Unit 3 In Class Unit

Physics

Physics 12/2 & 12/3

Warm Up

1. On Jamboard: Where are some places you've always wanted to visit? Why?

Agenda

1) Review Careers in Physics
2) The Great Physics Roadtrip (guided as a class)

Due Dates

Today: Careers in Physics (share out Friday)

Friday before class: Physics Roadtrip (share out Friday)

Physics: 12/4 & 12/7

Warm Up

1. Open up Google Classroom and both your Careers in Physics and Great Physics Roadtrip.
2. Drop in the chat (to everyone) where you went on your roadtrip

Agenda

1) Present Careers in Physics and Road Maps to groups
2) Unit 3 Calendar and Standards Sheet
3) Distance/Displacement Intro
4) Distance/Displacement Mini Lab- due next block

Breakout Room Share Out

- Oldest partner goes first!
  - *Share your careers in physics*
  - *Other Partner Goes*
  - *Share your road trip*
  - *Other Partner Goes*
- Fill out the question on Google Classroom about your Partner's Work

Motion Basics Vocab

Scalar: A number and units

Vector: A number, units AND direction

Distance: total distance from one place to another (the path you took)

Displacement: The shortest distance from start to end with direction (this includes an angle if needed)

Speed: Distance/Time

Velocity: Displacement/Time

	Scalar or Vector	Dis, Disp speed or v?
30 m north		
10 mph		
+ 15 steps		
- 100 miles		
15 m/s south		

Find dis, disp, s and v for each.

- ❏ You drive 10 miles north in 30 minutes.
- ❏ You drive 50 miles north and 10 miles south in 2 hours.
- ❏ You drive 100 miles west and 100 miles east in 4 hours.
- ❏ You drive 3 miles east and 4 miles north in 0.1 hrs

How could this relate to your road trip?

Distance & Displacement Mini Lab- Due next block!

AND your Careers in Physics and Road Trip if you didn’t do it… :(

Physics: 12/8 & 12/9

Warm Up

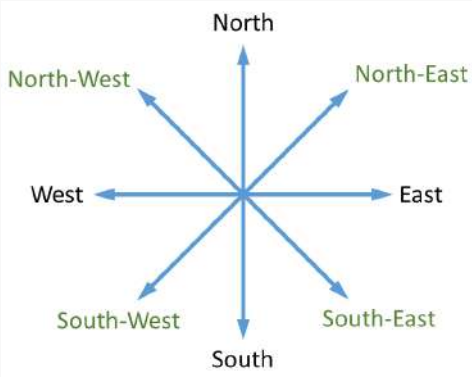
1. If you drive 20 miles east and 45 miles west in 3 hours, what is your distance, displacement, speed and velocity?

Agenda

1) Review Mini Lab
2) Road Trip Part 2
3) Work time on Mini Lab and Road Trip Part 2

Road Trip Part 2

- Finding Displacement, x and y components
  - *Click on starting city*
  - *Right click, Find Measurements*
  - *Click on next City*
  - *Look at distance at bottom (in the units you need)*
- Finding angle- don't worry about this yet but...
  - *Protractor plug in*
  - *Actual Protractor*
  - *Phone*
- Finding Directions
  - *Use cardinal directions (SW, NE, etc)*



Physics: 12/10- Wentzloff

Warm Up

1. Open up your Physics Road Trip
2. What questions do you have? What are you working on right now?

Agenda

1) Road Trip Part 2- You cannot sign off until it is done and checked by Mrs. Wentzloff!
2) Flipped Lesson Graphing Motion Due **Tuesday**

