



## Weekly Sheet for PHYSICS 1

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### Physics 1

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

**January School Wide Memory Verse:**

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

<sup>22</sup> But the fruit of the Spirit is love, joy, peace, forbearance, kindness, goodness, faithfulness, <sup>23</sup> 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.)**

	<u>In Class</u>	<u>Homework Due in this Class</u>
<b><u>This Monday</u></b>	<b><u>Momentum, Thermo Practice</u></b>	#28
<b><u>Tuesday</u></b>	Round Robin/ Science Olympiad Prep	#29
<b><u>Wednesday</u></b> <span style="color: cyan;">Not HS1</span>	<b><u>Lab/Demo TBA</u></b> <b><u>Practice for Test</u></b>	#30
<b><u>Thursday</u></b> <span style="color: cyan;">HS1 Double</span>	<b><u>Test Thermo</u></b>	#30 (HS1) #31
<b><u>Friday</u></b>	<b><u>No Class on Fridays</u></b>	<b><u>NA</u></b>
<b><u>Next Week</u></b>		#32

**Tests/Due Dates: TEST Thursday**

1. Fill in

a.

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

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 (Csp= 4.18 J/gm) How many Joules (energy- Q) are generated for 1 minute? \_\_\_\_\_

d. What is the Temperature change 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
- How much power is generated by that heater? \_\_\_\_\_
  - Watts = Joules/ Second; How many Joules per second are generated? \_  
\_\_\_\_\_
  - If you keep the heater plugged in and you drop it into a cup of 200 gms of water (Csp= 4.18 J/gm) How many Joules (energy- Q) are generated for 1 minute?  
\_\_\_\_\_
  - What is the Temperature change 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

- b. What heat needs to be added to 200gm water to raise it's temp 70°C?
- \_\_\_\_\_

Use this space:

- c. What heat needs to be removed from 400gm of water to lower it by 30°C?
- \_\_\_\_\_

Use this space:

2. If you plug in an electric heater that uses 120 volts with a current of 15 amps
- How much power is generated by that heater?\_\_\_\_\_
  - Watts = Joules/ Second; How many Joules per second are generated?\_  
\_\_\_\_\_
  - If you keep the heater plugged in and you drop it into a cup of 200 gms of water (Csp= 4.18 J/gm) How many Joules (energy- Q) are generated for 1 minute?\_\_\_\_\_
  - What is the Temperature change after 1 minute for the 200 gm of water?\_\_\_\_\_

TERM 2 #31 CFAPCA PHYSICS I

Name/ Grade: \_\_\_\_\_ / Date: \_\_\_\_\_ (#

## HMWRK #28

### 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 $F_{\text{grav}}$ & $F_{\text{Elec}}$ . 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  $1/4^{\text{th}}$  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,  $1/4^{\text{th}}$  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?

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