

During these interactive you are going to explore both the center of mass and the center of gravity on a body.

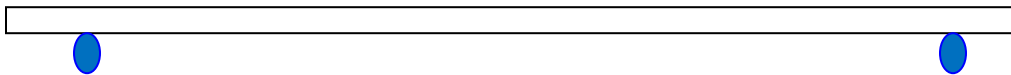
1. What is the center of mass of a body?

2. What is the center of gravity of a body?

3. When would the center of mass of a body be at a different location than its center of gravity?

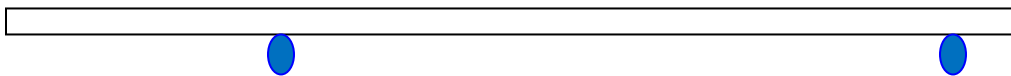
Part 1 Meter Stick Trick

1.1 Draw the free-body of the meter stick before you try and slide your fingers.

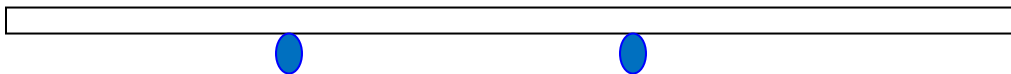


1.2 Where on the meter stick did your fingers meet? _____ cm

1.3 Draw the free-body of the meter stick in the situation shown. Indicate which finger is moving.

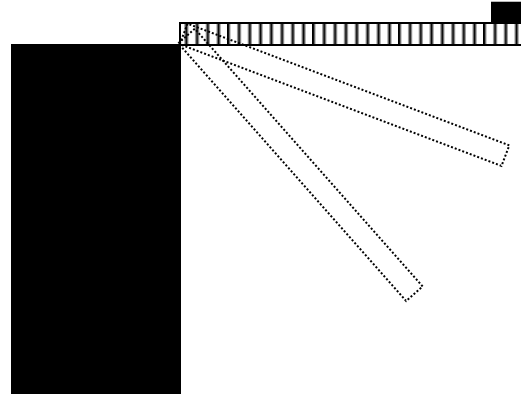


1.4 Draw the free-body of the meter stick in the situation shown. Indicate which finger is moving.



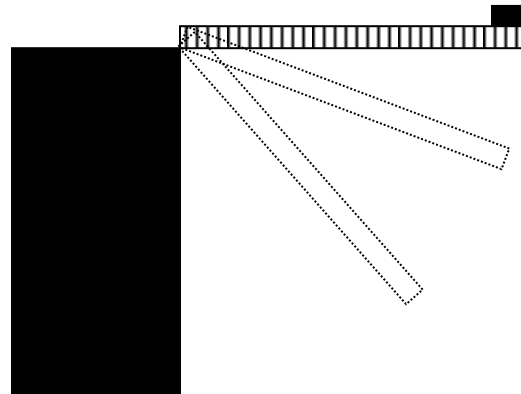
Part 2 Meter Stick and coin

2.1 Complete the drawing shown below of the coin and the meter stick by drawing your predictions of the location of the coin for the times shown by the meter stick in dotted lines.



2.2 Explain what you have drawn.

2.3 Complete the drawing shown below of the coin and the meter stick by drawing the location of the coin for the times shown by the meter stick in dotted lines.



2.4 Explain what happened.

Part 3 Kneeling Gender Challenge

3.1 Record who in the class are the challengers.

| | |
|------|--------|
| | |
| Male | Female |

3.2 Who do you think is going to be able to win the challenge? Why?

3.3 Who won the challenge? _____

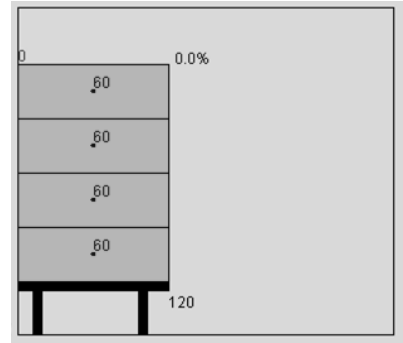
3.4 Draw the situation showing where the center of gravity was for each participant when they either completed or failed the challenge.



3.5 Explain the results of the challenge, including why you think one gender was successful compared to the opposite gender.

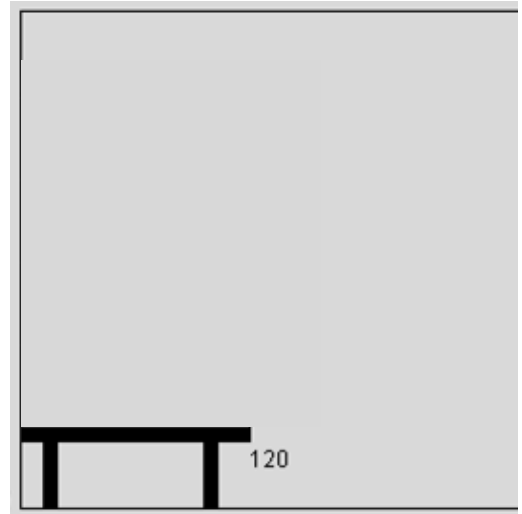
Part 4 Blocks

During this part you are going to be using a simulation on the computers. On a lab station open the folder “block and CofG.” In this folder open the file “block and CofG.” You will see a web page with a simulation that looks like the one to the right open. **Do Not follow the directions in the simulation follow these instructions.** Read the rules below the simulation to gain understanding of how the simulation is going to work.



When you click on the button to show the c.g. you will see four arrows. Each arrow is the center of gravity for the system of blocks above the arrow. So the top arrow is only for the top block. The next arrow is for the top and second blocks. You will notice that these arrows are on different points than the center of masses of the individual blocks.

4.1 Starting with the top block move each block right until it turns yellow. You should also notice that at this point the arrow showing the center of gravity for that block, and the one above it, is just at the edge of the support below. Draw the situation when all the blocks are as far right as possible. (Include all numbers that are shown on the diagram in your drawing.)



4.2 Hit reset on the simulation. Play with the simulation and come up with the most interesting stable situation you can devise. Draw your final situation below including all values.

