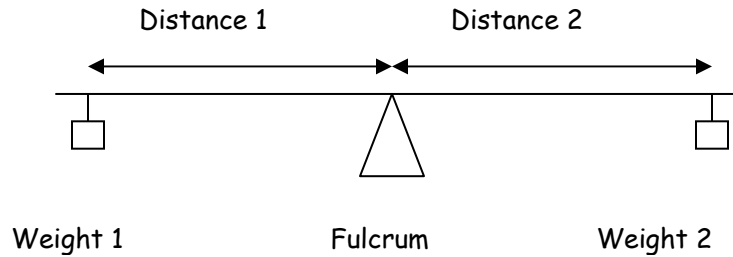


Balanced Students Activity Sheet

Diagram of 1st Class Lever Setup



DIRECTIONS

Balance the meter stick on the balance support using the knife-edge clamp. The balance point is usually **NOT** the 50cm mark. Place weights on the lever as shown above. Slide the weights until the lever is balanced. For trials 1 and 2, let weights 1 and 2 be equal, but change the distance. For trials 3-6, vary weights and distances any way you choose.

Trial	Distance1	Weight1	Dist1xWt1 (torque)	Distance2	Weight2	Dist2xWt2 (torque)
1						
2						
3						
4						
5						
6						

QUESTIONS

- How do the products, Dist x Wt (torque), compare for each trial?
- Write an equation relating weights and distances for a balanced lever.
- Give some everyday examples of first class levers?

PROBLEMS

- What weight placed 2cm from the fulcrum will balance 25N placed 4cm from the fulcrum on the other side?
- What weight placed 3cm from the fulcrum will balance 50N placed 12cm from the fulcrum on the other side?
- How far from the fulcrum should a weight of 700N be placed to balance a weight of 900N that is 8cm on the other side of the fulcrum?

Answers to Activity Sheet

QUESTIONS

1. Torques are equal.
2. $D_1W_1 = D_2W_2$
3. Claw hammers, scissors, pliers, bottle openers, jack handle, pry bar, etc.

PROBLEMS

1. $D_1W_1 = D_2W_2$

$$(2\text{cm})W = (4\text{cm})(25\text{N})$$
$$W = 50\text{N}$$

2. $(3\text{cm})W = (12\text{cm})(50\text{N})$

$$W = 200\text{N}$$

3. $D(700\text{N}) = (8\text{ cm})(900\text{N})$

$$D = 10.3\text{cm}$$