

Name = Kevin Mody

Lab Partner = Lisset Marin and Hayley Ormond

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Lab #3 Projection Motion

Grade =

Lab #3 Projection Motion

Objective:

The objective of this lab was to find the height, time and different velocities. We also need to stimulate our variable in the program called Interactive Physics (IP).

Theory:

$$1. v = v_0 + at$$

$$2. \Delta x = (v_0 + v) * t$$

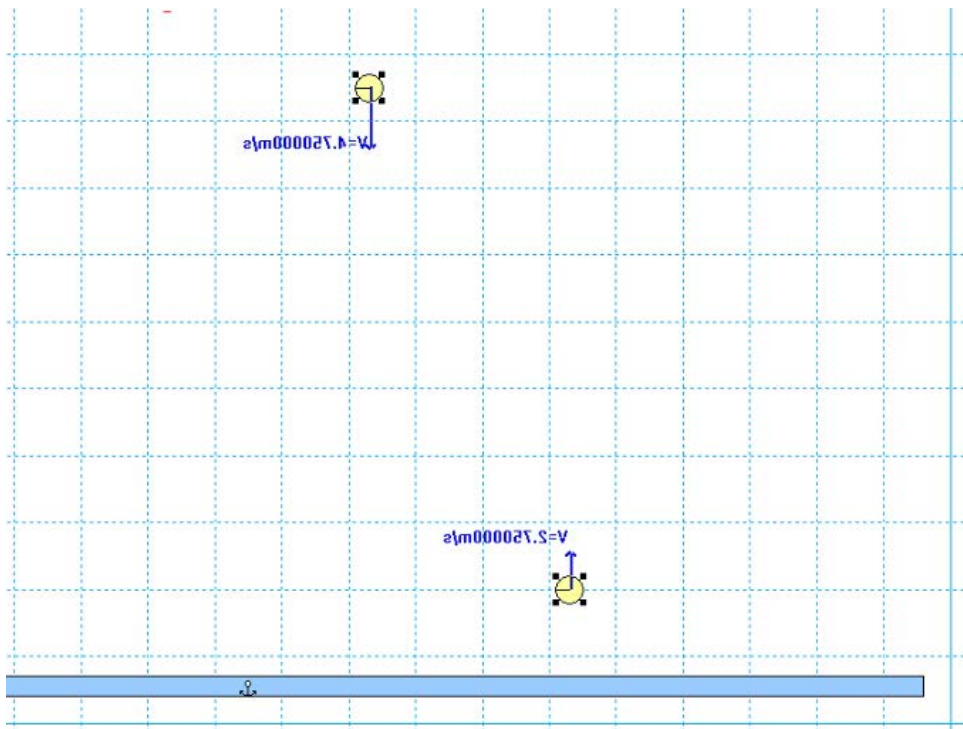
$$3. \Delta x = v_0 t + \frac{1}{2} at^2$$

$$4. v^2 = v_0^2 + 2a\Delta x$$

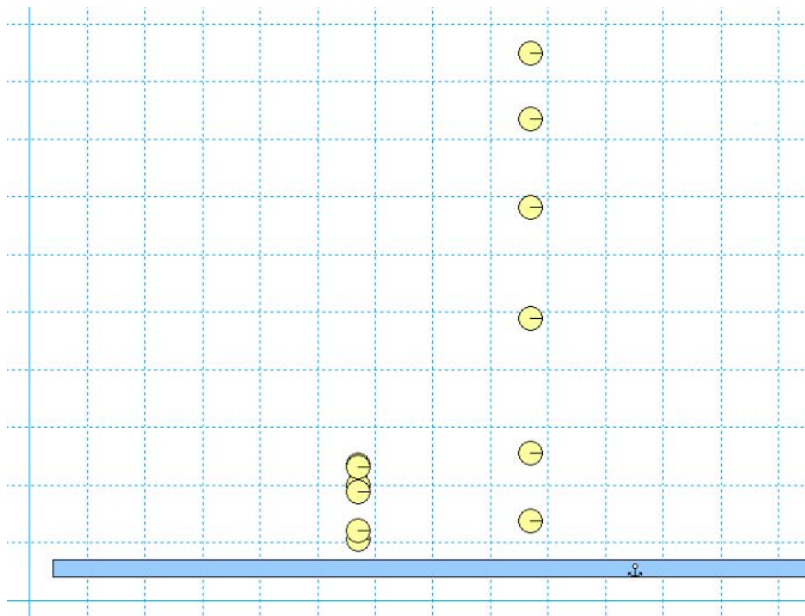
Data:

Part 1

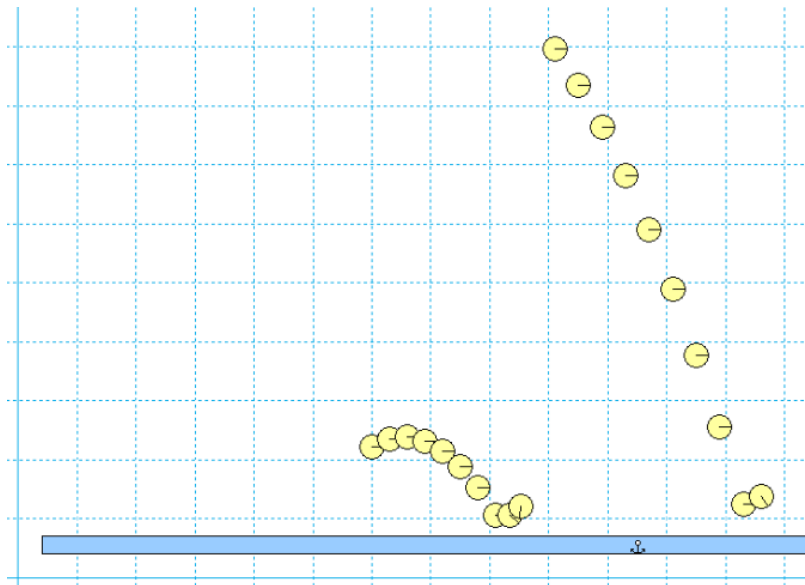
A.



B.

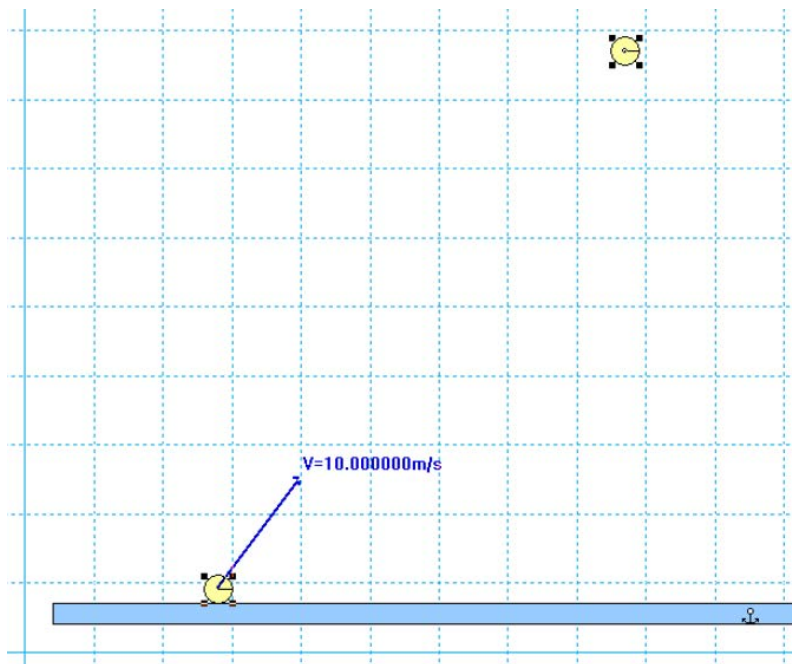


C.

