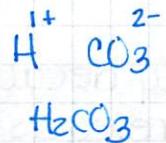


Year to Date Review Key

- 1) nuclear fission - an element spontaneously decays into 2 or more smaller particles & releases energy
nuclear fusion - 2 elements fuse together to create a larger element, releasing a lot of energy
- A) fusion C) fusion
B) fission D) fusion
- 2) (1) b. liquid (4) d. plasma (7) b. liquid
(2) c. gas (5) a. solid
(3) a. solid (6) c. gas & d. plasma
- 3) A) physical E) chemical
(B) chemical F) chemical
(c) physical G) physical
(D) physical H) chemical
- 4) A) element D) element
B) heterogeneous mixture E) compound
C) homogeneous mixture F) homogeneous mixture
- 5) A) chemical D) chemical
B) physical E) physical
C) physical F) physical
- 6) Liquid
- 7) The iced tea will be 25°C.
- 8) A) sodium sulfide B) HCl
$$\begin{array}{c} \text{Na}^+ \text{S}^{2-} \\ \text{Na}_2\text{S} \end{array}$$
 hydrochloric acid
- C) gold (III) fluoride D) N_2O_5
$$\begin{array}{c} \text{Au}^{3+} \text{F}^{-} \\ \text{AuF}_3 \end{array}$$
 dinitrogen pentoxide

8) E) carbonic acid



F) $\text{Ca}(\text{NO}_3)_2$

calcium nitrate

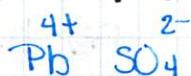
G) dihydrogen monoxide



H) H_3PO_3

phosphorous acid

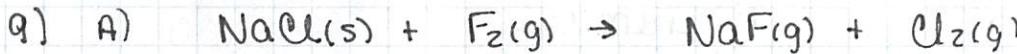
I) lead (IV) sulfate



$\text{Pb}_2(\text{SO}_4)_2$ simplify



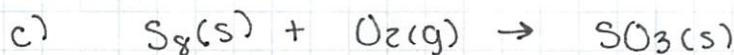
(11)



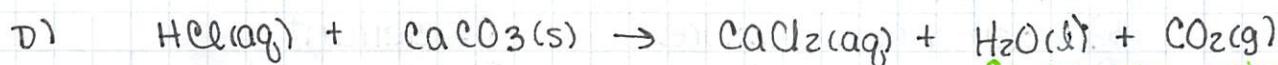
single-replacement



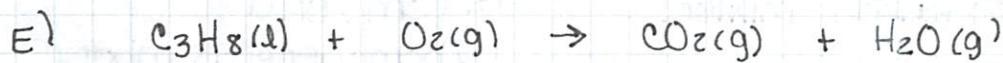
decomposition



synthesis



double-replacement



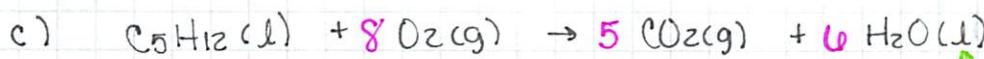
combustion



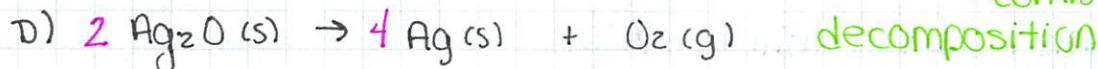
synthesis



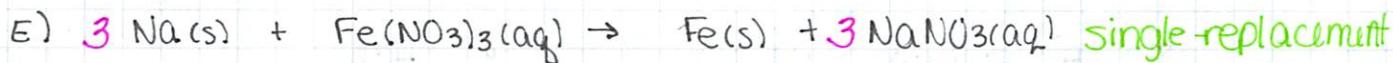
double-replacement



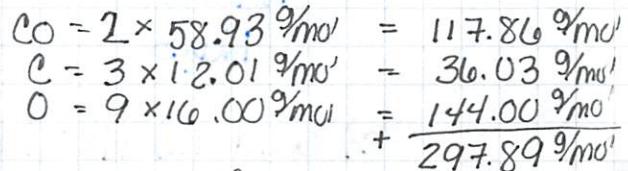
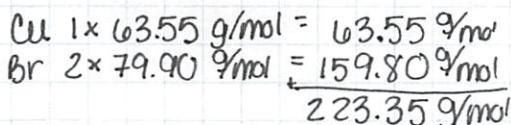
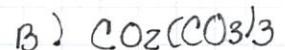
combustion



decomposition



single-replacement



$$\% \text{ Cu} = \frac{63.55 \% \text{ mol}}{223.35 \% \text{ mol}} \times 100 = 28.45\%$$

$$\% \text{ C} = \frac{117.86 \% \text{ mol}}{297.89 \% \text{ mol}} \times 100 = 39.60\%$$

$$\% \text{ Br} = \frac{159.80 \% \text{ mol}}{223.35 \% \text{ mol}} \times 100 = 71.55\%$$

$$\begin{array}{rcl} \text{O} & 3 \times 16.00 \% \text{ mol} = 48.00 \% \text{ mol} \\ & \hline & 297.89 \% \text{ mol} \end{array}$$

$$\% \text{ O} = \frac{48.00 \% \text{ mol}}{297.89 \% \text{ mol}} \times 100 = 16.34\%$$

