Physics 112

Tuesday, October 10/17

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1. Review -> SA - Unit 1: S1 & 2
2. Return: FA - Rearranging Kinematic Equations
3. FA: Kinematic Equations (UAM)
4. Questions? Worksheet: Motion Problems #1-6
5. Worksheet: Motion Problems - Continue

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6. Ball Toss
7. Acceleration due to Gravity
8. Freely Falling Bodies

Physics 112

SA: #1 U1 S1&2 (October 4/17)

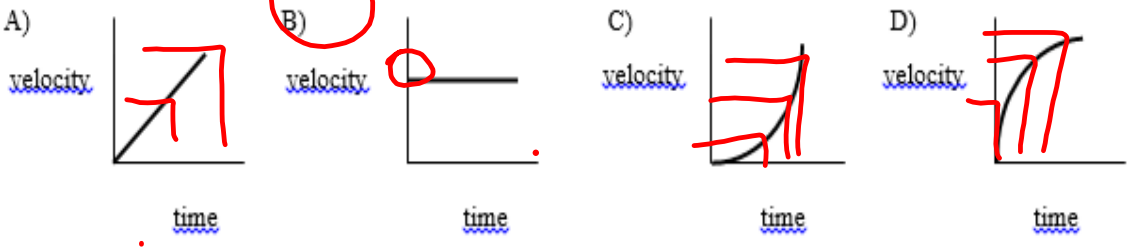
Name - _____ Date - _____

Part 1 – Multiple Choice (Value – 12)

Choose the letter of the best answer and print the letter on the line provided.

___1. What pair of forces could produce a resultant force with a magnitude of 10 N?
A) 15 N, 30 N
B) 8 N, 20 N
C) 5 N, 4 N
D) 10 N, 10 N

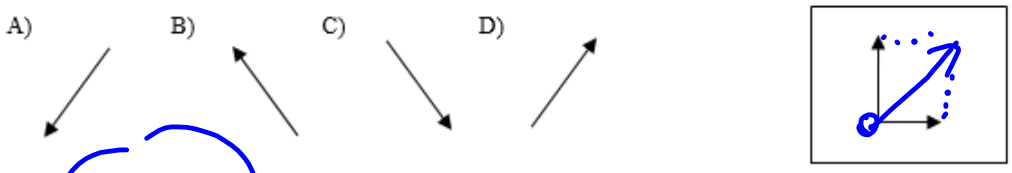
___2. Which of the following graphs represents uniform motion?



___3. Kinematics is the study of
A) why objects move
B) where objects move
C) how objects move
D) when objects move

___4. Which of the following is a scalar quantity?
A) time
B) position
C) velocity
D) acceleration

___5. Which vector represents the resultant of the two displacement vectors shown in the box?



___6. The maximum resultant of two forces acting on an object will occur when the angle between the two forces is
A) 0°
B) 45°
C) 90°
D) 180°

___7. Which of the following units can only be associated with a scalar quantity?
A) m
B) m/s
C) m/s^2
D) s

___ 8. In order to have a change in velocity, there must be
A) an increase in speed
B) a change in speed and/or direction
C) a decrease in speed
D) a change in both speed and direction

___9. The sum of two or more vectors is called the
A) final vector
B) dominant vector
C) kinematic vector
D) resultant vector

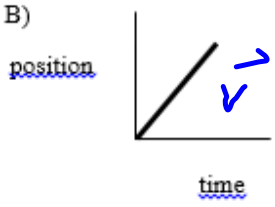
___ 10. A vector quantity has
A) only magnitude
B) magnitude or direction
C) magnitude and direction
D) only direction

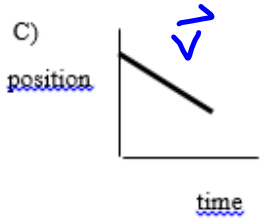
$\Rightarrow \vec{a}$ const / $\vec{v}$ change.

