review #1 for Thursday's Test

East.H.S. ©λ€M|s+ry

visit http://genest.weebly.com

Name_____

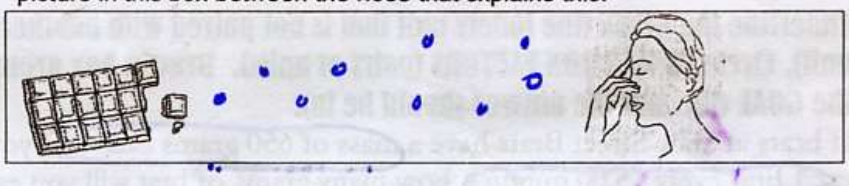
Date_____

Come to study. This week I am here Tues. & Thurs after school until 4:45 and every day at lunch

Fill in every grey box with the correct word and the correct symbol

G	?	?	M	?	?	k	?	?	?	?	C	m	?	?	M	?	?	n	?	?	P
GIGA			mega			kilo			base		centi	milli			micro			nano			pico

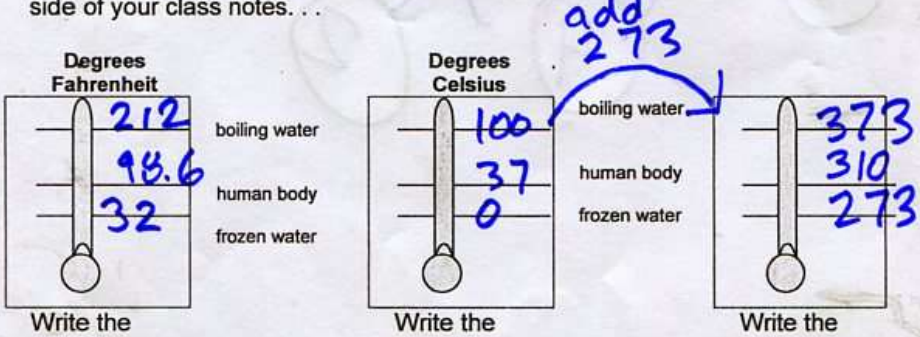
1. What are three things that molecules do that give them kinetic energy?
2. Chocolate bars are solid but they still have an odor. Draw a particle picture in this box between the nose that explains this:



3. The video on Tuesday described molecules as doing 'The Dance'. What are the only two moves allowed in this dance?

APART & TOGETHER
REPEL & ATTRACT

1. **How well can you memorize?** Write numbers onto each thermometer to match the three indicated amounts of temperature Try not to look at the other side of your class notes. . .



Write the symbol for *degrees Fahrenheit:* _____

Write the symbol for *degrees Celsius* _____

Write the symbol for *Kelvins* _____

1. Which will have more energy:
   a. a solid substance
   b. the same substance but as a liquid
2. If the freezing point of neon is negative 249 °C, what is the melting point of neon?

-249°C

Use your metric cheat sheet to answer these questions. By this Friday you should be able to draw this cheat sheet from memory.

3. In every 1 meter there are 1,000,000 micrometers.
4. In every 1 megameter there are 1,000,000 meters.

Underline the GIVEN (the lonely unit that is not paired with another unit). Circle CONVERSION FACTORS (pairs of units). Draw a box around the GOAL (the unit the answer should be in).

If brats at State Street Brats have a mass of 650 grams each and you eat 1 brat every 15.00 minutes, how many grams of brat will you eat in 18.1 minutes?

Solve:

$$18.1\ \text{min} \times \left(\frac{1\ \text{brat}}{15.00\ \text{min}}\right)\left(\frac{650\ \text{grams}}{1\ \text{brat}}\right) = 780\ \text{grams}$$

3 4 2

review #2 for Thursday's Test

East.H.S. ©λ€M|s+ry

visit http://genest.weebly.com

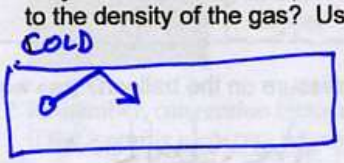
Name ANSWERS

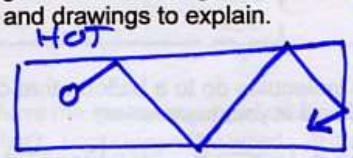
Date _____

Come to study. This week I am here Tues. & Wed after school until 4:45, and also every day at lunch

The test can include anything from notes and homework since Oct. 1. This review gives many of the highlights.

