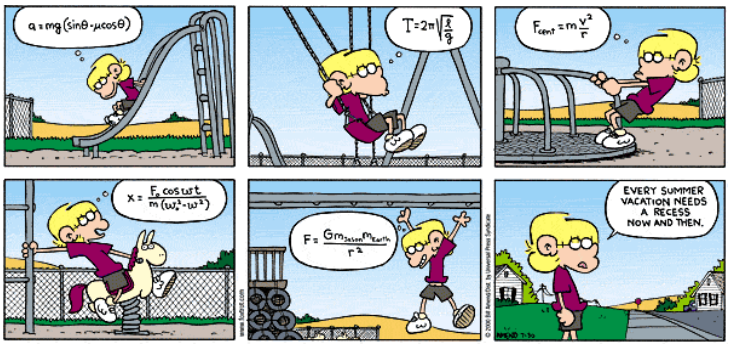

Weekly Sheet for PHYSICS 2

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Physics 2

Week #T2-8 More Thermo and some Momentum/Energy thrown in

January School Wide Memory Verse:

Galatians 5:22-23 New International Version (NIV)

22 *But the fruit of the Spirit is love, joy, peace, forbearance, kindness, goodness, faithfulness,* 23 *gentleness and self-control. Against such things there is no law.*

Topics/Content/Skills: Heat, Temperature, Laws of Thermodynamics

Skills:

Review- **Thermo Dynamics**:

- Temperature,
- 3 laws of Thermodynamics
  - Conservation of Energy
  - Entropy- Things get messy, socks (and energy), gets "misplaced" so no 100% engines.
  - Absolute zero means no movement
- Green house effect
- How Microwaves/Refrigerators/ Super Conductors work
- Buoyancy
- Heat ΔQ
- Linear Expansion
- Momentum, Inertia, Impulse…

Projects-Science Olympiad Topic Challenge.

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

	In Class	Homework Due in this Class
This Monday	**Momentum, Thermo Practice**	**#28**
Tuesday	Round Robin/ Science Olympiad Prep	**#29**
Wednesday Not HS1	***Lab/Demo TBA*** ***Practice for Test***	**#30**
Thursday HS1 Double	**Test Thermo**	**#30 (HS1) #31 With Fun math Practice #1**
Friday	**No Class on Fridays**	**NA**
Next Week		**#32 With Fun Sheet #2**

Tests/Due Dates: TEST Thursday

1. **Fill in**
    a.

Temp	Kelvin	Fahrenheit	Celsius
Abs. Zero			
Lowest Earth Temp	184		
Water Freezes			
Room Temp			
Body Temp			
Highest Earth Temp		136	
Water Boils			
Titanium Melts			1668
Surface Temp of the Sun	~5800	~	~5800

Thermo Practice-#29

1. **The Greenhouse effect:**
   a. **What is it?** _____
   b. **Why is it important?** _____
   c. **What can be done about it?** _____
2. **Thermal Insulator: Give 3 Examples:**
   a. _____
   b. _____
   c. _____
3. **Thermal Conductor: Give 3 Examples:**
   a. _____
   b. _____
   c. _____
4. **Three types of Heat Transfer:**
   a. _____
   b. _____
   c. _____
5. **If you heat a solid it will always expand: Yes or No** ***Pick one***
6. **Why to train tracks have gaps between them?** _____
7. **What Color plasma is the Hottest? Violet or Red** ***Pick one***
8. **If you plug in an electric heater that uses 50 volts with a current of 2 amps**
   a. **How much power is generated by that heater?_____**
   b. **Watts = Joules/ Second; How many Joules per second are generated?_____**
   c. **If you keep the heater plugged in and you drop it into a cup of 100 gms of water (C_{sp}= 4.18 J/gm ^{o}C) at 20^{o} C. How many Joules (energy- Q) are generated for 1 minute?_____**
   d. **What is the Temperature after 1 minute for the 100 gm of water?_____**

9. **If you plug in an electric heater that uses 100 volts with a current of 20 amps**
   a. **How much power is generated by that heater?_____**
   b. **Watts = Joules/ Second; How many Joules per second are generated?_ _____**
   c. **If you keep the heater plugged in and you drop it into a cup of 200 gms of water (Csp= 4.18 J/gm ^{o}C) at 5^{o} C How many Joules (energy- Q) are generated for 1 minute?_____**
   d. **What is the Temperature after 1 minute for the 200 gm of water?_____**

TERM 2 #30 CFA/PCA PHYSICS I

Name/ Grade:_____/ Date:_____(#

1. **A. FROM MEMORY- Fill in**

Temp	Kelvin	Fahrenheit	Celsius
Abs. Zero			
Lowest Earth Temp	184		
Water Freezes			
Room Temp			
Body Temp			
Highest Earth Temp		136	
Water Boils			
Titanium Melts			1668
Surface Temp of the Sun	~5800	~	~5800

What heat needs to be added to 200gm water to raise it's temp 70^{o}C from 60 ^{o}C?

Heat of Vaporization of water 2260 j/gm

Specific heat capacity, ice: 2.108 kJ/kg-K
Specific heat capacity, water: 4.187 kJ/kg-K
Specific heat capacity, water vapor: 1.996 kJ/-kgK

b. _____

Use this space:

c. **What heat needs to be removed from 400gm of water to lower it by 30°Cfrom 10 °C?** Heat of Fusion of Water (H_f = 334 J/g)

_____

Use this space:

2. **If you plug in an electric heater that uses 120 volts with a current of 15 amps**
   a. **How much power is generated by that heater?_____**
   b. **If you keep the heater plugged in and you drop it into a cup of 200 gms of an unknown substance (Csp= 3 J/gm °C) How many Joules (energy- Q) are generated for 1 minute?_____**
   c. **What is the Temperature change after 1 minute for the 200 gm of water?**

      _____

TERM 2 #31 CFA/PCA PHYSICS I

Name/ Grade:_____/ Date:_____

SCIENCE OLYMPIAD CHECK IN AND RUBRIC PLUS FUN SHEET #1

HMWRK #32
WRITE IT DO IT/SAT PREP PRACTICE…

Physics 1
SAT Diagnostic Test #8-39 (20 Minutes to Take, 10 Min to grade and UNDERSTAND),

1. Take,
2. Grade
3. Understand… What you got wrong and WHY

Physics 2
SAT Diagnostic Test #40-75 (30 Minutes to Take, 30 Min to grade and UNDERSTAND),

4. Take,
5. Grade
6. Understand… What you got wrong and WHY

Practice with F_{grav} & F_{Elec}. And proportions
Physics 1&2

1. If you double one mass what happens to the force:_____
2. If you Half the distance between two masses what happens to the force: _____
3. If you half each of the two masses what happens to the force: _____

Physics 2 Only

4. If you Double one charge and take $1/4^{th}$ of the other, what happens to the force: _____
5. If you double one mass, Double the distance between the two masses, what happens to the force: _____
6. If you triple the distance between two charges and double both charges, what happens to the force: _____
7. If you triple each mass, and make the distance between the masses, $1/4^{th}$ what it was, what happens to the force: _____

Explain why train tracks have spaces in them? How could this impact high speed trains? Can you think of solutions for that?

_____

_____

What is the fastest a railed vehicle has ever traveled?_____.