Test 3 Review

On the test you **MUST** show **ALL** work in order to receive **ANY** credit for an answer. For test corrections you must complete the review!!

1. A Chihuahua named Tito was ejected from the passenger seat of a car and vaulted over four lanes of oncoming traffic before landing safely (at the same level) on a grassy shoulder (based on a true story). If Tito was thrown at 7 m/s at an angle of 32 degrees above horizontal, how long did he spend in the air?

X	Y

2. While attacking a castle, a flaming projectile is launched from a trebuchet (catapult) at 35 m/s at an angle of 48 degrees above horizontal. If the projectile lands at the foot of the castle walls, how far away from the castle are the attacking forces?

X	Y

3. A howitzer can fire a shell at 305 m/s at an angle of 40 degrees above horizontal. What is the maximum height that the shell will reach on its path toward the target?

X	Y

4. In Pittsburgh, PA a 30 year old woman drove her car off of a parking garage. If the car was traveling 7 m/s and the parking garage was 17 meters high, how far from the base of the garage did the car land? (She was only slightly injured)

X	Y

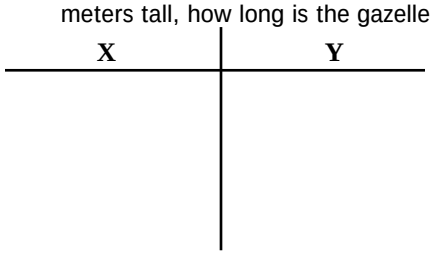
5. A gazelle that is being chased by a rabid capybara (the world's largest rodent), accidentally runs off a cliff. How fast is the gazelle running at the top of the 20 meter high cliff if it lands 45 meters away from the base?

X	Y

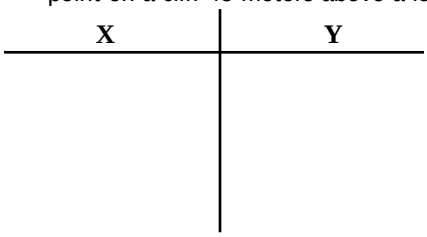
6. A Ferrari speeding along at 35 m/s can't negotiate a curve and horizontally drives off a high cliff. If the beautiful red sports car lands safely in a net 55 meters from the base of the cliff, how high was the cliff?

X	Y

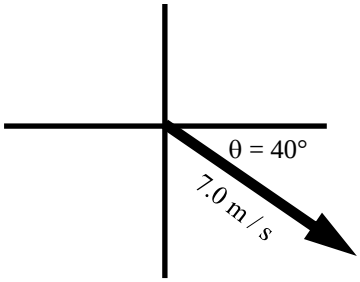
7. A gazelle is fired out of a cannon at 70 m/s at an angle of 25 degrees above horizontal. If the cannon is on a cliff that is 55 meters tall, how long is the gazelle in the air?



8. A stunt platypus is launched from a cannon with a velocity of 85 m/s at an angle of 50 degrees above the horizontal from a point on a cliff 45 meters above a level plain below. How far from the base of the cliff will the platypus land?



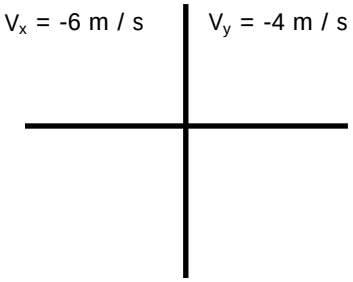
9. Resolve the vectors using trigonometry. **DO NOT FORGET THE SIGN!!!!!!**



v_x = _____

v_y = _____

10. Find the resultant velocity and direction (angle) Draw the vector.



V = _____

θ = _____

11. An airplane taxis to the end of a runway before taking off. The magnitude of the plane's total displacement is 599 m. The northern component of this displacement is 89 m.

A. What is the displacement's eastern component?

B. What is the direction of the total displacement?

12. The landing speed of the space shuttle *Columbia* is 347 km/h. If the shuttle is landing at an angle of 15.0° with respect to the horizontal, what are the horizontal and the vertical components of its velocity in km/hr?

V_x =

V_y =