CONCLUSIONS

How did changing force affect acceleration?

More force on an object causes acceleration to speed up. For example, with one washer the cart was slower but with 5 washers the cart accelerated faster.

In your answer be sure to:

A) Use pictures

B) Give examples

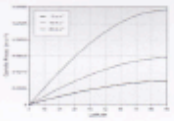
C) Use as much detail as you can

How did changing the mass affect acceleration?

Increasing the mass of an object causes the acceleration to slow down. For example, with one book the speed was the fastest but with four books the speed was the slowest.

F= ma lab worksheet 4/14/11

$a = \frac{f}{m}$



Name: _____

Date: _____ Per: _____

Assign No. _____

Problem: How does changing the mass and force on an object affect its rate of acceleration?

Info: List examples of things whose acceleration is affected by having: 3 to 5 examples

More or less force: football, soccer ball, pinwheel, wind mill, airplane

More or less mass: cars, humans, motorcycles, trains, elevators, skateboards.

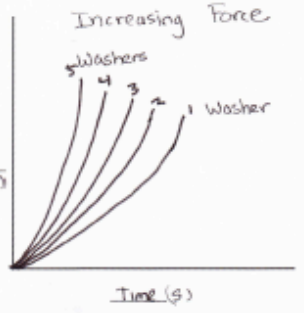
Hypothesis: a. If the force on the cart is increased, and the mass is kept constant, what will happen to the rate of acceleration (compared to before the force was increased)? increase.

b. If the mass of the cart is increased, and the force is kept constant, what will happen to the rate of acceleration (compared to before the mass was increased)? decrease.

DATA:

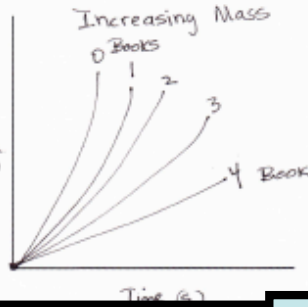
1. **Vary the force** on the cart by adding more washers.
Copy the graphs obtained .
Label each curve with the number of washers used.

Washers	color	Max Speed
1	red	0.14 m/s
2	purple	0.53 m/s
3	pink	0.77 m/s
4	green	0.84 m/s
5	orange	0.94 m/s

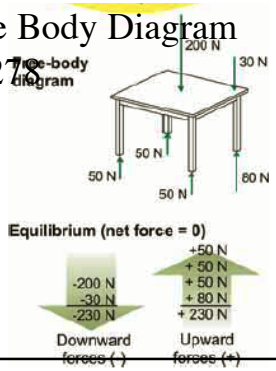
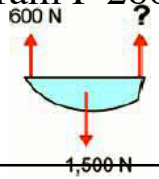
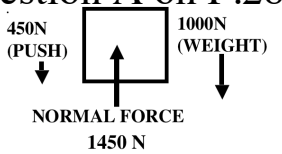
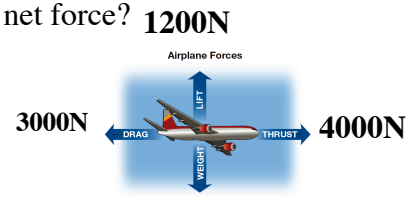


2. **Vary the mass** on the cart by adding Sciencesaurus books.
Copy the graphs obtained.
Label each curve with the number of books used.

Books	Color	Max Speed
0	red	0.94m/s
1	purple	0.63m/s
2	pink	0.39 m/s
3	green	0.26 m/s
4	orange	0.15 m/s



Net Forces Notes P 276-280

1. Net Force: • Definition (P 276) • Picture	2. What happens when forces are NOT balanced? •(include picture)
3. Definitions: (277) Equilibrium: Net Force:	4. Free Body Diagram Page 278 
5. Diagram P 280 	6. Question A on P.280 
7. Question B on P 280 	8. Plane Diagram: What is the net force? 

When finished, Work on HW:

Page 281- Questions 3-8

Draw pictures for #s 3, 5, 6, and 8!!!

