

Assessment Rubric

Simple Machines

Student's Name: _____ Assignment: _____ Level: _____

	Level 1	Level 2	Level 3	Level 4
Understanding Concepts	Demonstrates a limited understanding of concepts. Requires teacher intervention.	Demonstrates a basic understanding of concepts. Requires little teacher intervention.	Demonstrates a good understanding of concepts. Requires no teacher intervention.	Demonstrates a thorough understanding of concepts. Requires no teacher intervention.
Analysis and Application of Key Concepts	Limited application and interpretation in activity responses	Basic application and interpretation in activity responses	Good application and interpretation in activity responses	Strong application and interpretation in activity responses
Creativity and Imagination	Limited creativity and imagination applied in projects and activities	Some creativity and imagination applied in projects and activities	Satisfactory level of creativity and imagination applied in projects and activities	Beyond expected creativity and imagination applied in projects and activities
Application of Own Interests	Limited application of own interests in independent or group environment	Basic application of own interests in independent or group environment	Good application of own interests in independent or group environment	Strong application of own interests in independent or group environment

STRENGTHS:

WEAKNESSES:

NEXT STEPS:

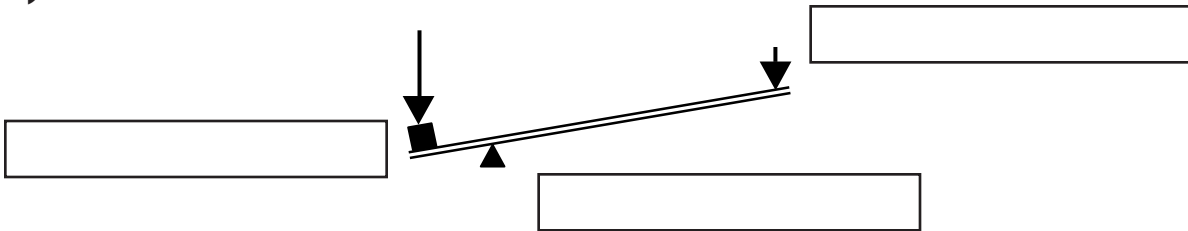


Levers



3. Answer the questions by writing the answers in the boxes.

a) A first-class lever is shown below.



Label the **effort force**, the **resistance force**, and the **fulcrum**.

b) A third-class lever is shown below.

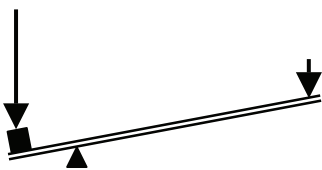


Label the **effort force**, the **resistance force**, and the **fulcrum**.

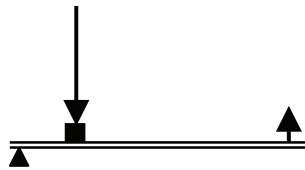
SAMPLE

Extension & Application

4. First-class, second-class, and third-class levers are shown below.



First-Class Lever



Second-Class Lever



Third-Class Lever

Look at the **Three Classes of Levers** chart on the next page. Read the questions for each class of lever. Answer each question by writing YES or NO in the spaces provided.



First-Class Levers



In this activity you will study how the DISTANCES and FORCES all work together for a first-class lever.

This is what you will need:

- A 12-inch wooden ruler
- Something to use for a fulcrum—a pencil will do
- A handful of pennies

All pennies have about the same weight. You can use the number of pennies to measure the amount of weight.

This is what you do:

1. Lay the ruler crosswise on the pencil.
2. Put two pennies on one end of the ruler and one penny on the other end.
3. Slide the ruler across the pencil until it balances.
4. See how many inches are on each side of the fulcrum (the pencil).

Repeat these four steps with different amounts of pennies on each end. Each time you do it, write down the distances and numbers of pennies. Can you find a pattern to the weights and distances? See if your weights and distances fit this equation:

(pennies on left) X (left side distance) = (pennies on right) X (right side distance)

We can think of pennies as **weight**, and weight is **force**. So what all this means is that, “Resistance force times resistance distance equals effort force times effort distance.” Even more simply, it means, “Work in equals work out.”

Bicycle - A Compound Machine



Mountain Bike