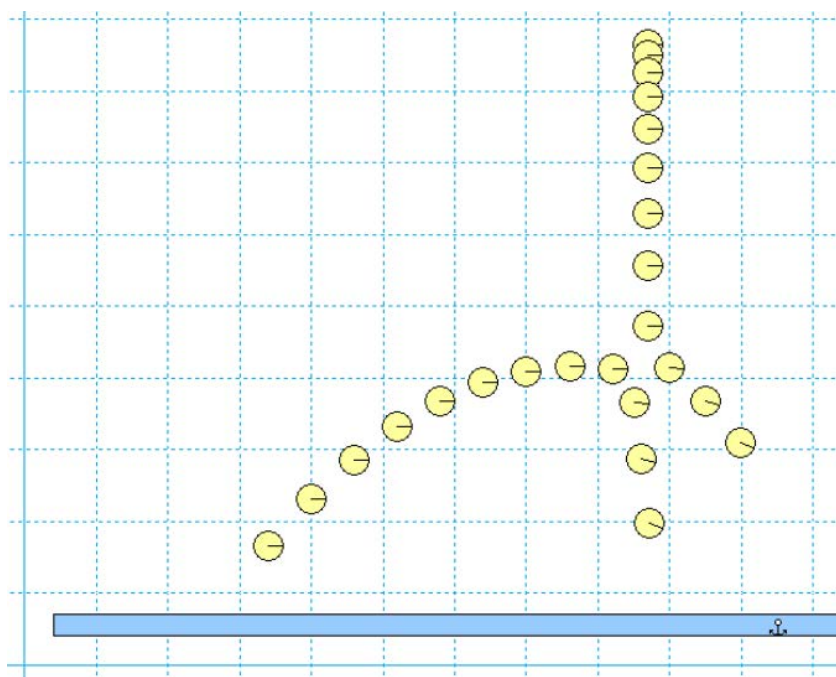


Part 2:

A.



B.



Procedure:

1. Part 1 A, B and C:

- Use the rectangle tool to create a floor and anchor it.
- Use the circle tool to create a small circle, drag it to some height above the floor, and give it some velocity in the y-direction (right click the circle to adjust its values); keep $v_x = 0$ for now.
- Create a second circle at a different height.
- Calculate the necessary initial y-velocity so the two circles hit the floor at the same time.
- Give the second circle this initial y-velocity.
- Use the Windows "Snipping Tool" to take a screen shot of your initial conditions.
- Select both circles and click Windows Appearance and check "Track outline".
- Run the simulation until both circles hit the floor.
- Take another screenshot to show that your calculations were correct.
- Restart the simulation (clear the tracks by clicking World Erase Track).
- Give the circles some random (but reasonable) x-velocity to show they still hit the floor at the same time.
- Run the simulation and take another screenshot.

2. Part 2 A and B;

- Using similar techniques as in Part 1, design an experiment where a projectile collides with a freely falling object.
- Show relevant screen shots

Calculations:

Attached in Calculations.pdf

Results:

Part 1:

I. Ball 2:

X	1.5m
Y	6.4m
V _y	3m/s
A	-9.81m/s ²
T	1.49s
V _x	3m/s

II. Ball 1:

X	4.5m
Y	10.5m
A	-9.81m/s ²
T	1.49s
V _y	.201m/s
V _x	4m/s

Part 2:

I. Ball 1:

X	11.5m
Y	8.5m
V _x	14 ² m/s
A	-9.81m/s ²

II. Ball 2:

X	2.50m
Y	8.5m
V _y	9m/s
A	-9.81m/s ²

V	16.64
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Analysis:

In the IP, the number were accurate and it useful in the real world. The calculations and stimulation were easy. We think physicians should more often this program.

Comments:

No comments.