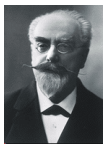
PHYSICS 534

ANSWERS

EXERCISE-11 **Component Forces Part-1 /2**



Gabriel Lippman was awarded the Nobel prize for physics in 1908 for his work on color reproduction by the interference of light.

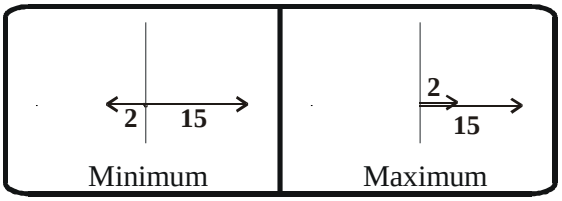
LIPPMAN

↳ ***Note***: For this exercise, find the component forces ***graphically***.

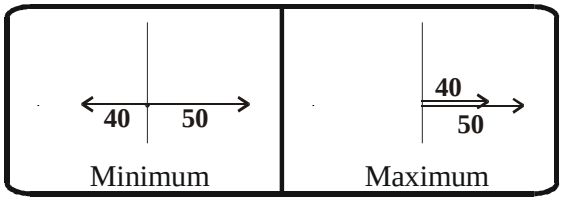
1. Define what is meant by the ***horizontal*** and ***vertical*** component forces.

The components (parts) of a force that lie on the horizontal and vertical axis.

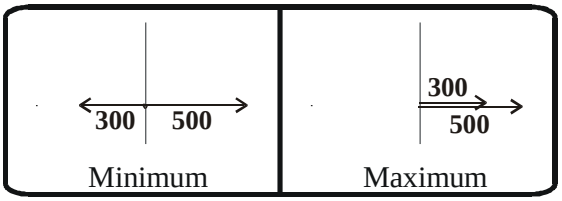
2. Each of the following pairs of numbers represent the ***magnitudes*** of two vectors acting concurrently. Make two drawings (by hand), the first resulting in a ***minimum*** "sum" and the second resulting in a ***maximum*** "sum".



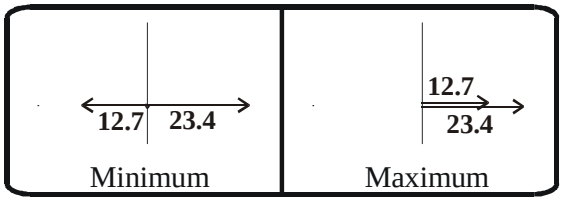
a) 2 and 15



b) 40 and 50

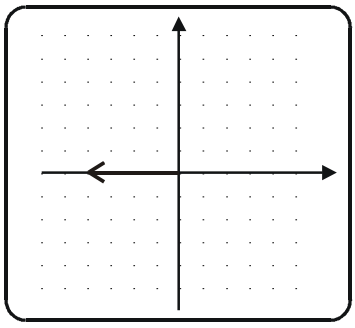


c) 300 and 500

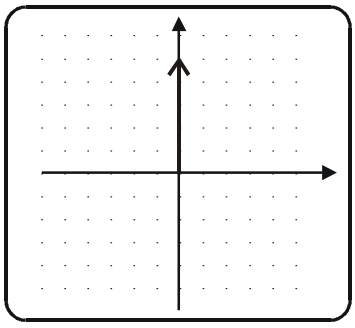


d) 12.7 and 23.4

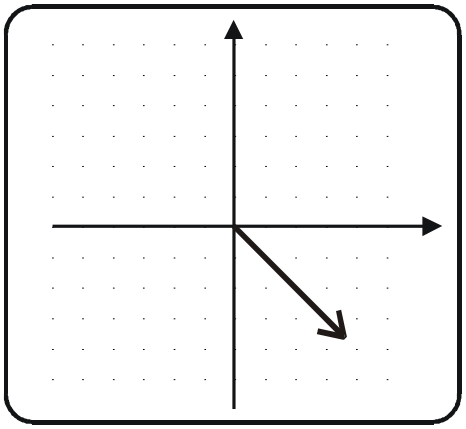
3. Using a ruler, compass and protractor, draw the following vectors. (Select suitable units)



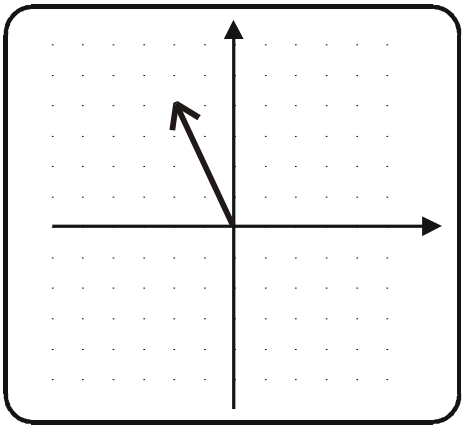
a) 200 N due West



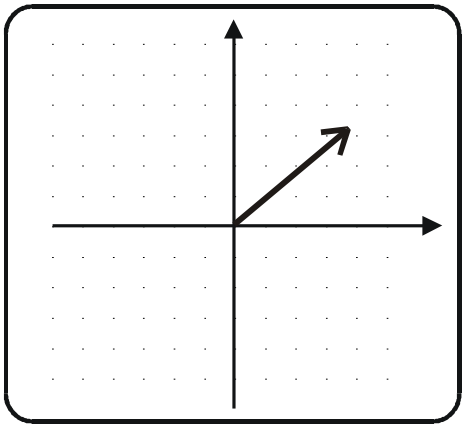
b) 500 N due North



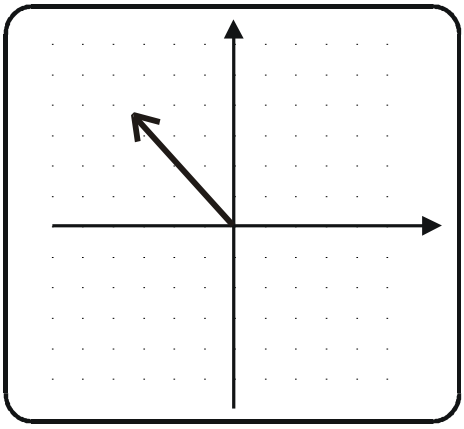
c) 1.8 N Southeast



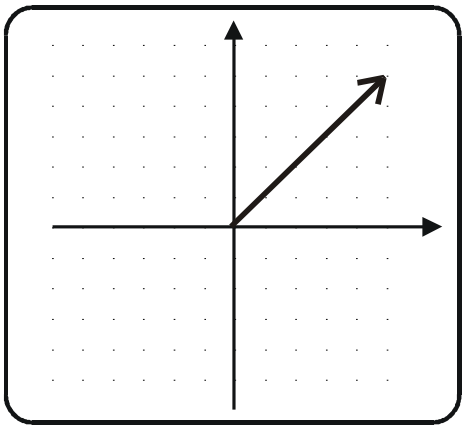
d) 5.5 N 25^{o} from the vertical



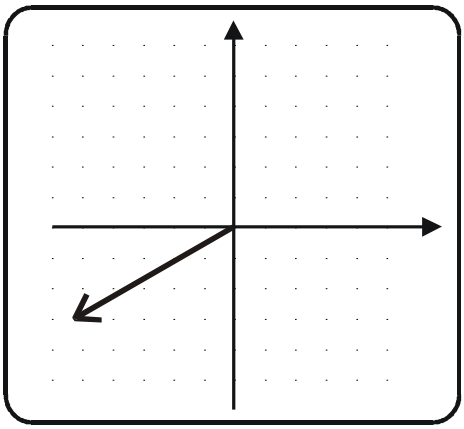
e) 2000 N 40^{o} from the horizontal