Physics: 12/10 & 12/14

Warm Up

1. Open up your Physics Road Trip
2. What questions do you have? What are you working on right now?

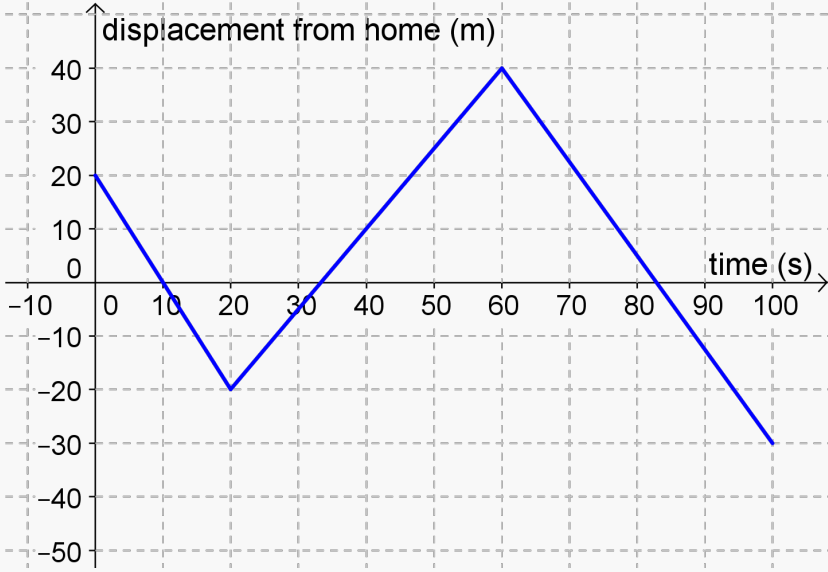
Agenda

1) Road Trip Part 2
2) Flipped Lesson Graphing Motion Due **Wednesday**

Physics: 12/15 & 12/16

Warm Up

1. What are some things you notice about the graph on the right?



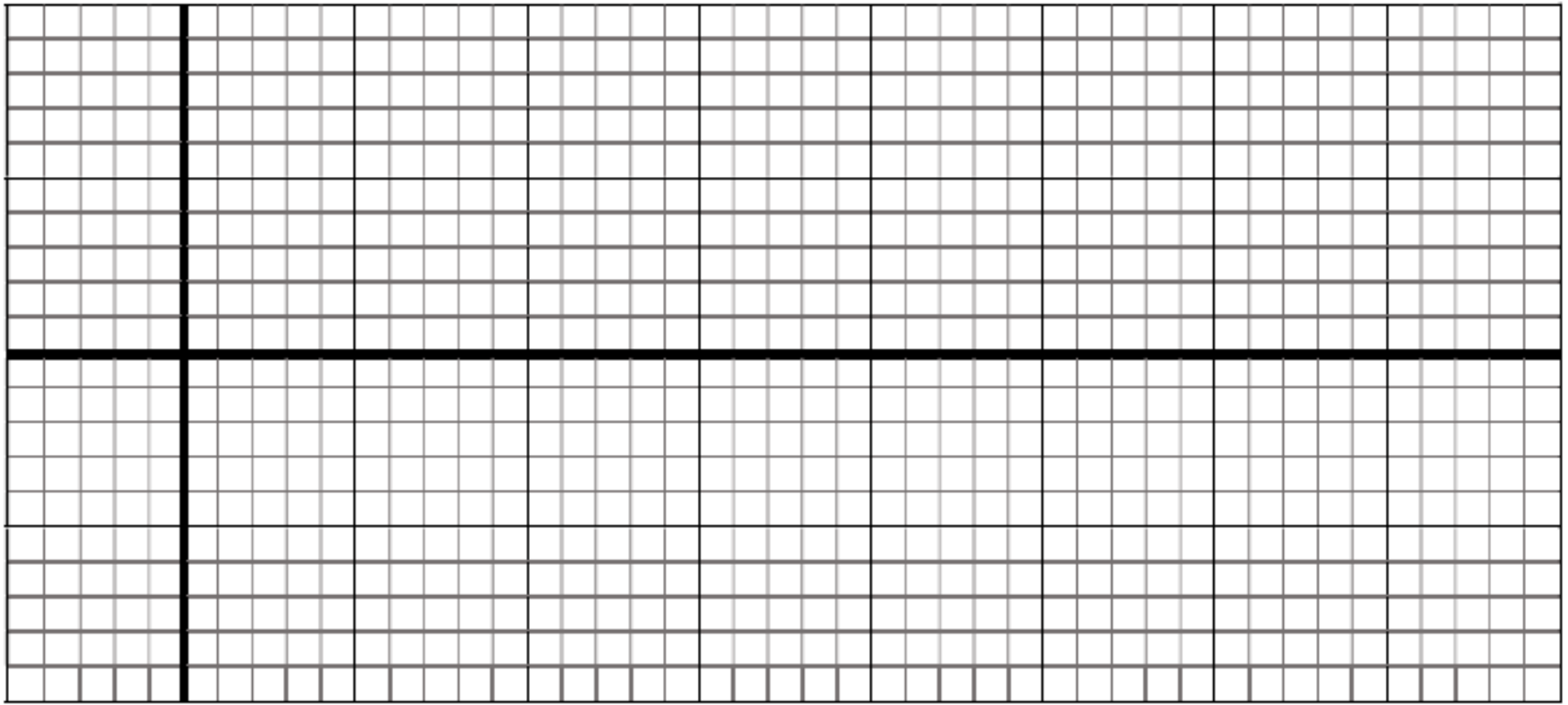
Agenda

1) Road Trip Part 2
2) Graphing Motion- Walk it Out
3) What does the slope mean?
4) Motion Lab Part 2- Graph It!

