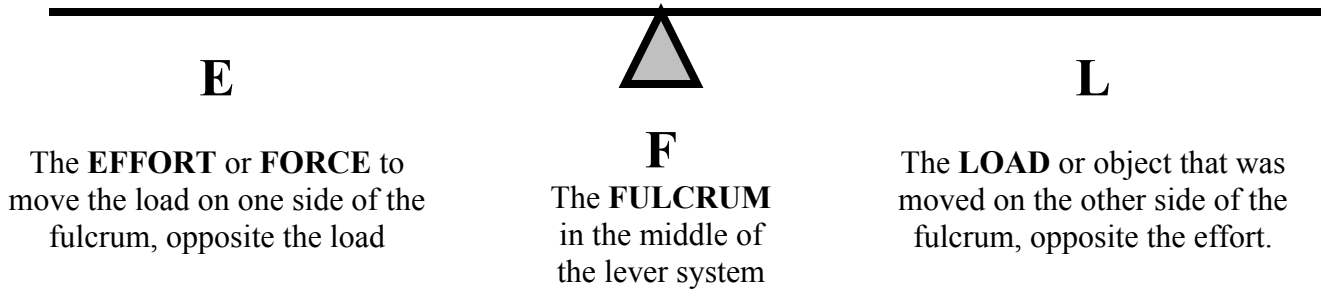


NAME _____

TYPES OF LEVERS

You have been investigating lever systems for several days. The lever system you used looked something like this:



Now we have a new problem to solve:

Problem: What happens when the position of the fulcrum in a lever system is changed?

Materials:

Lever set up
Spring scale or force probe

Weights
Various tools

Part 1

Procedure:

1. **Predict** what will happen if the fulcrum was not in the middle of the lever system: _____

2. Use the lever system to investigate and explore possible answers to the problem. Record your observations.

Data:

Part 2

Procedure:

1. Set up a lever system the load *in the middle*.
2. Investigate to see if it provides any type of advantage. Record your observations in the data section.
3. Set up a lever system with the *effort in the middle*.
4. Investigate to see if it provides any type of advantage. Record your observations.

Data Part 2:

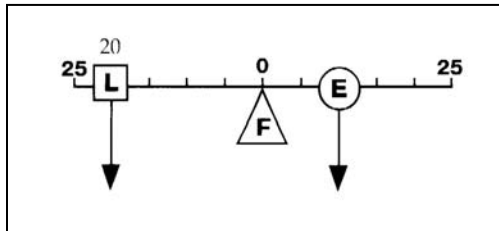
Load in the middle: _____

Effort in the middle: _____

Part 3

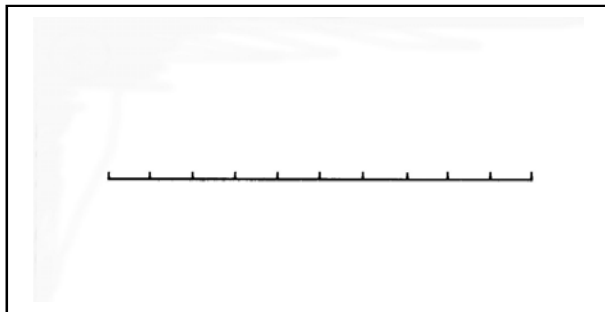
Procedure:

1. Set up a lever system to match this *diagram*:



Teacher Initials:

2. Have your teacher check and initial that your system set up is correct.
3. Set up another lever system with the load at 15 cm and the effort at 15 cm.
4. Diagram the system below:



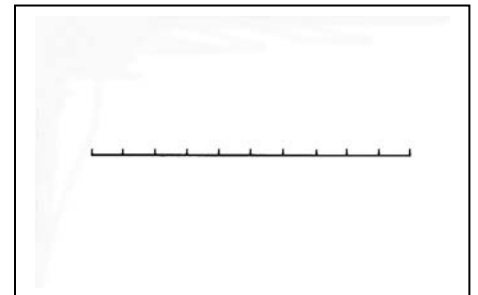
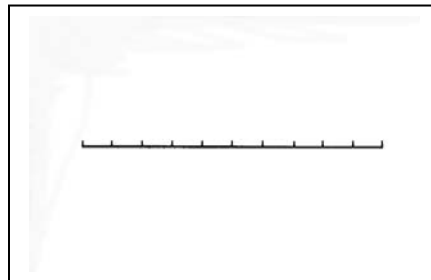
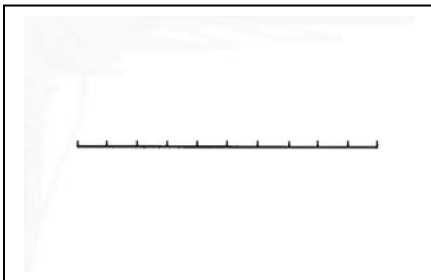
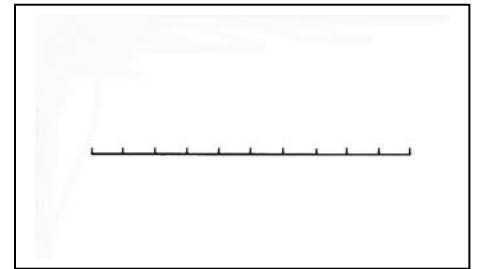
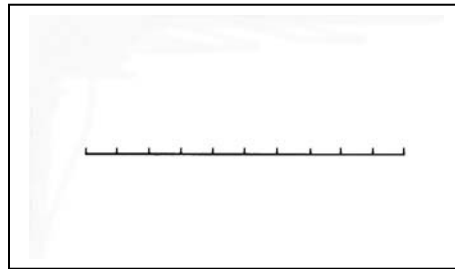
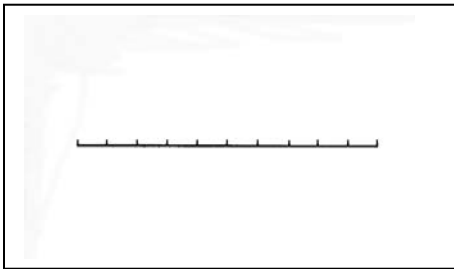
Teacher Initials:

5. Have your teacher check your system and diagram. A lever system with the fulcrum in the middle is called a **First Class Lever**. A lever system with the load in the middle is called a **Second Class Lever**. A

lever system with the effort in the middle is called a **Third Class Lever**.

6. Set up 2 lever systems for each type of lever: fulcrum in the middle (1st class), load in the middle (2nd class), effort in the middle (3rd class).
7. Diagram each lever system. Label each diagram with the class of lever.

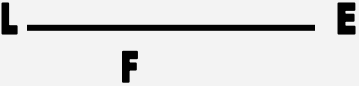


Data Part 3:



Part 4

Procedure:

1. Look at the tools available in your class.
2. Analyze each to determine the type of lever, position of the load, and direction of the effort.
3. Draw a diagram for each tool.

Use the diagrams below for reference:		
<u>Class 1 Lever</u> 	<u>Class 2 Lever</u> 	<u>Class 3 Lever</u> 
Analyze & diagram these tools:		
Broom This is a ____ class lever	Nutcracker This is a ____ class lever	Scissors This is a ____ class lever
Bottle Opener This is a ____ class lever	Pliers This is a ____ class lever	Tweezers This is a ____ class lever
Hammer This is a ____ class lever	Human Arm This is a ____ class lever	

Analysis and Conclusions:

1. How many different ways can levers be set up?

2. Why is a diagram a good way to record information about lever design?

3. Where are levers found in everyday use?
