**Physics – Honors: Vector Addition (Adv.)** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:** *Determine the magnitude and direction of the resultant vector. Construct a diagram on the graph paper provided. Be sure to* ***show all work*** *and report your answers with the appropriate units and significant figures.*

You accelerate 7.0 m/s2 at 25° N of E and 4.0 m/s2 at 65° W of N. Add the vectors and give the magnitude and direction of the resultant. The chart is optional – use it if you wish.



|  |  |
| --- | --- |
| **x-component of vector** | **y-component of vector** |
| vector 1: | vector 1: |
| vector 2: | vector 2: |
| sum of x-components = | sum of y-components = |

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You move with a velocity of 12 m/s at 40.° E of N and 15 m/s at 20.° W of S. Add the vectors and give the magnitude and direction of the resultant.



|  |  |
| --- | --- |
| **x-component of vector** | **y-component of vector** |
| vector 1: | vector 1: |
| vector 2: | vector 2: |
| sum of x-components = | sum of y-components = |

The great, gray-green, greasy Zambezi River flows over Victoria Falls in south central Africa. The falls are approximately 108 m high. If the river is flowing horizontally at 3.60 m/s just before going over the falls, what is the velocity (magnitude and direction) of the water when it hits the bottom? Ignore air resistance.