f) 9.0 N, W 48^{o} N

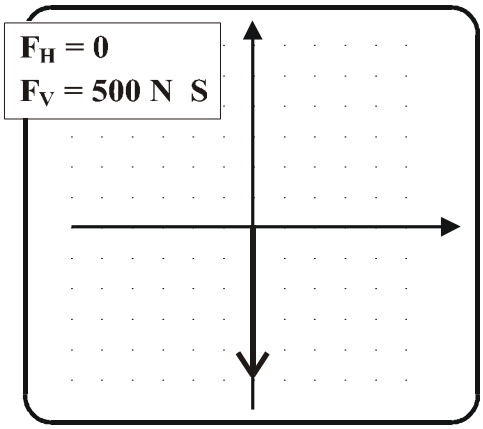


g) 150 N, E 45^{o} N

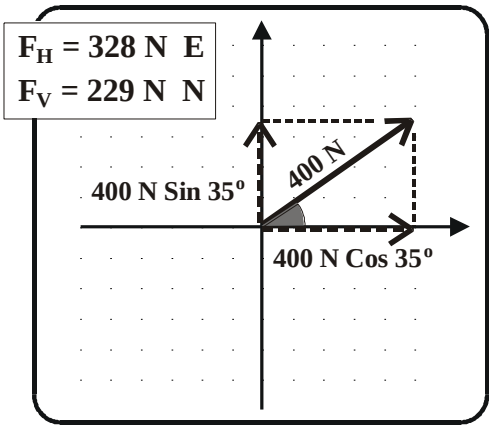


h) 290 N, S 60^{o} W

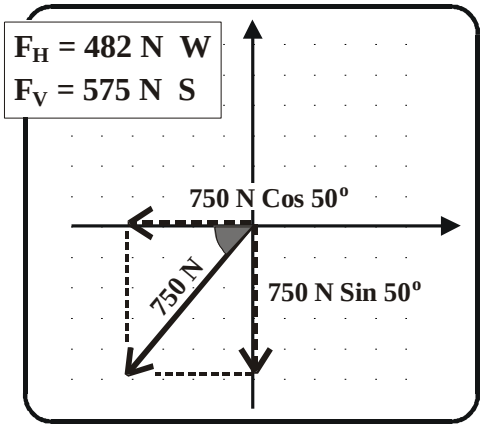
4. Using a ruler, compass and protractor, resolve the following vectors into their horizontal and vertical components. Select suitable units for each vector.



