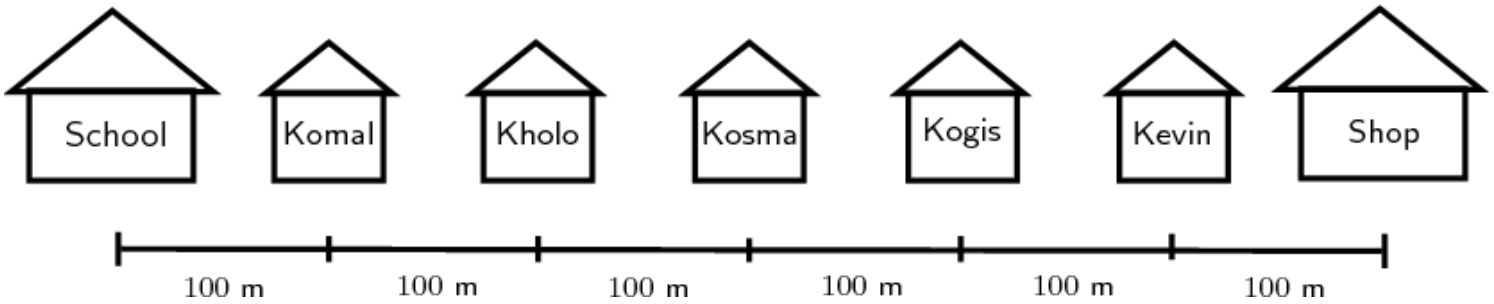
Unit 1 Essentials of Physics

Do Now and Agenda

Phys Ess Do Now

What are some words we can use to describe MOTION?

Physics Essentials Do Now



- You walk from School to Kogi’s House. What is your distance and displacement?
- You walk from School to Kosma’s and back to school. What is your distance and displacement?

Distance and Displacement Lab

- You will be assigned a random partner
- 1 walker, 1 measurer
- Follow the directions exactly!
- Complete Activity #1, #2, #3 steps 1-5 and Activity #4, steps 1-3 today

How do we measure with a meter stick?

Physics Essentials Do Now

---

1) Ally runs north 6 meters and south 10 meters. Draw her path. What is her distance? Displacement?
2) Hannah drove 10 meters north and 3 meters south. Draw her path. What is her distance? Displacement?

Physics Essentials Goals

---

1. Finish your lab (less than 10 minutes)
2. Work on your 2 practice sheets
3. Organize binder

Physics Essentials Do Now

---

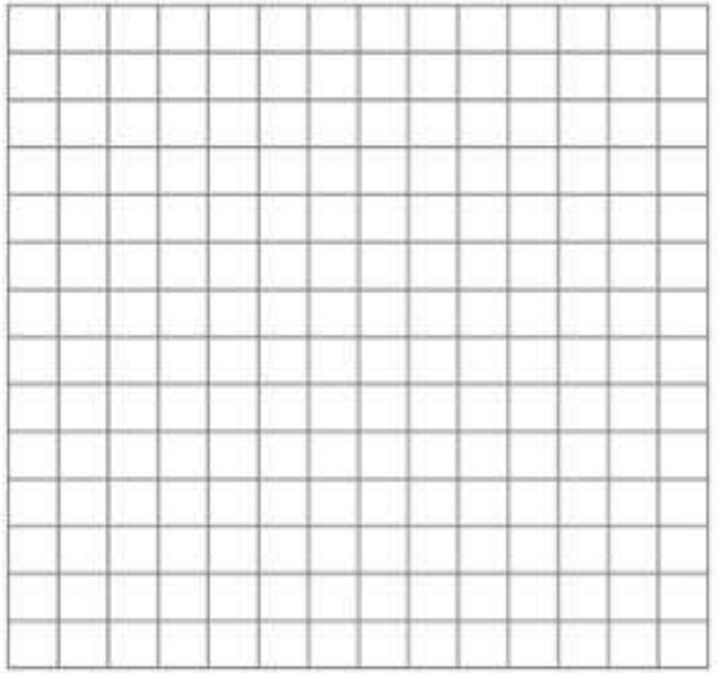
1) After walking 11 km due north from camp, a hiker then walks 11 km due south. Draw the situation. What is the total distance walked by the hiker? Determine the total displacement from the starting point.

1) An explorer walks 13 km due east and 3 km west. Draw the situation. What is the total distance walked? Draw a line showing the displacement.

Phys Ess Do Now

A bus drives 5 miles west, 2 miles south, 10 miles north and finally 3 miles east

- Draw the path.
- What is the distance the bus drove?
- What is the displacement?



Phys Ess Do Now

Use your notes from yesterday:

1) Describe 3 ways speed and velocity are different.
2) Does acceleration use speed or velocity in it’s equation?
3) What are the units for acceleration?

Motion Lab

Instantaneous Speed:

Average Speed:

Speed Equation:

Velocity Equation:

Acceleration Equation:

Physics Essentials DO NOW
S = d/t

For the following table, determine the speed of the runner. Use the speed equation to solve.

Runner (World Record)	Distance (m)	Time (s)	Speed
Usain Bolt (M)	100 m	9.58 s	
Wyde D. Niekerk (M)	400 m	43.3 s	
Florence Griffith Joyner (W)	100 m	10.49 s	
Marita Koch (W)	400 m	47.60 s	

How to find acceleration in lab...

Go to end of lab and show to do this

Physics Essentials DO NOW

A 1000 kg car is driving north with a speed of 6 m/s but a 2500 kg truck is driving south with a speed of 2 m/s. The truck accelerates at 7 m/s^2 while the car accelerates at 3 m/s^2. Suddenly a 10 kg bird crashes into the car with a speed of 2 m/s. The truck slows down with an acceleration -2 m/s^2 because it wants to see if the car is okay. A flock of birds appear (approximately 20 birds) that each weigh 10 kg. They avoid crashing in the truck, but they mourn the loss of their friend. Each bird cries 7 grams of tears, but one bird cries 2 grams of tear because he didn't really even like the bird that crashed. The truck and car accelerate away at 2 m/s^2 in their respective directions.

Write down all important information in this word problem

Write down several emotions/feelings/thoughts when you saw this do now

Turn in Do Now Sheets

WORD PROBLEMS ARE SCARY

Let’s think of the them like a puzzle or a game… we need to take steps to succeed!

You can use these steps in ANY CLASS at any time in your academic career!

-- If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Read the Problem

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Underline Important Information

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Draw a Picture

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Given Variables

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Unknown Variables or Looking For

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Equation

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Solve

If Joey throws a football 50 m in 3 seconds, what is the average speed of the football?

Answer

Physics Essentials Do Now

The speed equation is $\text{speed} = \frac{\text{distance}}{\text{time}}$

How can I write this equation to solve for distance (d)?

How can I write this equation to solve for time (t)?

Physics Essentials Do Now

You run around a track that is 400 m long in 40 seconds. You start and stop in the same place. What is your speed? Velocity?

How do I solve for acceleration?

Velocity initial: what you started with

Velocity final: what you ended with

Time: how much time did it take?

A car starts from rest and accelerates to 20 m/s in 8 seconds. What is the acceleration of the car?

Physics Essentials

- Turn in last week’s Do Nows (if needed)
- By the end of class- complete 3 out of 5 practice worksheets
- Don’t forget you can check your work and ask questions!

Physics Essentials DO NOW

A man travels to the store from his house. He walks 1.4 miles north and then 2.6 miles south in 1.9 hours.

What is his speed? What is his velocity?

Suppose his wife walks 1.8 miles to another store and 1.8 miles back to their house in 2.1 hours.

What is her speed? Velocity?

Physics Ess Do Now- Tuesday

Use the graph paper provided to create a line graph AND answer the questions.

Don’t forget to include x and y axes labels and a title!

1) What hour has the highest class average?
2) What happens during the day to the class average?
3) If there was a seventh hour, what you think the class average would be?

Class Hour	Class Average
1	78.9
2	82.1
3	85.4
4	80.3
5	77.9
6	76.3

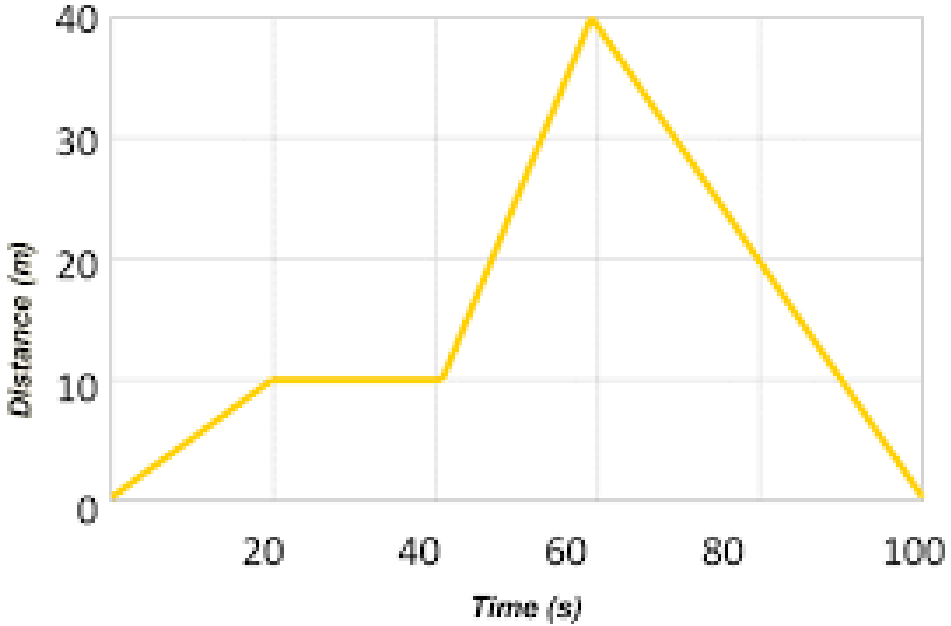
Physics Essentials Do Now

The graph on the rights shows a man walking around a track.

1- When is he moving away from the origin? Toward?

2- When is the man standing still?

3- When do you think the man have the greatest speed? Why?



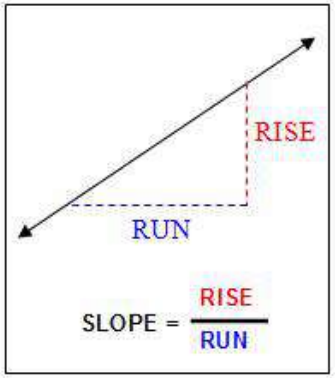
Physics Essentials

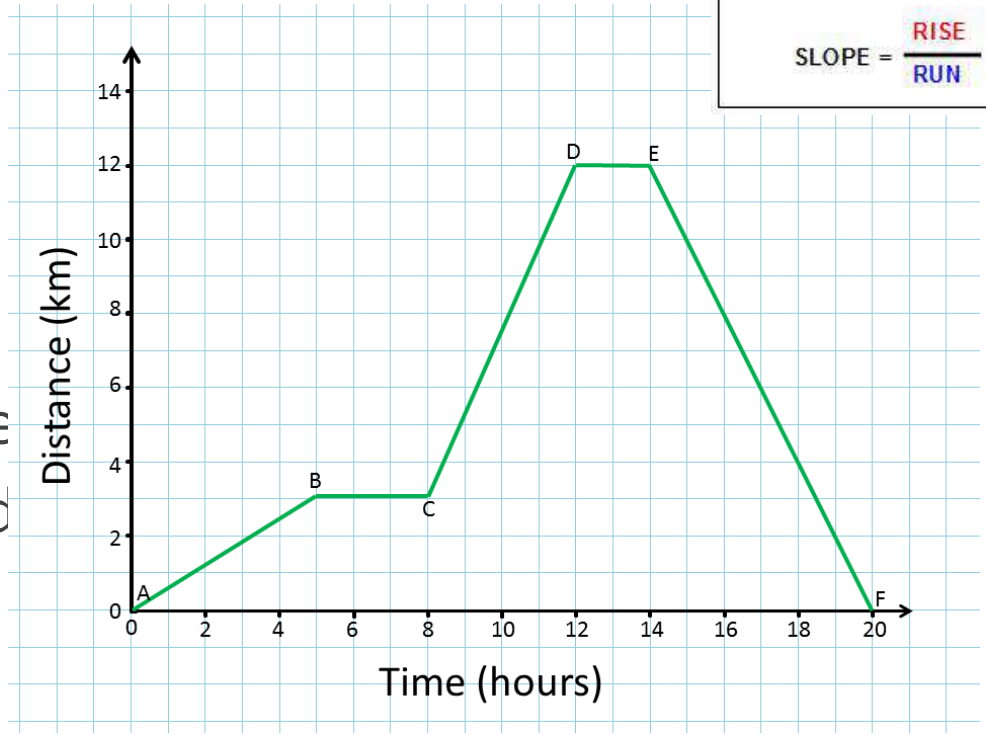
- Complete the Graphing Motion Tutorial from last Tuesday
- Show Ms. Logan
- Get a Graphing Motion PhET Lab and a computer

Physics Essentials Do Now

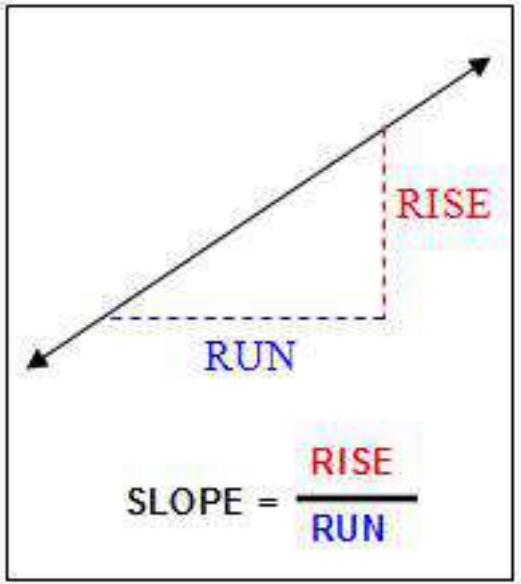
---

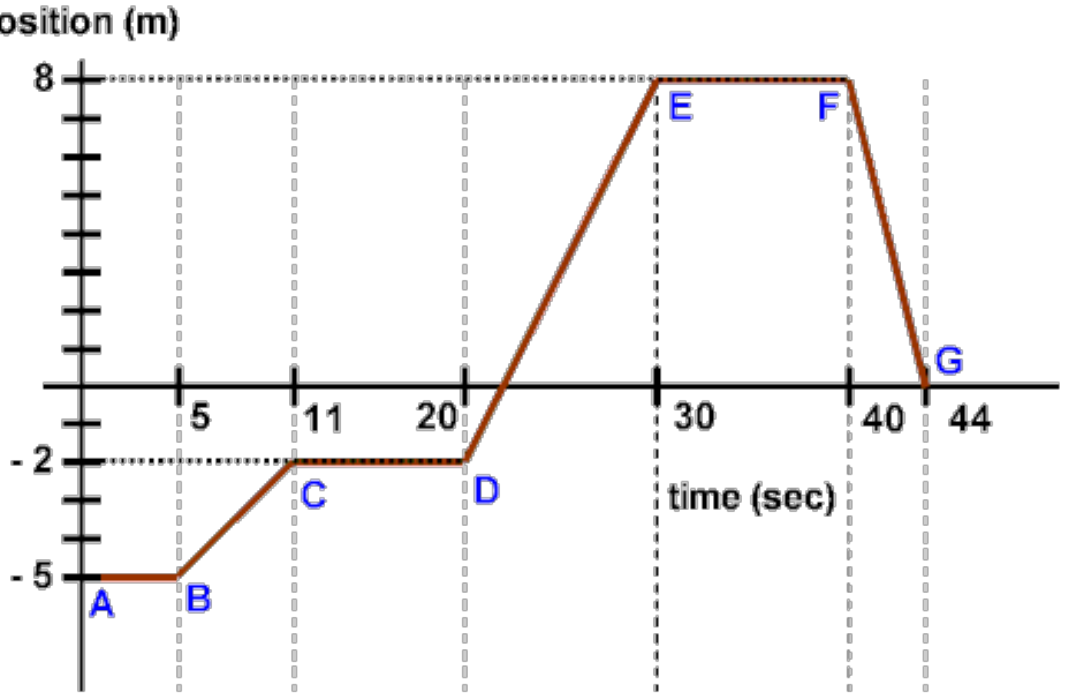
1) When is there a positive slope? negative ? zero?
2) Determine the slope of the line from A-B, C-D and E-F





