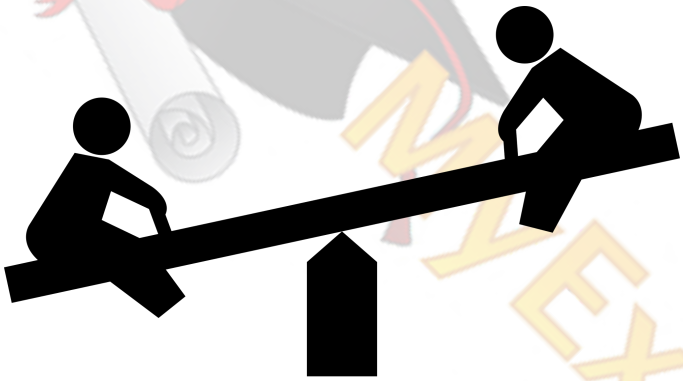
A2. Levers: Seesaws

Seesaw: The Lever of Fun

Have you ever played on a seesaw at the playground? It's a classic piece of equipment that can bring lots of joy and excitement. But do you know how a seesaw works and why it's considered a lever? Let's dive into the fascinating world of seesaws!



How Does a Seesaw Work?

A seesaw is a long, narrow board balanced on a central pivot or fulcrum. Children sit on either end of the board, and by pushing off the ground with their feet, they can go up and down. The seesaw moves in a seesaw-like motion, with one end rising as the other end lowers.

The Lever Principle

A seesaw is a simple machine called a lever. A lever is any rigid object, like a bar or a board, that rotates around a fixed point called the fulcrum. In the case of a seesaw, the fulcrum is the central point where the board balances.

First-Class Lever

Seesaws are an example of a first-class lever. In a first-class lever, the fulcrum is between the effort force (the force applied by the person) and the load (the weight of the person sitting on the seesaw). The seesaw's board acts as the lever arm.

Mechanics of a Seesaw

When one child pushes down on their side, they apply an effort force. This force causes one side of the seesaw to move down while the other side goes up. The seesaw remains balanced because the total clockwise moments (the turning effect of the forces) are equal to the total counterclockwise moments.

Balancing the Seesaw

To balance the seesaw, kids can adjust their position along the board. If one child moves closer to the fulcrum while the other stays near the edge, the seesaw will balance out. The child closer to the fulcrum will have a smaller turning effect, so they need to sit closer to the center to match the force of the child farther away.

Why is it a Lever?

A seesaw is a lever because it meets all the criteria of a first-class lever. It has a fulcrum (the central pivot point), an effort force (the force applied by the child), and a load (the weight of the child). The seesaw's board acts as the lever arm, which rotates around the fulcrum when children go up and down.

Safety on the Seesaw

While seesaws are lots of fun, it's essential to use them safely. Always make sure to have adult supervision, and follow these rules:

1. Only one child on each side
   Having two kids on one side can lead to an unbalanced seesaw and potential accidents.

2. Hold on tight
   Children should hold on to the handles and keep their hands and feet away from the pivot area.

3. Landing safely
   When coming down, bend your knees to land softly and avoid injuries.

In Conclusion

Seesaws are not just playground equipment; they are simple machines known as levers. These fun devices teach us about physics and balance while providing hours of enjoyment. Next time you see a seesaw, hop on and have a thrilling time experiencing the lever of fun!

1. What is a seesaw?
   A) A type of swing
   B) A long, narrow board balanced on a central pivot or fulcrum
   C) A spinning ride

D) A slide

2. How does a seesaw move?
    A) Side to side
    B) Back and forth
    C) Up and down
    D) In a circle

3. What is a lever?
    A) A turning wheel
    B) Any rigid object that rotates around a fixed point
    C) A round-shaped object
    D) A bouncing ball

4. In a first-class lever, where is the fulcrum located?
    A) Between the effort force and the load
    B) At one end of the lever
    C) On top of the lever
    D) None of the above

5. How can children balance the seesaw?
    A) By sitting closer to the edge
    B) By adjusting their position along the board
    C) By holding on to the handles tightly
    D) By adding weights on one side

ANSWERS & EXPLANATIONS

1. B) A long, narrow board balanced on a central pivot or fulcrum.
    - A seesaw is a long, narrow board balanced on a central pivot or fulcrum, and children sit on either end to move it up and down.

2. C) Up and down.
    - A seesaw moves up and down when children push off the ground with their feet.

3. B) Any rigid object that rotates around a fixed point.
    - A lever is any rigid object, like a bar or a board, that rotates around a fixed point called the fulcrum.

4. A) Between the effort force and the load.
    - In a first-class lever, the fulcrum is located between the effort force (the force applied by the person) and the load (the weight of the person sitting on the seesaw).

5. B) By adjusting their position along the board.
    - Children can balance the seesaw by adjusting their position along the board. If one child sits closer to the fulcrum while the other stays near the edge, the seesaw will balance out.