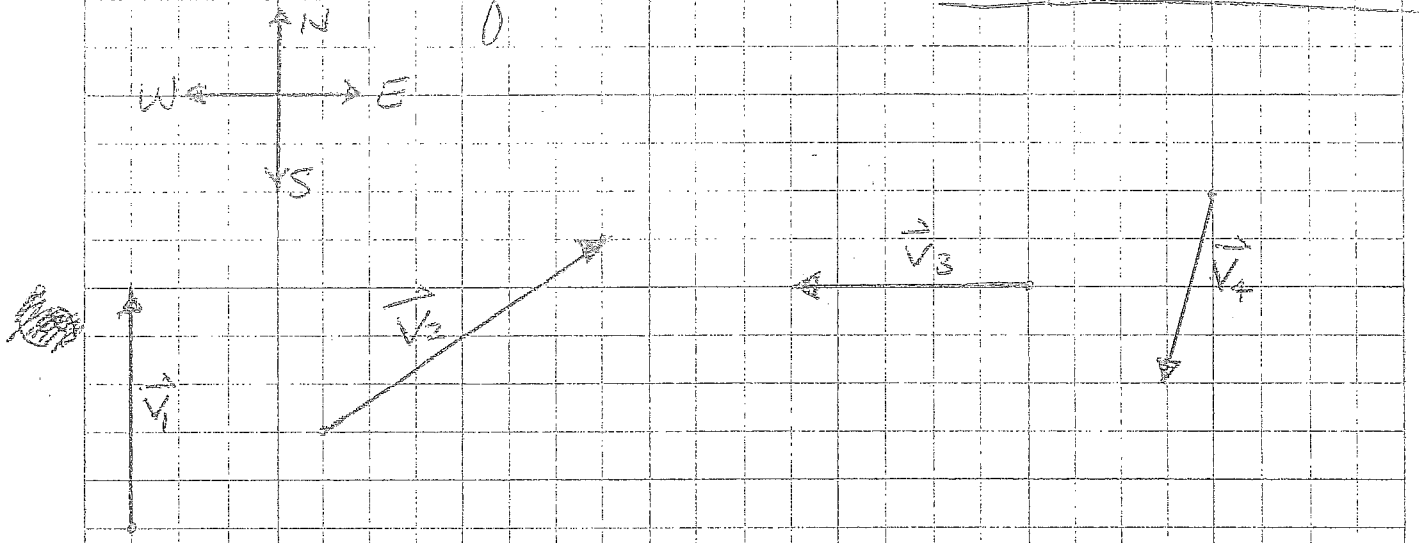
Worksheet Name: KEY

Vectors - Graphical Methods of addition

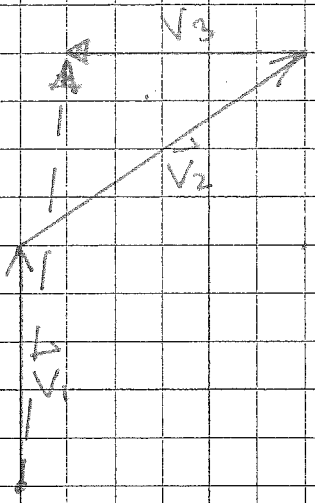
1. Use Scale diagrams to determine the resultant vector in the following examples. (1 unit = 1 side length of 1 square)

* For these questions use compass directions



Use GRAPHICAL METHODS (diagram) to determine the resultant

(a) $\vec{V}_1 + \vec{V}_2 + \vec{V}_3$ Resultant: 9.2 units [6° E of N]