(2)

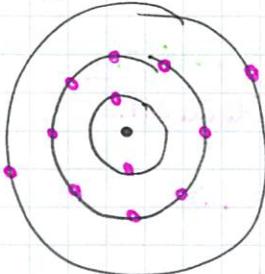
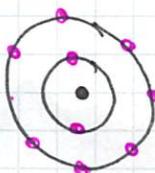
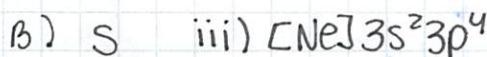
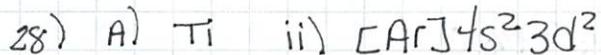
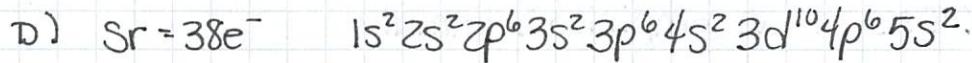
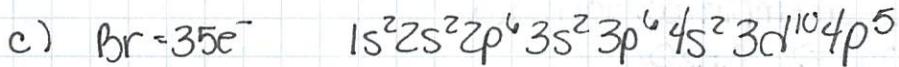
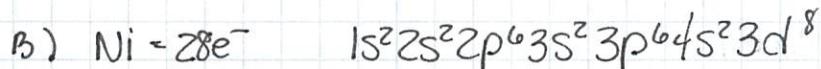
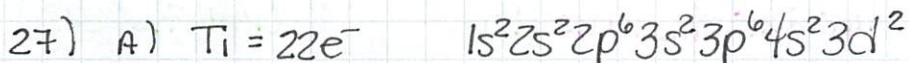
- 13) $\frac{34.5 \text{ g H}_2\text{O}}{18.02 \text{ g}} \left| \begin{array}{c} 1 \text{ mol} \\ \hline \end{array} \right| = 1.91 \text{ mol H}_2\text{O}$
- 14) $\frac{45.0 \text{ mol H}_2\text{O}}{1 \text{ mol}} \left| \begin{array}{c} 18.02 \text{ g} \\ \hline \end{array} \right| = 8.22 \text{ g H}_2\text{O}$
- 15) $\frac{21.1 \text{ g CaCl}_2}{110.98 \text{ g}} \left| \begin{array}{c} 1 \text{ mol} \\ \hline \end{array} \right| = 0.190 \text{ mol CaCl}_2$
- 16) $\frac{6.789 \times 10^{22} \text{ f.units CaCl}_2}{6.02 \times 10^{23} \text{ f.units}} \left| \begin{array}{c} 1 \text{ mol} \\ \hline \end{array} \right| = 0.1128 \text{ mol CaCl}_2$
- 17) $\frac{99.99 \text{ g HNO}_3}{63.02 \text{ g HNO}_3} \left| \begin{array}{c} 1 \text{ mol} \\ \hline \end{array} \right| \left| \begin{array}{c} 6.02 \times 10^{23} \text{ f.units} \\ \hline 1 \text{ mol} \end{array} \right| = 9.552 \times 10^{23} \text{ f.units HNO}_3$
- 18) $\frac{7.87 \times 10^{25} \text{ molecules SO}_3}{6.02 \times 10^{23} \text{ molecules}} \left| \begin{array}{c} 1 \text{ mol} \\ \hline \end{array} \right| \left| \begin{array}{c} 80.07 \text{ g SO}_3 \\ \hline 1 \text{ mol} \end{array} \right| = 10500 \text{ g SO}_3$
 (10467.62292)
- 19) A) $\text{C}_6\text{H}_{14} \Rightarrow \text{C}_3\text{H}_7$
 B) C_3H_8 is an empirical formula
 C) $\text{C}_6\text{H}_{12}\text{O}_6 \Rightarrow \text{CH}_2\text{O}$
 D) $\text{CO}_2(\text{CO}_3)_3$ is an empirical formula
- 20) $32.38\% \text{ Na} \quad 22.65\% \text{ S} \quad 44.99\% \text{ O}$
 $\downarrow \qquad \downarrow \qquad \downarrow$
 $\frac{32.38 \text{ g Na}}{22.99 \text{ g/mol}} \quad \frac{22.65 \text{ g S}}{32.07 \text{ g/mol}} \quad \frac{44.99 \text{ g O}}{16.00 \text{ g/mol}}$
 $= \frac{1.408438 \text{ mol Na}}{706268 \text{ mol}} \quad = \frac{0.706268 \text{ mol S}}{706268 \text{ mol}} \quad = \frac{2.811875 \text{ mol O}}{706268 \text{ mol}}$
 $= 2 \text{ Na} \quad = 1 \text{ S} \quad = 4 \text{ O}$
 $E.F = \text{Na}_2\text{SO}_4$