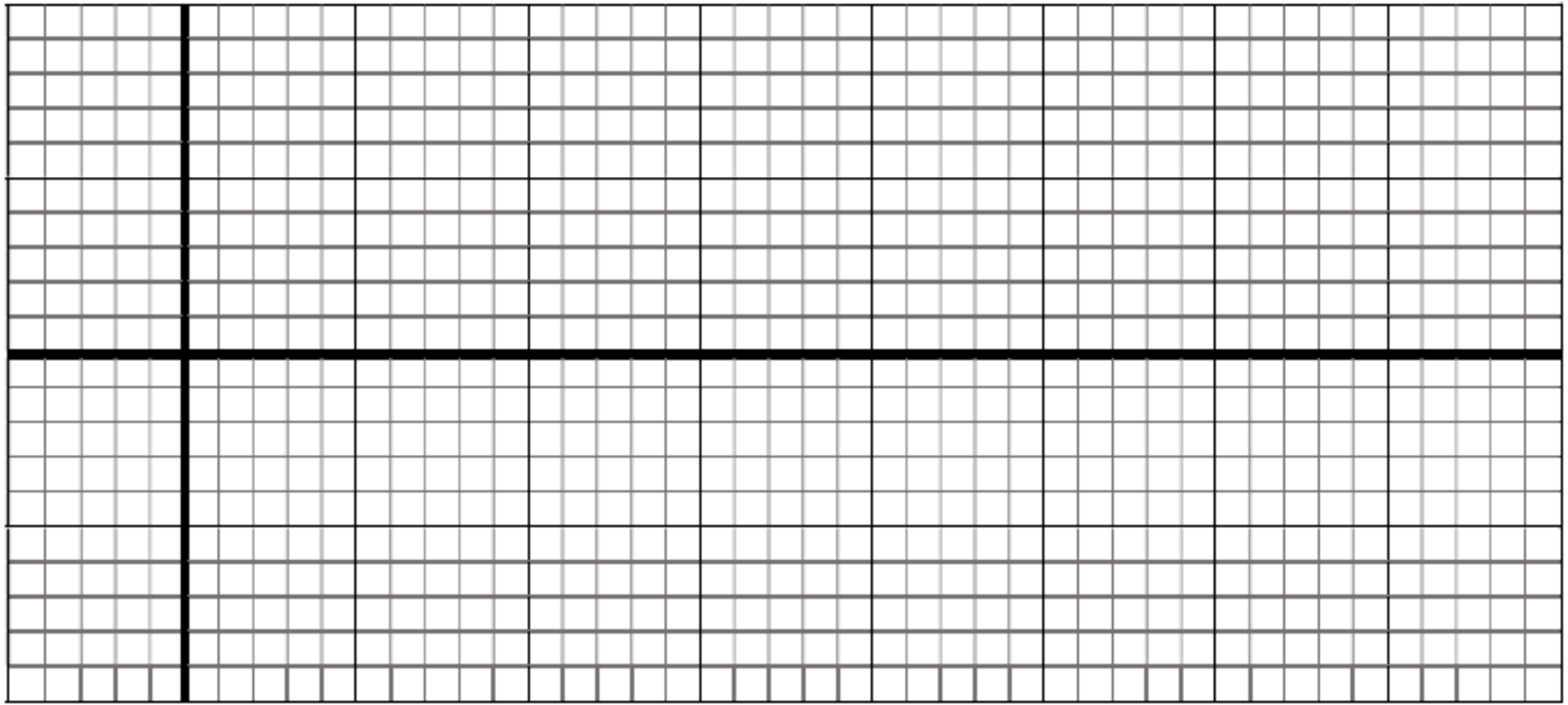
Graphing Motion: Walk it Out

Let’s draw & graph:

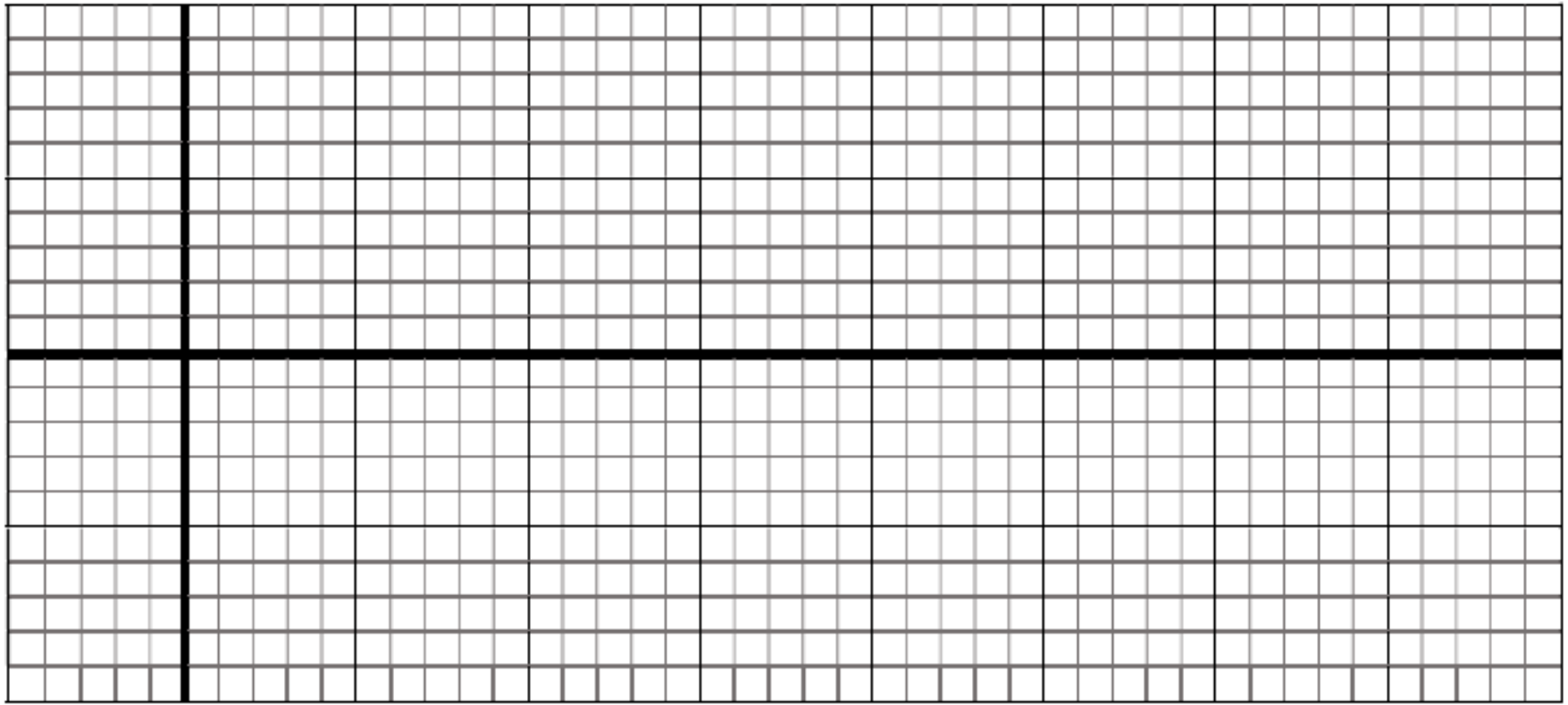
- 10 steps to the right in 5 seconds, 10 steps to the left in 10 seconds
- 5 steps to the left in 5 seconds, 10 steps to the right in 5 seconds
- 5 steps to the right for 5 seconds, rest for 10 seconds, 5 steps to the left for 5 seconds



