Sci-Map Site
Westside Park

Name of Activity
Playground Physics Before You Go - Seesaw Lever Lift

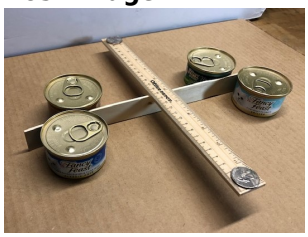
Materials
1 Paint stick
1 Ruler
4 Books or food cans (small cans of cat food work well)
Several pennies (Or nickels, dimes, quarters. They just have to be the same denomination.)

Procedure
Stand the paint stick on its long edge and support it with the books (or food cans). This is your pivot point, or fulcrum. Place the ruler on the paint stick so that it is balanced (the ends do not touch the table). What number on the ruler is on the fulcrum? Make sure this number is always placed at the fulcrum for the following activities. Place one penny on each end of the ruler and balance the ruler again. How far are the pennies from the fulcrum? Now place two pennies on one end, leaving just one penny on the other end. What happens? How can you balance the ruler now? When it is balanced, how far are the pennies on each side from the fulcrum? Keep trying other combinations of pennies to balance the ruler. Can you predict where to put the pennies?

Now you can go to the playground and try to balance the seesaw with different sizes of people!

The Science Behind It
A lever is simple machine that helps us do work. A lever is a long rigid arm that pivots around a point, or fulcrum, and gives us a mechanical advantage (exerting a force on an object over a distance). Seesaws are actually two levers that pivot around a fulcrum. When two people (or masses) sit on the seesaw there is a force pulling each of them downward. If the weight of each person is equal and the distance between each person to the fulcrum is equal the seesaw will be balanced. This can be described mathematically as;
$M1 \times d1 = M2 \times d2$
where M1, M2 are the masses of the people and d1, d2 are the distances between the people and the fulcrum. However, if one person is bigger (larger M1) the seesaw will pivot to the ground of the larger person giving them a mechanical advantage. In order to balance the seesaw the larger person moves closer to the fulcrum (smaller d1) so that we are again in balance ($M1 \times d1 = M2 \times d2$).

Post Image



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