Projectiles #1

1. A catapult launches a stone into the air at an angle of 25° and a velocity of 62 m/s
   (a) Draw a diagram of the situations and write down knowns and unknowns.

   (b) Consider that the stone is initially moving at an angle. Find the x- and y- components of its initial velocity.

   (c) How long is the stone in the air?

   (d) How far in the x-direction did the stone travel?

   (e) What is the stone's maximum height?

2. A baby eagle is in a nest atop a 23 m tall tree. You are 13 m away from the base of the tree and need to throw some food up to the bird or it will starve! *Hint: assume that your food will be at its maximum height when it reaches the baby eagle.*

   (a) Draw a diagram of the situations and write down knowns and unknowns.

   (b) With what initial y- velocity must you throw the food?

   (c) How much time would it take the food to reach the nest?

   (d) What is the x-velocity of the food?

   (e) With what initial resultant velocity and at what angle must the food be thrown?