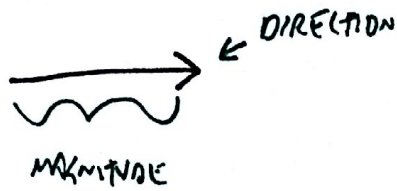


VECTORS CAN BE REPRESENTED BY ARROWS
 → HAVE MAGNITUDE + DIRECTION



VECTORS CAN BE BROKEN UP INTO COMPONENTS
 → PARTS

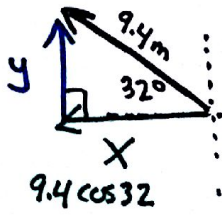
X (HORIZ)
 Y (VERT)

$$\vec{A} = 5 \text{ m E} \xrightarrow{\text{5m}} \begin{matrix} A_x = +5 \text{ m} \\ A_y = 0 \end{matrix}$$

$$\vec{B} = 8 \text{ m N} \xrightarrow{\text{8m}} \begin{matrix} B_x = 0 \\ B_y = +8 \text{ m} \end{matrix}$$

$$\vec{C} = 5 \text{ m S} \xrightarrow{\text{5m}} \begin{matrix} C_x = 0 \\ C_y = -5 \text{ m} \end{matrix}$$

$$\vec{D} = 9.4 \text{ m } @ 32^\circ \text{ N of W}$$

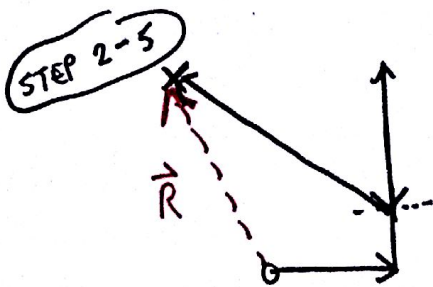


$$D_x = -7.97 \text{ m}$$

$$D_y = 4.98 \text{ m}$$

$$\cos \theta = \frac{A}{H}$$

SOH
 CAH
 TOA
 $\sin \theta = \frac{O}{H}$
 $y = 9.4 \sin 32$



ADD VECTORS

$$\vec{A} + \vec{B} + \vec{C} + \vec{D}$$



STEP

① TIP TO TAIL

② MARK OUR STARTING POSITION W/ "0"

③ SKETCH VECTORS TIP TO TAIL

④ MARK ENDING POSITION W/ "X"

⑤ DRAW RESULTANT DOTTED FROM "0" TO "X"

\vec{R} ← ANSWER (MAG + DIR)

* MAKE ALL MEASUREMENTS FROM THE STARTING POSITION ("0")

⑥ BREAK VECTORS INTO COMPONENTS

⑦ PUT COMPONENTS INTO X/Y CHART

⑧ ADD COMPONENTS

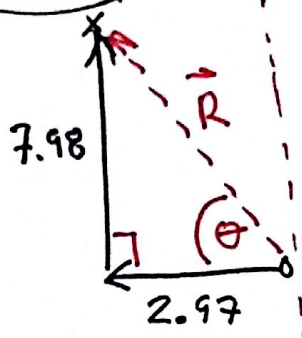
⑨ REDRAW RESULTANT USING ITS COMPONENTS

⑩ RESOLVE RESULTANT

STEPS 6-8

	X	Y
\vec{A} :	+5	0
\vec{B} :	0	+8
\vec{C} :	0	-5
\vec{D} :	-7.97	4.98
\vec{R} :	-2.97	+7.98

STEP 9



STEP 10

$$R = \sqrt{7.98^2 + 2.97^2}$$

$$= 8.51 \text{ m}$$

$$\theta = \tan^{-1}\left(\frac{7.98}{2.97}\right)$$

$$= 69.6^\circ \text{ N of W}$$

OTHER MATN w/ VECTORS

SUBTRACTION: "ADDING THE NEGATIVE (OPPOSITE)"

$$\vec{A} - \vec{B} : (5\text{mE}) - (8\text{mN})$$

$$= (5\text{mE}) + (8\text{mS})$$

MULT/DIVISION: APPLY FACTOR TO MAGNITUDE ONLY

$$2\vec{A} : 2(5\text{mE}) = 10\text{mE}$$

$$10\vec{D} : 10(9.4\text{m} @ 32^\circ \text{ N of W}) = 94\text{m} @ 32^\circ \text{ N of W}$$