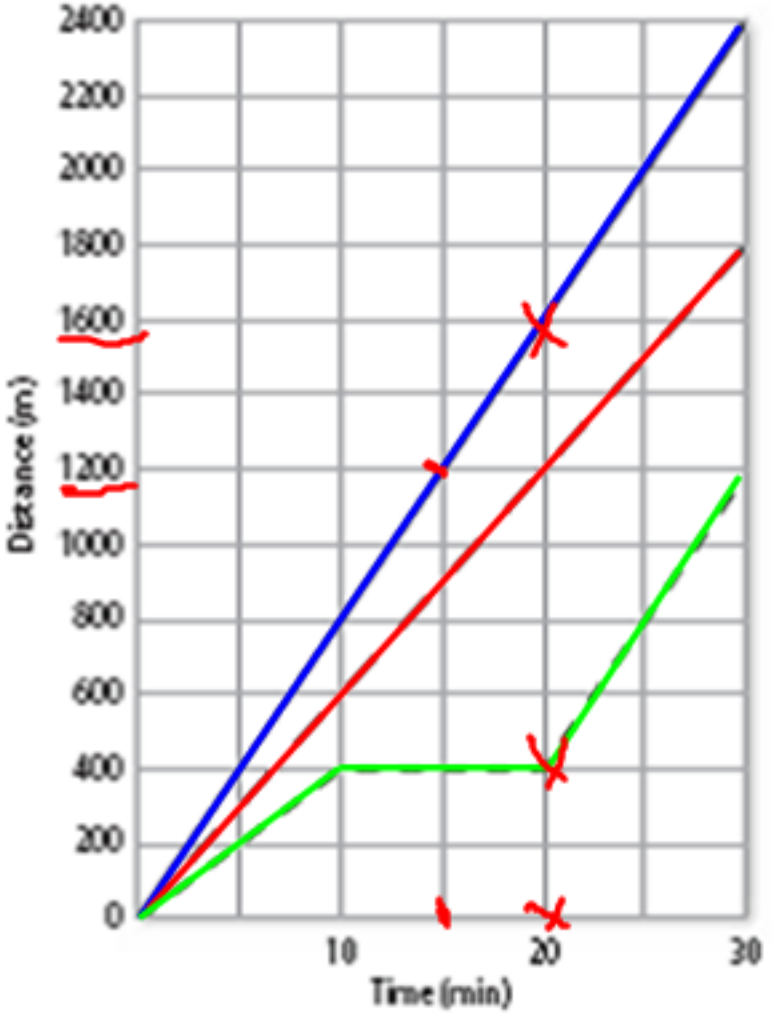
$= \frac{25 - 0}{2.9}$

$a = 8.6\ m/s^2$

Draw a line to connect the terms on the left with their correct definition on the right!!



Graphing Motion



4. The lines represent three swimmers. What do the slopes of the lines tell you about the swimmers?

Speed, direction

5. Which swimmer swam the fastest? Which swimmer stopped for ten minutes?

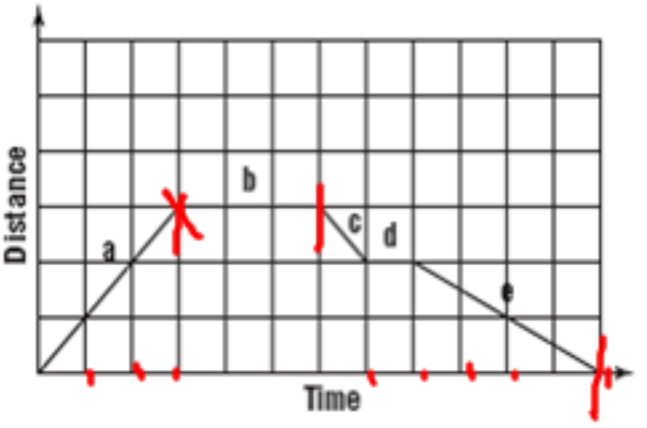
Blue, Green

6. How far did the blue swimmer travel in 15 minutes?

1200m

7. How much farther than the slowest swimmer did the fastest swimmer travel in 20 minutes?

1600 − 400 = 1200m



Directions: *The distance-time graph above shows the motion of a student walking to a convenience store for a loaf of bread and returning home. Use the graph to answer questions 1 through 5.*

1. In which segment was the student moving at the slowest rate of speed? e
2. Which segment indicates that the student might be stopped at the convenience store? B
3. In which two segments was the student moving at the fastest rate of speed? A/C
4. In which segment might the student be waiting for a traffic light? d
5. Which took longer, walking to the store or walking home? Home

Drag the terms to the correct!!!

Acceleration occurs when an object's 1. velocity changes. When an object speeds up, it has 2. positive acceleration. When an object's final velocity is less than its initial velocity, however, it has 3. negative acceleration. An object that is changing 4. direction is accelerating, even if its speed remains the same. Acceleration can be calculated by dividing the change in velocity by the 5. time interval in which the change occurred. The SI unit of 6. acceleration is m/s^2.