

Quiz #4

Name: _____

Use a pencil, not a pen.

In an x - y plane, **four** different forces act on a small circular object of mass m , which is at rest. Three of those forces are sketched to scale on the diagram already. You have to “measure” using the gray blocks. Each gray block represents 1 Newton.

1. [3] Write the *components* of the three forces that are already drawn. Include units and signs. One of them is already done for you as an example.

$$\begin{array}{lll}
 F_{1x} = \underline{\hspace{2cm}} & F_{2x} = \underline{\hspace{2cm}} & F_{3x} = \underline{\hspace{2cm}} \\
 F_{1y} = \underline{\hspace{2cm}} & F_{2y} = \underline{\hspace{2cm}} -2 \text{ N} & F_{3y} = \underline{\hspace{2cm}}
 \end{array}$$

2. [1] Compute: what is the *angle* of vector F_1 (in degrees, using only positive numbers. Answers may be between 0° and 360°):

$$\theta_1 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}}^\circ$$

3. [1] Find the *angle* of F_2 (in degrees, using only positive numbers. Hint: it is *not* between 0° and 90°):

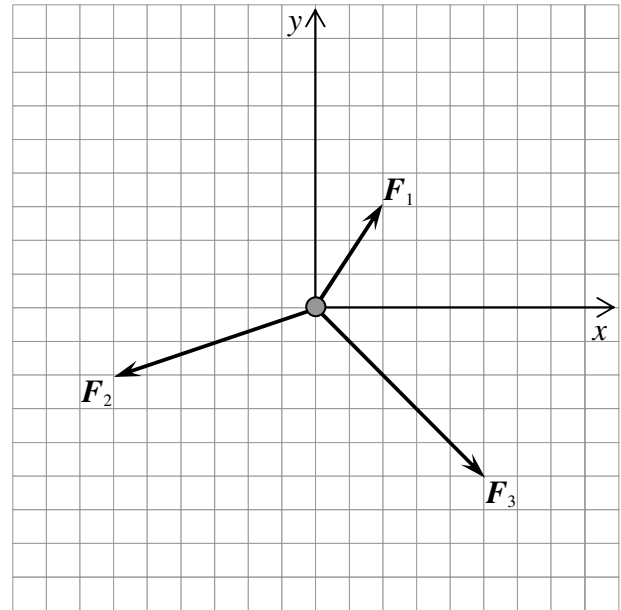
$$\theta_2 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}}^\circ$$

4. [1] Find the *angle* of F_3 (in degrees, using only positive numbers):

$$\theta_3 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}}^\circ$$

5. [1] What is the magnitude of F_1 ?

$$|F_1| = \underline{\hspace{2cm}} \text{ N}$$



6. [2] On the sketch, and using the same scale, *draw and label* F_{123} , a vector starting at the center that is equal to $F_1 + F_2 + F_3$.
7. [1] Knowing that $F_1 + F_2 + F_3 + F_4 = 0$, draw the required vector F_4 on the sketch.