

MEASURING FORCES

Main Idea: Elastic
materials can
be used to measure
force

Elastic Materials

- To measure a force, an elastic material can be used when pulling or pushing an object, and measure how far it **STRETCHES**

Elastic Materials

- The Tools To Use: P. 210, a thru e
- List the effect of the force in each picture. Then tell how you would use the effect to measure force amount.



a) Effect: The weight moves down.

To Measure Force: how far RB stretches.

b) Effect: The plunger is pushed down.

To Measure Force: how far the plunger goes.

c) Effect: The ruler is pulled down.

To Measure Force: how far the ruler bends.

d) Effect: The blade is pulled.

To Measure Force: how far the blade bends.

e) Effect: The spring stretches.

To Measure Force: how far the spring stretches

UNIT OF FORCE

Newton (N): named for Sir Isaac Newton.

One Newton is equal to the amount of force needed to move 100 grams of mass.

MAKING A FORCE METER

Materials: cup hook, cardboard tube, wooden dowel, paper clips, rubber bands, masking tape, pen.

1. Place a piece of tape on the wood. **Remove at the end of the period.**

MAKING A FORCE METER

2. Calibrate the force meter:

a) attach the spring scale to the force meter.

b) hold the spring scale still while pulling the cardboard tube until the spring scale reads 1 N (Newton).

MAKING A FORCE METER

- c) Draw a line at the end of the cardboard tube (this is the 1 N line).
- d) Pull slightly harder until the spring scale reads 2 N. Draw the line.
- e) Repeat until you reach 15 N.

USING THE FORCE METER

Measure the force needed to lift the following objects:

500 gram mass: _____ N

2 pound weight: _____ N

book with string: _____ N

QUESTIONS

1. What is a Newton?
2. How many Newtons of force does it take to lift: 100 grams, 200 grams, 400 grams, 450 grams, 750 grams.