

## Architecture – Remote Learning Lesson 4

### ENDURING UNDERSTANDING:

In our unit we have been learning that Architects are people who work with engineers and provide a service. They are trained to plan and design buildings and oversee their construction.

Architecture is the art of directing and designing the structure of buildings.

Architects have specific skills and characteristics that help make them successful.

You have been exploring with different materials and shapes as you build paper houses and paper bridges. Did you know that shapes can be **geometric or organic**? Architects use both geometric and organic shapes when designing buildings so that they are safe and look nice. Architects use the engineering process or design thinking process.

### ESSENTIAL QUESTION(s) How are shapes used in architecture?

#### Part I

#### Design Challenge #1

#### Shape Structures

Architects sort shapes into two categories, geometric and organic. Learn about them [HERE](#).

Now it is time for you to be the architect!

#### Build Shape Sculptures:

**Step 1:** Find some cardboard that is thin enough to cut through, yet stiff.

**Step 2:** Cut out some **organic shapes** from the cardboard. (Larger shapes work better.)

**Step 3:** Cut out some **geometric shapes** from the cardboard. (Larger shapes work better.)

**Step 4:** Decorate the shapes with markers, paint, or crayons.

**Step 5:** Cut two, three, or four slots into each of the shapes.

**Step 6:** Assemble the sculpture by sliding the slots together. You've created your first Shape Sculpture! Congratulations Architects! If you have time, you could give the sculptures names/titles. Upload a picture of your creation to Seesaw.



1 Find some sturdy cardboard in your recycling bin.



2 Cut out some organic shapes from the cardboard.



3 Cut out some geometric shapes from the cardboard.



4 Decorate the shapes with the markers.



5 Cut two, three, or four slots into each of the shapes.



6 Assemble the sculpture by sliding the slots together. Wow! Good work!

## Part 2

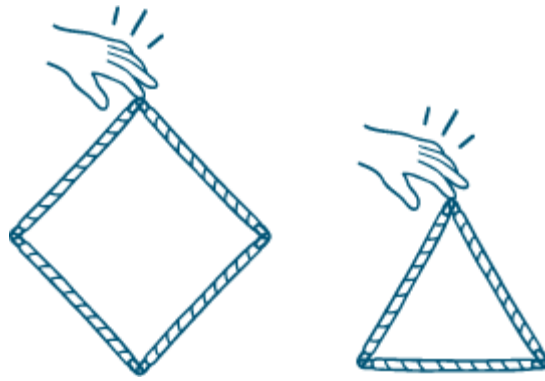
**Optional Extension Activity:** If you have straws and paperclips at home, you may want to try this activity.

Click the link below to watch a video on architecture and design thinking.

<http://nicertube.com/hb4bhb>

### Which shape is more stable, a triangle or a square?

You'll test the stability of a triangle and a square by standing them on a table and pressing on them. The one that changes shape less is more stable.



### What You Will Need

- 7 drinking straws
- 14 paper clips

### Make a Prediction

Predict which shape will be more stable. Why do you think so?

### Try It Out

1. With your homework helper, build a triangle and a square from the straws and paper clips.

To connect two straws, slip the wide end of a paper clip into the end of one straw. Hook a second paper clip to the first. Now insert the wide end of the second clip into a second straw.



2. Compare the stability of the shapes. Stand each shape up and press down on the top corner. What happens? How much does each one bend and twist? How hard can you press down on each shape before it collapses?

### Explain It

Compare the results of your tests on the triangle and square. Which shape was more stable? What do you think made it more stable? How might this shape be used in large structures? Record your results

on paper and Upload your results (answers to your questions) to Seesaw if you like.

### **Build on It/Design Challenge #2**

- Can you reinforce the less stable shape by adding no more than 2 straws and 4 paper clips?

- Now that you know more about shapes, **build the most stable structure you can using no more than 20 straws and 40 paper clips.**

How much weight can your structure support? Upload a picture to Seesaw if you like.