Weekly Sheet for M$2/ H$1b PHYSIC$

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Week #4, Week of Mon(9/19) to Mon (9/26)

Topics/Content/Skills:

Vectors/ How things Move/Measuring velocity/Graphs

Skills:

- Identify and calculate the components of a vector.
- Identify a velocity and Acceleration graph from a Displacement vs Time graph.
- Solve 1 and 2 step algebra problems for trig.
- Can convert between 2 levels of units.

Vocabulary/Key Terms/Formulas:

Alpha, Omega, Sigma, Scientific notation, Conversions

Homework/Classwork: (All homework is due the next class day unless indicated.)

	In Class	Homework Due in this Class
Monday 9/12	PhET Labs 2d Motion Vectors Khan Academy Practice(if time)	Sheet #6
Tuesday	Finishing our lab, Graphs	Vector Activity
Wednesday	DVAJ Graphs & Quiz Review *Online Physics lab- Constant Velocity*	Finish Online Physics lab- Lady bug vectors Hmwrk sheet #7 Kinetic Book Quiz board from chapter 2
Thursday	Quiz #2	Hmwrk sheet #8
Friday	No Class on Fridays	NA
Monday 9/19	PhET simulation Lab Khan Academy	Hmwrk sheet #9

Tests/Due Dates: **There will be a 45 min test on Thursday Sept. 29. Our Quiz will be this Thursday.**

Test Topics: *Vector Components, Circular motion, Kinematics, 1-**2 Step Algebra problems, STEM Review, Extra ordinary Review, Graphs of DVAJ, Basic Trigonometry.***

Special Events/News:

6th -10th graders are expected to take the PSAT's and consequently we are having some extra help sessions during academic club time as well as Saturdays 10:00 a.m. to 12:30 p.m. Lunch will be provided.

Other Information

Here you will list other information that you want to communicate to students and families. You may delete this section if you so choose. What I use this for is below for example:

Resources: Web Site for researching Vectors & DVA Graphs http://phet.colorado.edu

Name/ Grade:_____/ Date:_____

Homework Sheet #6.5 (Equation and Algebra Practice)

1.) $\frac{1}{5}+\frac{1}{9}=$

2.) $\frac{x}{5}=3$

3.) $\frac{x}{7}=5$

4.) $\frac{18}{x}=-6$

5.) $-10=x-1$

6.) $-1-6x=-25$

7.) $3x-\frac{8}{9}=\frac{181}{9}$

8.) $9+6x=21$

9.) $-2x + 5 = -15$

10.) $8 + 5x = -22$

11.) $-x + 7 - 5x = -35$

12.) $51 = -x + 7x + 3$

13.) $\frac{2}{5} + \frac{148}{5} =$

14.) $-4 - -8 =$

15) $d_f = 0.5\ (10)\ t^2$

What does d_f =? ____ if t = 5

What does d_f = ? ____if t = 10

Bonus- What does t =? ____ if d_f = 20?

Memorize for Quiz Next class:

1. All Squares 0-16, 20, 25, 30. All multiplication table 0-12+

Name/ Grade:_____/ Date:_____

Homework Sheet #7

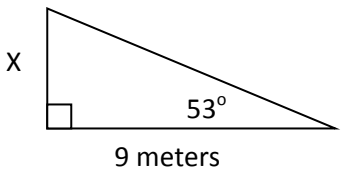
Do these as fast as you can…(if not under 90 seconds- for most) then Mastery isn't quite there….Check time before you start..

X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																

17. Did you finish these in under 2 minutes?_____

Physics Review Questions of the Week

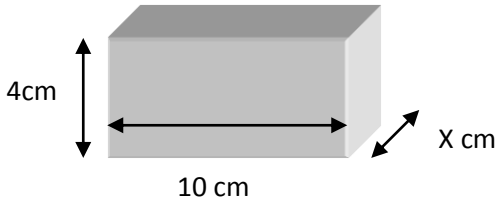
1.



a. Which trig function would you use? Sin Cos Tan
b. Explain why you pick that one_____
_____

c. **NOT Bonus**: X is the height of the flagpole, how tall is the flag (solve for x)?

2. a.



Mass = _____**gms**

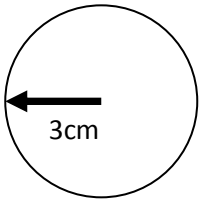
Volume =_200cc____ x=____

Density = __3gm/cc_____

Circumference of a Circle= $2\pi r$

Area of a Circle = πr^2

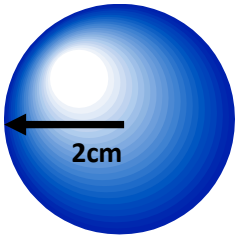
Volume of a Sphere= $4/3\pi r^3$



Radius of this circle is 3 cm.

Circumference =_____

AREA = _____



Radius of this sphere is 2cm

Volume = _____

3. a. 15% of 8642=_____

b. 15% of 7000 =_____

c. d= v= $3t^5$ a=_____ j=_____

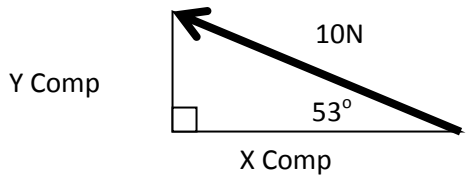
1. **Fermi: Estimate how many homework assignments have you ever had?** *Show work and give answer to the nearest order of magnitude (power of 10).*

Name/ Grade:_____/ Date:_____

Homework Sheet #8

Physics Review Questions of the Week

2.



a. What is the x component of the 10 N vector ?_____
b. What is the y component of the 10 N vector ?_____

Basic Derivatives:

1. D= $2t^3$
a. V=_____
b. A=_____
c. What is A if t = 4 seconds?_____
2. V= $50t^9$
a. A= _____
b. D= _____ (be careful)
3. A= $10m/s^2$
V=_____

Fraction Basics: (Show work) Level:_____

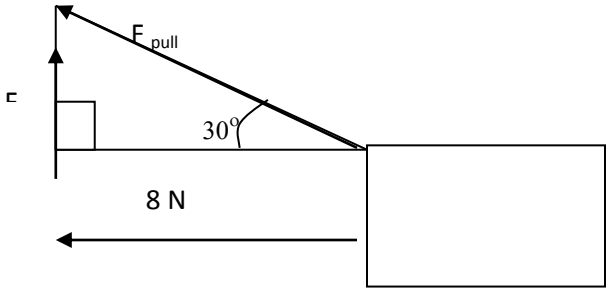
1. $\frac{2}{6}+\frac{3}{24}=$

2. $\frac{2}{7}*\frac{-7}{9}=$

Basic Trigonometry: Level:_____

1. An important word for Trig that helps us know the functions:_____**** don't forget

2.



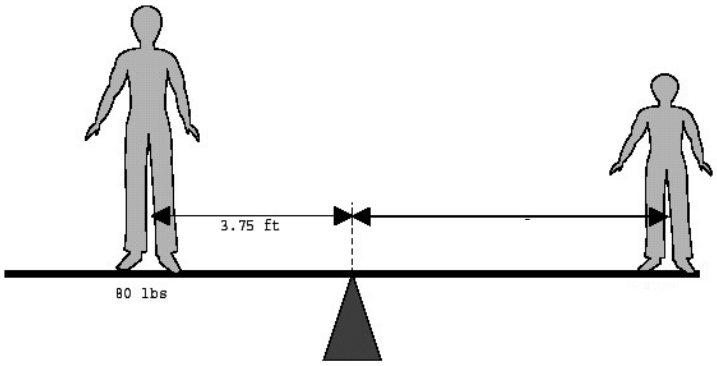
a. What trig function would you use to solve for F up?

Cos θ Sin θ Tan θ

(Circle one)

b. What is F_{up}?

c. What is F pull?