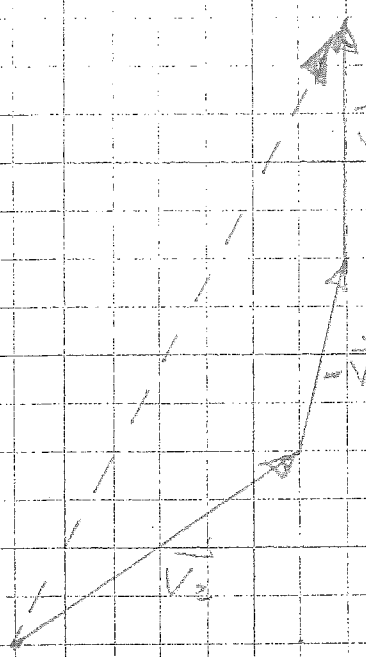


Note: Vectors Must Be expressed with both magnitude and direction

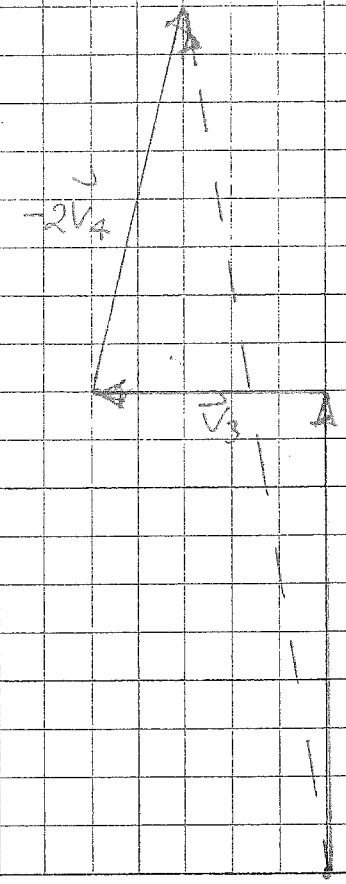
~~Resultant~~: e.g. 25 km [36° N of E]
magnitude direction

4 Squares to the Inch

(b) $\vec{V}_2 - \vec{V}_4 + \vec{V}_1$ Resultant: 15 units [28° E of N]

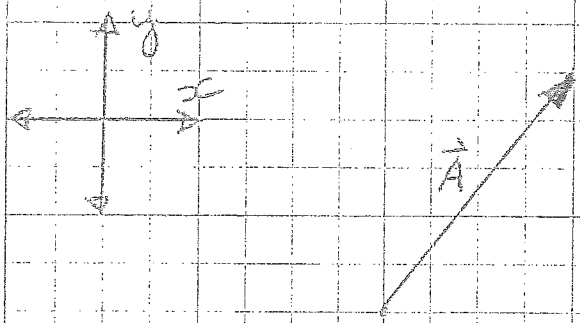


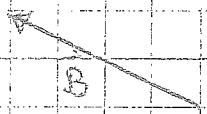
(c) $2\vec{V}_1 + \vec{V}_3 - 2\vec{V}_4$ Resultant: 18.4 units [9° W of N]



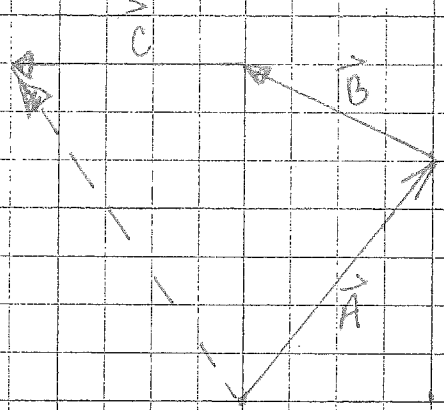
4 Squares to the Inch

2. Use scale diagrams and the x-y axis to determine the following resultants.





(a) $\vec{A} + \vec{B} + \vec{C}$ Resultant: 8.8 units [36° to the left of the +y axis]



(b) $\vec{C} - \vec{A} + 2\vec{B}$ Resultant:

3. Use a ruler and protractor to create a <u>scale diagram</u> representing the following situation. Use the ruler and protractor to determine the magnitude <u>and</u> direction of the resultant vector. (you must create a scale ... eg 1cm : 1km)

A marathon runner in training runs 10.0 km [30.0° North of East], then turns and runs 3.0 km [due East]. Finally, she runs 15.0 km [40.0° West of North].

What is her total (resultant) displacement?

$\vec{d}_R = 16.7\text{ km}\ [7.5°\text{ East of North}]$