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SPH 4C - Pully and Lever Activity

Start by googling "force lever labs physics interactive"
Click on something similiar to below or type it in.

http://www.edinformatics.com/il/il_physics.htm

click on pulleys

**PULLEY FAMILY:**

You must use four calculations to show the effect of using more pulleys.
1. G- is the hanging mass and G' is the mass of the hanging pulleys.
2. You must choose four different masses for G and G' then anyone else.
3. Calculate with each of the four different masses, the Effort Force needed. Show the calculations. For each mass you must use 2 , 4, and 6 pulleys.
4. In total you should have 3 calculations.

**Purpose**: To determine the mechanical advantage of simple and compound pulley systems.

1. Complete the following table.

Masses 1 (G and G')

| | Effort (N) | Load (N) | Mechanical Advantage (Load / Effort) |
|---|---|---|---|
| Compound Pulley (2) | | | |
| Compound Pulley (4) | | | |
| Compound Pulley (6) | | | |

Same chart you need to make for masses 2 , masses 3 and masses 4.

2. Based on your observations, which pulley system has a larger mechanical advantage.
3. Based on your observations, what disadvantage does the compound pulley system exhibit?
4. The compound pulley system in the animation has 2,4,or 6 strands supporting the masses as it lifts. Sketch a pulley system that uses 3 strands to support a load. What would be its mechanical advantage?

Return to previous screen and then click on levers.

**LEVER FAMILY:**

**Purpose**: To investigate the mathematical relationship between Load, Effort, Load Arm and Effort Arm when a lever is balanced.

1. Read the directions carefully. The left side is the LOAD (red).
   The right side is EFFORT (black).
2. Position the 4N(Load) at the 0.2 m position.
3. Position the masses (Effort) on the right side of the lever to attempt to balance the lever. *Test.* If the lever is balanced, record the results in the table below.
4. Repeat with the load at the 0.40m and 0.6m mark to complete the table.
   For the third mass use two EFFORT masses.

| *Trial* | *One* | *Two* | *Three** | |
|---|---|---|---|---|
| | | | | |
| $F_{L\ Load}$ | 4N | 4N | 8N | |
| $d_{L\ Load\ Arm}$ | 0.2 m | 0.4 m | .6m | |
| $F_{E\ Effort}$ | | | | |
| $d_{E\ Effort\ Arm}$ | | | | |
| | | | | |
| $F_L x d_L$ | | | | |
| $F_E x d_E$ | | | | |

***Note: Trial Three requires two masses (Efforts) to balance.**

## Analysis: