Name _____

School _____

Teacher _____

Come back and visit YOUR museum again soon!

The ***Less = More*** exhibition
and the school tour program
Math through Art are presented by:

Hawaiian Electric

Honolulu Museum of Art

Spalding House

2411 Makiki Heights
Honolulu, Hawai'i 96822

Honolulu Museum of Art

Spalding House

Math through Art

Student Booklet

Welcome to the
Honolulu Museum of Art Spalding House
Less = More

We hope this booklet helps you revisit the works of art and ideas from the exhibition *Less = More*. On the tour you learned ways that artists use math to create art and how mathematicians create art. This booklet provides images of the key works of art and some activities to do with each one.

After the tour, you received a Parent Pass. With this pass you can return to Spalding House with two adults for free. Your friends under the age of 18 are always free, so come with a group!

With your Parent Pass, you may also visit the main campus at 900 South Beretania. There you will find 30 galleries filled with art.

Our Education Department has over 25 tours on different themes that help connect art to the core curriculum. Visit our website honolulumuseum.org to learn more about our tours. The Education Department is dedicated to making your visit fun!

We hope to see you again soon!

The Art of Origami

Origami comes from the Japanese words "*ori*" for folding and "*kami*" for paper. Through origami, artists transform a square piece of paper into a three dimensional object with a series of folds. The folding process may be depicted visually, and is referred to as a crease pattern. One is shown on this page.

What work of art might this crease pattern represent?

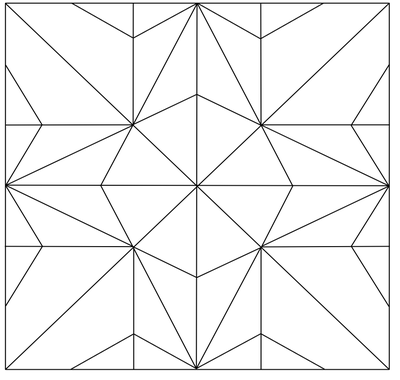
You can find the answer on the cover of this booklet.

Name the kinds of lines, shapes and angles you see in this crease pattern.

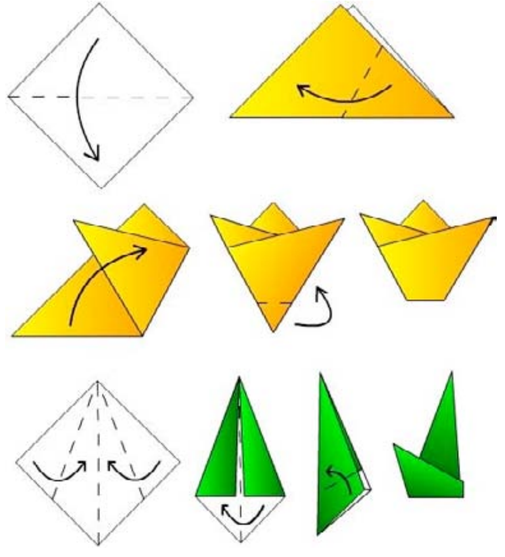
Lines

Shapes

Angles



In the exhibition, you saw flowers made by the artist Michael Lafosse.
Follow these simple instructions to make a tulip and stem similar to the ones you saw in the museum.



Creating mass from small units

Kwang Young Chun created this large sphere from bundles of many sizes, individually wrapped and tied in pages from Korean books.. All together, they create a sphere that nearly fills the gallery.

What percentage of the gallery does the work of art cover?

How much do you think this work of art weighs?

How many bundles do you think Kwang attached to the sphere?
Guesstimate this number.

How do you determine the surface area of this sphere if it were smooth? Let's use five feet as the radius. and the formula: A = 4 r^2

What would the volume of the sphere be?
Use the formula: V=(4/3) r^3

Intrepreting art

Kwang Young Chun believes his art work depicts both harmony and conflict among diverse groups.

What does this work of art look like to you?

Do you think he has a message?
Write how you feel about Kwang*'s work.*

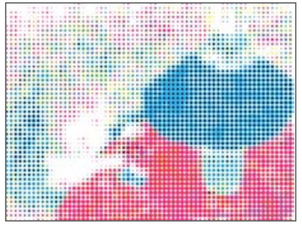
Kwang Young Chun called this work of art *Aggregation 03-AU 130.*

If you were the artist, what would be a good title for this work of art?

During your tour, you made a work of art similar to Chun's out of may different sizes of dowel rods.

What title would you give your piece? Why?

Dots, pixels and values



What do these two works of art have in common?

One was made in the 19th century by French artist Pierre Bonnard, the other in 2015 by the local printmaking collective **.5ppi** from Honolulu.

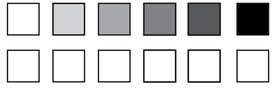
Both of these works of art are made the same method - printmaking - but use the latest technology of the time.

How was each made?

Why does one have dots and the other does not?

The Honolulu artists created their interpretation of Bonnard's print using large dots, like pixels, generated by a computer. Each pixel size and color was carved into a wooden block to represent a range of values and colors. Altogether, the printed pixel helps define the actual image.

In the grid opposite this page, try and create an image using a range of value dots as you did in the gallery. Use a pencil, and press hard to make black, and use a lighter touch for various shades of gray. You can practice below.



Dots and lines

Kumi Yamashita created a portrait of a yong girl using thread she strung between many small nails.

How long do you think her thread was?

On the opposite page, use a similar technique to create a portrait of a girl. Use only pencil or ink lines to connect the dots. The faint photograph will help you decide how many lines to draw. Put more lines where the image is dark and fewer lines where it is light.

How many lines does it take to make it look like a girl? (Too many to count!)

Negative and Positive Space

The traditional Japanese craft of making paper stencils for dying textiles is called *katagami*.

To make the stencil, thin handmade paper is bonded with a glue made from persimmons, turning the paper brown. An artist designs and cuts a detailed design into the paper and then the stencil is stabilized with a netting of silk or hair.

To print the design, wax is pressed through the stencil (in the negative space) onto the fabric. Later, dye is applied to the fabric and it resists the areas with the wax, filling in the positive space.

In the space on the next page, use the stencil provided in the gallery to make an image of the negative space.

Next, use the template made of the cut-out postive images to create a rubbing of the positive space.

Making art with cut out stencils is similar to the way artists print t-shirts with your school name or your soccer team. *What is this process called?*

Making art with geometric shapes

Kenneth W. Bushnell created *Futurismo* using the principles of Euclidean geometry and the elements of art. You can see in the gallery that the combination of colors and shapes are endless!

You can create interesting arrangements using geometric shapes with a traditional tangram set. A tangram is a set of seven flat puzzle pieces made from a square and is pictured below. Players try to put the pieces together to make a shape using all seven pieces.

What are the names of each of the seven shapes in the tangram set?

Can you determine the area of the square?
Each piece?

You can make a tangram set by folding and cutting a piece of paper. Instructions may be found on the Internet.

After you make your set of tangram shapes, there are many puzzles to solve and endless shapes to create. Use your imagination!

What shapes can you make?
Can you make the original square shape without looking back at the instructions?

Try making people, animals, letters, numbers, etc. Each shape must use all seven pieces.

The next page has some examples to get you started.