Name: _____

Period: _____

Projectile Motion Concepts with Diagrams

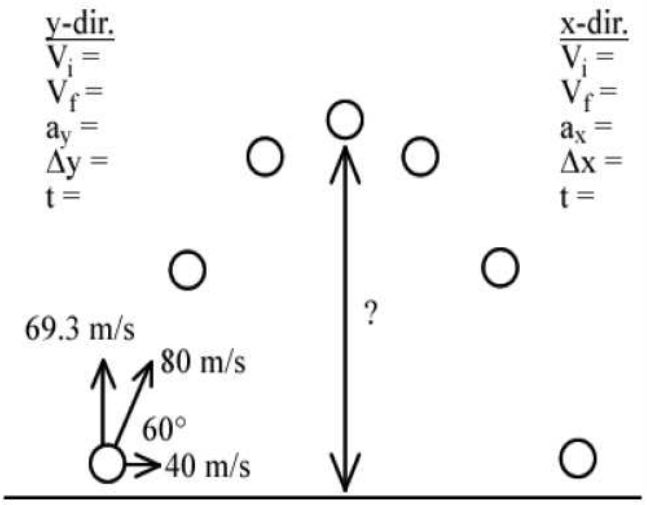
2.6

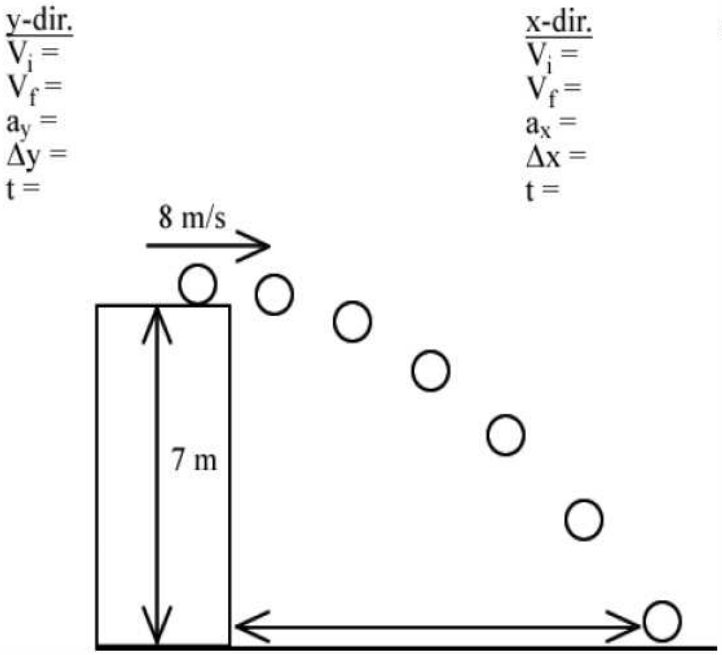
1. An object is thrown into the air going 80 m/s at an angle of 60°. How high does it go?

   A. Realizing that in the y-direction projectiles are just freefall , fill in the y-direction variables.

   B. Realizing that in the x-direction, projectiles are at constant speed, fill in the x-direction variables.

   C. In the y-direction, calculate how high the object goes.





2. An object is launched horizontally with a speed of 8 m/s.
   A. Since it is launched horizontally, what is the initial y-direction velocity?

   B. What is its initial x-direction velocity?

   C. Again, in the y-direction projectiles are just freefall, fill in the y-direction variables.
   D. In the x-direction, projectiles are at constant speed, fill in the x-direction variables.

   F. In the y-direction, calculate how much time it is in the air before it hits the ground.

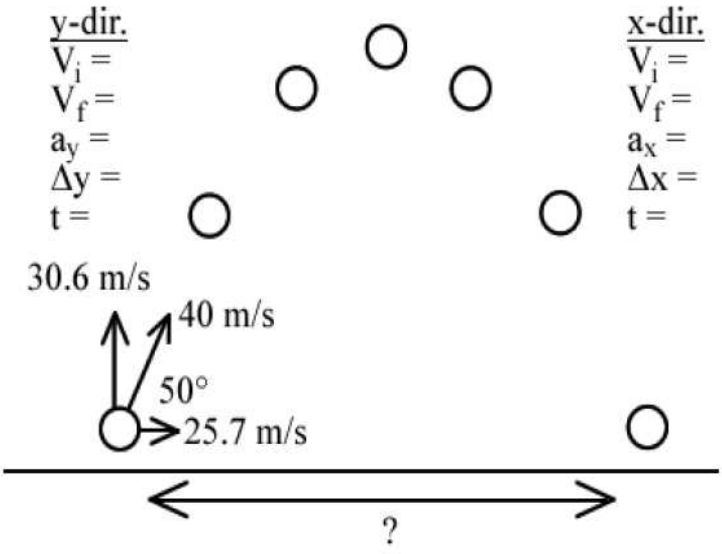
   G. In the x-direction (at constant speed), what equation will you use?