1. As you increase the temperature of a gas in a sealed, rigid container, what happens to the density of the gas? Use words and drawings to explain.



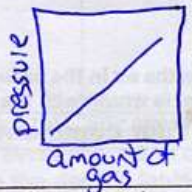


speed and pressure increased but the mass stayed the same! Since $D = \frac{m}{v}$ the mass didn't change.

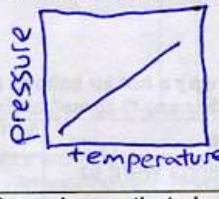
2. Draw a qualitative **graph** (no numbers) for particles of gas in a container to show how

2. Draw a qualitative **graph** (no numbers) for particles of gas in a container to show how the first property varies with the second. Label both axes of each graph.

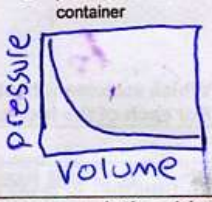
a. pressure vs. amount of gas



b. pressure vs. temperature



c. pressure vs. volume of the container



d. Of the above graphs, which is the only one that showed an inverse relationship between the two variables?

Graph C is an inverse relationship.

e. What is the word that describes the relationship between the variables in the other two graphs? "DIRECT"

3. Convert these to scientific notation

6. 0.25 = 2.5×10^{-1}
7. 0.025 = 2.5×10^{-2}
8. 0.0025 = 2.5×10^{-3}
9. 500 = 5×10^{2}
10. 5,000 = 5×10^{3}

4. Convert these to standard notation

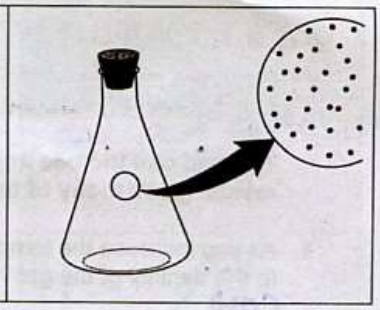
6. 3.35×10^{-1} = 0.335
7. 1.2×10^{-4} = 0.00012
8. 1×10^{4} = 10000
9. 1×10^{-1} = 0.1
10. 4×10^{0} = 4

5. Under the following conversion factors write how many significant figures it contains

$\frac{1\ October}{31\ days}$	$\frac{4\ players}{1\ golf\ team}$	$\frac{1\ mL\ Tin}{7.31\ grams\ of\ Tin}$	$\frac{12\ inches}{1\ feet}$	$\frac{1\ Mr\ Genest}{6\ feet\ tall}$
infinite! (dictionary definition)	infinite because it was counted	3 sig figs because it was measured	infinite because it's a definition	1 sig fig because it's a measurement

6. A diagram in a chemistry textbook shows the magnified view of a flask of air seen here at the right. What do you suppose is between the dots (the dots represent air molecules)?

nothing at all



7. What do molecules do to a balloon that creates pressure on the balloon? **(use words and/or pictures in your explanation)**

Molecules colliding with the balloon create pressure

Which statement best explains why a hot air balloon rises when the air in the balloon is heated? For each of the four choices either say "I agree" or Explain what is wrong with the reasoning.

