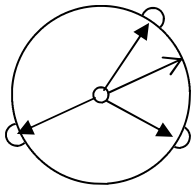
A-Day: Due Thurs., Oct 8
B-Day: Due Fri., Oct 9

PreAP Two Dimensions 6



Equilibrium Mass
(mass that keeps Mass 1 and 2 from moving)
$M_{equilibrium} = M_{resultant}$
$\theta_{equilibrium} = \theta_{resultant} + 180°$

		Last Name starts with:		
	Direction	Per 1	Per 6	Per 7
Mass1	210°	Be - Ch	A-C	A
Mass 2	117°			
Mass 1	143°	Co-Fo	F-G	C-D
Mass 2	268°			
Mass 1	12°	Ga-He	H-L	E-H
Mass 2	310°			
Mass 1	194°	Ho-Ja	M-P	K-M
Mass 2	302°			
Mass 1	69°	Jo-M	Q-Se	N-P
Mass 2	174°			
Mass 1	3°	R-S	Sl -U	R-Sc
Mass 2	222°			
Mass 1	94°	T-W		Se-W
Mass 2	352°			

1. Force Table Vector Addition Lab. In the Lab you will hang two masses Mass 1 (100 g) and Mass 2 (200 g) off of the side of the force table. You will hang them in the directions given on the table at the right. Treat them as any vectors.
   A. Add your two vectors together (using sin and cos, etc).

   B. Give your resultant's magnitude and direction here:

      R = _____ at _____°

   C. Your equilibrant mass is a mass that keeps your two masses from moving. It is equal in magnitude and opposite in direction to your resultant. Give your equilibrant mass here:
      Eq: = _____ at _____°

   D. Graph your two vectors on a piece of graph paper. Graphically find your resultant. You will have to compare your two methods and decide which you like better OR average them, or….? You will also compare with your lab partners. When you do this for me in the lab you will lose 10 points for each attempt AND have to start over. *You MUST have this done to participate in the lab in class OR you will have to do this on your own time.*

For all of these projectile motion problems and draw a simple diagram, write the x and y variables as we have done in class. Do each of these on a separate piece of paper, just like you will have to on the test. (Which is not next time or the next…) If you set them up correctly, they are not hard to solve. Come see me if you are struggling.

2. For the band students: last year I found out that Taylor B. has a secret identity: "Bolto the Human Cannonball". Bolto is shot out of a cannon going 28 m/s at an angle of 37°. If his catching net is at the same height as the opening of the cannon, how far away should he put his catching net?

3. Trying to show off for his friends, Corey C, is riding his bike on an abandoned section of a freeway bridge. Unfortunately the reason the bridge was abandoned was that it wasn't finished. Corey accidently rides his bike 12.5 m/s off of the perfectly level 18.4 m tall bridge. How far away is Corey's shocked face planted into the ground below?

4. Nico thinks this is SOOOO cool, so he sets up a trampoline below the bridge and jumps. Nico bounces off the trampoline going 13.8 m/s at an angle of 72°. Assuming the trampoline is on the ground, where exactly is Nico's highest point (both x and y positions)? (*Find the maximum height in the y-direction, then find the x distance of that point. You will need 3 calculations.)*

5. Dallas K, not wanting to be shown up by these amateurs, sets up a camera to take a picture as he thumbs his nose at the others. Earlier he set up the camera at the perfect angle to get his beautiful self-portrait 2 seconds after he starts his flight. He bounces off the trampoline going 15 m/s at an angle of 65°. A) Calculate his x and y velocities 2 seconds after he is launched from the trampoline. B) Using these two velocities, find his direction (angle) at this point.

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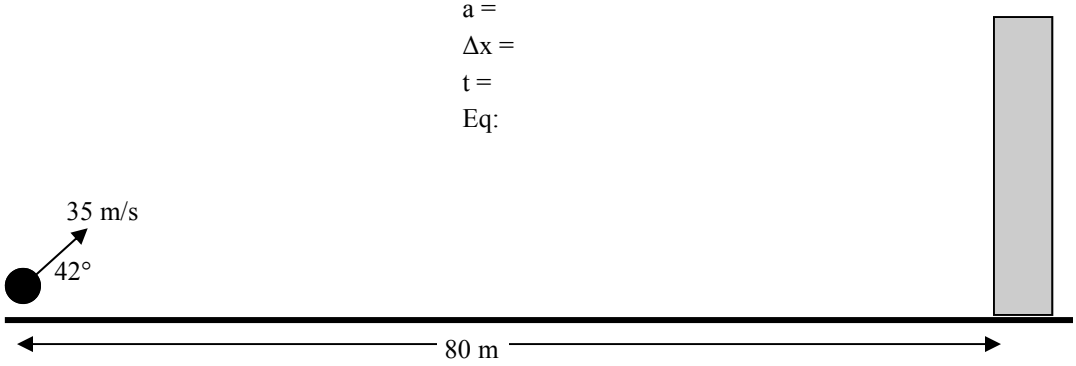
y-direction
v_i =
v_f =
a =
Δy =
t =
Eq:

x-direction
v_i =
v_f =
a =
Δx =
t =
Eq:

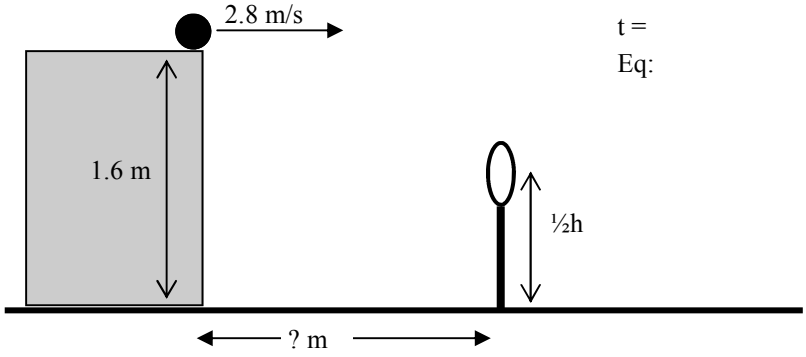


6. A projectile is shot 35 m/s at 42° from the ground. It is shot at a wall 80 m away (see above). How high on the wall does the projectile hit?

7. A projectile is shot horizontally from a 1.6 m desk going 2.8 m/s. Where would you have to put a hoop that is half the height of the table?

y-direction
v_i =
v_f =
a =
Δy =
t =

x-direction
v_i =
v_f =
a =
Δx =
t =
Eq:



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