21) A) $\frac{21.0 \text{ mol K}}{3 \text{ mol K}} \times \frac{3 \text{ mol KNO}_3}{1 \text{ mol K}} = \underline{\underline{21.0 \text{ mol KNO}_3}}$

B) $\frac{1.50 \text{ mol Au}}{3 \text{ mol K}} \times \frac{196.97 \text{ g Au}}{1 \text{ mol Au}} = \underline{\underline{98.5 \text{ g Au}}}$

C) $\frac{50.00 \text{ g Au(NO}_3)_3}{383.00 \text{ g Au(NO}_3)_3} \times \frac{1 \text{ mol Au(NO}_3)_3}{1 \text{ mol Au(NO}_3)_3} \times \frac{3 \text{ mol KNO}_3}{1 \text{ mol Au(NO}_3)_3} = \underline{\underline{.3916 \text{ mol KNO}_3}}$

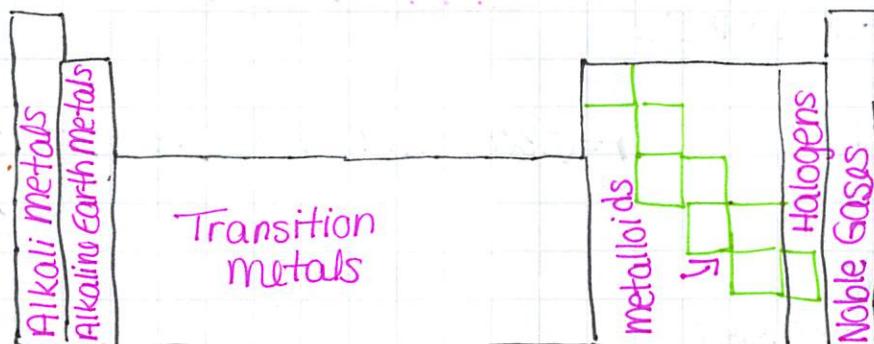
Element	Atomic #	mass#	# protons	# electrons	# neutrons
sulfur	16	32	16	16	$32 - 16 = 16$
cadmium	48	$48 + 64 = 112$	48	48	64
tantalum	73	181	73	73	$181 - 73 = 108$
einsteinium	99	$99 + 153 = 252$	99	99	153



- 30) A) CO_2 - covalent
 B) FeF_2 - ionic
 C) NH_3 - covalent

- D) CaBr_2 - ionic
 E) MgSO_4 - ionic (Mg-S) & covalent (S-O)
 F) KCH_3O_2 - ionic (K-C) & covalent (C-O-H)

31)



Inner Transition metals

32) groups - 18 vertical columns on the Periodic Table

33) periods - 7 horizontal rows on the Periodic Table

- 34) A) $\text{Br} \rightarrow \text{Ni} \rightarrow \text{Sc}$
 B) $\text{Sc} \rightarrow \text{Ni} \rightarrow \text{Br}$
 C) $\text{Sc} \rightarrow \text{Ni} \rightarrow \text{Br}$
 D) $\text{Br} \rightarrow \text{Ni} \rightarrow \text{Sc}$

- 35) A) $\text{F} \rightarrow \text{Se} \rightarrow \text{Pb}$
 B) $\text{Pb} \rightarrow \text{Se} \rightarrow \text{F}$
 C) $\text{Pb} \rightarrow \text{Se} \rightarrow \text{F}$
 D) $\text{F} \rightarrow \text{Se} \rightarrow \text{Pb}$

- 36) A) hot chocolate \rightarrow exothermic
 B) hands \rightarrow endothermic

37) exothermic

38) endothermic

$$39) q = mCT$$

$$1086.75\text{J} = (15.75\text{g}) C (150^\circ\text{C})$$

$$q = 1086.75\text{J}$$

$$m = 15.75\text{g}$$

$$C = ?$$

$$\Delta T = 175^\circ\text{C} - 25^\circ\text{C} = 150^\circ\text{C}$$

$$\frac{1086.75\text{J}}{2362.5\text{g}^\circ\text{C}} = \frac{1086.75\text{J}}{2362.5\text{g}^\circ\text{C}} C$$

$$\underline{46\text{J/g}^\circ\text{C}} = C$$

$$40) q = mCT$$

$$q = (2300\text{g})(.90\text{J/g}^\circ\text{C})(14^\circ\text{C}) = 28,980\text{J}$$

$$\underline{\underline{= 29000\text{J}}}$$

$$q = ?$$

$$m = 2300\text{g}$$

$$C = .90\text{J/g}^\circ\text{C}$$

$$\Delta T = 16^\circ\text{C} - 2^\circ\text{C} = 14^\circ\text{C}$$

$$41) q = mCT$$

$$q = (454\text{g})(.386\text{J/g}^\circ\text{C})(-68.0^\circ\text{C}) = -11,916.592\text{J}$$

$$\underline{\underline{= -11,900\text{J}}}$$

$$q = ?$$

$$m = 454\text{g}$$

$$C = .386\text{J/g}^\circ\text{C}$$

$$\Delta T = 28.0^\circ\text{C} - 96.0^\circ\text{C} = -68.0^\circ\text{C}$$