

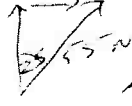
Name KEY

44
40

Vector Components


Find the vector components of the following problems: (Show all of your work)

- 1.) 55.0 Newtons at 25°



$\sin 25 = \frac{x}{55}$
 $\sin 65 = \frac{y}{55}$

$x = 23.24 @ 90^\circ$
 $y = 49.84 @ 0^\circ$
- 2.) 20 m/s at 70°




$\sin 20 = \frac{y}{20}$
 $\sin 70 = \frac{x}{20}$

$x = 18.8 \text{ m/s} @ 90^\circ$
 $y = 6.84 \text{ m/s} @ 0^\circ$
- 3.) 4.0 m at 90°


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$x = 4 \text{ m} @ 90^\circ$
 $y = 0$
- 4.) 17.0 Newtons at 135°



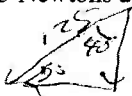
$\sin 45 = \frac{x \text{ or } y}{17}$

$x = 12.02 @ 90^\circ$
 $y = 12.02 @ 180^\circ$
- 5.) 15 m/s at 160°




$\sin 20 = \frac{y}{15}$
 $\sin 70 = \frac{x}{15}$

$x = 5.13 \text{ m/s} @ 90^\circ$
 $y = 14.09 @ 180^\circ$
- 6.) 125 Newtons at 220°




$\sin 40 = \frac{x}{125}$
 $\sin 50 = \frac{y}{125}$

$x = 80 \text{ N} @ 270^\circ$
 $y = 95.7 @ 180^\circ$
- 7.) 3.5 cm at 330°

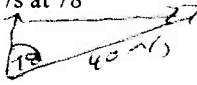


$\sin 30 = \frac{x}{3.5}$
 $\sin 60 = \frac{y}{3.5}$

$x = 1.75 @ 270^\circ$
 $y = 3.03 @ 180^\circ$
- 8.) 9.8 m/s at 270°

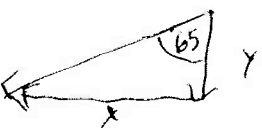


$x = 9.8 \text{ m/s} @ 270^\circ$
 $y = 0$
- 9.) 40 m/s at 78°



$\sin 78 = \frac{x}{40}$
 $\sin 12 = \frac{y}{40}$

$x = 39.17 \text{ m/s} @ 90^\circ$
 $y = 8.31 \text{ m/s} @ 0^\circ$
- 10.) 3500 N at 245°



$\sin 65 = \frac{x}{3500}$
 $\sin 25 = \frac{y}{3500}$


$x = 3172 @ 270^\circ$
 $y = 1479 @ 180^\circ$

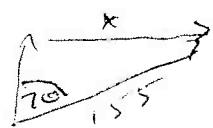
Bonus: If you know how to add two vectors that are in a straight line like 30 N at 0° and 50 N at 0° (= 80 N at 0°) and knowing how to compute the vector components of any vector. Show me a way to add the following two vectors. Also give the answer to the problem. (do on back)

+A

$\sin 30 = \frac{x}{45}$
 $\sin 60 = \frac{y}{45}$

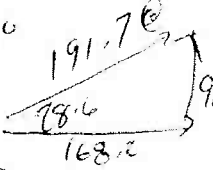
$\sin 70 = \frac{x}{155}$
 $\sin 20 = \frac{y}{155}$





total

 $x = 168.2 @ 90^\circ$
 $y = 91.97 @ 0^\circ$



$x = 22.5 @ 90^\circ$ $y = 38.97 @ 0^\circ$ $x = 145.7 @ 90^\circ$ $y = 53 @ 0^\circ$