Exp. No. 2

Vectors

Name: …….…….. Grade: ….....

Student's No.: ……..... Day and Date: ……

Partners Names: ……..…... Sec.: ……

Data:

(1) Use the force table to find the resultant R of two vector forces and fill the table below

Method	$\|F_1\|$	$\|F_2\|$	θ_1	θ_2	F_x	F_y	$\|R\|$	$\emptyset_R$	Error% In R
Force Table									
Calculation									
Components									
Graphically									

(2) Calculation:

Compute the resultant **R** (magnitude and direction) by direct calculation:

$R = \sqrt{\qquad\qquad\qquad\qquad}$ = ……..……

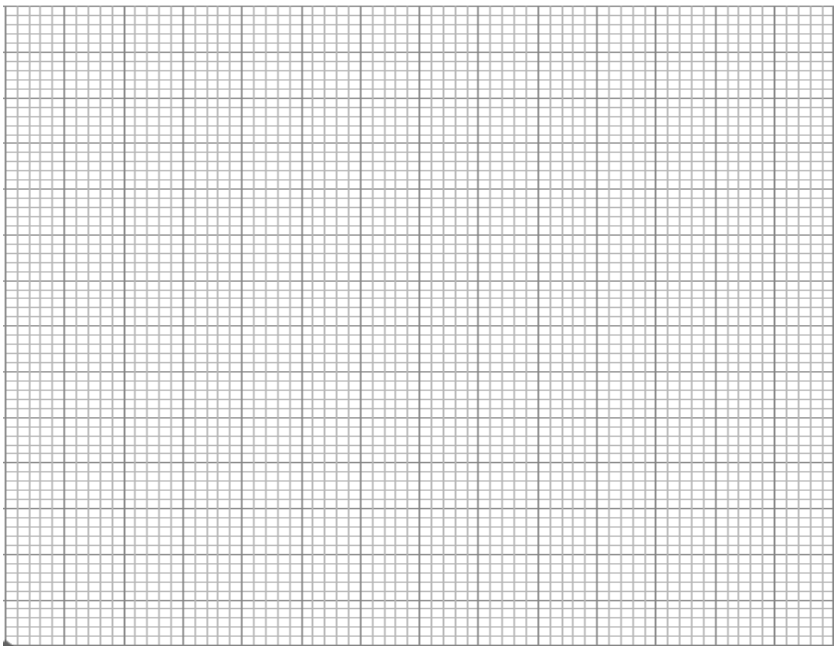
$\phi' = tan^{-1}$ ——— = ... , ϕ = ...

(3) **Find R graphically** (triangle method) using graph paper.

From your drawing, determine:

R = ….....

ø = ...



(4) **<u>Method of components:</u>** Compute **R** by the method of components

F_x = ……..…….……..…..……

F_y = ……..……..……...

R = ……..……..…….…..

$$\phi = tan^{-1}\left(\frac{\qquad\qquad}{\qquad\qquad}\right) =$$

(5) Find the **percentage error P.E.** for each case above.

PE = $\dfrac{|\ measured\ value - true\ value\ |}{true\ value} \times 100\%$ (the true value of R is calculated in 1)

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(6) Add the following two vectors: $\vec{u} = 1\hat{i} + 2\hat{j}$, $\vec{v} = 2\hat{i} - 5\hat{j}$

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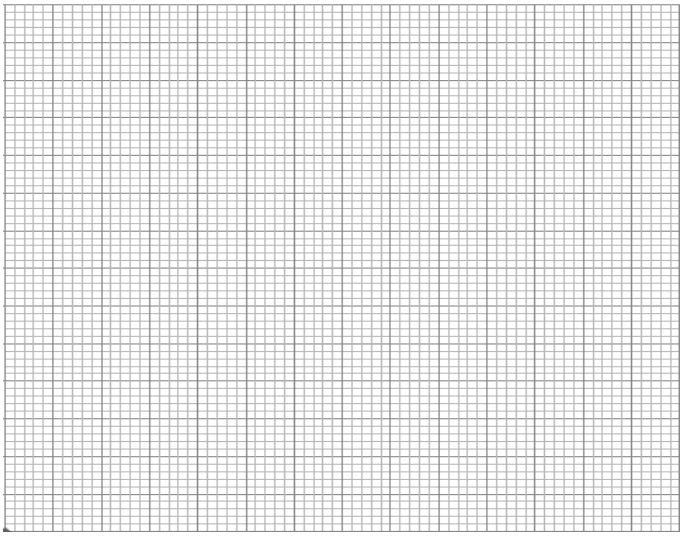
(7) Draw the two vectors described above and add them graphically (i.e. find the resultant)



(8) Split the 3 vectors drawn below into the two given (x,y) components and add them up.

A_x = ...

A_y = ...

B_x = ...

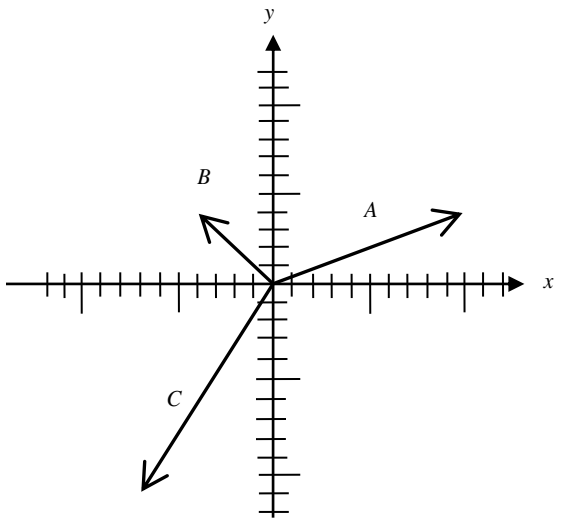
B_y = ...

C_x = ...

C_y = ...

R_x = ...

R_x = ...



$\vec{A} = (\quad)\,\hat{i} + (\quad)\,\hat{j}$,

$\vec{B} = (\quad)\,\hat{i} + (\quad)\,\hat{j}$

$\vec{C} = (\quad)\,\hat{i} + (\quad)\,\hat{j}$

$\vec{R} = (\quad)\,\hat{i} + (\quad)\,\hat{j}$

(9) In the adjacent Fig. the forces are in equilibrium $\mathbf{F}_1$ = 80g dyn and $\mathbf{F}_2$ = 60g dyn. Determine the resultant vector sum **R** of and its direction.