Answers only, but you must use a "meaningful phrase". For example,

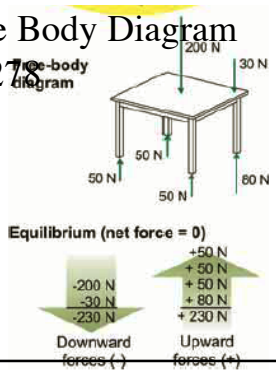
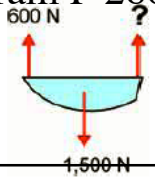
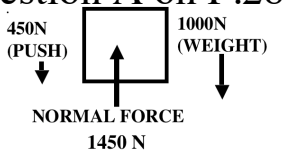
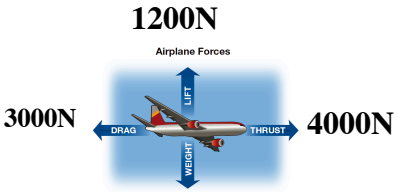
#3. Net force is ___ N to the _____.

#4. Equilibrium means….

Science Notebook Layout **GET WORKSHEETS FROM MY ASSIGNMENTS PAGE**

Mrs. Aguirre's Webpage: http://www.quia.com/profiles/caguirre

Net Forces Notes P 276-280

1. Net Force: • Definition (P 276) • Picture	2. What happens when forces are NOT balanced? •(include picture)
3. Definitions: (277) Equilibrium: Net Force:	4. Free Body Diagram Page 278 
5. Diagram P 280 	6. Question A on P.280 
7. Question B on P 280 	8. Plane Diagram: 

Bodies at Rest

A. Newton's Laws of Motion:

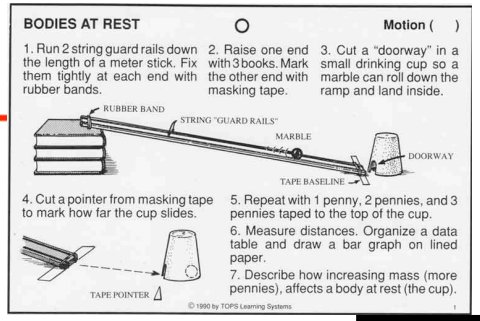
1. **First Law: page 289**
2. **Second Law: page 299**
3. **Third Law: page 292**

B. Data Table

# pennies	Trial 1	Trial 2	Trial 3	Average Distance (cm)
0				
1				
2				
3				
4				
5				

(a) Independent variable on the x-axis: # of pennies

(b) Dependent variable on the y-axis: Distance of cup



Bodies at Rest/ Motion- Discussion

DISCUSSION Write a short paragraph describing your results in the activity. Include in your paragraph:

D. Bodies at Rest
Describe how increasing the mass (# of pennies) affects a body at rest (the cup).

Which of Newton's Laws of Motion does this activity demonstrate and why? Hint: Look in your text (Newton's First Law- page 289; Second Law: 299; Third Law: 292)

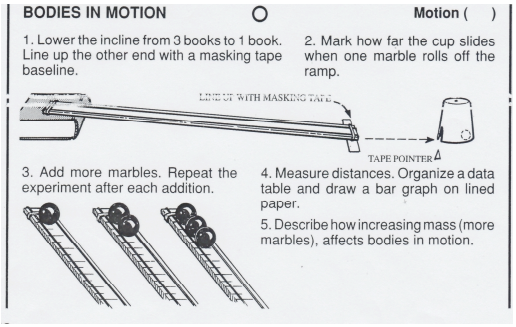
G. Bodies in Motion
Describe how increasing the mass (# of marbles) affects a bodies in motion (force hitting cup).

Which of Newton's Laws of Motion does this activity demonstrate and why? Hint: Look in your text (Newton's First Law- page 289; Second Law: 299; Third Law: 292)

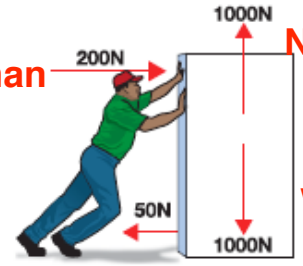
E. Bodies in Motion

# marbles	Trial 1	Trial 2	Trial 3	Average Distance (cm)
1				
2				
3				
4				
5				

Make a LINE GRAPH of your data- use graph paper if you have it, if not, use binder paper
Clearly label :
(a) Independent variable on the x-axis: # of marbles
(b) Dependent variable on the y-axis: Distance of cup



NB 108: Force Review



Friction

Draw the refrigerator and label the vectors: •Weight •Friction, •Push of the man •Normal force.

