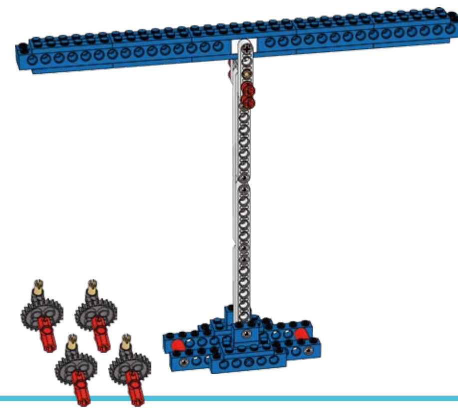
Beam Balance

Name(s): **Date and Subject:**

Build the Beam Balance and Loads

(Building Instruction 15A and 15B to page 9, step 9)

- Make sure the arm moves up and down freely and the Beam Balance is in a state of equilibrium



Why is it in a state of equilibrium?

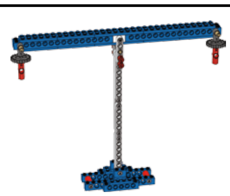
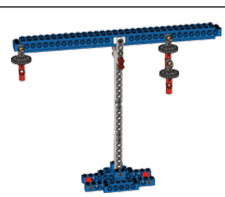
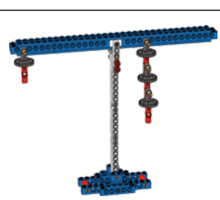
Place the load and efforts as shown and use the formulas for levers to find the mechanical advantage and to explain what happens.

First, observe the mechanical advantage of Beam Balance A.

Then use the formula for calculating the amount of effort needed to lift a given load to explain why the Beam Balance is in a state of equilibrium.

Next, follow the same procedure for Beam Balance B and C.

Use this formula to help explain why each model is balanced Effort x length of effort arm = Load x length of load arm.

	Mechanical advantage	Weight of load	Load distance from fulcrum	Weight of effort	Effort distance from fulcrum
A  (page 10, step 10)					
B  (page 11, step 11)					
C  (page 12, step 12)					

How much does it weigh?

Your challenge is to use the balance to work out the weight of assembly A.

Put assembly A one arm and balance it with preassembled weights on the other arm. Use these positions to calculate the weight of assembly A.
Use the calibrated weighing machine to check your accuracy.

Build your own set of weights from LEGO® parts and test their accuracy.

A

	Calculated weight of load	Measured weight of load	Percentage of accuracy
A 			

Hint:
Find out how accurate your calculation was by finding the difference between the actual and calculated weight. Then divide the difference with the actual weight and multiply it by 100.

Explain your findings: