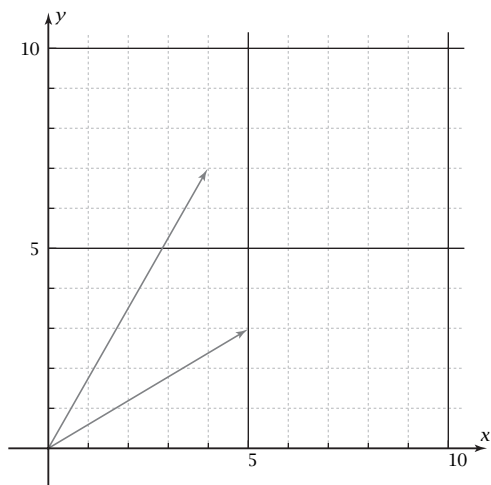


## Exploration 6-6a: Introduction to Vectors

Date: \_\_\_\_\_

**Objective:** Use the properties of triangles to add vectors.

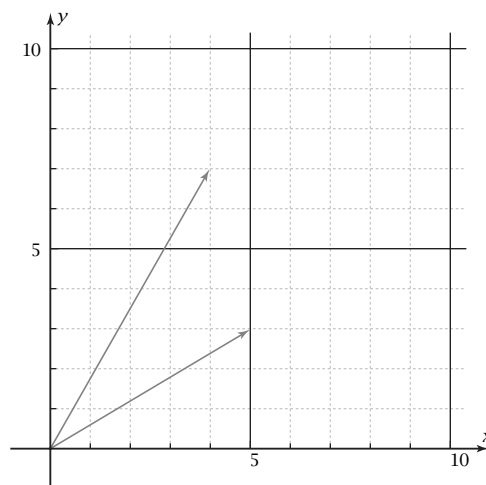
- The figure shows two vectors starting from the origin. One ends at the point (4, 7) and the other ends at (5, 3). Translate one of the two vectors so that the vectors are in position to be added. Then draw the resultant vector—the sum of the two vectors.



- Calculate the length of the resultant vector in Problem 1 and the angle it makes with the  $x$ -axis.
- The two given vectors and the resultant vector form a triangle. Calculate the measure of the largest angle in this triangle.

- Calculate the measure of the angle between the two vectors when they are placed tail-to-tail, as they were given in Problem 1.

- In Problem 1, you translated one of the vectors. Show on the figure that you would have gotten the *same* resultant vector if you had translated the *other* vector. Use a different color than you used in Problem 1.
- The vectors in Problem 1 have **components** in the  $x$ -direction and in the  $y$ -direction. These components are vectors that can be added together to equal the given vector. On this copy of the figure, show how the components of the longer vector can be added to give that vector.



- Give an *easy* way to get the components of the sum of the two given vectors in Problem 1.
- What did you learn as a result of doing this Exploration that you did not know before?