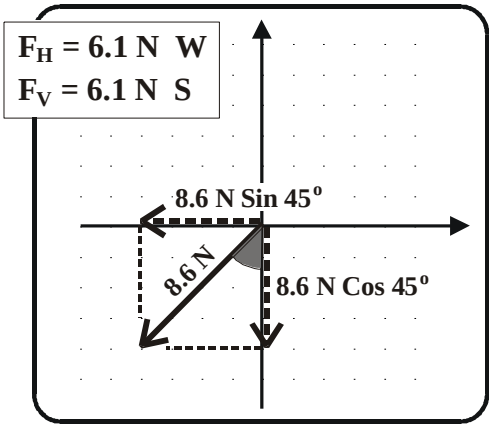
a) 500 N due South



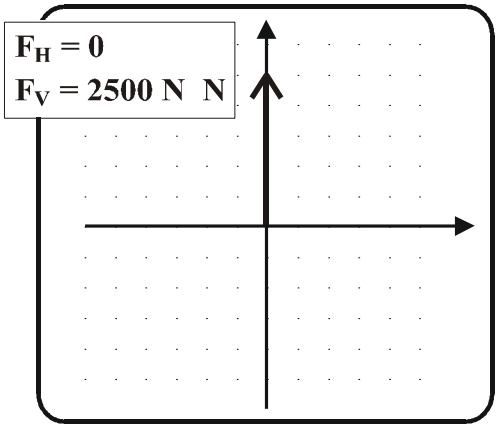
b) 400 N, E 35° N



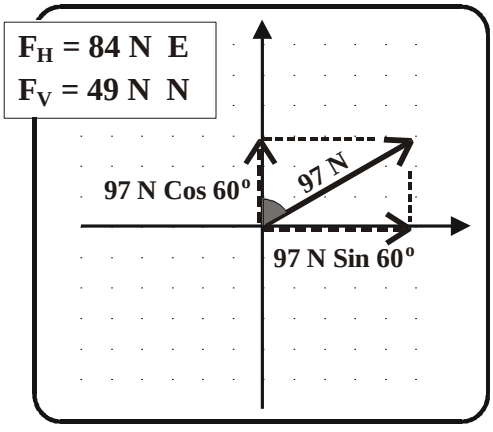
c) 750 N, W 50° S



d) 8.6 N, S 45° W

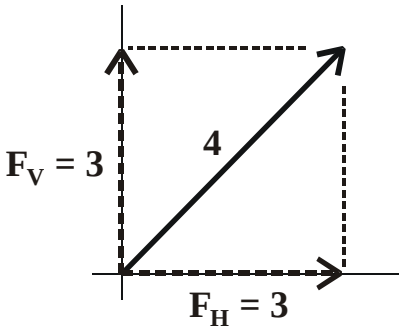


e) 2500 N due North

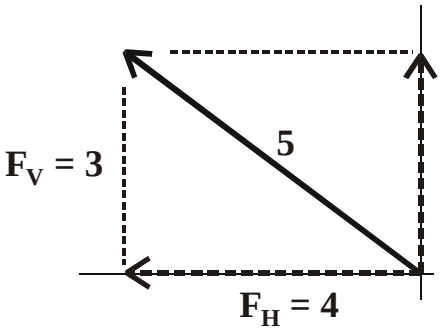


f) 97 N, N 60° E

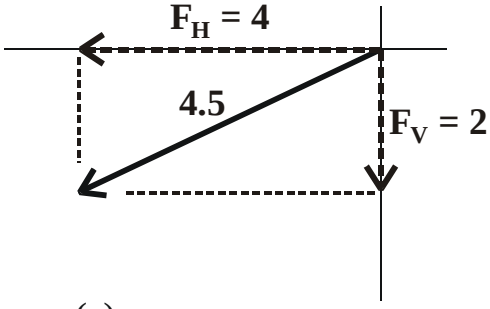
5. Using a ruler and a compass, drop perpendiculars to the horizontal and vertical axis for each vector shown below. Next, measure their lengths and, using suitable units, find the horizontal and vertical component forces.



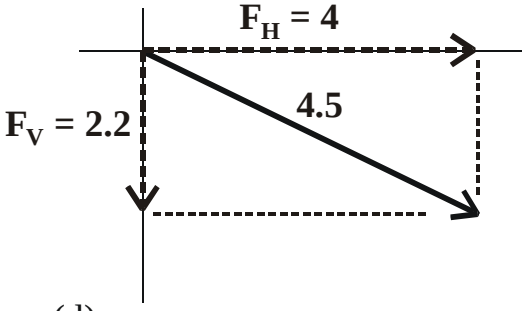
(a)



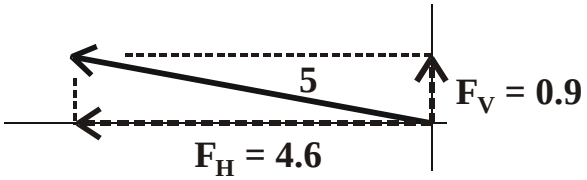
(b)



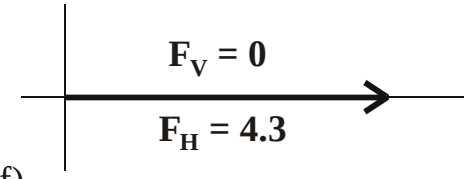
(c)



(d)



(e)



(f)

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