Curiosity Guide #202
Levers

Accompanies Curious Crew, Season 2, Episode 2 (#202)

Pan Balance Lever

Investigation #3

Description

Did you know that a lever can help you compare the masses of objects? Associate the names of the parts of a lever with their jobs.

Materials

- Pan balance
- Variety of objects
- Golf ball

Procedure

1) Set up the pan balance. Place an object on each side. The object with more mass will cause the lever to pivot down.
2) Demonstrate how the pan balance lever can be used to compare masses of objects by putting various pairs of objects in the pans. Predict which side will go down based on the objects you select to compare. Were you right? Did any objects surprise you?
3) Place the golf ball on one side of the pan. Notice that the end with the golf ball pivots down.
4) Push down on the opposite side of the balance. This is called the effort arm. The side with the golf ball will rise up.
5) Identify the parts of the lever:
    - Load arm
    - Effort arm
    - Fulcrum

6) How is a pan balance like a seesaw?

My Results

Explanation

A lever is a simple machine that uses a rigid arm or beam and a pivot point to lift or move heavier objects. A load is positioned somewhere on the length of the beam while effort is applied to another part of the beam. Pivoting the arm against a pivot point can reduce the amount of effort needed to lift an object.

The fulcrum is the object that the arm or beam pivots against. By shifting the position of the fulcrum, a user can get an increased mechanical advantage. For example, the greater the distance the fulcrum is from the end of the effort arm, the heavier the load that can be moved.

The distance of the effort arm increases the effect of the force that is applied. When the lever is balanced, the distance of the effort arm will equal the load force multiplied by its distance to the fulcrum on the other end.

The fulcrum of a class 1 lever is centered between the effort and load arms. Scissors, seesaws, pan balances, an oar in an oarlock, and claw hammers are good examples of class 1 levers.

Parents and Educators: use #CuriousCrew #CuriosityGuide to share what your Curious Crew learned!

Curious Crew is a production of Michigan State University.
Learn more at WKAR.org.