

Newton's Notions-Part I

"Just Rolling Along"-Team Instructions:

TASK #1: Measure how long it takes a ball to roll 2 meters when released at the 80-cm. mark on the ramp.

TASK #2: Measure how long it takes a ball to roll from the 2-meter mark to the 4-meter mark when it is release at the 80-cm. mark on the ramp.

TASK #3: Measure how long it takes a ball to roll 2 meters when released at the 40-cm. mark on the ramp.

TASK #4: Measure how long it takes a ball to roll from the 2-meter mark to the 4-meter mark when it is release at the 40-cm. mark on the ramp.

“Just Rolling Along”- Data Table

Students: _____, _____ **Date:** _____

*The height of the upper end of the meter stick ramp must not change.

Trial #	Ball Released From:	Description of Trip	Time (sec.)
1	40 cm.	0-2 meters	
2	40 cm.	0-2 meters	
3	40 cm.	0-2 meters	
		Avg. Time =	
1	40 cm.	2-4 meters	
2	40 cm.	2-4 meters	
3	40 cm.	2-4 meters	
		Avg. Time =	
1	80 cm.	0-2 meters	
2	80 cm.	0-2 meters	
3	80 cm.	0-2 meters	
		Avg. Time =	
1	80 cm.	2-4 meters	
2	80 cm.	2-4 meters	
3	80 cm.	2-4 meters	
		Avg. Time =	

"Just Rolling Along" - ANSWER SHEET

Students: _____, _____ **Date:** _____

TASK #1: What was the average speed (in cm. per second) for the ball to roll 2 meters when released at the 80-cm. mark on the ramp? (Show your work.)

Average Speed = _____ cm./sec.

TASK #2: What was the average speed (in cm. per second) for the ball to roll from the 2-meter mark to the 4-meter mark when it is release at the 80-cm. mark on the ramp? (Show your work.)

Average Speed = _____ cm./sec.

TASK #3: What was the average speed (in cm. per second) for the ball to roll 2 meters when released at the 40-cm. mark on the ramp? (Show your work.)

Average Speed = _____ cm./sec.

TASK #4: What was the average speed (in cm. per second) for the ball to roll from the 2-meter mark to the 4-meter mark when it is release at the 40-cm. mark on the ramp? (Show your work.)

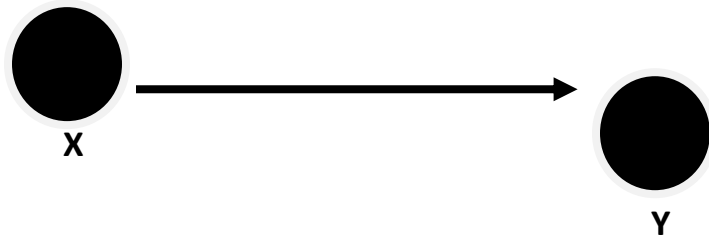
Average Speed = _____ cm./sec.

Question 1: How and why was the speed of the ball different when released from 80-cm versus 40-cm?

Question 2: How did the speed for the second 2 meters compare to the first 2 meters? Explain why the speeds were different for these parts of the trip.

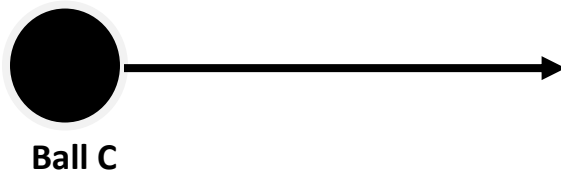
Newton's Notions-Part II

1. Ball "X" is moving and Ball "Y" is sitting still. Use your pencil to draw the motion of both balls after the collision.

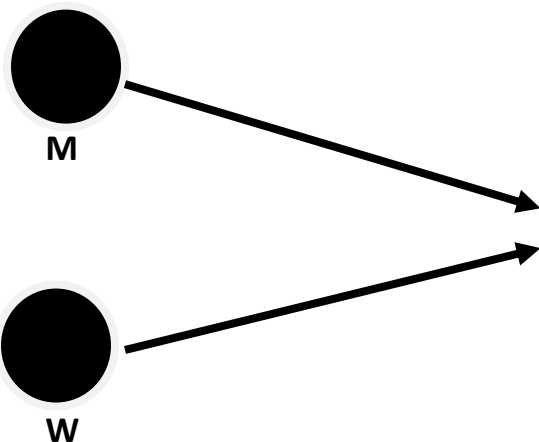


2. Ball "C" was given a force and it is moving. Describe the motion of ball "C" if no other forces ever act upon it. _____
3. If ball "C" were really rolling on a floor, what forces would act on it?

4. Describe the motion of ball "C" as it would roll on a floor.



5. Ball "M" and "W" are were each given the same force and are about to collide. Draw their motion after the collision. Label both balls.



6. The arrows below show two forces acting on a wagon at the same time. The amount of each force is shown next to each arrow.
Describe the resulting motion of the wagon. _____

How would you describe these forces? _____

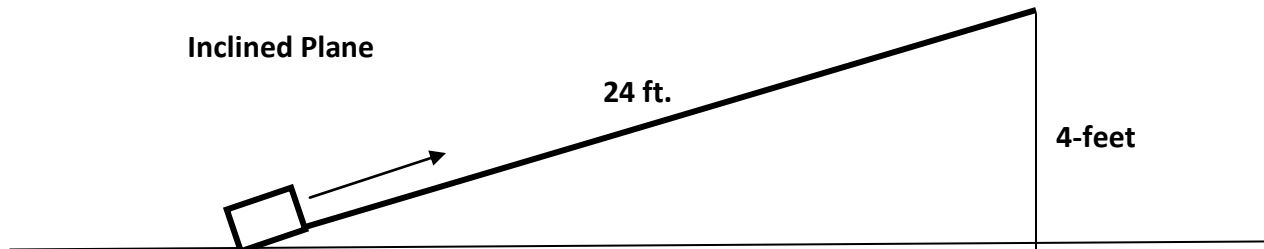


7. The arrows below show two forces acting on a wagon at the same time. The amount of each force is shown next to each arrow. Describe the resulting motion of the wagon.
Describe the resulting motion of the wagon. _____

How would you describe these forces? _____



PART III: What is the least amount of force needed to slide the 480-lbs. box up the inclined plane if it is 24 feet long and 4 feet high? Assume that the box has wheels. _____
(Show your work.)



Label the parts of the lever below and also label the forces.



PART IV: Simple Machine Stations

Observe the simple machines very carefully. You may measure them.

LEVER STATION: (Make your answers very complete.)

1. Describe the advantages of this lever. _____

2. Describe its disadvantages. _____

INCLINED PLANE STATION: (Make your answers very complete.)

1. Describe the advantages of this inclined plane. _____

2. Describe its disadvantages. _____

PULLEY STATION: (Make your answers very complete.)

1. Describe the advantages of this pulley. _____

2. Describe its disadvantages. _____

PART V: Write the type of simple machine next to each example simple machine below:

1. Bottle Opener = _____

9. Stairs = _____

2. Door Knob = _____

10. Drill = _____

3. Flagpole = _____

11. Axe = _____

4. Shovel = _____

12. Fork = _____

5. Door stop = _____

13. Knife = _____

6. Loading dock = _____

14. Well = _____

7. Egg beater = _____

15. Jar lid = _____

8. Clothesline = _____