Idea	Your comment:
8. Heat rises. Hot things want to rise.	(false) This drives science teachers nuts: there is no such rule.
9. Some of the gas escapes from the bottom of the balloon, thus decreasing the mass of gas in the balloon. This decreases the density of the balloon and the balloon rises.	I agree
10. The particles move faster when hot, hitting the sides of the balloon harder and pushing the balloon up.	(false) they hit in every direction not just up and there are opposing forces from outside the balloon
11. Heating the air makes the particles of air larger. Since each particle is larger but still the same mass, the density is less and the balloon floats.	(false) molecules don't shrink and grow! When matter expands and contracts it is b/c the faster vibrations spread the molecules farther apart a little bit.

use these numbers for the density problems on this packet

Element	density[g/mL]
Aluminum	2.70
Titanium	4.54
Zinc	7.13
Tin	7.31
Iron	7.87
Nickel	8.90
Copper	8.96

12. Remember, conversion factors should have the same amount of stuff on top and bottom. If the factor is incorrect rewrite it so it isn't. Don't move the words, just change numbers.

$\frac{12\ dozen}{1\ egg}$	$\frac{2.70\ g\ Copper}{1\ mL\ Copper}$	$\frac{1\ g\ of\ Tin}{7.31\ mL\ Tin}$
$\frac{1\ dozen}{12\ eggs}$	$\frac{8.96\ gms}{1\ mL}$	$\frac{7.31\ g\ of\ Tin}{mL\ Tin}$

13. Finish this **"For every..."** sentence
For every one mL of copper there would be 8.96 grams copper.

14. Use the density table from an old worksheet. If you had 38.00 g of titanium, how many mL of titanium would you have?

$$\frac{38.00\ \text{g titanium}}{1} \times \frac{1\ \text{mL Titanium}}{4.54\ \text{g Titanium}} =$$

15. What are two types of numbers in story problems that have ***infinite*** significant figures?
counted things and dictionary definition

16. The boiling point for aluminum is 2743 kelvins and the melting point is 933 kelvins. Draw a highly magnified view of a sealed, rigid container filled with 2000 K aluminum. Then draw what it would look like if it were at 1000 K. Finally draw what it would look like at 500 K.

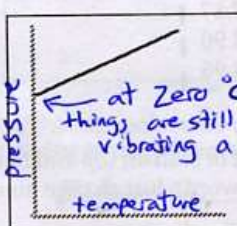
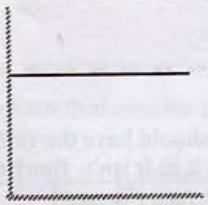
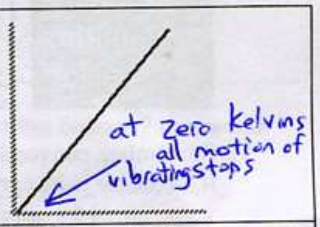
(a) 2000 kelvins	(b) 1000 kelvins	(c) 500 kelvins
 draw liquid	 draw liquid	 draw solid

17. Which temperature scale(s) can be used to measure the temperature of freezing water?
a. celsius
b. fahrenheit
c. kelvin
d. all of them
e. none of them

BUT FOR MEASURING kinetic energy, only kelvin is very useful

18. What is different about the attraction of particles in gases contrasted to particles in liquids?
Gas particles are so far apart they can't attract very much.

19. What is kinetic energy? Which temperature scale is best for measuring it?
K.E. is when particles vibrate, rotate, and move side to side.
Kelvins is the best scale for it

		
20. The graph above represents the relationship a. pressure vs temperature in kelvins b. pressure vs temperature in celsius c. neither	21. The graph above represents the relationship a. pressure vs temperature in kelvins b. pressure vs temperature in Celsius c. neither	22. The graph above represents the relationship a. pressure vs temperature in kelvins b. pressure vs temperature in Celsius c. neither

23. If you buy 3 boxes of titanium rings, and each ring has a mass of 347 grams, and each box contains 24 rings, what will be the total mass of rings in grams?

$$3 \text{ boxes} \times \left(\frac{24 \text{ rings}}{3 \text{ box}}\right) \times \left(\frac{347 \text{ grams}}{1 \text{ ring}}\right) =$$

24. When the gas collides with the wall of the box it causes pressure. Based on the number of hits, pressure seems to be (directly / inversely) related to temperature of gas molecules.

