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| Review #1: JUST REVIEW MATH  http://genest.weebly.com  Stop in for help every day at lunch and Tues &Thurs after school! |  | Name\_\_\_\_\_\_\_\_\_\_\_\_\_  Period\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| ***You will always be given these numbers on***  ***tests and quizzes.*** |  |
| 1.00 mole of anything = 6.02x1023 of those things.  1,000 calories = 1 Calorie and 4.18 joules = 1.00 calorie  The specific heat of water is C = 4.18  *or* 1.00 | |

**Conversions**

1. If a beaker gained 4.59x107 joules, how many
   1. calories did it gain? (lower case c)
   2. Calories did it gain? (upper case C)

Q=mc ΔT Type Problems

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| Instructions: For the formula Q=mc ΔT fill in the parentheses at right.  Fill in (a) with the words such as “change of temperature”, “heat”, “specific heat”, and “mass”  Fill in (b) with the units, such as “grams”, “joules”, “°C”, and | 1. ( ) = ( ) ( ) ( ) 2. [ ] = [ ] [ ] [ ] |

Fill in blank with whichever is more appropriate, 'specific heat' or 'heat'

1. \_\_\_\_\_\_\_\_\_\_\_ Q stands for this in the formula Q=m C ΔT.
2. \_\_\_\_\_\_\_\_\_\_\_ C stands for this in the formula Q=m C ΔT
3. \_\_\_\_\_\_\_\_\_\_\_This is a constant number for a given substance.
4. \_\_\_\_\_\_\_\_\_\_\_This is sometimes measured in joules
5. \_\_\_\_\_\_\_\_\_\_\_This is sometimes measured in
6. \_\_\_\_\_\_\_\_\_\_\_This is sometimes measured in calories
7. How much heat will raise a pot of 500. g of water from 26. °C to 90. °C?

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| Story problem | calculate  ΔT = Tfinal - Tinitial | Write the formula Q=mc ΔT and rearrange it to get the unknown by itself | plug in numbers and solve |
| What is the specific heat of silicon if it takes 384J to raise the temperature of 45.0g of Si from 23.00oC to 35.00? |  |  |  |
| 1. If a copper hammer gains 24,881 joules of heat while its temperature goes from 13°C to 71°C, what is the hammer’s mass? The specific heat of copper is 0.385 J/g°C. |  |  |  |
| 1. A metal coin absorbed 656.04 calories of heat. What was the mass of the coin if the initial temperature was 25°C and the final temperature was 86°C? The specific heat of copper is 0.092 cal/g°C… |  |  |  |

Show work for full credit.

1. If 68.0 grams of metal were dropped into 171 grams of water calculate the following

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|  | 11°C water  74°C metal  35°C water  35°C metal | 1. Find ∆T for the water. 2. How many joules of heat entered the water? 3. How many joules of heat heat left the metal? |

1. Calculate the specific heat of the metal.
2. Solve the following questions for a certain substance that contains only oxygen, hydrogen, and carbon, in the following amounts:

**Carbon: 34.00grams Hydrogen: 5.22 grams Oxygen: 11.04 grams**

* 1. Find the percent oxygen by mass
  2. How much oxygen would be in a larger sample of this same substance, if the sample’s total mass was 400. grams?

1. Solve the following questions for a certain substance that contains only oxygen, hydrogen, and carbon, in the following amounts:

**Carbon: 44.06grams Hydrogen: 6.20 grams Oxygen: 13.41 grams**

* 1. Find the percent oxygen by mass
  2. How much oxygen would be in a larger sample of this same substance, if the sample’s total mass was 690. grams?
  3. If you obtained a sample of this same substance that contained 84.2 grams of oxygen, how large would that sample’s total mass be?

1. List the seven elements that exist as diatomic molecules:
2. The following questions all relate to the reaction where hydrogen (H2) reacts with nitrogen (N2) to form ammonia (NH3) according to this recipe:

3H2 + 1N2 → 2NH3

* 1. If 2.7x1018 molecules of H2 reacted, how many molecules of N2 would react?
  2. If 2.7x1018 molecules of H2 reacted, how many molecules of NH3 would form?
  3. Convert 2.7x1018 molecules of H2 into moles of H2
  4. If you had 355 molecules of NH3, how many atoms of hydrogen are in those molecules all together?
  5. If you had 6934 atoms of nitrogen, how many molecules of nitrogen could you form?
  6. If 7.7x1018 molecules of N2 reacted, how many molecules of NH3 would form?
  7. Convert 7.7x1014 molecules of H2 into moles of H2