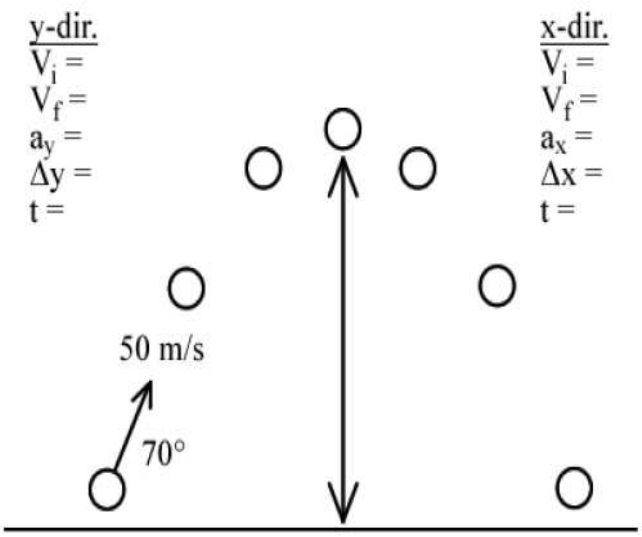
   H. Calculate how far away it landed in the x-direction, using the time you just found.

3. An object is shot 40 m/s at an angle of 50° from the ground. How far away does it land?
   A. Fill in the x and y variables for the object.

   B. Calculate how long it was in the air, in the y-direction.

   C. In the x-direction (at constant speed), use the time you just calculated to find how far away it landed.





4. An object is shot 50 m/s at an angle of 70º. How high does it go?
   A. Use trigonometry to calculate the initial x and y velocities of the object.

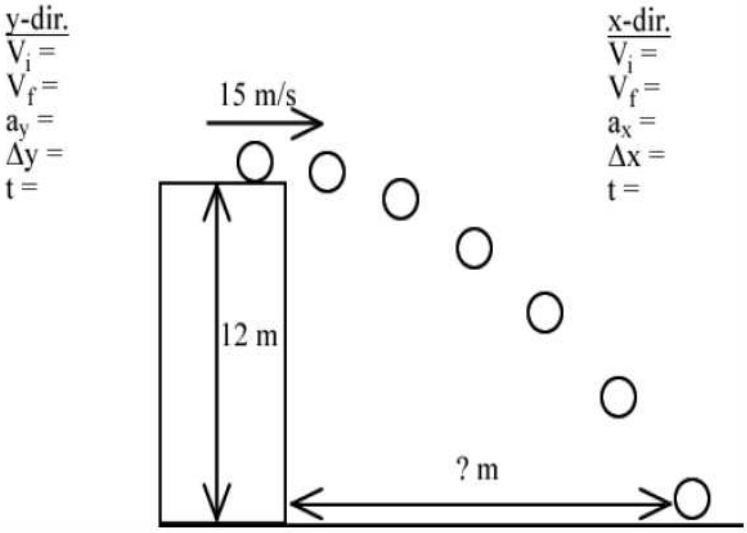
   B. Fill in the x and y variables.

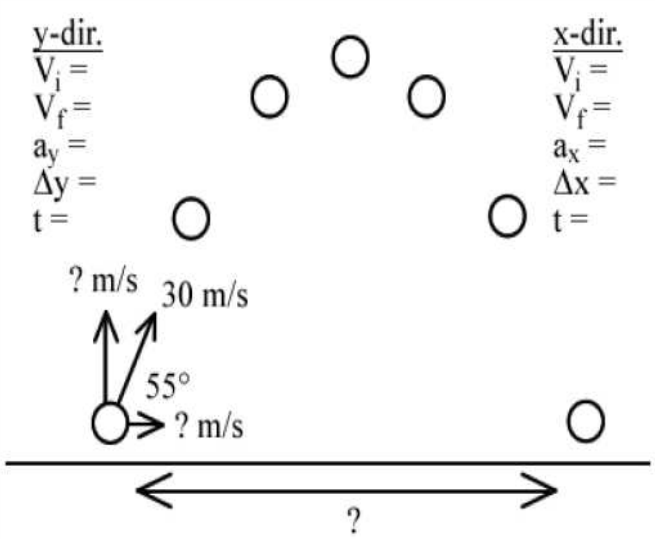
   C. Calculate how high the object rises.

5. An object is launched 15 m/s horizontally.
   A. Fill in the variables for the object.

   B. Solve for time in the y-direction.

   C. Since the x-direction is constant speed, solve for Δx.





6. An object is launched from the ground at a speed of 30 m/s at an angle of 55º. If it lands back on the ground, calculate how far it went horizontally.
   A. Find the initial x and y velocities from the given speed and direction.

   B. Fill in the variables.

   C. Calculate time in the y-direction.

   D. Calculate Δx.