1. David a ~ 80lb, 6th grader is on a see saw with a Serena, a 2nd Grader. David is 3.75 feet from the pivot and the Serna is 6 feet from the pivot.

a. Label the Forces of the students

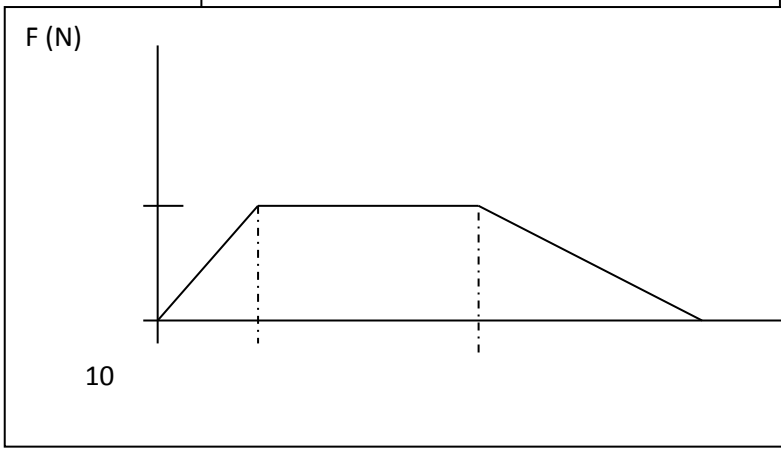
b. Label the direction of the torque for each student.

2.

a. What is the Impulse from 0-3 seconds?

b. What is the Impulse from 3-8 seconds?

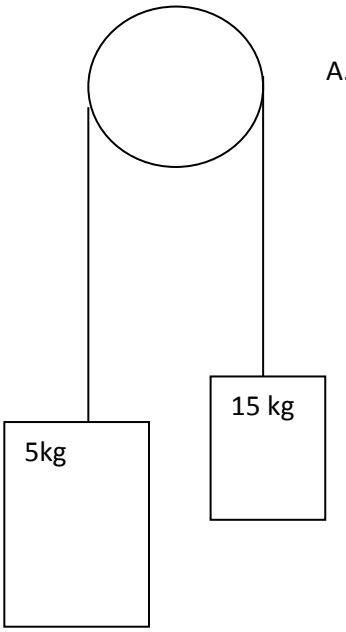
c. What is the Impulse from 8-13 seconds?



d. What is the total Impulse from 0-13seconds?

e. A runner (30 kg) had this impulse and she started from rest how fast would she be moving after 30 seconds?

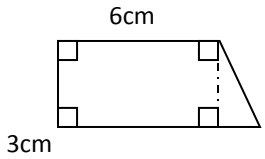
f.

3. 

A. What is the magnitude of Acceleration of the blocks?_____

B. What is the Tension on the String?_____

Equations/Units Memory:

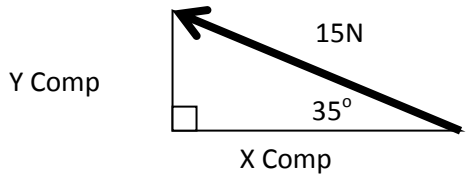
1) For Newton's 2nd law If you triple the mass and double the acceleration what do you get compared to the original force (F_o)?	2) **Unit** for momentum=_____	3) Draw the FBD of a 3kg at rest on a table. Label all forces on it.
4) Impulse=_____x_____ or =_____x_____ Unit=_____	5) Torque=_____x_____ or =_____x_____ Unit=_____	6) Area of a Trapezoid= 
7) Describe an Atwood machine is_____ _____	8) Spring Potential Energy =	9) If AxB=C If you keep B constant and Triple A, what happens to C?
10) Spring Force = _____ Unit=_____	11) The slope of the acceleration vs. Time graph is called _____	12) The Area (Sum) under the Force vs time graph is: _____
13) **Unit** for energy &work =_____	14) Tangent of an angle = $\frac{What}{What}$ = Bonus What is the Cotangent?	15) **Unit** for a. Displacement= b. Jerk= _____

Name/ Grade:_____/ Date:_____

Homework Sheet #9

Physics Review Questions of the Week

1.