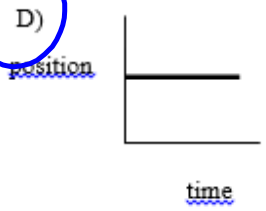
___11. Which of the following graphs represents uniformly accelerated motion?

$\vec{v} = 0 m/s$

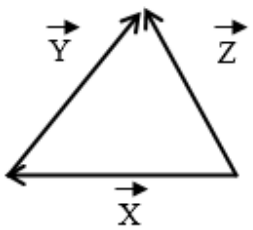
A)


B)


C)


D)


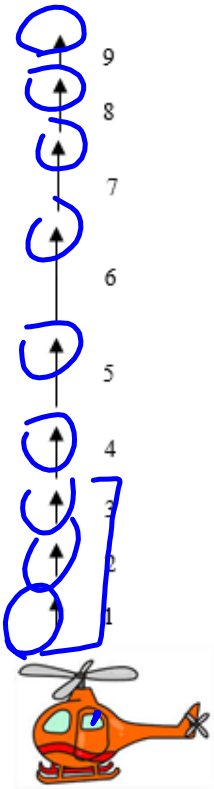
___12. Study the diagram to the right. Which statement best describes the relationship between **X**, **Y** and **Z**?
A) **Y** is the resultant of **X** and **Z**
B) **Z** is the resultant of **X** and **Y**
C) **X** is the resultant of **Y** and **Z**
D) There is no particular relationship between **X**, **Y** and **Z**.



Part 2 – Chart (Value - 9)

Complete the chart below for the helicopter to the right. The arrows represent velocities.

Images in Diagram	Direction of Velocity Vector	Direction of Acceleration Vector	Description of Motion
1-2-3	Pos.	X	constant speed in a +ve dir.
4-5-6	Pos.	Pos.	Speeding up +ve dir.
7-8-9	Pos.	neg.	slowing down +ve dir



Part 3 – Calculating a Resultant (Value - 10)

Show your work in the space provided. Follow the rubric to obtain full value.

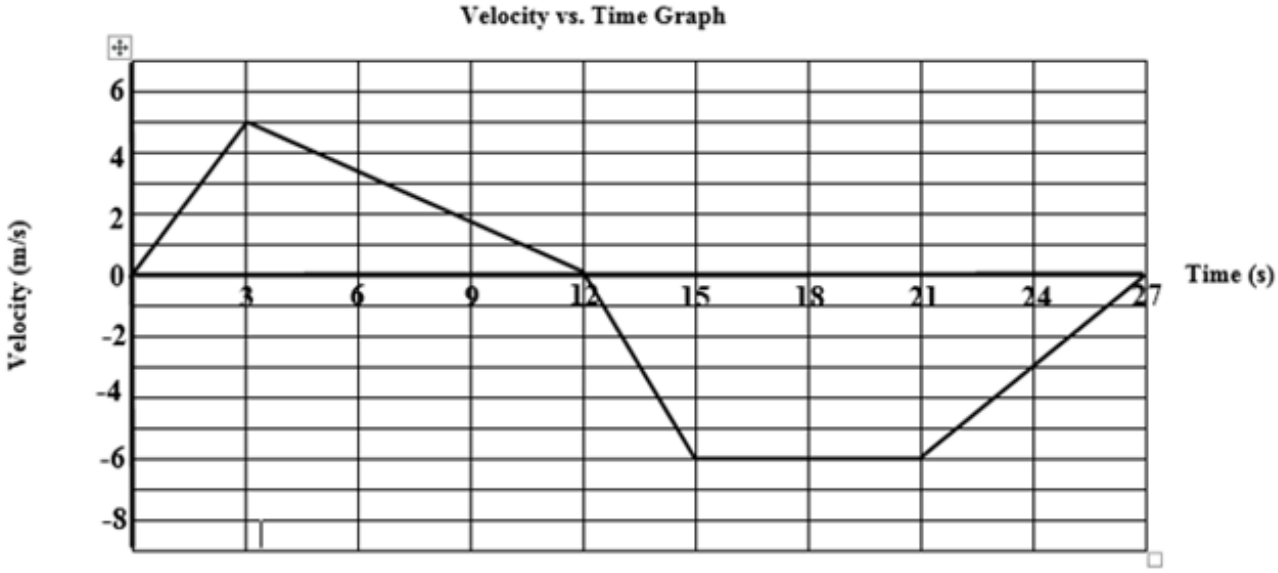
A = 5.67 m/s W and **B** = 7.29 m/s, N. Find their resultant.

$\vec{R} = \sqrt{A^2 + B^2}$

$\vec{R} = \square$ m/s.

Part 4 – Velocity-Time Graph (Value - 15)

Refer to the following graph to answer the questions below. Assume that the positive direction is east. Show work when calculations are required on your own looseleaf. Express all answers to two significant digits. Use east and west to describe the directions of vector quantities in your final answers.



a) What was the maximum speed of the object? (1)
b) What was the acceleration of the object at t = 5.0 s? (2)
c) What was the displacement of the object between 3.0 s and 27 s? (3)
d) What was the average velocity of the object between 3.0 s and 27 s? (3)
e) What was the average speed of the object between 3.0 s and 27 s? (3)
f) What was the average acceleration of the object between t = 3.0 s and t = 24 s? (2)
g) Did the object change direction? If so, when? (1)

FA - Kinematic Equations: UAM (10/17)

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4 KE for UAM

$$\vec{a} = \frac{\vec{v}_f - \vec{v}_i}{t} \quad \text{(slope v-t)}$$

$$\vec{d} = \frac{1}{2}(\vec{v}_i + \vec{v}_f)t \quad \text{(area v-t)}$$

$$\vec{d} = \vec{v}_i t + \frac{1}{2}\vec{a}t^2$$

$$\vec{v}_f^{\,2} = \vec{v}_i^{\,2} + 2\vec{a}\vec{d}$$

Physics 122

Tuesday, October 10/17

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1. Return -> SA: Unit 1 - S1& 2

2. Questions?
   Worksheet - Physics Texts Problems - Relative Velocity

3. FA - Relative Velocity: Boat Problem -> Tomorrow

4. Type II: Velocities at Right Angles
   (ii) Intersection Problems

5. Worksheets - Relative Velocity (4)

Science 10

Tuesday, October 10/17

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1. SA - Chem #1 Intervention
2. Questions?
   Worksheet: Formation and Decomposition Reactions
3. FA: Chemical Reactions #1
4. Single Replacement Reactions - P5
5. Double Replacement Reactions - P4

6. Worksheet: Single and Double Replacement Reactions
7. Combustion Reactions
8. Worksheet: Combustion Reactions

Science 10

FA: Chemical Reactions #1A

(October 10/17)

Name - _____

1. The starting substances in a chemical reaction are called reactants.
2. In a chemical reaction, the new substances that are formed are called products.
3. The arrow in a chemical equation could be replaced by the word "yields".
4. The large numbers in front of some the formulas in a chemical equation are called coefficients and are used to balance the equation.
5. Matter cannot be created or destroyed according to the Law of Conservation of Mass.
6. What type of reaction has the general format provided below? decomposition

AB → A + B (1R → 2P)

A + B → AB formation

7. Balance the chemical equations below.

a) 6 Mg + ___ P_4 → 2 Mg_3P_2

b) ___ F_2 + 2 NaCl + → ___ Cl_2 + 2 NaF

c) 3 K_2SO_4 + 2 $AlBr_3$ + → 6 KBr + ___ $Al_2(SO_4)_3$

Reactants	Products
K = 2 x 3 = 6	K = 1 x 6 = 6
SO_4 = 1 x 3 = 3	SO_4 = 3
Al = 1 x 2 = 2	Al = 2
Br = 3 x 2 = 6	Br = 1 x 6 = 6

#1B.

a) 3 Ca + N_2 → Ca_3N_2

b) 2 KF + I_2 → 2 KI + F_2

c) 2 3 → 1 6