

Lego Simple Machines Project

1. You will be completing a total of 13 worksheets/projects
 - A. 6 relating to the 6 simple machines
 - B. 3 relating to mechanism (combo of simple machines)
 - C. 4 activities where you combine everything above
2. You must complete the activities in “category A” before you move to “category B” and must complete “category B” before you move onto “category C”
 - a. You may do the activities in each category (A, B, or C) in any order, as long as you stay in that category
 - i. i.e. you could do levers, pulley, then wedge OR pulley, screw, then incline plane
 - b. You must complete Gear Racer last
3. Mr. Gunkelman MUST sign off on each activity BEFORE you move to the next activity
 - a. i.e. for the pulley lab he will sign off on C1 before you can move to C2, etc.
4. Make sure you complete ALL the question for each activity
 - a. You will hand in the worksheet, and any handouts, for the activity when you are done
5. You will fill out the “Lego Simple Machine Project Log” before you start the project
 - a. If a person is gone, you may change it at that point
 - b. I would recommend you split it up evenly
 - i. i.e. Category A = 3 and 3 OR 2 and 2 and 2

Category A	Category B	Category C
Lever Wheel and Axle Incline Plane Wedge Screw Pulley	Gear Pawl and Ratchet Cam	Beam Balance Tower Crane Ramp Gear Racer

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What your group must be completed for each activity.
(and other important information)

Category A

Levers (20 minutes)

- The distance to the lever arm is to where the load/effort input is located
- Write the distances for each arm on the picture of the lever in the worksheet
- Show Mr. Gunkelman the lever you have created and have him sign off on it before you move to the next type of lever
- Show your MA work and answer all questions

Wheel and Axle (30 minutes)

- Show Mr. Gunkelman the W&A you have created and have him sign off on it before you move to the next type of W&A
- Show your MA work and answer all questions

Incline Plane (25 minutes)

- Write the distances for each side of the incline plane on the picture of the incline plane in the worksheet
- Show Mr. Gunkelman the incline plane you have created and have him sign off on it before you move to the next type of incline plane
- Show your MA work and answer all questions

Wedge (15 minutes)

- Write the distances for each side of the wedge on the picture of the wedge in the worksheet
- Show Mr. Gunkelman the wedge you have created and have him sign off on it before you move to the next type of wedge
- Show your MA work and answer all questions

Screw (10 minutes)

- Show Mr. Gunkelman the screw you have created and have him sign off on it
- Answer the question

Pulley (2 class periods)

- Answer all of the questions and show all of your work for the MA
- Show Mr. Gunkelman the pulley you have created and have him sign off on it before you move to the next type of pulley

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Category B

Gear (45 minutes)

- Answer all of the questions and show all of your work for the gear ratio's
- Show Mr. Gunkelman the gear you have created and have him sign off on it before you move to the next type of gear

Pawl and Ratchet (8 minutes)

- Answer the question
- Show Mr. Gunkelman the pawl and ratchet you have created and have him sign off on it

Cam (5 minutes)

- Answer the question
- Show Mr. Gunkelman the cam you have created and have him sign off on it

Category C

Beam Balance (1 class period)

- Complete the math for the MA and answer the question for each step on the "Crane Tower Sheet"
- Fill in the data table on the front of the worksheet
- Complete the data table on the back page
 - o Make sure to show your work for the % errors

Tower Crane (2 class periods)

- Complete the math for the MA, Average Time, and Average Speed on the "Crane Tower Sheet"
- Fill in the data table on the front of the worksheet
- Answer the 4 questions on the back of the "Crane Tower Sheet"

Ramp (2 class periods)

- Complete the math for the Ideal MA, Actual MA, and % Error on the "Ramp Sheet"
- Fill in the data table on the front of the worksheet
- Answer the 4 questions on the back of the "Ramp Sheet"

Gear Racer (2 class periods)

- Complete the math for the Gear Ratio, % Error, and Average Speed on the "Gear Racer Sheet"
- Fill in the data table on the front of the worksheet
- Answer the 4 questions on the back of the "Gear Racer Sheet"