KIT # ____ Names: _____

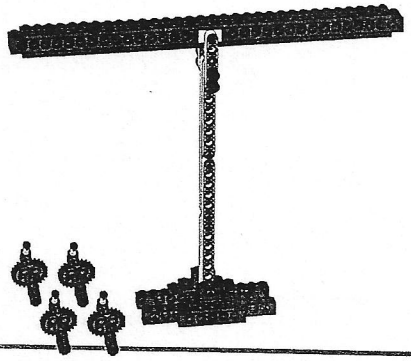
Build Book ____ Date Started _____

Beam Balance pg 1 Required

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



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Describe any difficulties with your balance or describe what works well.

STAMP:

NAMES: _____

Pg 2 Required

Contemplate

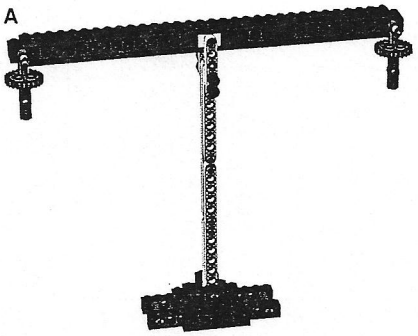
Why is it in a state of equilibrium?
Place the load and efforts as shown and use the formulas for levers to find the mechanical advantage and to explain what happens.

First, observe the mechanical advantage of Beam Balance A.
Record the mechanical advantage on the worksheet.

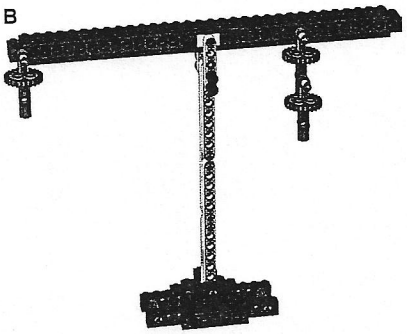
Then use the formula for calculating the amount of effort needed to lift a given load to explain why the Beam Balance is in a state of equilibrium.
Record your findings on the worksheet.

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

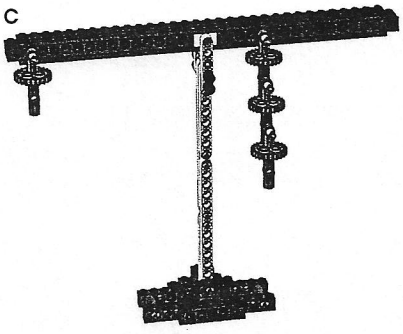
A



B



C



Hint:
You can find all of the formulas you need to perform this investigation in the Principle Models section for Lever.

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

Did you know?

The loads weigh 2 g each.

NO STAMPS
:)

(This page will help you with p. 3 :))

How much does it weigh?

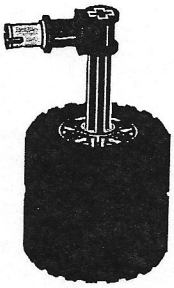
Beam Balance p-4 (optional)

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



Names: _____

	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:

_____

_____

Beam Balance p. 3 Required

NAMES _____

Why is it in a state of equilibrium?

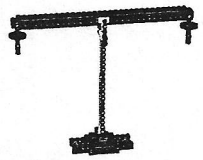
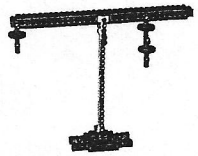
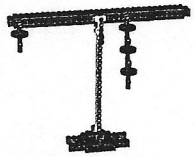
Place the load and efforts as shown and use the formulas for levers to find the mechanical advantage and to explain what happens.

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)					

STAMPS

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