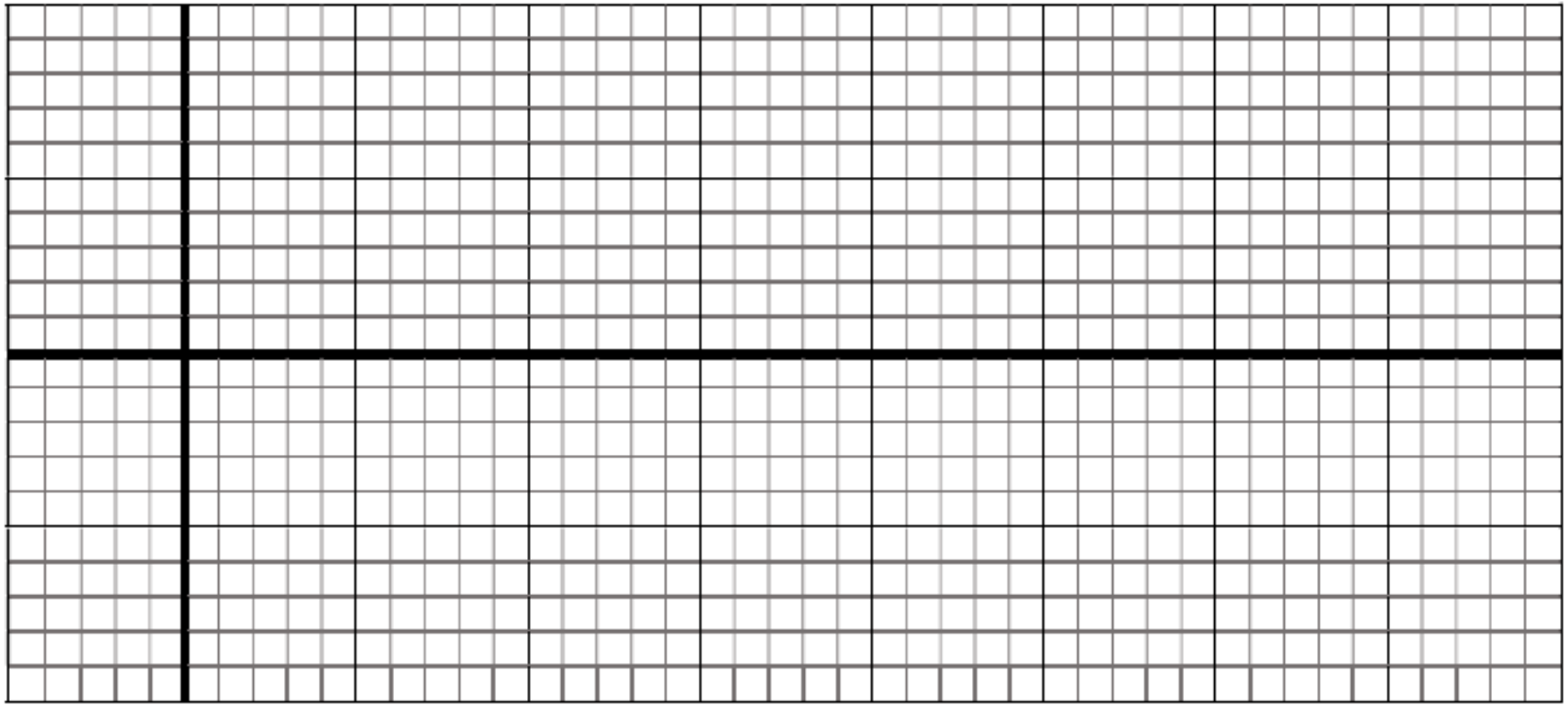
- 10 steps to the right in 5 seconds, 10 steps to the left in 10 seconds



5 steps to the left in 5 seconds, 10 steps to the right in 5 seconds



- 5 steps to the right for 5 seconds, rest for 10 seconds, 5 steps to the left for 5 seconds



Motion Lab Basics

Graph how you walked! Part 2

This is NOT GRADED. This is for feedback. Try your best :)

A person walks 10m in 5 seconds to the right, stops for 5 seconds, and then walks 20 m to the left in 5 seconds

1) Draw the situation
2) Graph the situation
3) Determine the total time, distance and displacement
4) Determine the speed in each section
5) Determine the overall speed and velocity (hint use answers from #3)

