

Machines - Build a Lever



Grade Level	All Grades
Learning Objective	To explain how forces can be balanced
Science Unit	Energy and Forces: Force
Skills Development	Observing
Materials Needed	Metre stick Two plastic cups String Scissors Tape Marbles
Steps	<ol style="list-style-type: none"> 1. Cut two holes opposite each other in the top edges of the cups. 2. Put a short piece of string through the two holes and make a loop. 3. Find the centre of gravity of the metre stick by moving your finger in until the stick balances. 4. Place a loop of string at this point and hold the metre stick so that it balances. 5. Hang two cups on either end of the metre stick with the loops of string. 6. Place a marble in each cup and balance the metre stick by moving the cups. 7. Measure the distance from the cups to the centre of gravity of the metre stick. 8. Now, place two marbles in one cup and one in the other. Move the one with the two marbles in towards the centre of gravity of the metre stick until it balances again. 9. Measure the distance from the cups to the centre of gravity of the metre stick.
What's Happening?	When the weight is the same in the cups, the distance to the centre of gravity is the same. If the weight on one side is doubled, the distance from the cup to the centre of gravity will be halved. Weight is a force that is measured in Newtons.
Scientific Principles	The force multiplied by the distance on one side must equal the force multiplied by the distance on the other side.

