

Build it up, Break it down: Find area of composite figures

Math 6

Work through stations to create and build polygons, as well as break figure out ways to break apart figures in order to find the area.

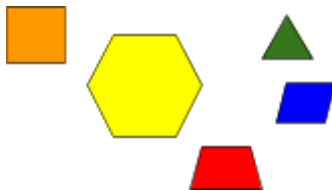
Read the instructions carefully

Record and show your results from each station on the correct sheet

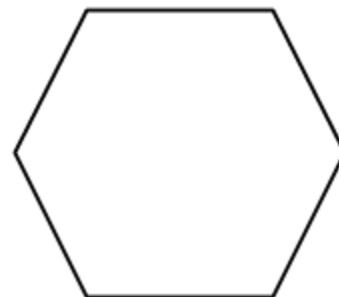
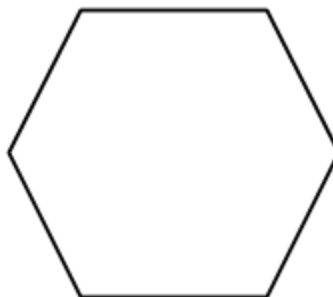
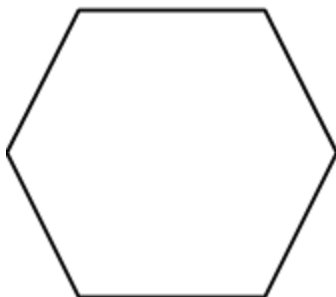
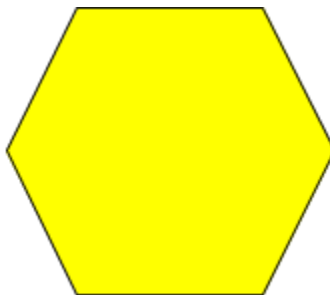
Work independently and move to the next open stations when you are ready

Please do not have more than 4 students at a station at any one time

STATION 1 : *How many ways can you make a hexagon?*



- Use any combination of pattern blocks to create a hexagon on the yellow hexagon shape below
- Draw and color your examples to show the different ways
- Find the area of the hexagon in square inches.
- The area of the green triangle block is 0.5 sq.in
- ****Extend:** Make a larger hexagon using only: trapezoids, parallelograms, or triangles. On a blank piece of paper, trace and outline to show how you made it. What is the area?



Note to designer - make the hexagon templates above the actual size of pattern blocks (each side is 1 inch and the area is 3 inch squared)

Name: _____ Period: _____ Date: _____

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AREA of yellow hexagon in square inches: _____

Station 1 (cont.)

AREA of LARGER Hexagon that you built.

Area = _____

Outline and color

Which pattern block shapes did you use to make the hexagon?



Station 2: *Make a Letter with Post-it notes*

- Find the AREA of 1 post it note, write it on the note (don't forget correct units)
- Make any letter from the alphabet using only post it notes (For example L, E, H)
- It must fit on a piece of paper.
- Calculate the AREA of the Letter that you made
- Extend: Can you do your initials?

What letter or letters did you make?

Why?

AREA of 1 Post-it note = _____

AREA of the the Letter = _____

AREA of your initials = _____

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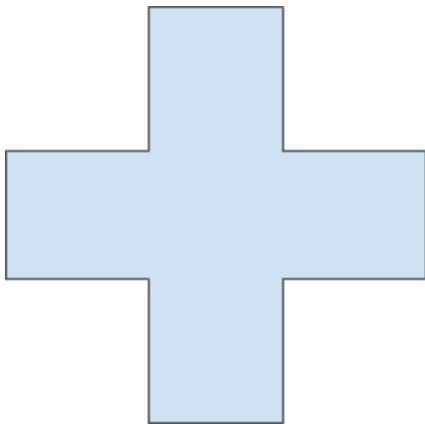
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Station 3: *Break it down*

- Using a ruler, divide the composite figure into parts: squares or rectangles
- Find the area of each polygon in square cm
- Add the areas together to find the area of the figure

***Note to designer - provide large composite figures similar to shapes shown below. Be sure that sides can be measured to the nearest cm.



