

The Lever

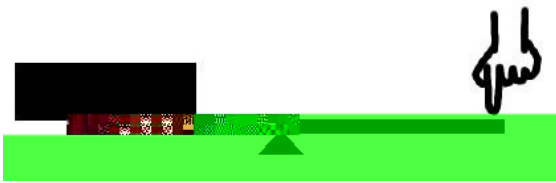
Name: _____

Date: _____

Part 1. Lifting a book

For this part you will use the meter stick as a lever to lift a textbook. The text book will go on one end and you will push on the other. The point where the meter stick pivots is called the fulcrum. You will try to lift the textbook with the fulcrum at three different points.

A. Put the fulcrum in the middle of the meter stick.



How hard do you have to push?

- a. very hard
- b. not very hard
- c. very lightly

B. Put the fulcrum at the book end of the meter stick.



How hard do you have to push?

- a. very hard
- b. not very hard
- c. very lightly

C. Put the fulcrum at your end of the meter stick.



How hard do you have to push?

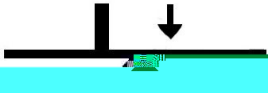
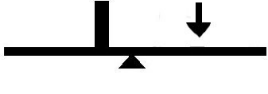
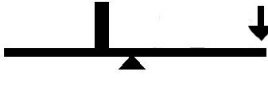
- a. very hard
- b. not very hard
- c. very lightly

Imagine you are trying to lift something very heavy with a lever but you are not strong enough. How could you change the setup so you could lift it? (besides getting a lot stronger)

Part 2. Penny balance

Now you will leave the fulcrum in the middle so it is balanced without weights. Write down the number that the fulcrum is under when it is balanced, and place a stack of 10 pennies 10cm to the left of this point. For this experiment, you will place a second stack of pennies at different distances to the right of the middle point, and see how many you need to balance the meter stick.

A. Follow the directions and fill in the table.

| Where the pennies go | How many pennies do you think you'll need on the right? | How many pennies did you need? |
|--|---|--------------------------------|
|  <p>Place the pennies 10cm from the fulcrum</p> | | |
|  <p>Place the pennies 20cm from the fulcrum</p> | | |
|  <p>Place the pennies 50cm from the fulcrum</p> | | |

If you had an extra long meter stick, balanced it like above, then put 40 pennies 20cm to the left of the middle, how many would you have to put 60cm to the right of the middle to balance the meter stick?

