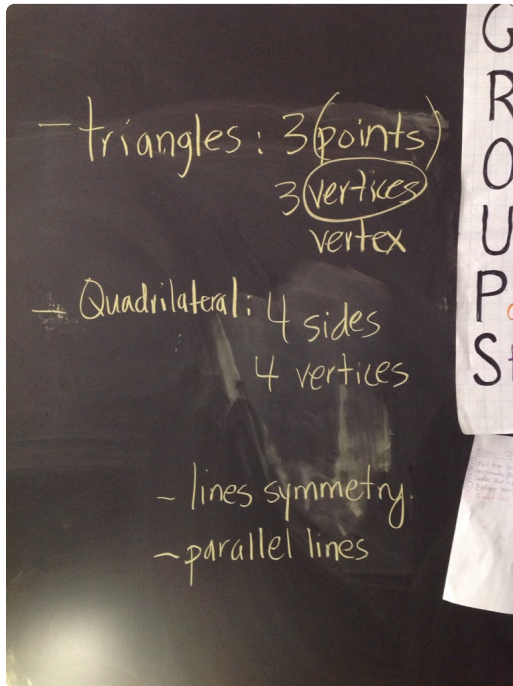


Learning Goal

We are learning to sort and classify polygons, by their attributes and define them using their properties.

Minds On

Give students each a shape and ask them to form a group with each other based on something they have in common



Some students started with things like colour, but as they talked with other students we heard things like

- points
- vertices
- sides
- lines of symmetry
- name of polygon
- parallel lines

Problem

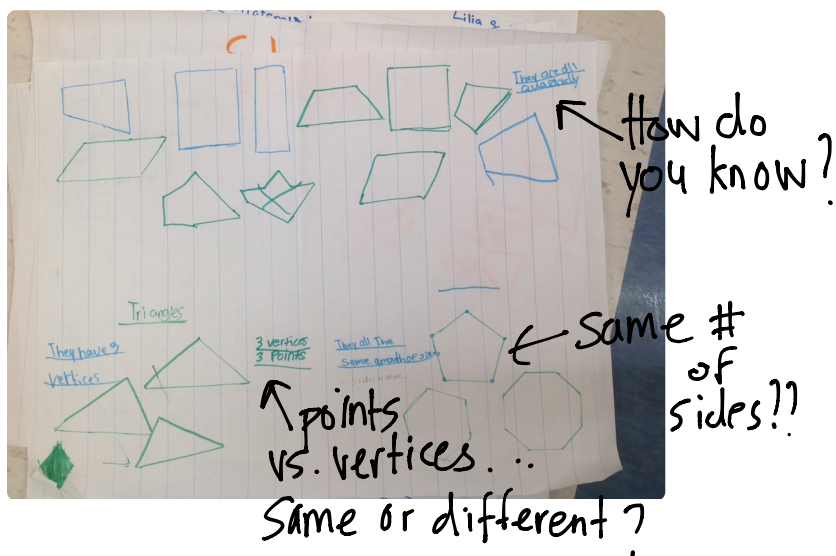
-using Van de Walle's BLM shapes, without any curved shapes, you can find these online

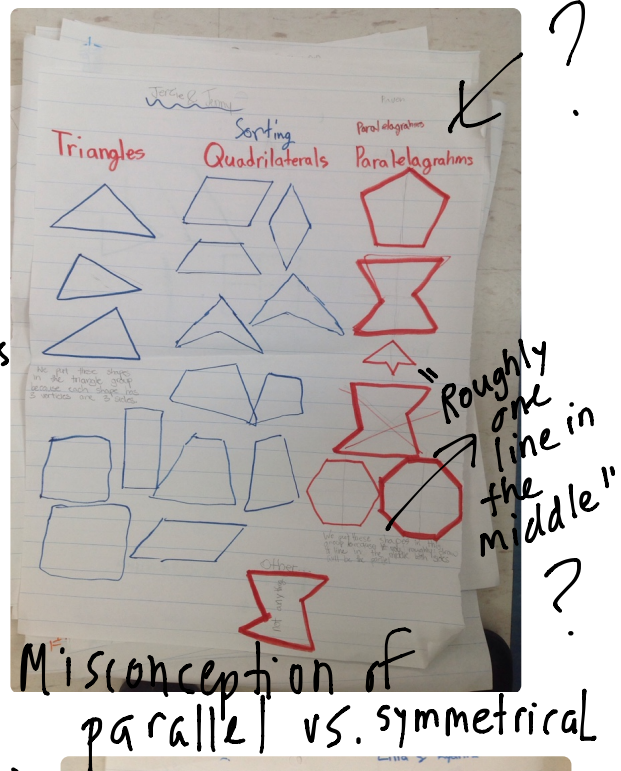
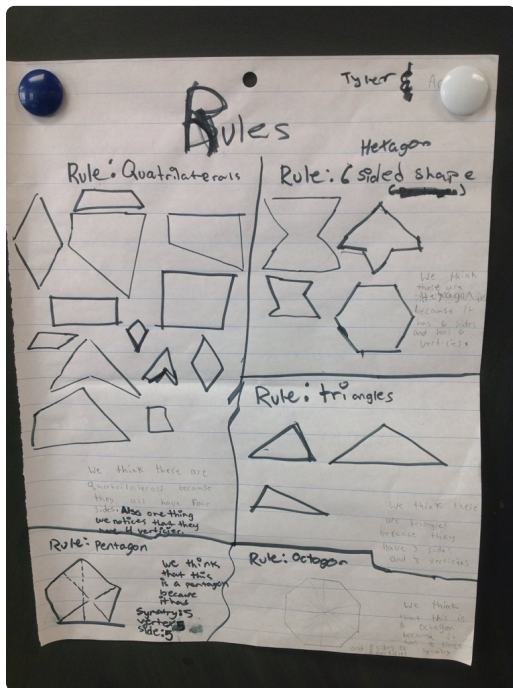
Sort these shapes according to a rule, and be prepared to explain it. Sort them in as many ways as you can, and choose a few interesting rules to sketch out your shapes for...be sure to identify the rule that connects to your sketched shapes.