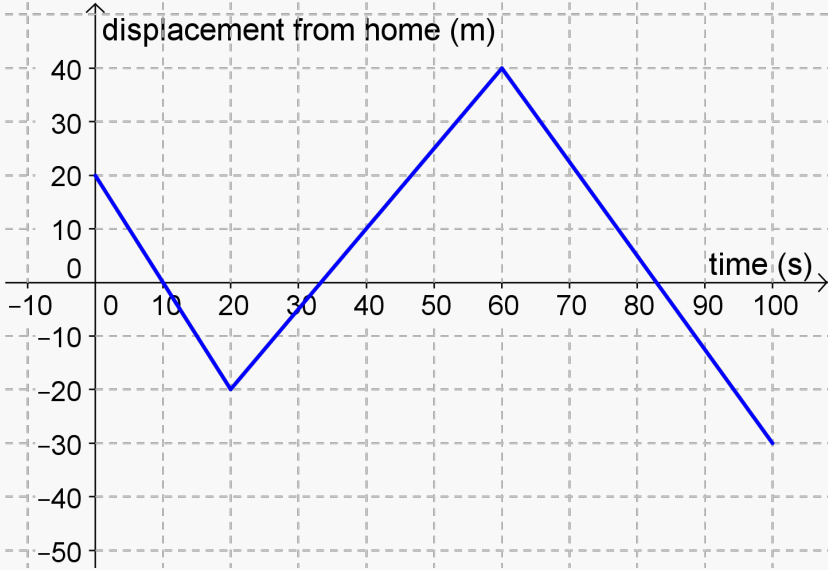
Physics: 12/17 & 12/18

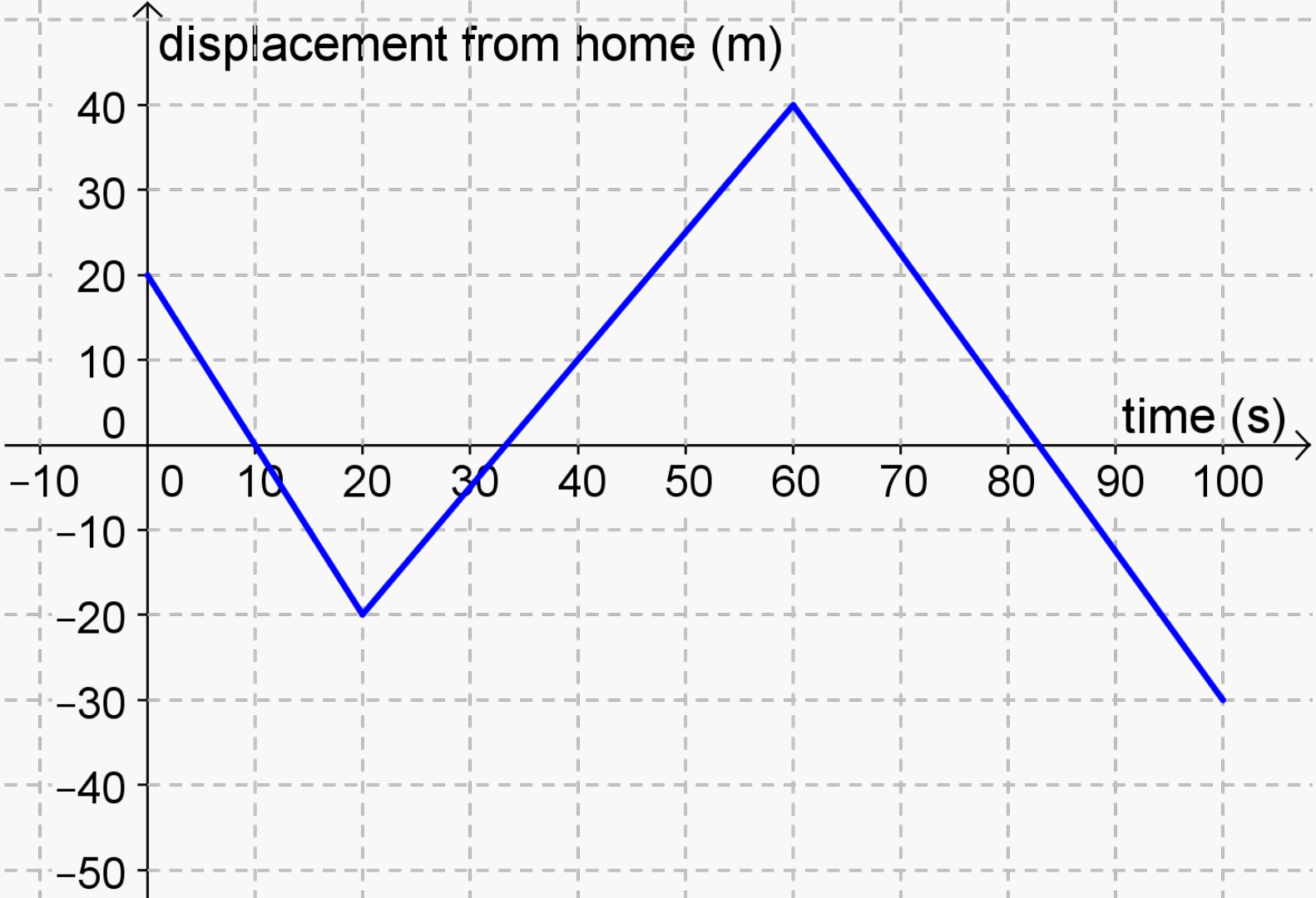
Warm Up

1. Draw out the situation on the graph on the right
2. What is the total distance traveled?
3. What is the displacement?

Agenda

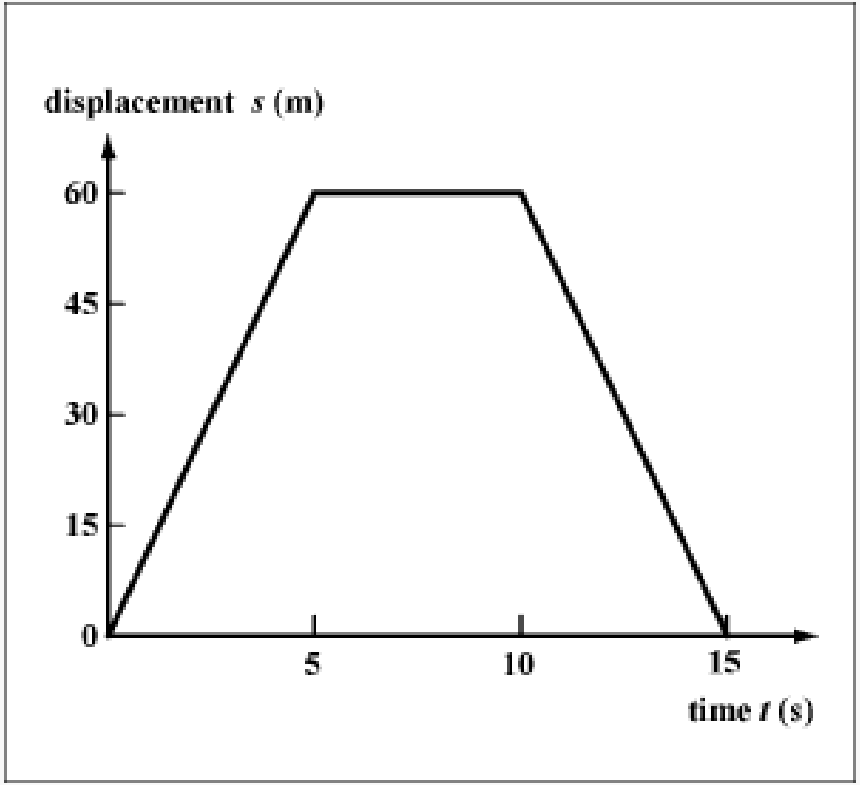
1) Slope a Motion Graph
2) Motion Lab Part 2




displacement from home (m)
time (s)
40
30
20
10
0
−10
−20
−30
−40
−50
−10
0
10
20
30
40
50
60
70
80
90
100

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

- Draw it out
- Find the speed and velocity of each section
- Find the total distance
- Find the displacement
- Find the average speed and velocity



Complete Graphing Motion problems on Google Classroom by FRIDAY

Welcome back Physics! 1/4 & 1/5

Warm Up

Share in the chat: What is something you enjoyed about break? What do you look forward to as you finish the semester?

Agenda

1) Make sure you've turned in your graphing motion practice and road trips - I will be looking at these
2) Information about the final
3) Early release on Thursday
4) What is flipped learning?
5) Flipped Lesson 1D Horizontal Motion

Final in Physics

- Reassessment of Standards
- You will get a phenomenon, model and then explain to your teacher the day of the final.
- You will get replacement of 6+ standards
- 70% + in the class does not have to take the final

I will post a question on Google Classroom later this week asking if you will take the final.

Avondale High School

Exam Week

	Monday	Tuesday	Wednesday	Thursday	Friday
7:22-8:42	4th Hour Regular Class	1st Hour FINAL EXAM	2nd Hour FINAL EXAM	4th Hour FINAL EXAM	6th Hour FINAL EXAM
8:47-10:07	5th Hour Regular Class	2nd Hour Regular Class	3rd Hour FINAL EXAM	5th Hour FINAL EXAM	7th Hour FINAL EXAM
10:12-11:32	6th Hour Regular Class	3rd Hour Regular Class	STUDENT STUDY PERIOD	STUDENT STUDY PERIOD	ENJOY YOUR WEEKEND!!
11:37-12:07	Lunch	Lunch			
12:12-12:52	7th Hour Regular Class	7th Hour Regular Class			
12:52-1:22	Office Hours	Office Hours			
1:22-2:22	PLC	PLC			

Avondale 20-21 Early Release Schedule

1st or 4th Hr – 7:22-8:32 am

2nd or 5th Hr – 8:37-9:47 am

3rd or 6th Hr – 9:52-11:02 am

7th Hr – 11:07-11:52 am

Exploration of Motion

What do you notice about the starting and ending velocities?

Is the distance traveled the same? Is the time to the finish line the same?

Is the average speed and velocity different? How could you determine this for each vehicle?

What is flipped learning?

To do:
Watch flipped lesson, take notes and answer questions by next block and we'll dive right in!

Physics 1/6 & 1/7

Warm Up

Take out flipped lesson notes and open up Google Classroom!

Agenda

1) Review Final Information
2) Flipped Lesson Review
3) Practice Problems
4) Exit Ticket
5) Independent Practice in Practice Packet
6) Vertical Flipped Lesson due next class

Reminders

All late work due Friday, Final Choice due Monday, Final Tuesday

Vocabulary	Abbreviation	Meaning	Units	Scalar or Vector?
Distance				
Displacement				
Time				
Speed				
Velocity				
Acceleration				

What about those other speed equations?

S = dis/t v = disp/t

They are average.

I drive 400 miles over 3 hours. What is my average speed? But wait… sometimes I’m driving at 70 mph and 20 mph...

YES!

NO!

$$V_f = V_i + at$$

$$\Delta x = V_i t + \frac{1}{2} a t^2$$

$$V_f^2 = V_i^2 + 2a\Delta x$$

$$\Delta x = \frac{1}{2}(V_i + V_f)\, t$$

How to do a word problem

1) Read the problem and draw a picture
2) Underline important information
3) Write down your knowns and unknowns with units
4) Determine which equation to use
5) Rearrange the equation to solve for your unknown variable (if needed)***
6) Plug in your numbers (with units)
7) Do some math
8) Write your answer with units and circle it

*** Rearranging is not required, but highly recommended for students who take AP Physics in the future

A runner starts from rest and accelerates to 4 m/s in 3.2 seconds. What is the acceleration of the person? How much distance did they travel?

Hidden Words

- Rest: velocity initial = 0
- Stops: velocity final = 0

A car is traveling at 20 m/s sees a stop light 50 m away and slows down until it is at rest. What is the acceleration of the car? How long does it take to slow down to rest?

A snake slithers across the jungle to catch a mouse. It takes him 10 seconds to move 33 m. What is his acceleration? Final velocity?

Wait when do we use average?

A person runs around a track (400m) in 60 seconds. What is their average speed and velocity?

Exit Ticket

The mouse sees the snake when he is slithering towards him and starts to run with an acceleration of 7 m/s^2 over the same 10 seconds. How much distance does the mouse move?

Next Up

1) Group problems (#2 in practice packet)
2) Exit Ticket
3) Practice Packet
4) Flipped Lesson: see next slide

Flipped Lesson - Vertical Motion

https://www.youtube.com/watch?v=Y2BCNO9Go5o&t=9s

1) In vertical motion gravity is always equal to… (concept and number)
2) If something is dropped, what is the initial velocity?
3) Is the final velocity positive or negative? Why?
4) Is the displacement positive or negative? Why?

Physics 1/8 & 1/11

Warm Up

Brenden and Allie are racing cars. Both start from the starting line and race over 200 m. Brenden accelerates at 3 m/s/s and Allie accelerates at 4 m/s/s. Who won? By how much time?

Agenda

1) Review Final Information/Late Work
2) Review Vertical Motion
3) Practice Packet Part 2 #1-5 only

Final Info

- 70%+ can be exempt
- Current grade is final grade
- You do not have to show up for the final
- QUESTION MUST BE ANSWERED BY MONDAY or I assume you are taking the final
- Late work due TODAY
- Second Semester (if you have me first hour) same GC and Zoom link

Physics:January 19 & 20

Warm Up

- What is something you enjoyed from last semester? Something you want to improve on? Something you struggled with?

Agenda

1. Expectations Semester 2
2. Review Kinematic Equations
3. Review Vertical Motion Up and Down
4. Practice Packet Work Time (Part 1 and 2 due next block)

Remind

@f2d6a6h

Basics of Vertical Kinematics

Acceleration?

Delta y?

Vi?

T?

Vf?

Three Situations

1. Something is just dropped
2. Something is thrown down
3. Something is thrown upwards and comes back down

We will review the first two **only**!

After the semester change we will pick back up learning about this!

A ball is dropped from a height of 3 m. How long does it take to reach the ground?

A ball is thrown down with an initial velocity of 6 m/s and hits the ground 1.6 m below. What is the velocity it hits the ground? How long does it take to hit the ground?

YES!

NO!

$$V_f = V_i + at$$

Vi vf a t

x

$$\Delta x = V_i t + \frac{1}{2} a t^2$$

Vi a t x

vf

$$V_f^2 = V_i^2 + 2a\Delta x$$

Vi vf a x

$$\Delta x = \frac{1}{2}(V_i + V_f)\, t$$

t

A ball is thrown upwards with an initial velocity of 3 m/s and then comes back down into your hand. How far did it go up? How much time was it in the air?

Due next block
Practice Packet
(You already started it!)

Physics: January 21 & 22

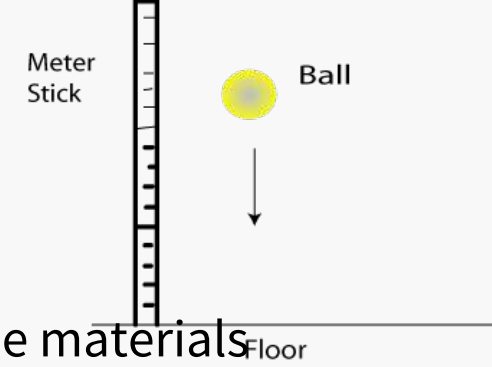
Warm Up

- You arrive at a new planet and need to figure out gravity! You drop a rock and it takes 0.3 seconds to drop 2 meters. What is the gravity (acceleration) on the planet?

Agenda

1. Review Practice Packet
2. Lab Introduction
3. Review Lab Data Standards
4. Pre Lab Work Time

Pre Lab: Gravity Lab



Question: How can you determine gravity using only the materials below?

Materials: Meter stick, stopwatch, ball

Background: Gravity is an *acceleration*. It pulls everything on earth down.

Kinematics: What kinematics equation would you use to determine acceleration using the materials above? Hint: What knowns do you have?

Pre-Lab: Question, Background (with equation), Materials, Diagram, Procedure, Variables, Data Table (10+ trials same height)

Pre Lab

- Materials
- Diagram
- Procedure
- Variables
- Data Table (10+ trials same height)

(also come with any questions you have)

Physics: Monday Jan 25 & Tuesday Jan 26

Warm Up

1. In the chat to me- are you coming back in person or staying remote? Do you have questions about what will change or stay the same?

Agenda

1. Review pre-lab
2. Does Mass Affect Gravity?
3. How to take data & derive equations

Due Next Block: Data for your Lab


BBC

- Demo how to take data
- Derive with Class the Equations

Physics: Wed Jan 27 & Thurs Jan 28

Warm Up

1. Where are you in your lab report? Did you finish taking your data? What was your average for time?

Agenda

1. Review data and conclusions (with rubric)
2. Review how to do background
3. Look at sample lab reports
4. Work Time/Check in With Teacher

Due Next Block: Come to class with a rough draft of your lab report complete to share with a writing center consultant!

Physics: Friday Jan 29 & Mon Feb 1

Warm Up

1. Where are you in your lab report? What do you have accomplished? What do you have questions on?

Agenda

1. Review parts of the lab and expectations
2. Writing center consultations (required for all students)

Upcoming: Lab report due Tuesday (no class time to work), Review for Quiz Tuesday, Flip Grid 1D Motion Assessment on Thursday

Physics: Tues Feb 2 & Wed Feb 3

Warm Up

1. Did you turn in your lab? If not, what do you need to finish? (you will have time at the end to finish)
2. Open up your kinematic aka motion equations (on your practice packet or in your notes)

Agenda

1. Review 1D Motion
2. Explanation of Assessment
3. Independent Work Time (must stay on to finish your lab)

Upcoming: 1D Motion Quiz (Flipgrid) Thursday/Friday!

YES!

NO!

$$V_f = V_i + at$$

Vi vf a t

x

$$\Delta x = V_i t + \frac{1}{2} a t^2$$

Vi a t x

vf

$$V_f^2 = V_i^2 + 2a\Delta x$$

Vi vf a x

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t

How to do a word problem

1) Read the problem and draw a picture
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6) Plug in your numbers (with units)
7) Do some math
8) Write your answer with units and circle it

*** Rearranging is not required, but highly recommended for students who take AP Physics in the future

1) A person is at a race and accelerates at 1.2 m/s/s for 5 seconds. How much distance did they travel? Final velocity?
2) A ball is dropped from a building and falls for 5 seconds before hitting the ground. How much distance did it travel?

1) A car is traveling at 30 m/s and sees a red light. It slows down to a stop in 4 seconds. What is the acceleration? Distance?
2) A ball is dropped from a building and balls falls 100 m. How much time did it take to hit the ground? Final velocity?

A ball is thrown upwards with an initial velocity of 3 m/s and goes up to the top and comes back down.

- What is the velocity before it comes back down (at top)?
- How high did it go?
- How much time did it take to reach the top?

1D Motion Assessment

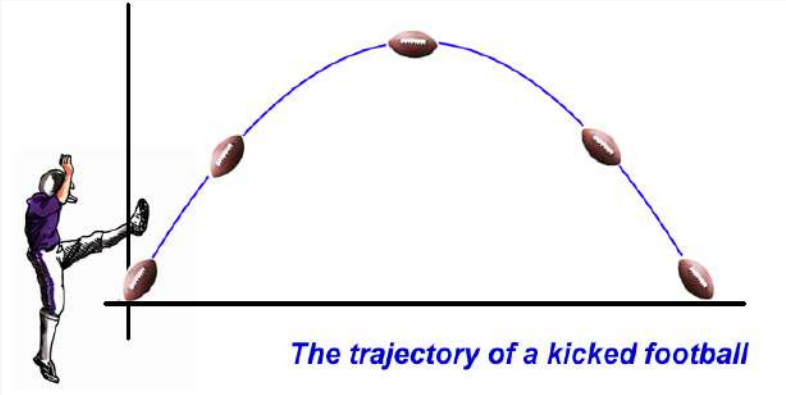
1) You will get 2 problems based on your **first name**. 1D Horizontal and 1D Vertical
2) You will have time to solve them on your own and then create a Flipgrid explaining how to solve the problem. You must describe the situation, write down your variables, determine which equation to use and explain your answer.

How can I prepare? Practice Packet, Flipped Lessons, In Class Notes, In Class Slides (Unit 3 Materials)

Physics: Monday Feb 8 & Tuesday Feb 9

Warm Up

What is all the data you could collect from the image on the right? **Write in the chat**



Agenda

1. Variables in projectile motion
2. PhET Projectiles- work with partner or by yourself.

Due Next Block: Graphing and Presenting your Data

Variables in Projectile Motion

- Initial velocity
- **Overall distance- range- x distance**
- **Maximum height (y)**
- Velocity final
- acceleration
- Gravity
- **Total time**
- Time to reach the top
- Weight of the object
- Angle
- Height that it is launched

Schedule

- Monday Feb 8- Purple
- Tuesday Feb 9- Gold
- Wednesday Feb 10- Purple **Count Day**
- Thursday Feb 11- **All Classes Asynchronous- You'll have an assignment**
- Friday to Tuesday- Mid Winter Break
- Wed Feb 17- Asynchronous ALL classes- Assignment all classes
- Thurs Feb 18- Purple
- Friday Feb 19- Gold

Physics: Wed 2/10 & Thurs 2/11

Warm Up

Were there any variables that did not affect the height/range/time? Were there any variables that affected time and max height the most?

Agenda

1. Review Assignment
2. Breakout Rooms to Graph and Make Conclusions
3. Present to Me!
4. Turn in Missing Work

Wednesday Asynchronous Assignment: Forces Phenomenon- required to be completed by 11:00 am- not busy work… what we do in class. I will post this Thursday (tomorrow)

Variables to Graph

1. Angle vs. Distance
2. Angle vs. Max Height
3. Angle vs. Time in Air
4. Speed vs. Distance
5. Speed vs. Max Height
6. Speed vs. Time in Air
7. Height vs. Range
8. Height vs. Time in Air
9. Mass vs. Distance
10. Mass vs. Max Height
11. Mass vs. Time in Air
12. Gravity vs. Distance
13. Gravity vs. Max Height
14. Gravity vs. Time in Air

- Assigned 2 with a partner in a breakout room
- Graph x vs. y in a scatter plot.
- What does this graph tell you?
- You will present 1 of them to me and turn in the assignment on GC.