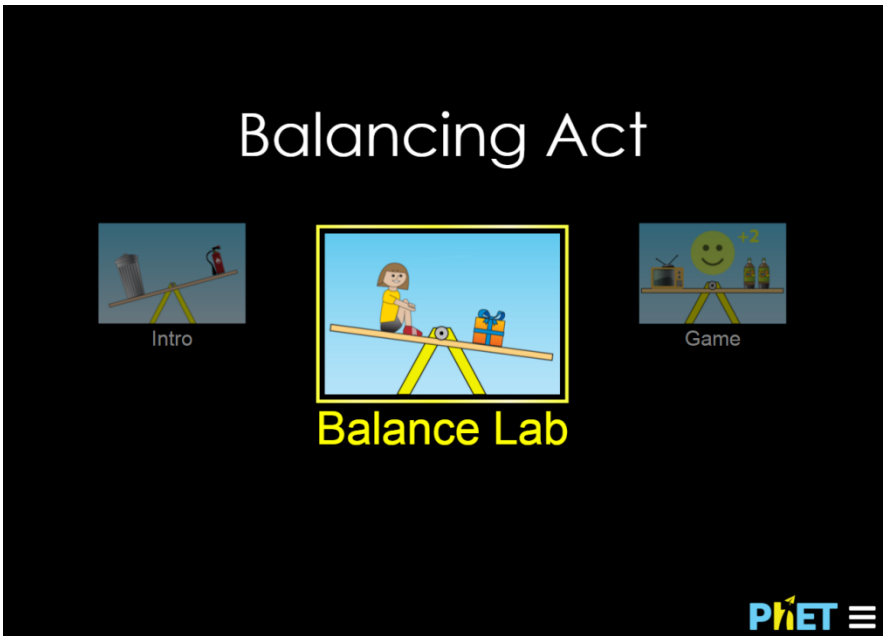
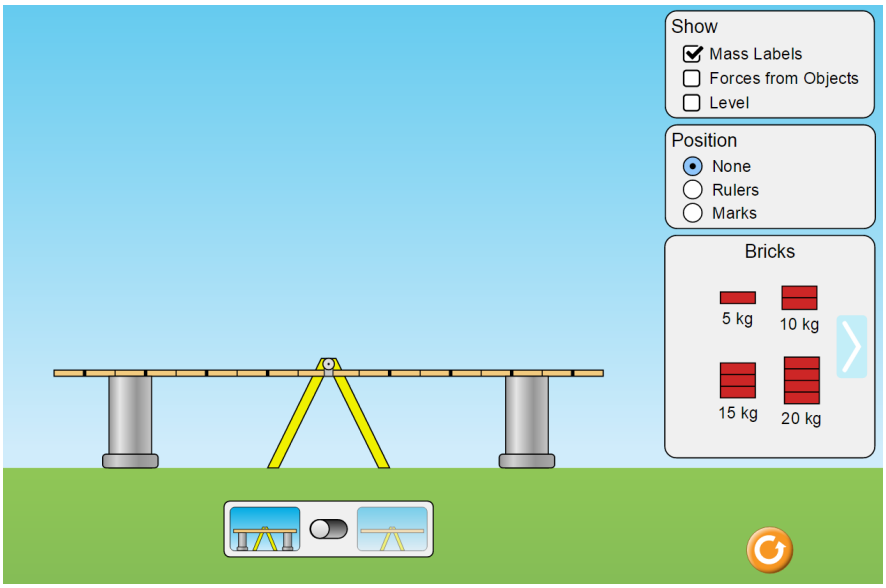
# Balancing Act Activity




Click on the link above or go to the address below…

https://phet.colorado.edu/sims/html/balancing-act/latest/balancing-act_en.html

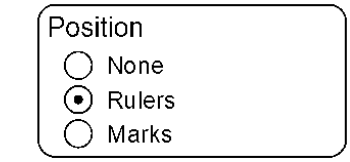
Then select “Balance Lab”

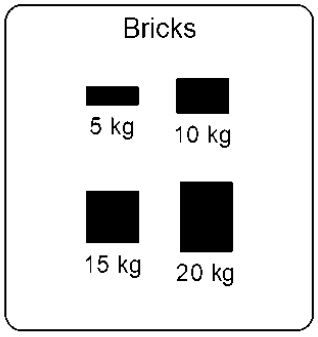


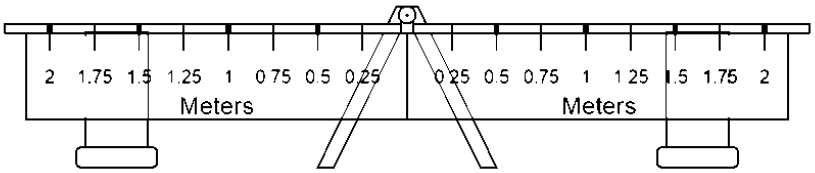
Name:

Period: Date:

Turn the “Rulers” to on

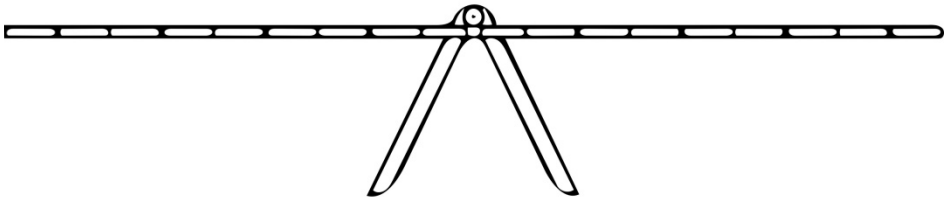


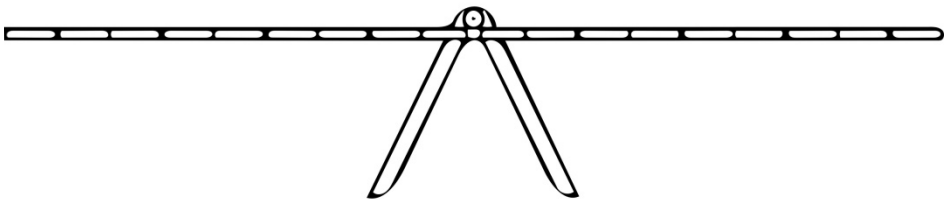




## The lab challenges…

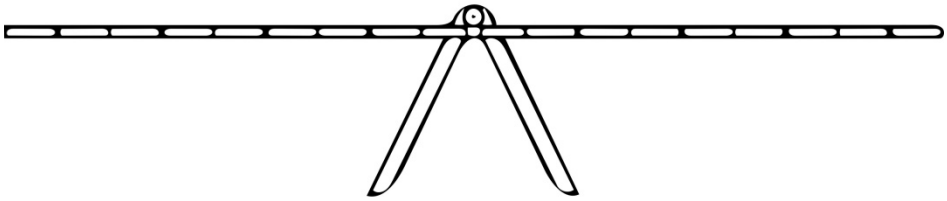
1. Place the 10 kg mass at 1 m to the right of the pivot. Where would you place the 5 kg mass in order to keep it from rotating? In other words…how do you keep the plank balanced or in static equilibrium?



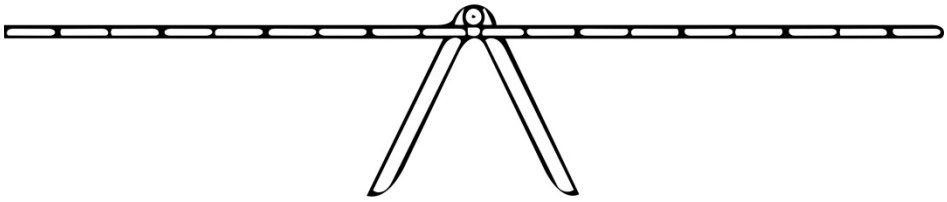
2. Place the 10 kg mass at 1 m to the right of the pivot. Where would you place the 15 kg mass in order to keep the plank in static equilibrium?



3. Place the 20 kg mass at 2 m to the right of the pivot. Where should you place additional mass(es) to achieve static equilibrium? Include the amount of mass and location in your answer



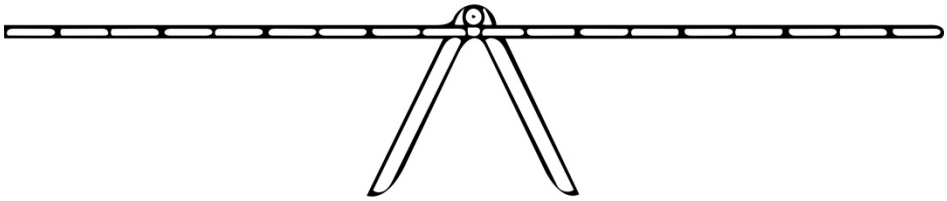
4. Place the 20 kg mass at 2 m to the right of the pivot. Make sure the plank is in static equilibrium using only 5 kg masses. Where did you place the 5 kg masses?



5. Using evidence from the lab describe the role the distance from the pivot plays in balancing the plank?

6. What role does the mass play in balancing the plank? (Hint: Would you need to balance the plank in a “weightless” environment?)

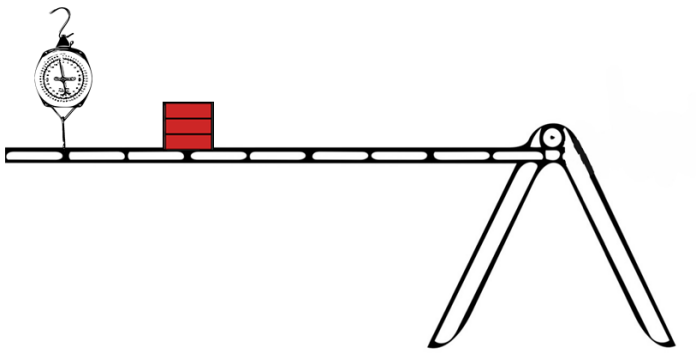
7. Using the mass distribution in problem #2, draw the forces acting on the plank. Forces are vectors so make sure and draw them to scale.



8. Analyze your drawing…
    a. How many forces did you draw?

    b. Would the object be in translational equilibrium?

9. Now imagine a different set up…



What would the scale read if the plank is in static equilibrium? The 15 kg mass is located at 3 m away from the pivot.

10. What would be your answer to the scenario in problem #9 if I told you the mass of the plank was 5 kg?