Anticipation and Look Fors

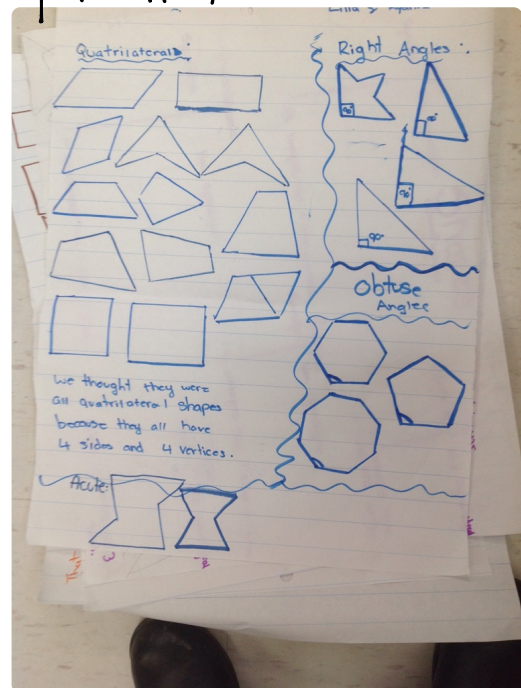
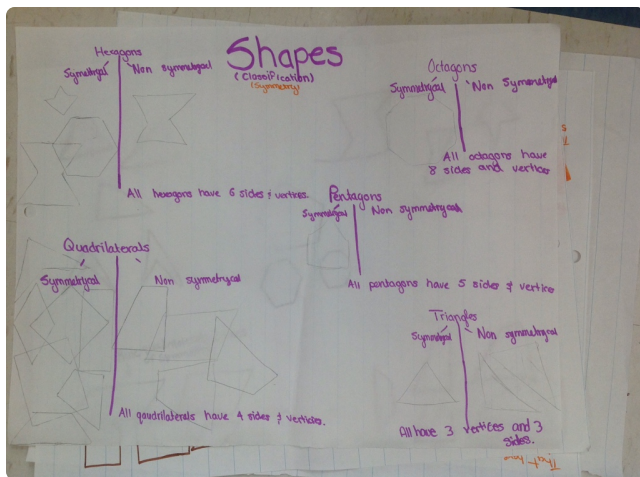
5 Practices for Orchestrating Productive Mathematics Discussions-Anticipation Organizer			
Strategy	Key Questions to Ask	Who and What	Order
- Sort by number of sides.	How did you sort your shapes?		
- Sort by angles or vertices	Is there anything else your shapes have in common?		
- Sort by non-geometric attributes (size, ...)	Is there another way you could sort these?		
- Sort by lines of symmetry or parallel lines.			
Name of polygon	How did you know that was a quadrilateral?		
Parallelograms - some misconceptions around what makes a parallelogram → lines of symmetry too.			

Student Work





Angles →



Symmetrical vs.
non-symmetrical, # of sides

The Debrief

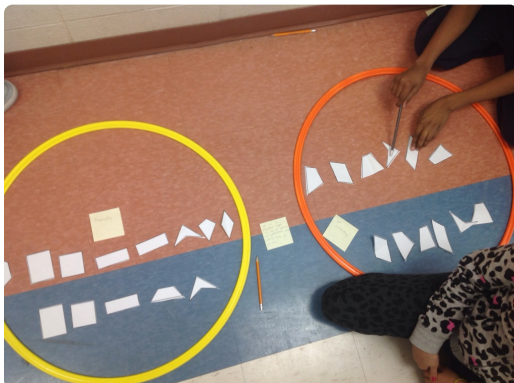
Shape	Side #	Vertices #
Triangle		
Quadrilateral		
Pentagon		

Are # sides always = # vertices?

