

- The amount of heat that is gained or lost from a substance depends on: a) the mass of the substance; b) the specific heat of the substance; c) the temperature change in the substance; ☒ d) all of the above.
- A reaction that absorbs heat is called:
a) exothermic; b) aldothermic; c) monothermic; ☒ d) endothermic.
- In an ordinary chemical reaction: a) a small amount of energy is created; b) energy is converted into mass; ☒ c) energy is neither created nor destroyed; d) mass is converted into energy.
- Convert 400 K to °C ☒ a) 673; b) 127; c) 300 d) 0
- What is the correct formula for calcium chloride?
a) CCl; b) Ca₂Cl; ☒ c) CaCl₂; d) CaCl.
- What is the molar mass of Mg(NO₃)₂? ☒ a) 148 g; b) 134 g; c) 132 g; d) 109g
- What is the mass of 2.50 moles of NaCl? a) 117 g ☒ b) 146 g; c) 23.4 g; d) 143 g
- How many molecules of H₂O are in 1.50 moles of H₂O?
a) 12; b) 2.49 x 10⁻²⁴; ☒ c) 9.03 x 10²³; d) 27
- Classify the reaction: $\text{CuCO}_3 \rightarrow \text{CuO} + \text{CO}_2$ a) direct combination (synthesis); ☒ b) decomposition; c) single replacement; d) double replacement.
- Which coefficients balance the following equation:
 $3 \text{CaCl}_2 + 2 \text{Na}_3\text{PO}_4 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + 6 \text{NaCl}$
a) 2,3,2,6; b) 2,3,6,6; ☒ c) 3,2,1,6; d) 3,3,1,3
- Which of the following is conserved in a balanced chemical equation? a) moles; ☒ b) atoms; c) volume; d) molecules.
- Using the equation: $2 \text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2 \text{H}_2\text{O}(\text{l})$
How many grams of H₂O can be produced from 128 g of O₂?
a) 256; ☒ b) 144; c) 64.0; d) 288

128 g	1 mol O ₂	2 H ₂ O	18.0 g
	32 g	1 O ₂	mol

$\frac{128}{32} = 4$ $4 \times 18 = 72$
- A sample of gas has a volume of 125.0 dm³ at a temperature of 250 K. If pressure is held constant, what will the volume be if the temperature is increased to 350 K?
a) 89.3 dm³; ☒ b) 175 dm³; c) 700 dm³; d) 149 dm³

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\frac{125}{250} = \frac{V_2}{350}$$

$$V_2 = 175$$
- The maximum amount of solute that can be dissolved in a given amount of solvent is called: a) molarity; b) molality; c) concentration; ☒ d) solubility.
- When substances are dissolved in water, the effect is to:
☒ a) raise the boiling point and lower the freezing point;
b) raise both the boiling and freezing point;
c) lower both the boiling and freezing point;
d) lower the boiling point and raise the freezing point.

16. The properties of a solution include all of the following EXCEPT:
 a) it is a homogeneous mixture; b) dissolved particles will settle out upon standing;
 c) it is clear and transparent; **d) dissolved particles will pass through filter paper.**
17. How many moles of NaCl are in 0.75 dm^3 of $2.0 \text{ M NaCl}_{(aq)}$?
 a) 2.7 b) 0.38 c) 375 **d) 1.5** e) 87.8
18. How much 5.0 M HCl do you need to make 3.0 L of 2.0 M HCl ?
 a) 1.0 L b) 7.5 L **c) 1.2 L** d) 3.3 L e) 4.0 L
19. A nonpolar covalent bond is unlikely when two different atoms join because the atoms are likely to differ in: a) polarity; b) mass **c) electronegativity;**
 d) radius; e) atomic number.
20. What is the molecular geometry (shape) of a H_2O molecule?
 a) trigonal planar **b) bent;** c) tetrahedral; d) trigonal pyramidal
21. What is the molecular geometry (shape) of a NH_3 molecule?
 a) trigonal planar; b) bent; c) tetrahedral; **d) trigonal pyramidal**
22. What is the molecular geometry (shape) of a PCl_5 molecule?
a) trigonal bipyramidal; b) bent; c) tetrahedral; d) trigonal pyramidal
23. Which of the following molecules is polar? **a) H_2S ;** b) CO_2 ; c) CH_4 ; d) N_2
24. Increasing the concentration of the reactants in a reaction would speed up the reaction because: a) it decreases the activation energy; b) it increases the temperature **c) it increases the number of collisions;** d) all of the above.
25. A catalyst works by: a) increasing the concentration of reactants; b) decreasing the concentration of reactants; c) increasing the activation energy; **d) decreasing the activation energy.**
26. Chemical equilibrium occurs when: a) the forward and reverse reactions stop; b) the reaction becomes endothermic; **c) the rate of the forward reaction equals the rate of the reverse reaction;** d) there are no more reactants present.
27. For the equilibrium: $\text{H}_2\text{O}(\text{g}) + \text{heat} \leftrightarrow 2 \text{H}_2(\text{g}) + \text{O}_2(\text{g})$
 If you decrease $[\text{O}_2]$, what happens to $[\text{H}_2\text{O}]$?
 a) $[\text{H}_2\text{O}]$ increases **b) $[\text{H}_2\text{O}]$ decreases;** c) $[\text{H}_2\text{O}]$ stays the same
28. Approximately how much heat energy is required to raise a 15.0 g sample of water from -10°C to 25°C **SEE CLASS REVIEW**
29. Glucose decomposes into Ethyl Alcohol and Carbon Dioxide. What mass of Glucose decomposed to produce 38.5 g Ethyl Alcohol and 36.8 g Carbon Dioxide?

London Dispersion Forces **$38.5 + 36.8 = 75.3 \text{ g}$**
 Dipole-Dipole Forces