

NAME KEY
NAME _____

Simple Machines with Lego Building Kits

In this activity you will be using Lego building kits to experiment and learn about simple machines. Follow the instructions on this sheet and on the Lego activity cards to complete this activity. Be sure to have your teacher stamp your sheet for each task as you complete it.

Show the teacher the model and questions completed for credit!

Intro: Use Card 1 to become familiar with the pieces and where they fit in the box. Remember to have the teacher stamp the inventory sheet when the kit is back in order and then put it back on the shelf.

Task 1: Find Card 2. Practice putting the pieces of the kit together using the pictures on the inside of the card. Next, build one of the models on the back of the card and then get teacher to stamp for approval. Be ready to identify what class of lever is being represented.

5 points _____ Approval stamp _____

Task 2: Find Card 3 and build the samples on the inside of the card.

Which shapes are more rigid? TRIANGLE

Next, build each of the models on the back of the card. Get each one stamped when completed.

5 points _____ (See-Saw)

5 Points _____ (Swing)

Task 3 : Build the models on the inside of Card 4 and answer the following questions about each of them:

White Model: What happens to the effort required to lift the weight if you move the axle (black bar) to a different hole location? THE EFFORT REQUIRED CHANGES.
What happens if you make the lever arm longer? EASIER Shorter? HARDER

5 Points _____

Yellow Model: What happens if you:

Move the axle? EFFORT CHANGES

What class of lever is represented if the axle is moved to the farthest point? THIRD CLASS

What type of real life examples does this lever represent? TWEEZERS

5 Points _____

Red Model: What happens if the Mass (weight) is moved to a different location? EFFORT CHANGES

What type of lever is this an example of? SECOND CLASS

5 Points _____

Task 4 : Build the White model on the inside of Card 6. What direction does the output gear turn compared to the input gear? OPPOSITE

Build the Yellow model and explain what changes between the large gears?

LARGE GEARS NOW MOVE IN THE SAME DIRECTION

5 Points _____

Build the models on the back of Card 6

5 Points _____ (Top)

5 Points _____ (Bottom)

Task 5 : Build the models on the inside of Card 7.

5 Points _____ (Bevel Gears)

5 Points _____ (Crown and Pinion)

What do these models do that the previous ones do

not? CHANGE MOTION AT AN ANGLE. (90°)

Build the drill on the back of Card 7

10 Points _____

Task 6 : Build the model on the back of card 15.

10 Points _____

Can you build a device that can reach even higher?

Task 7 : Build the models on the inside of card 16. Which model (white or yellow) lifts the weight with less effort? Why? THE YELLOW MODEL REQUIRES LESS EFFORT BECAUSE OF THE MOVEABLE PULLEY

5 Points _____ (White)

5 Points _____ (Yellow)

* Bonus 15 Points _____ (Back of card 16 block & tackle)

Task 8 : Build the model on the inside of Card 18

10 Points _____ (Windmill)

BONUS

Inside of Card 19

5 Points _____ (white model)

5 Points _____ (Yellow model)

Back of Card 19

10 Points _____ (Car)

Inside of Card 20

5 Points _____

Back of Card 20

5 Points _____