

## MATH NOTES:

Math is used in art all the time: to measure canvas and stretcher strips, to figure framing needs, compute how much metal will be needed for casting, hanging a show, **profit margins**, etc.

### DESIGNS, SHAPES:

Using tools: ruler, compass, protractor to draw any kind of a design with overlapping shapes;  
Fill shapes with different patterns, line, colors, values. Name some shapes. (grades 1-5)

Using a compass, create overlapping circles, fill resulting shapes with patterns (grades 2-5)

### MEASUREMENTS:

Using ruler to mark sides of 2" squares (1", 1/2", 1/4", 1/8") make a 4-square quilt (grades 4-5)

- sheet of paper has 4 squares drawn on it, each 2" square (use computer)
- have students mark the center of each side of each square (at 1" mark). STOP
  - on ONE square, connects the lines, creating a diamond, also corners if they wish
  - fill sections with pattern (use thin markers). STOP
- on SECOND square, students make 1/2" marks on each side. STOP
  - connect the lines, and/or corners, and/or intersections
  - fill sections with pattern (use thin markers)
- on THIRD square, students make 1/2" AND 1/4" marks on each side. STOP
  - connect the lines, and/or corners, and/or intersections
  - fill sections with pattern (use thin markers)
- on FOURTH square, students make 1/2", 1/4" AND 1/8" marks on each side. STOP
  - connect the lines, and/or corners, and/or intersections
  - fill sections with pattern (use thin markers)

THEN, cut out, glue to a colored base 6" square

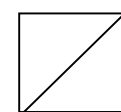
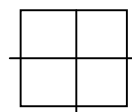


Have some small single squares ready, in case students really mess up a square.

### SHAPES, GEOMETRY, SYMMETRY:

Quilts designs using geometric shapes (grades k-2). Use 1" squares, have them cut in fourths, use as diamonds; cut on diagonal to make triangles.

(NOT that easy for them to do)



Punch out geometric shapes to create a radially symmetrical design (like a mandala) (grades 3-5)  
(Ellison die-cut machine)

Create a hexagon with a compass, from a circle and its radius, or 7 circles (grades 4-5).  
This requires discussing the RADIUS of a circle.

Create an 8-sided star (grade 5). This is by making lines intersect at 90° and 45° angles

Fold paper in half to create bilateral symmetry in designs (grades 1-5). Cut, or use paint.

# MATH NOTES:

6-sided snowflakes (grades 4-5)

- snowflakes have 6 sides or 6 arms (branches)
- demonstrate how to fold paper
- be willing to fold for those who cannot
- demonstrate how to cut out holes (do NOT cut tip)
- glue to another color of paper, on a square

<sup>a</sup>students may cut around snowflake after it is glued down, leaving border all around

Origami (all grades)

Strings of paperdolls

## MATH COMPUTATIONS:

Students use specific measurement to create polygons, snowflakes, hexagons, octagons  
Keep gallon, quart, and pint containers around, labeled, so students can SEE what they amount looks like

Model how to figure out the age of artists who are dead, or how long ago a work of art was created: by direct subtraction, or add number of years before and after the century. (all grades)

Ex: b. 1845, d. 1920

$$\begin{array}{r} 1920 \\ - 1845 \\ \hline 75 \end{array} \quad \text{or} \quad \begin{array}{l} \text{from 1845 to 1900 is} \\ \text{from 1900 to 1920 is} \\ \text{this equals} \end{array} \begin{array}{l} \rightarrow 55 \text{ years,} \\ \rightarrow + 20 \text{ years} \\ \rightarrow 75 \text{ years} \end{array} \quad \begin{array}{l} \text{(this will not work when both dates} \\ \text{are in the same century)} \end{array}$$

## VOCABULARY:

angle	perimeter
right angle	height
acute angle	width
obtuse angle	depth
radius	cup
diameter	pint
circle	quart
tangent	gallon
segment	
inch	
foot	metric
yard	U.S. standard
mile	

## SHAPES:

3-D (dimensional)	2-D (dimensional)
volume (cubic)	area (square)
<b>prism:</b>	<b>polygon:</b>
cube ←	square (tessellate)
sphere ←	circle
rectangular prism ←	rectangle
cylinder ←	rectangle (tessellate)
pyramid ←	triangle (tessellate)
	hexagon (tessellate)
	octagon (tessellate w/square)
	oval