25. What do you predict would happen to the number of hits if you had two boxes with the same temperature but one box was ½ the size of the other box? Circle choice:
   a. the smaller box would have twice as many wall hits
   b. each box would still have the same number of hits
   c. the smaller box would have half as many wall hits

26. Based on what you learned about pressure of a gas in two boxes of different size, finish the following sentence. "When the size of the container increases, the pressure on the walls…"
decreases

Gas Laws Learned from folded paper!

Diamond Clay

Directions: For each square draw a before box and an after box. Then at the bottom of the box, finish the sentence stem.

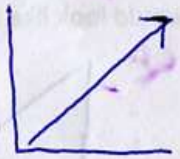
1. What happens to the pressure in a box when the number of gas molecules is doubled in the box?

The pressure doubles

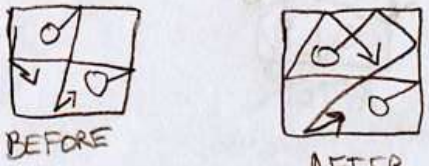
"My law of gas particle number says that if you..."

double the number of gas particles the pressure will double.

A *qualitative* graph (a graph with no numbers) of pressure vs particle number would look like this

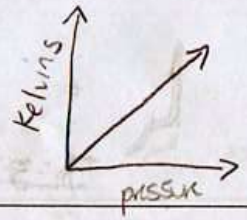


2. What happens to the pressure in a box when the temperature of gas molecules is doubled in the box?

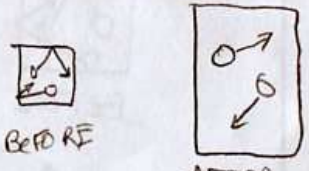


"My law of gas particle number says that if you..." if you increase the temperature, the amount of pressure increases as well

A *qualitative* graph (a graph with no numbers) of pressure vs temperature would look like this

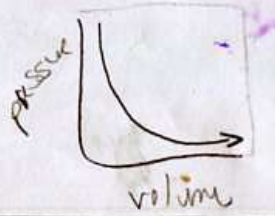


3. What happens to the pressure in a box when the box gets twice as tall and twice as wide?



"My law of box size says that if you..." increase the volume of a container, you decrease the pressure

A *qualitative* graph (a graph with no numbers) of pressure vs box size would look like this



4. What is the only temperature scale allowed for doing gas law problems?

5. How do you draw hot gas particles and cold gas particles (show)?

6. What causes pressure (explain by using particles).

Celsius and Kelvins

East.H.S. ©ΛΕΜ|s+ry

visit http://genest.weebly.com

JORDAN wrote

Name

Date

Come for assistance and cheerful encouragement after school Tues. Thurs. every day at lunch

6. **What property of matter best describes the way a typical alcohol thermometer works? Explain (in terms of energy transfer) why the alcohol level in the thermometer rises (or falls) when you place the thermometer in contact with both warmer (or colder) objects.**

With warmer objects, particles gain energy and more faster, so they take up more room and expand up the thermometer.

With colder objects, particles lose energy and move slower, so they take up less room and contract down the thermometer.

7. **If you feel feverish, why can't you take your own temperature with your hand?**

Because your hand can't accurately measure temperature, it just feels heat and cold.

8. Your older brother announces that the lid to a jar of pickles from the refrigerator is "impossible" to loosen. You take the jar, hold the lid under the hot water from your sink's faucet for a few seconds, and calmly open the jar. Your brother, when faced with this blow to his pride, claims that he loosened it for you. What knowledge of materials have you applied in this situation that really explains how you were able to open the lid?

When things are heated they expand so the top would get bigger and easier to unscrew.

9. Describe how Anders Celsius devised the temperature scale that bears his name.

He boiled and froze water to create its freezing and boiling point to create Celsius. by observing how much a tube of liquid mercury expanded and contracted

10. Which would feel warmer to the touch - a bucket of water at 50°C or a bathtub filled with water at 25°C? Which of these stores more energy? Account for any differences in your answers to these questions.

A bucket of water at 50°C.
The bath tub stores more energy because there are more molecules