Name: _____

An Introduction to Vectors

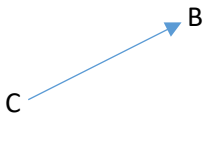
Chapter 1: What is a vector?

Introduction:

1. What are the three ways you can represent a vector?

   _____ _____ _____

2. How would you represent the following vectors?



   _____ _____ _____

3. Do you see a coordinate plane? Do you think it is important for vectors to have this in order to *exist*?

   _____

4. Press "Show Components". What happens?

   _____

5. Move the terminal point and initial point around. What happens?

   _____

Vectors in a Plane:

1. What do you see in the window?

   _____

2. How many vectors do you see?

   _____

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3. What do you see in < , >?

_____

4. What do you think this < , > is in relation to in the window?

_____

5. Move the point B to (9,3) and point A to (5,-1). What is in the < , >?

_____

6. What happened to the other vector in the window that originates from the origin?

_____

7. What are the coordinates of the terminal point for the vector originating at the origin?

_____

8. Move the point B to (3,1) and point A to (7,4). What is in the < , >?

_____

9. What happened to the other vector in the window that originates from the origin?

_____

10. What are the coordinates of the terminal point for the vector originating at the origin?

_____

11. The length, what is the formula for the length?

_____

Component Form:

1. What does **u** equal?

_____

2. Place point B on (3,2) and A on (1,1), what does **u** equal now?

_____

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3. Place B on (1,1) and A on (3,2) what does **u** equal now?

   _____

4. What can you say about the component form $\binom{a}{b}$?

   _____

5. If A(4,5) B(6,1) and C(-2,8), find the component form for the following without using the site:

   $\overrightarrow{AB}$ _____ $\overrightarrow{CB}$_____ $\overrightarrow{BC}$_____

Magnitude and Direction:

1. How do you think we represent magnitude of vectors? _____
2. Below draw a vector with the magnitude of 2cm and direction $120°$. What would be its component form?

<u>Chapter 2: Arithmetic with Vectors</u>

Geometric Addition of Vectors:

1. What is happening when you add u+v?

   _____

2. What is happening when you add v+u?

   _____

3. Do you think it matters if you say u+v or v+u?

   _____