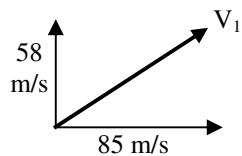# 2012 PreAP Two Dimensions 15

1.   The arrows below show the initial Vx and Vy for projectile 1. (*They have already been broken up into components*)

58 m/s

85 m/s

V₁

A.   * Working backwards, calculate the initial velocity and direction. (*Find V, the hypotenuse.*)

B.   * If it is launched ground to ground, how long will it take to hit the ground?   (*Can't you just use the Vy you were given?*)

C.   * How far away does it land?

D.   * How high does it go?

2.   A second projectile is launched as shown below. (*Do most of this one on your own*.)

80 m/s

65 m/s

V₂
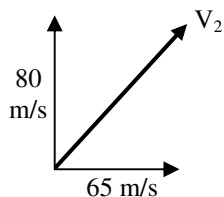
A.   * Working backwards, calculate the initial velocity and direction.

B.   If it is launched ground to ground, how long will it take to hit the ground?

C.   How far away does it land?

D.   How high does it go?

   You should now know that the two projectiles are have the same velocity, just different angles. It is like a cannon being shot at one angle and then moved to another angle. We can use this information to learn more about projectiles.

3.   Comparing the two.   Projectile 1 or 2:

   A.   Which one had the greatest initial v (rounded to the whole number)?

   B.   Which one had the greatest initial acceleration?

   C.   Which one had the greatest x-velocity?

   D.   Which one had the greatest initial y-velocity?

   E.   Which one went higher?

   F.   Which one was in the air for more time?

   G.   Which one went further?

4.   Using the comparisons you just did, x or y component (or both):

   A.   _____ Determines how high it goes.
   B.   _____ Determines how far it goes.
   C.   _____ Determines it's initial velocity.
   D.   _____ Determines the time in the air.

1A) 103 m/s at 32.8°
1B) 11.56 sec
1C) 1001 m
2A) 103 m/s at 50.9°