Physics 112

Friday, September 21/18

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1. Conferences: Summative Assessment - Basic Knowledge/Skills

2. Check:
   Worksheet - U1-S1: Vector Analysis
   * #2c -> Should be S of E
   * Range of Resultants - Diagrams

3. FA -> U1-S1: Vector Analysis
   -> Topics (See Next Page)

4. U1-S2: Graphical Analysis

5. Concept Sheet - U1 S2 - Graphical Analysis

6. Types of Motion

7. Directions of Velocity and Acceleration
   - Handout -> Complete for Monday

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8. Position-Time Graphs

9. Position-Time Graph: Direction of Motion

10. Velocity-Time Graphs

11. Velocity-Time Graph: Direction of Motion

12. Velocity-Time Graph Calculations

Topics: FA U1-S1

1. kinematics
2. two types of physical quantities:
   (i) scalar quantity - has magnitude only
   - has units
   - be able to name and give examples of four scalar quantities
   (ii) vector quantity - has magnitude and direction
   - has units
   - vector notation
   - conventional directions
   - be able to name and give examples of four vector quantities
3. arrows are used to represent vector quantities graphically
4. resultant
5. two graphical methods used to add vector quantities:
   (i) tip-to-tail method
   (ii) parallelogram method
6. determine the range of possible resultant values
7. adding vectors analytically (follow the rubric)

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Worksheet – U1-S1: Vector Analysis

1. Two velocity vectors with magnitudes of 9.0 m/s and 4.0 m/s are combined.
   a) What is the magnitude of the largest possible resultant?
   b) What is the magnitude of the smallest possible resultant?

2. If vectors **A**, **B**, **C** and **D** are 3.0 m/s east, 5.0 m/s north, 7.0 m/s west and 4.0 m/s south respectively, find the resultant of the following – use the rubric discussed in class.
   a) **A** + **B**
   b) **C** + **D**
   c) **A** + **D**
   d) **B** + **C**
   e) **C** + **B**

3. A 3.0 N force and a 9.0 N force act on the same point of an object simultaneously. Would the largest resultant be produced when the angle between the two forces is 30^o, 60^0, 120^0 or 150^0? Explain.

4. Two forces of 40 N and x N have a resultant of 100 N. Could the unknown force be
   a) 20 N?
   b) 40 N?
   c) 80 N?
   d) 150 N?

40 N, x N

a) ~~20~~ N
20 N − 60 N

b) ~~40~~ N
0 N − 80 N

c) 80 N
40 N − 120 N

d) ~~150~~ N
110 N − 190 N

min → max

opp dir. | same dir

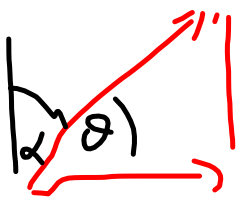
6.0 N | 12.0 N

180° ← 0°

min R | max R

30°

X = 80 N



Physics 122

Friday, September 21/18

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1. Return -> FA - Force Problem - Type II (Simple)
2. Check:
   Worksheet: Force Problems - Type II (Complex)
3. FA - Force Problem - Type II (Simple) - Submit
4. FA - Force Problem - Type II (Complex) 10 min (11:15)
5. Force Problem - Type III: Inclined Planes
6. Worksheet: Force Problems Type III - Try

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7. FA - Force Problem - Type III
8. Extra Practice - 2 Worksheets (Type I, II and III Mixed)

Science 10

Friday, September 21/18

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1. Return -> SA - Chem #1
2. Progress Reports (3 SAs)
3. Assignment - Your Name in Chemical Symbols
   - Due: Tuesday, September 25/18
4. Simple Binary Ionic Compounds - Continue
5. Worksheet 2 - Simple Binary Ionic Compounds - Complete for Monday

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6. Polyatomic Ions
7. Ionic Compounds Containing Polyatomic Ions
6. Worksheet 3 - Ionic Compounds Containing Polyatomic Ions

Simple Binary Ionic Compounds

Ionic compounds are formed by the combination of a cation and an anion and are electrically neutral. Binary compounds are compounds that contain only two elements.

Examples:

Na Cl

m nm

name - Sodium chloride

chemical formula - NaCl

Na^{+1} Cl^{-1}

+1 −1 = 0 net charge.

Al P

m nm

name - Aluminum phosphide

chemical formula - AlP

Al^{3+} P^{3-}

+3 −3 = 0 net charge

Na O

m nm

name - Sodium oxide

chemical formula - Na_2O

Na^{+1} O^{2-}

Na^{+} Na^{+}

+2 −2 = 0

2 ← subscript

Al Cl

m nm

name - aluminum chloride

chemical formula - $AlCl_3$

Al^{3+} Cl^{-1} Cl^{-} Cl^{-}

+3 −3

Mg P

m nm

name - magnesium phosphide

chemical formula - Mg_3P_2

Mg^{2+} P^{3-}

Mg^{2+} P^{3-}

Mg^{2+}

+6 −6

Al O

name - aluminum chloride

chemical formula - Al_2Cl_3

Shortcut

Criss-Cross (X) and Slide

Al 3+ O 2−

2 3

+6 -6

* We require two aluminum ions and three chloride ions to produce a neutral ionic compound.

Charge value of each ion becomes the subscript for the other ion.