How to Find Slope

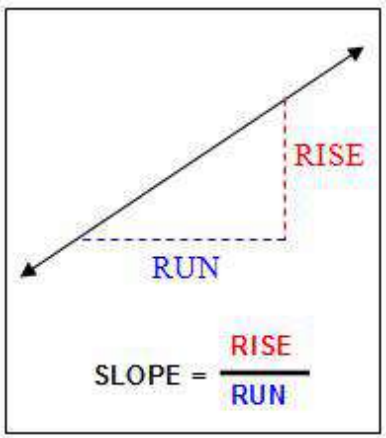


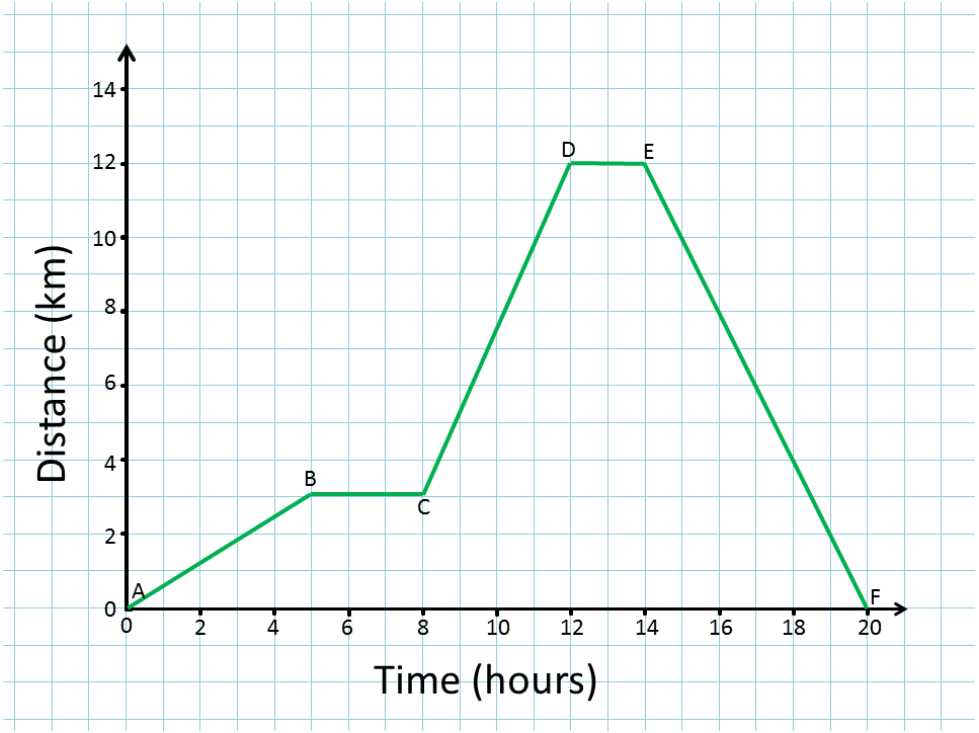


Physics Essentials Do Now

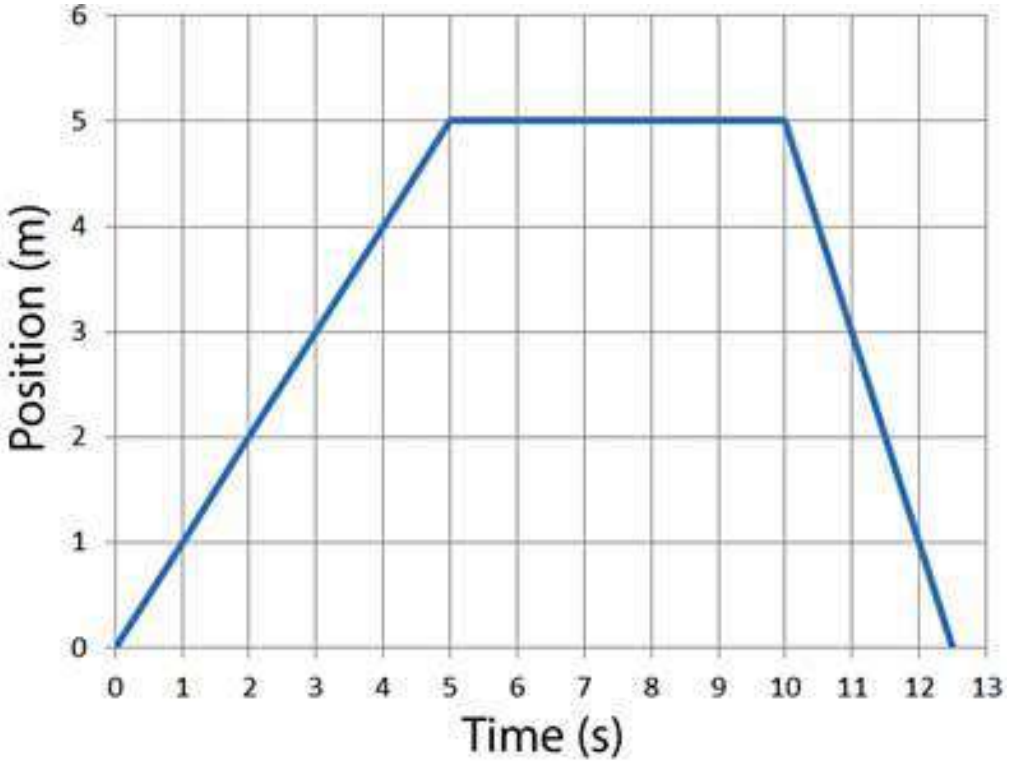
---

1) Determine the slope for each segment.





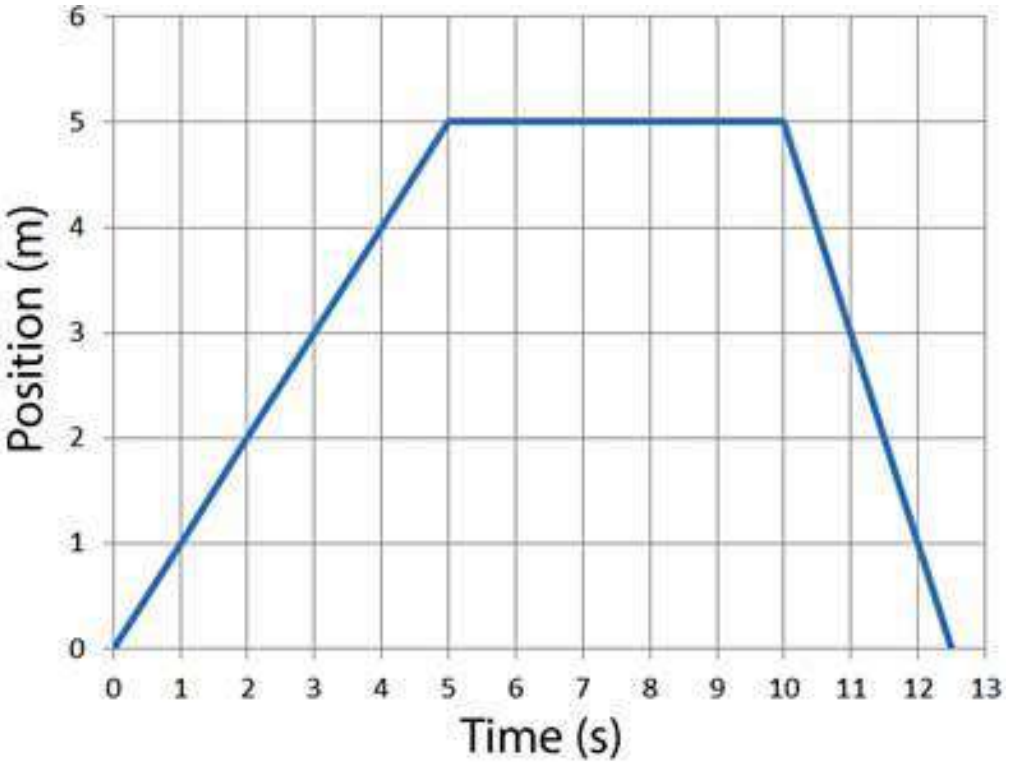
What does the slope mean?



Phys Ess Do Now

Find the speed for each segment.

When is the car going the fastest?



Essentials of Physics

- Get a post it note
- Organize Binder
- What do you need to work on? Write this on your post it note!

Phys Ess Friday

- Complete your Motion Graphs 2 Practice Sheets
- Complete any unfinished work in your binder
- Work on your review sheet (I have copies up front)

Phys Ess Do Now

Use a problem solving box.

1) The school is 4.5 miles from your house and you drive an average of 25 miles/hour. How long does it take you to get to school?
2) After sitting at a stop light, a car increases its velocity to 6 m/s in 2.5 seconds. What is the car’s acceleration?

Essentials of Physics

___

No Do Now

- Turn in your binder next to Ms. Logan’s Desk
- Get a pencil and calculator for your test
- Make sure you are not sitting directly across from someone