Name: Date: Period:

Vectors Practice

For each problem, start by **drawing the triangle**. Then complete the calculations.

1. Sandy Squirrel travels 18 m east and 41 m north to get to her secret stash of Emerald Nuts. Chester Chipmunk decides to take a short cut and travel in a straight line to the location of the (not so) secret stash. How far did he travel and at what angle?

2. An airplane is taking off at a 57° angle with a velocity of 45 m/s. How fast is it traveling across the ground, as well as into the air?

3. An airplane is flying at 80 km/hr N, and experiences a crosswind of 20 km/hr E. What is magnitude and direction of the resultant velocity of the plane?

4. A javelin is flying toward the ground at a speed of 30 m/s at an angle of 55 degrees below the horizon. Find the x- and y- components of the javelin's velocity.

Review. Try some of these problems to remind yourself how to use the kinematic equations.

$v_f = v_i + at$	$d = v_i t + \frac{1}{2}at^2$	$v_f^2 = v_i^2 + 2ad$
"Old Faithful"	*"The Big Chalupa"*	*"Ain't Got no Time"*

5. You drop a puppy off the side of a cliff. How much time does it take to fall 3.8 meters?

6. You drop kick a soccer ball straight up in the air with a velocity of 13.1 m/s.
   (a) What maximum height does the soccer ball reach?

   (b) How much time is the soccer ball in the air?