

If I Built a House: Engineering Design Process

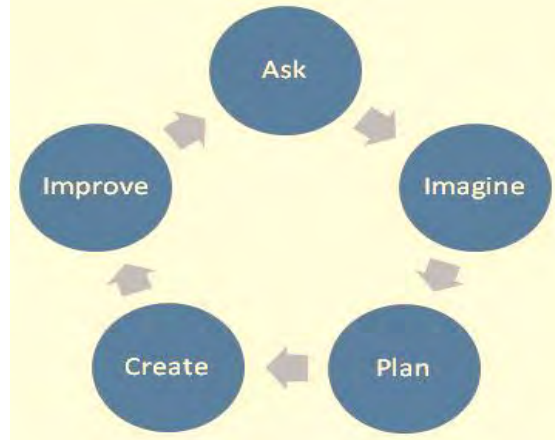
Your team of engineers will build a house. The materials you can use to build your house are pictured below.

					
Cards	Straws	Craft Sticks	Play-Doh	Tape	Glue

1) Notice that the word Ask is in one of the circles in Figure 1. Ask yourself: What materials would I like to use to build a house that can withstand wind, rain, and hail? Write these materials on your STEM Challenge handout.

2) Notice that the word Imagine is in one of the circles in Figure 1. Imagine what your house will look like. Draw a picture of your house on your STEM Challenge handout.

Figure 1: Engineering Design Process



3) It is time to share your ideas with your team! Put on your listening ears and, one at a time, share your ideas!

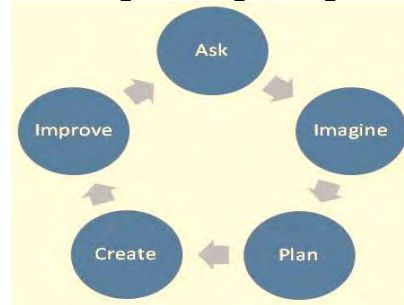
4) Notice that the word Plan is in one of the circles in Figure 1. Plan what your house will look like. You can use one of your teammates' ideas or a combination of the teams' ideas. But remember, you must create your house together as a team!

5) Draw a picture of your house on your STEM Challenge handout.

If I Built a House: Create Your House!

It is finally time for you and your team to Create your house! Notice that the word Create is in one of the circles in Figure 1. Work as a team while creating your house. As you create your house, keep track of the number of items you use. Use the table below to keep track of these items.

Figure 1: Engineering Design Process



Material	Number of items used
Card from a deck of cards	
Craft stick	
Glue stick	
Straw	
Tub of Play-Doh	
Foot of wax paper	
Yard of painters tape	

If I Built a House: Test and Improve Your House

It is finally time to test your house.

- 1) Did your house withstand the wind test? Write a sentence or two about why your house did or did not withstand the wind test.

- 2) Did your house withstand the hail test? Write a sentence or two about why your house did or did not withstand the hail test.

- 3) Did your house withstand the rain test? Write a sentence or two about why your house did or did not withstand the rain test.

If I Built a House: Cost of Materials

Your team will be given money to spend on materials to build your second house. First, you need to determine the cost of a few materials.

- 1) Let's figure out the cost of the glue. If two containers of glue cost \$1.50, what is the cost of one container of glue?



- 2) Let's figure out the cost of the craft sticks. If four craft sticks cost \$1.00, how much does one craft stick cost?



- 3) Let's figure out the cost of one tub of Play-Doh. If eight tubs of Play-Doh cost \$4.00, what is the cost of one tub of Play-Doh?



If I Built a House: Buying Time!

It is time for you to purchase the materials for the second house your team will build!
You have \$4.00 to spend. The items and their prices are shown below.

Material	Cost per one item	Number of items your team would like to purchase	Total cost of the items your team would like to purchase
One glue stick	\$0.50		
One small tub or stick of Play-Doh	\$0.50		
One foot of painters tape	\$0.50		
One sheet of wax paper that is one foot wide	\$0.25		
One craft stick	\$0.25		
One straw	\$0.15		
One card from a deck of cards	\$0.10		
		Total Cost:	

Show your work here or on the back of this handout:

If I Built a House: Measure Your House

You and your team are going to measure the dimensions of your house. The dimensions are the length, width, and height.

- 1) As a team, talk about what each of you thinks the length, width, and height is for your house.**
- 2) Use a ruler to measure the length, width, and height of your house. Record your measurements in the table below.**

Measurements of Your House

Length	
Width	
Height	

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- 2) **Did your house withstand the hail test? Write a sentence or two about why your house did or did not withstand the hail test.**

- 3) **Did your house withstand the rain test? Write a sentence or two about why your house did or did not withstand the rain test.**
