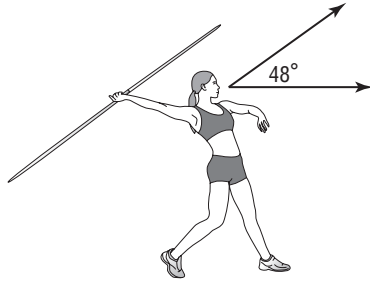


## 8-2 Word Problem Practice

### Vectors in the Coordinate Plane

1. **TRACK** Monica is throwing the javelin in a track meet. While running at 4 meters per second, she throws the javelin with a velocity of 28 meters per second at an angle of  $48^\circ$ .



- What is the resultant speed of the javelin?
- What is the resultant direction of the javelin?

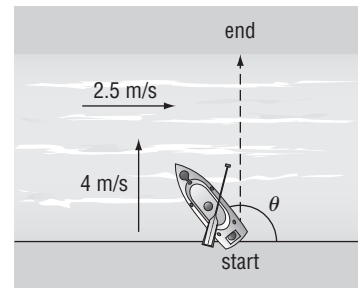
2. **TRANSPORTATION** Jordyn is riding the bus to school. The bus travels north for 4.5 miles, east for 2 miles, and then  $30^\circ$  north of east for 1.5 miles. Express Jordyn's commute as a linear combination of unit vectors  $\mathbf{i}$  and  $\mathbf{j}$ .

3. **HIKING** Amel is hiking in the forest. He hikes 2 miles west and then hikes 3.4 miles north. If he would have hiked diagonally to reach the same ending point, how much shorter would his hike have been?

4. **AIRPLANES** An airplane is traveling 300 kilometers per hour due east. A wind is blowing 35 kilometers per hour  $75^\circ$  south of west. What is the resulting speed of the airplane?

5. **FLYING** To reach a destination, a pilot is plotting a course that will result in a velocity of 450 miles per hour at an angle of  $30^\circ$  north of west. The wind is blowing 50 miles per hour to the north. Find the direction and speed the pilot should set to achieve the desired resultant.

6. **KAYAKING** Walter is kayaking across a river that has a current of 2.5 meters per second. He is paddling at a rate of 4 meters per second perpendicular to the shore.



- What is the resultant velocity of the kayak?
- At what angle will Walter be moving with respect to the shore?
- If Walter wants to land directly in front of his starting point, at what angle with respect to the shore should he kayak?