Name: Date:

Magnitude of Vectors

The magnitude of a vector refers to its length. In other words, it quantifies how long the vector is. Let's explore how to calculate the magnitude of a vector:

For instance, a vector has coordinates (3, -5). Draw a vector triangle by plotting the horizontal (x-coordinate) and vertical components (y-coordinate).

The magnitude of the vector is equal to the hypotenuse of the triangle. You can use the Pythagorean theorem to calculate it:

Solve for the magnitude using the ordered pair of the vector. For example:
$v = \sqrt{(3^2 + (-5)^2)} = \sqrt{34} = 5.831$ (3.d.p)

1. What is the magnitude of a vector with components (3,4)?
2. What is the magnitude of a vector with components (6,8)?
3. What is the magnitude of a vector with components (-3,4)?
4. What is the magnitude of a vector with components (0,-12)?
5. What is the magnitude of a vector with components (9,12)?
6. What is the magnitude of a vector with components (-5,-12)?

ANSWERS

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1. What is the magnitude of a vector with components (3,4)? 5
2. What is the magnitude of a vector with components (6,8)? 10
3. What is the magnitude of a vector with components (-3,4)? 5
4. What is the magnitude of a vector with components (0,-12)? 12
5. What is the magnitude of a vector with components (9,12)? 15
6. What is the magnitude of a vector with components (-5,-12)? 13