1. **Which direction will the refrigerator accelerate?**
2. **Why?**
3. **What is the net force?**

a. **Up and down?**

b. **Left and right?**

Show math including vectors. Hint: First add up and down forces, then the left and right

4. **Draw the correct graph for the relationship between <u>MASS</u> carried by a car and its <u>ACCELERATION</u>. Label as DIRECT or INVERSE.**

5. **Draw the correct graph for the relationship between <u>FORCE</u> on a car and its <u>ACCELERATION</u>. Label as DIRECT or INVERSE.**

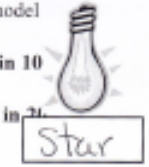
Life Zones

MODEL LIFEZONES: STAR TYPES & TEMPERATURE

Follow directions at tables with radiometers and model stars:

Inner edge is where radiometer turns 10 time in 10 seconds.

Outer edge is where radiometer turns 10 time in 2[illegible] seconds.



Measure the distance in cm from the "star" to the center of the radiometer (planet).

STAR COLOR	TOO COLD Outer Edge of Lifezone (in cm)	TOO HOT Inner Edge of Lifezone (in cm)	Subtract to get size of LIFEZONE	Life span of each star (to be added later)
RED	15	10	5	100 by
YELLOW	31	23	8	10 by
WHITE	34	26	8	200 my
BLUE	54	39	15	10 my

Which star has the largest lifezone? blue Show math: 54-39=15

Which star has the smallest lifezone? red Show math: 15-10=5

Which star color is hottest? blue How do you know?

Which star color is coolest? red How do you know?

Use the website for the following questions: http://www.kidsastronomy.com/stars.htm

RED STARS 1. What size are red (dwarf) stars?

2. Why do they last so long?

3. Why are they hard to see?

YELLOW STARS 4. How long do they last? Explain:

5. What happens at the end of their life span?

BLUE STARS 6. How long do they last? Explain:

7. Why do we see many of these, even though they are rare?

8. What happens when they die out?

Solar System Ruler

A.U. = Astronomical Unit

= distance from the Sun to Earth

1AU ≈ 93 million miles or

≈ 150 million kilometers (149, 597, 870.691km)

	0. Sun	**(0AU)**
My	**1. Mercury**	**(0.4 AU)**
Very	**2. Venus**	**(0.7 AU)**
Educated	**3. Earth**	**(1 AU)**
Mother	**4. Mars**	**(1.5 AU)**
	Asteroid Belt	**(2-4 AU)**
Just	**5. Jupiter**	**(5 AU)**
Sent	**6. Saturn**	**(9.5 AU)**
Us	**7. Uranus**	**(19AU)**
Noodles	**8. Neptune**	**(30 AU)**
	***. Pluto**	**(39 AU)**

Solar Ruler with colored pictures Goes in the "pocket"

Solar System in One Page

The solar system in one page!

Inner 4 planets — All made of: _____

Fill in: What is the atmosphere like? What is the surface like?, What is the temperature range? Other: Are there rings? Moons? Craters? Volcanoes.

1st planet: _____	2nd planet: _____	3rd planet: _____	4th planet: _____
Atmos: _____	Atmos: _____	Atmos: _____	Atmos: _____
Surface _____	Surface _____	Surface _____	Surface _____
Temp _____	Temp _____	Temp _____	Temp _____
Other _____	Other _____	Other _____	Other _____

Outer 4 planets — All made of: _____

5th planet: _____	6th planet: _____	7th planet: _____	8th planet: _____
Atmos: _____	Atmos: _____	Atmos: _____	Atmos: _____
Surface _____	Surface _____	Surface _____	Surface _____
Temp _____	Temp _____	Temp _____	Temp _____
Other _____	Other _____	Other _____	Other _____

List facts for other objects in solar system:

1. Pluto:

2. Asteroids:

3. Comets:

4. Meteors:

5. Which would be the most likely place to look for life? Give reasons for your answer.