Name: _____ Period: _____

AP PHYSICS I

Activity: Vector Inspectors

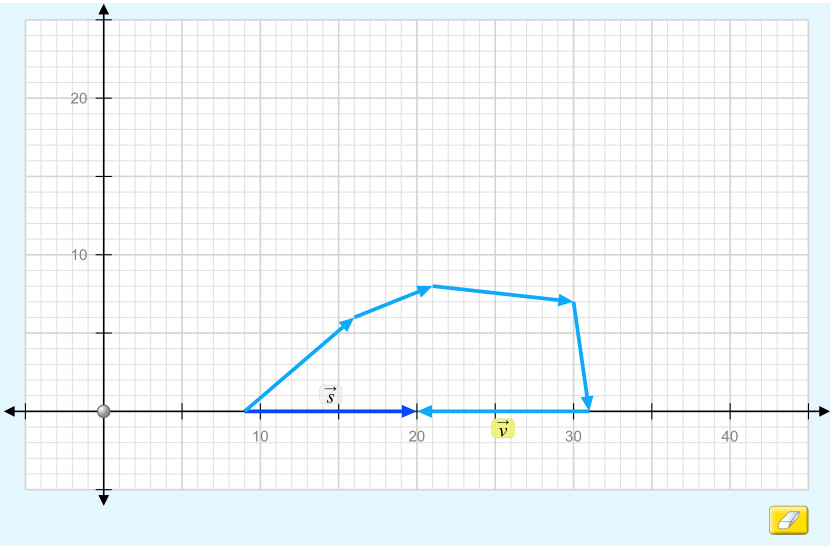
Purpose

The purpose of today's lab is to create a mathematical relationship dealing with the properties of adding vectors. We will be analyzing why it is called vector "addition."

Procedure

1. Go to http://phet.colorado.edu/en/simulation/vector-addition
2. Choose the Lab option
3. Take any 5 vectors with magnitudes and directions of your choice and add them with the head-to-tail method.
4. Display the Sum Vector and also arrange it to follow the head-to-tail method.
5. Record all of your data and make a mathematical analysis with the variables provided.

Setup Screenshot:



Data

Vector #	Magnitude	Angle	X-Component	Y-Component
Vector 1	9.2	40.6	7.0	6.0
Vector 2	5.4	21.8	5.0	2.0
Vector 3	9.1	-6.3	9.0	-1.0
Vector 4	7.1	-81.9	1.0	-7.0
Vector 5	11.0	180.0	-11.0	0.0
Sum Vector	11.0	0.0	11.0	0.0

Conclusion: Are there *any* mathematical relationships between the components of Vectors and the Sum Vector? Write out the mathematical formula.

$$9.2 + 5.4 + 9.1 + 7.1 + 11.0 = 41.8$$

$40.6 + 21.8 - 6.3 - 81.9 + 180.0 = 154.2$

X component

7.0+5.0+9.0+1.0-11.0=11.0

Y component
6.0+2.0-1.0-7.0+0.0=0.0