Name: _____

# Unit Vector and Direction Angles

**Exercise 1:** Find a unit vector in the direction of the given vector.

1) $v = \langle 3, 4 \rangle$

2) $v = \langle 6, 8 \rangle$

3) $v = \langle 12, 5 \rangle$

4) $v = \langle -5, 12 \rangle$

5) $v = \langle 0, 10 \rangle$

6) $v = \langle -4, -3 \rangle$

7) $v = -3i + j$

8) $v = 2i - 9j$

**Exercise 2:** Find the vertical and horizontal components of the vector.

1) $v = \langle 1, 1 \rangle, \theta = 60^\circ$

2) $v = \langle 2, 3 \rangle, \theta = 45^\circ$

3) $v = \langle 2, 8 \rangle, \theta = 40^\circ$

4) $v = \langle 5, 3 \rangle, \theta = 50^\circ$

5) $v = \langle 3, 6 \rangle, \theta = 30^\circ$

6) $v = \langle 4, 1 \rangle, \theta = 75^\circ$

7) $v = \langle -7, 2 \rangle, \theta = 120^\circ$

8) $v = \langle 2, -3 \rangle, \theta = 300^\circ$

9) $v = \langle -2, -3 \rangle, \theta = 210^\circ$

10) $v = \langle -4, 2 \rangle, \theta = 100^\circ$

**Exercise 3:** Find the angle of the vector with the x-axis.

1) $v = \langle 2, -5 \rangle$

2) $v = \langle 3, 3 \rangle$

3) $v = \langle -3, 2 \rangle$

4) $v = \langle 4, -1 \rangle$

5) $v = \langle 2, 4 \rangle$

6) $v = \langle 1, \sqrt{3} \rangle$

7) $v = \langle 3, 6 \rangle$

8) $v = \langle 5, 1 \rangle$

9) $v = \langle 3, -1 \rangle$

10) $v = \langle 1, 3 \rangle$