

Teeter-Totter Weights (Guide)

Leading questions:

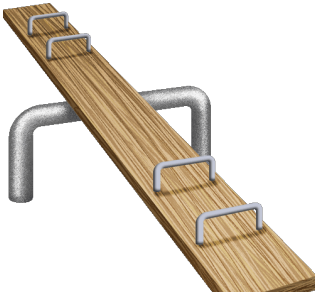
- If one person was bigger than the other would they sit closer to the center or further away to balance the teeter totter making it level?
Ask: Elicit student's ideas about what they think is involved in making the teeter totter balance. Question them about distance from the center and how they think this affects the forces involved.

What to do:

1. Hang one weight on a hook of the teeter-totter.
 - Describe what happens.
 - What two forces are acting on the weight?
Explain: As with the playground teeter-totter, you need a weight at both ends.
Ask: What is pulling the weight down? (gravity) Let students think about gravity affecting both sides.
2. Try using two weights, one on either side of the teeter-totter.
 - What has to be true for the teeter-totter to balance?
Explain: With two weights, they must be an equal distance from the center.
3. Can you balance the teeter-totter with 3 weights?
 - Try different combinations to make the three weights balanced.
Assist: Let the students try it themselves, but if they have difficulty, the correct combination would be two weights on the inside of one side and one weight on the outside of the other side
 - How are the distance from the center and the number of weights related?
Explain: The further from the center the weights are, the more **force** they will exert on the beam. Ask students if they think there is a mathematical relationship.
4. Using what you learned can you come up with other combinations of weights to balance the teeter-totter? (4,5, or 6 weights...)
5. Hold a hammer by the handle out to your side. Then hold the hammer out to your side holding the hammer by the head.
 - Which is easier? Why?
Explain: The further a mass is extended, the greater the force.

Summary:

- What two variables do you have to take into account in making the teeter totter level?
Explain: Distance from the center and mass.
- How do you think **distance** and **weight** are related on a level teeter-totter? (Hint – try multiplying each pair)



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 - What has to be true for the teeter-totter to balance?
3. Can you balance the teeter-totter with 3 weights?
 - Try different combinations to make the three weights balanced.
 - How are the distance from the center and the number of weights related?
4. Using what you learned can you come up with other combinations of weights to balance the teeter-totter? (4,5, or 6 weights...)
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