Science 10

Thursday, April 5/18

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1. Check:
   Review - SA Chem #2

2. SA Chem #2 - Friday, April 6/18

3. Translating Word Equations

4. Worksheet - Translating Word Equations

5. Predicting Products

6. Worksheet - Predicting Products

Science 10

Review for SA: Chem #2

Part 1 – Multiple Choice

Print the letter of the best answer on the line provided.

A 1. In a chemical reaction, Substance A and Substance B combine to form a new substance, AB. In this reaction,
A) A and B are the reactants.
B) A, B and AB are the reactants.
C) AB is the reactant.
D) A and B are the products.

A 2. In a combustion reaction, one of the reactants must be ____.
A) oxygen
B) carbon dioxide
C) water
D) carbon monoxide

B 3. A single replacement reaction can be compared to:
A) two dancing couples switching partners
B) a person "cutting in" on a dancing couple
C) two single people joining for a dance
D) a couple breaking up D

C 4. In a chemical reaction,
A) the atoms of the reactants always stay together to form the products.
B) new atoms are formed which combine to make the products.
C) the atoms of the reactants unbond, rearrange, and then rebond to form the products.
D) some atoms disappear while others multiply to form the products.

C 5. What does the symbol ⟶ in a chemical equation mean?
A) reactant
B) numerical coefficient
C) yields
D) product

B 6. If you rewrite the following word equation as a chemical equation, what will be the symbol for fluorine?

nitrogen trifluoride ⟶ nitrogen + fluorine

A) F
B) F_2
C) F_3
D) F_6

D 7. The _____ states the mass of reactants has to be equal to the mass of the products in a chemical reaction.
A) The Law of Definite Proportions
B) The Law of Multiple Proportions
C) The Law of Chemical Reactions
D) The Law of Conservation of Mass

D 8. Hydrocarbons must contain
A) hydrogen
B) hydrogen and oxygen
C) carbon
D) carbon and hydrogen

Part 2 – Names and Chemical Formulas

Complete the table below.

Name of Compound	Formula of Compound
silver phosphide	Ag_3P metal ⇒ ionic cpd.
bismuth (V) sulfate	$Bi_2(SO_4)_5$ metal → ionic cpd.
ammonium selenide polyatomic	$(NH_4)^{+1}_2 \cancel{Se^{2-}_1} \rightarrow (NH_4)_2Se$
nitrogen triiodide	NI_3 nonmetal → mol. cpd. (plateau)
zinc chloride metal.	$Zn^{2+} \cancel{Cl^{-1}} \rightarrow ZnCl_2$
diselenium hexasulfide	Se_2S_6 nonmetal → mol. cpd → plat.
barium borate metal.	$Ba^{2+} \cancel{(BO_3)^{-3}} \rightarrow Ba_3(BO_3)_2$
tetrabromine octochloride	Br_4Cl_8 mol. don't reduce
pentaphosphorous decaoxide	P_5O_{10} nonmetal → mol cpd (plat)
manganese(IV) carbonate	$Mn(CO_3)_2$ metal
iron (III) arsenide metal	$Fe^{3+}As^{-3} \rightarrow FeAs$.

Part 3 – Identifying and Balancing Chemical Equations

I. Indicate the type of each equation by printing F (formation), D (decomposition), SR (single replacement), DR (double replacement) or C (combustion) on the line provided.
II. Balance each reaction.

DR 1. 3 Ag_4SiO_4 + 4 $GaBO_3$ → 4 Ag_3BO_3 + ___ $Ga_4(SiO_4)_3$

SR 2. 6 Na + ___ Cr_3P_2 → 2 Na_3P + 3 Cr

DR 3. ___ Mg_3As_2 + 6 KF → 3 MgF_2 + 2 K_3As

C 4. ___ C_9H_{20} + 14 O_2 → 9 CO_2 + 10 H_2O

SR 5. 2 $BiCl_5$ + 5 I_2 → 2 BiI_5 + 5 Cl_2

D 6. 2 Al_2O_3 → 4 Al + 3 O_2

F 7. 16 Li + ___ S_8 → 8 Li_2S

C 8. 2 C_6H_{14} + 19 O_2 → 12 CO_2 + 14 H_2O

Physics 112

Thursday, April 4/18

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1. SA: U1-S3 - Mathematical Analysis

2. Unit 2 - Dynamics
3. Concept Sheet: U2 S1 - Introduction to Forces
4. Introduction to Forces
5. Applied Force
6. Force of Gravity
7. Worksheet - Practice Problems (PP) - C4 - Weight - Page 137: 1-4
8. Normal Force
9. Tension
10. Force of Friction
11. Handout - Coefficients of Friction
12. Free Body Diagrams

Physics 122

Thursday, April 5/18

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1. Check:
   Worksheet - Elastic and Inelastic Collisions
   Worksheets - 2D Collisions and Explosions

2. FA - 1D Collision and Type
   FA - 2D Explosion

3. SA - Unit 1 - S3&4
   - Friday. Prob. only.

   Relative Velocity - Parallel Directions
   Relative Velocity - Boat/Plane
   Relative Velocity - Intersection
   1D Collision/Explosion with Type
   2D Collision
   2D Explosion

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4. Unit 3 - S1: Electrostatics

Formative Assessment - 1D Collision and Type (DE4.1 and DE4.3)

A 92.0 kg football player running at 6.50 m/s south collides with an 85.0 kg football player running at 3.00 m/s north. The 92.0 kg football player continues moving at a velocity of 2.00 m/s south after the collision.

a) What is the velocity of the 85.0 kg football player after the collision?

b) What type of collision occurred? Justify your answer mathematically.

Formative Assessment: 2D Explosion (DE4.5)

A 5.0 kg bomb at rest explodes into three pieces, each of which travels parallel to the ground. The first piece, with a mass of 1.2 kg, travels at 5.5 m/s at an angle of 20° south of east. The second piece has a mass of 2.5 kg and travels 4.1 m/s at an angle of 25° north of east. Determine the velocity of the third piece.

Physics 122 - 2D Explosions

5. A bomb sitting at rest on a table explodes into four pieces of equal mass. The first piece travels to the South at a velocity of 55.0 m/s. The second piece travels to the West at a velocity of 80.0 m/s. The third piece travels at a velocity of 40.0 m/s [30.0^0 W of N]. What is the velocity of the fourth piece? (102 m/s, 11.5° N of E)

6. A 200 kg bomb moving at a velocity of 10.0 m/s to the West explode into three pieces. The first piece has a mass of 100 kg and moves to the West with a velocity of 90.0 m/s. The second piece has a mass of 55.0 kg and moves at an angle of 30.0^0 N of E with a velocity of 55.0 m/s. What is the velocity of the third piece? (103 m/s, 19.0° S of E)

Science 122

Thursday, April 5/18

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1. Check:
   Worksheet - Pressure and Depth in a Static Fluid
   Worksheet - Archimedes' Principle
   Worksheet - More Hydrostatic Fluid Problems
   Worksheet - Section 11.8 - The Equation of Continuity
   Worksheet - Section 11.9 - Bernoulli's Equation
   Worksheets - Fluids - Continuity and Bernoulli's Equations

2. SA - Fluid Mechanics
   - Friday, April 6/18 -> 7 Problems

pressure
hydrostatic fluid
~~Pascal's Principle~~
~~partially submerged object~~
apparent weight
completely immersed object
mass flow rate
continuity equation
volume flow rate
Bernoulli equation