Shape	Side #	Vertices #
Triangle	3	3
Quadrilateral	4	4
Pentagon	5	5
Hexagon	6	6
Octagon	8	8

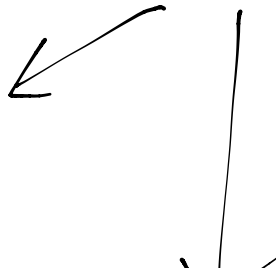
Are # sides always = # vertices?

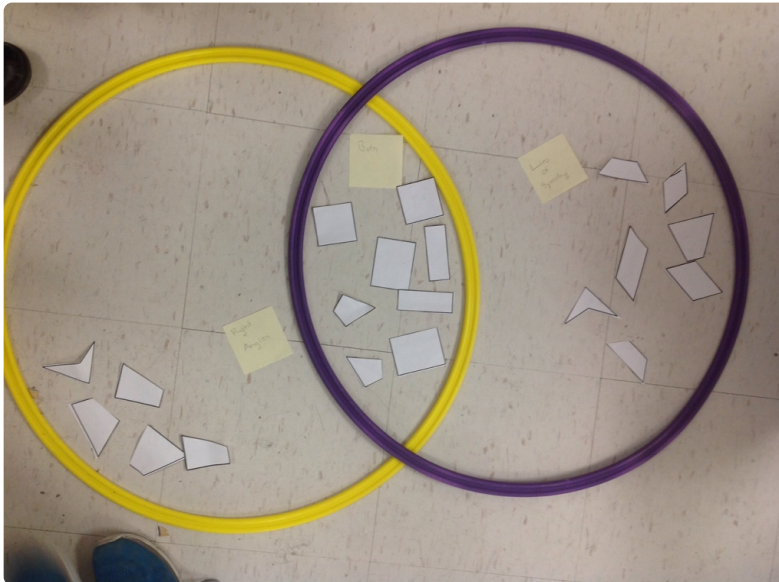
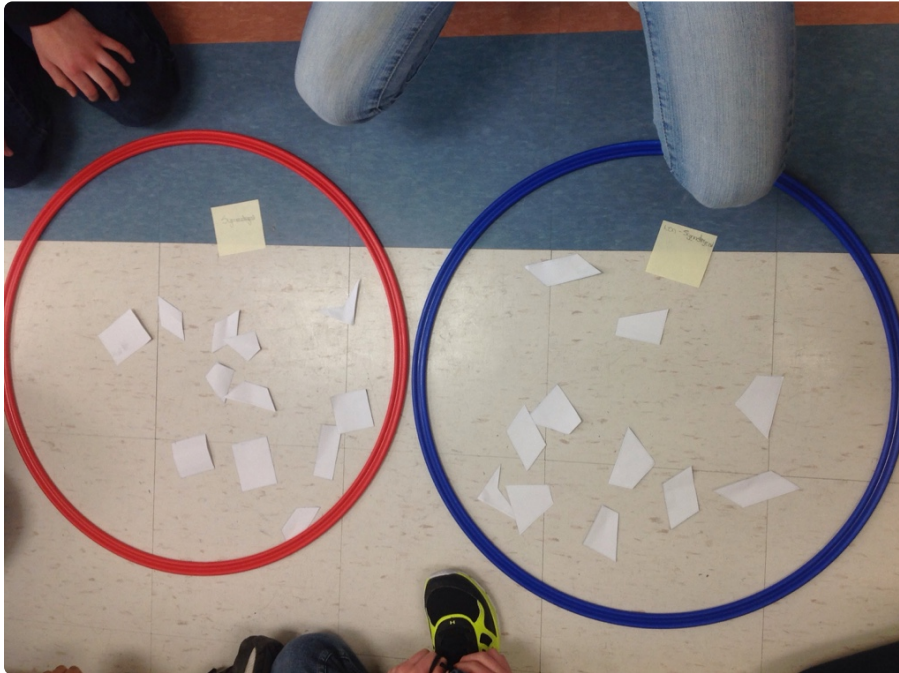
In the middle you put things that they have in common- one group made a Venn diagram



Others used the hoops separately

Symmetry versus no symmetry





Sorted in a Venn, line of symmetry with no right angle, vs right angle with no line of symmetry, with a shape with both symmetry and a right angle in the middle

Another group had two pairs of parallel lines, vs. none, with the

middle being quads with one pair of parallel and one pair of intersecting.

So what do all quadrilaterals have, versus only some? Property vs. attribute

ack

all angles $\rightarrow 360^\circ?$
total 180°

- at least one 90° or less
- 4 angles.

All quadrilaterals

- 4 sides
 - 4 vertices
- } PROPERTY

Some quadrilaterals

- lines of symmetry
 - right angles
 - parallel lines
- } ATTRIBUTE

Shape
Triangle
Quadrilateral
Pentagon
Hexagon
Octagon
Are #s

tas