Sketch how you decomposed the shape. Area = _____



Sketch how you decomposed the shape. Area = _____

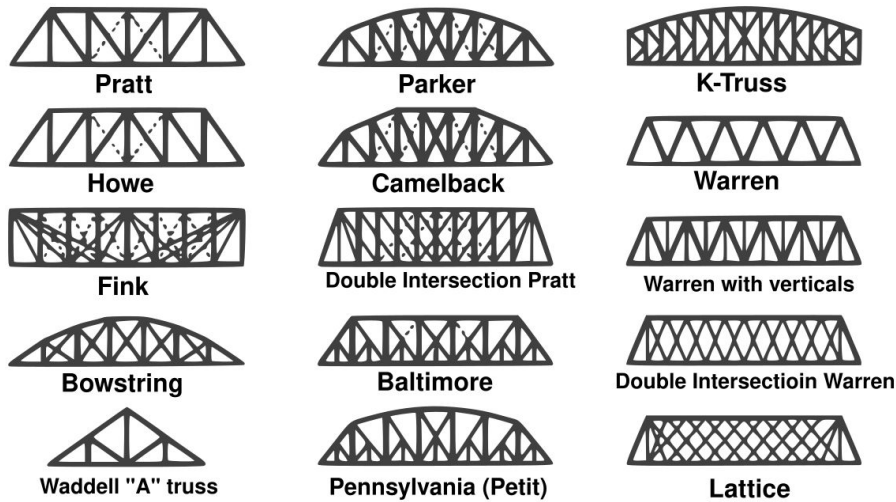
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***note - Side view or photo of a similar bridge shown to the left

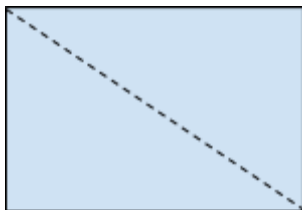
Note to designer - draw and make a side view of a truss bridge, similar to the Howe or Pratt style shown below



Station 4 Build a Truss Bridge

- Make 2 right triangles out of index cards by cutting each card in half
- Use triangles to create a truss bridge pattern, similar to the image provided
- Calculate the area of your bridge in square inches

***note to designer, show an image of an index card and where to cut it to make right triangles, similar to below

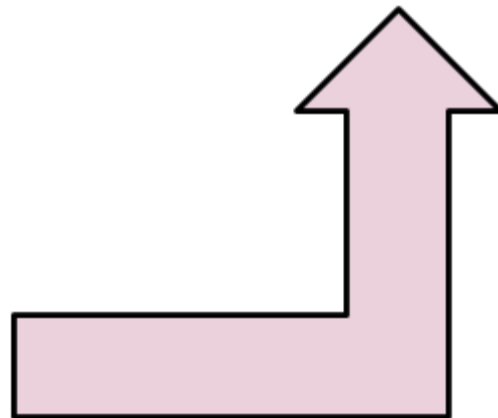
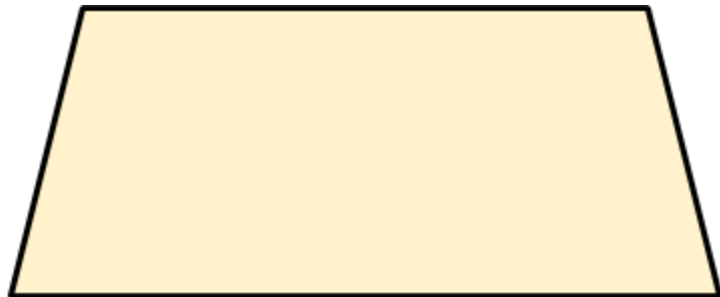


AREA of your bridge= _____

Station 5: *Tape it out*

- Find the area of the figures on the floor
- Use yarn to help you break it down or outline into triangles/rectangles/squares
- Measure the sides of each part to help find the area

***** note to designer - provide an image of masking tape on the floor, taped out in a shape similar to figures shown below, or any composite figure**



Reflection questions and practice

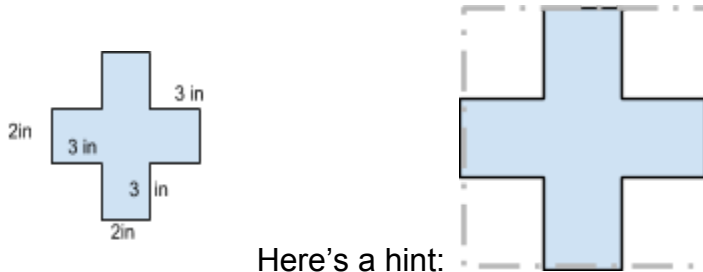
- 1.) What was your favorite station and why?

- 2.) Which stations were “composing” stations where you had to make your own figure?

- 3.) Which station was a “decomposing” station where you had to break it down into known shapes and areas?

- 4.) Did you ever use subtraction to help you figure out an area? If so, explain.

- 5.) How could you use subtraction to find the area of this shape?



Show your work and find the area using subtraction.

Now find the area using addition. Draw lines on the figure to show how you decomposed the figure.

Area= _____