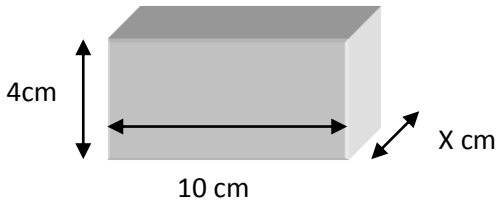


c. What is the x component of the 10 N vector ?_____

d. What is the y component of the 10 N vector ?_____

c. **NOT Bonus**: X is the height of the flagpole, how tall is the flag (solve for x)?

2. a.



Mass = _____**gms**

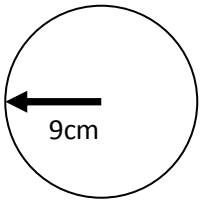
Volume =_900cc____ x=____

Density = __9gm/cc_____

Circumference of a Circle= 2 π r

Area of a Circle = π r^2

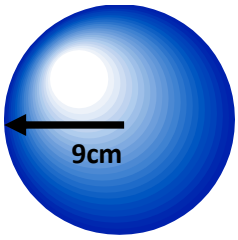
Volume of a Sphere= 4/3π r^3



Radius of this circle is 9 cm.

Circumference =_____

AREA = _____



Radius of this sphere is 9cm

Volume = _____

3. a. 15% of 9642=_____

b. 15% of 9090 =_____

c. d=_____ v=_____ $9t^8$ a=_____ j= _____

Fermi: Estimate how many times have you brushed your teeth? *Show work and give answer to the nearest order of magnitude* These are extra Credit (Bonus)

From Last week

$d_f = \frac{1}{2} a\ t^2 + v_i t + d_i$ $\quad V_f^2 = V_i^2 - 2a\,\Delta d$ $\quad$ So $V_i = \sqrt{2 * a * \Delta d}$

Let a ~ 10 m/s²

Solve for x: $x = \frac{1}{2} * 10 * (4.5)^2$ x =__101.25_____

1. If $d_i=v_i=0$, and accel = 10 m/s²,
   a. What is d_f if t = 5 s?__125m_____
   b. What is d_f if t = 7 s?__245m_____
   c. What is d_f if t = 4.2 s?_88.2 m_____
   d. What is d_f if t = 12 s?_720m_____
2. A Ball is thrown straight up with initial velocity (v_i). It reaches a height of 10 meters, what was the initial velocity?___14.1m/s_____
3. A Ball is thrown straight up with initial velocity (v_i). It reaches a height of 2.5 meters, what was the initial velocity?___7.07 m/s_____
4. What goes up must come down. If a ball is thrown up with an initial velocity, and it takes 9 seconds to return, what was the initial velocity? **45 m/s**
5. If a ball is thrown up with an initial velocity, and it takes 30 seconds to return, what was the initial velocity? **150 m/s**
6. If a ball is thrown up with an initial velocity 40 m/s , how long does it take to return?_____**8s**
7. If a ball is thrown up with an initial velocity 10.3 m/s , how long does it take to return?_____**2.6 s**
8. Give the equation for Momentum:_____ **mxv=p**
9. A car with mass of 500 kg is traveling with velocity of 30 m/s. What is it's momentum?___**1500kg m/s**_____ (Don't forget the units)
10. What is the difference between an elastic collision **(bounces w/ energy conserved)** and an inelastic **(sticks w/ energy NOT conserved)**collision?
    _____
11. What is the equation for Static Friction:_____$F_s=\mu_s N$_____
12. What is the maximum value of the static friction of a box with coefficient of static friction of 0.2, and mass of 7kg?___14N_____
13. What is the equation for Centripetal acceleration:___v^2/r____
14. A ball on a **2m** string is spun in a circle with a tangential velocity of 10 m/s. What is it's acceleration?____**100/2= 50 m/s²**_____ Don't forget the unit and DIRECTION!