

COMMON CORE COLLABORATIVE GEOMETRY CARDS



Grades 3–5

MEANINGFUL TASKS

Grade 3 PAGES 2–3

Grade 4 PAGES 4–5

Grade 5 PAGES 6–7

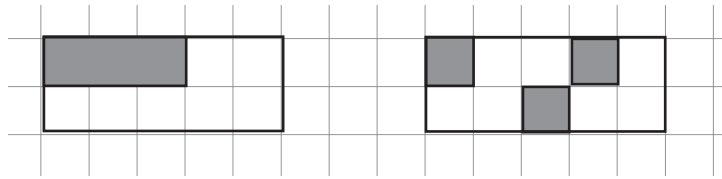
by Kit Norris



TEACHER'S PAGE

GRADE LEVEL	3
TASK	Make the Case
COMMON CORE STATE STANDARDS ADDRESSED	3.G.2
STANDARDS FOR MATHEMATICAL PRACTICE	<ol style="list-style-type: none">1. Make sense of problems and persevere in solving them.3. Construct viable arguments and critique the reasoning of others.7. Look for and make use of structure.

LAUNCH Show students this diagram.



Example A

Example B

Say:

Each rectangle represents one whole.

Do the shaded regions represent the same size?

For each rectangle, how could we show the shaded area as a fraction of the whole?

TASK Students complete the activity sheet (next page) and analyze each other's work. They justify their answers as correct.

CLOSURE Ask students to share the patterns that they noticed from example E. What do students think that the sum of all the parts will be?

EXTENSION Pose the question:

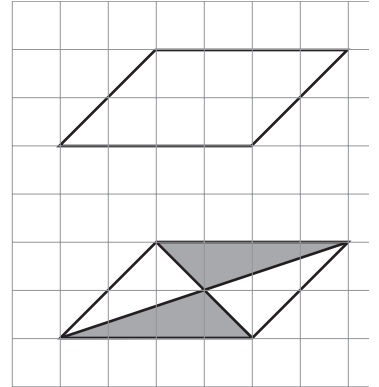
In example 3, suppose that section A represents the whole. What are the values of the other areas in the diagram in terms of this whole?

MAKE THE CASE

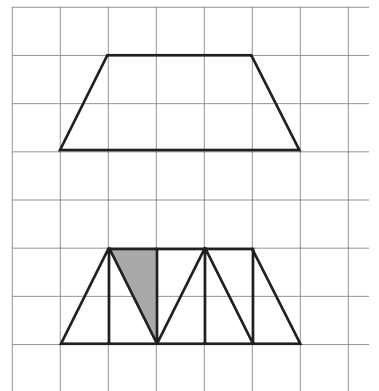


NAME _____

1. Frederica divided a parallelogram into four parts and then shaded two of those parts. She says that the shaded part is $\frac{1}{2}$ of the whole. Do you agree with Frederica? Explain.



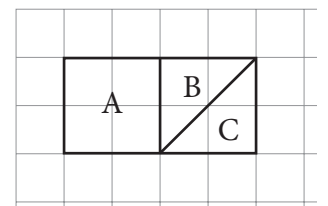
2. Francis divided a trapezoid into 8 parts. He says the shaded part is $\frac{1}{8}$ of the whole trapezoid. Do you agree with Francis? Explain.



3. The large square represents the whole. Find the size of each labeled space.

A = _____ B = _____ C = _____

What patterns do you notice?





TEACHER'S PAGE

GRADE LEVEL	4
TASK	Copy Cat
COMMON CORE STATE STANDARDS ADDRESSED	4.G.1, 4.G.2
STANDARDS FOR MATHEMATICAL PRACTICE	1. Make sense of problems and persevere in solving them. 6. Attend to precision.

LAUNCH Review names and attributes of geometric shapes by giving pairs of students a set of pattern blocks. Ask students to find the shape that has the attributes that you present to them. Say:

Find a polygon that has EXACTLY one set of parallel sides. (trapezoid)

Show me a polygon that has a right angle. (square, rectangle, right triangle)

Find a polygon that has two sets of parallel sides. (rhombus, parallelogram, square, rectangle)

Show me a polygon that has an acute angle. (many answers)

Find a polygon that has two pairs of congruent sides. (many answers, including kite)

MATERIALS Pattern blocks, paper

TASK Provide students with paper and pattern blocks. When you say "Go," they will join their partner somewhere in the classroom. The two partners sit back-to-back. Partner A will create a design on his/her paper using the five different pattern blocks. All of the blocks in the design must lie flat on the paper and must touch at least one other block.

Partner A will then instruct Partner B to build the same design by giving specific directions using the appropriate vocabulary. When Partner A's last direction has been carried out, the partners compare their designs. The partners then switch roles and repeat the process.

CLOSURE Ask students to share their strategies. *What did they say that helped their partner to copy their design without looking at it?*

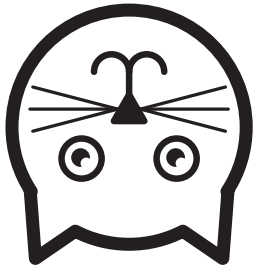
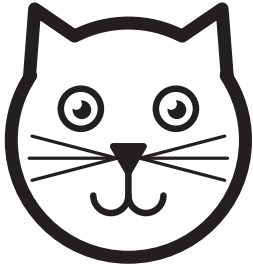
Share with the class the vocabulary the different student pairs used to describe the attributes of their pattern blocks (polygons).

EXTENSION Students repeat the Copy Cat task, and this time they cannot refer to the pattern blocks (polygons) by name. They can only describe their attributes.

COPY CAT



NAME _____



What to Do:

1. Sit back-to-back with your partner. Decide which of you will go first (Partner A).
2. Wait for the teacher to say "Go."
3. Partner A: Create a design on your paper using 5 different pattern blocks. All of the blocks must lie flat on the paper and touch at least one other block.
4. Describe your design to your partner so that he/she can copy your design without looking. When your partner is done, compare your designs.
5. Switch roles. It's Partner B's turn to create a design with pattern blocks and describe it, and Partner A's turn to copy it.

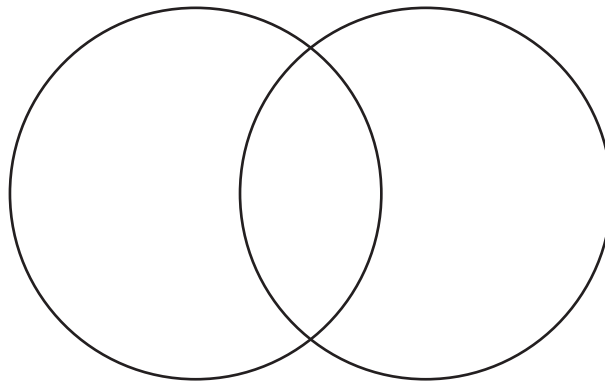


TEACHER'S PAGE

GRADE LEVEL	5
TASK	Sorting Shapes
COMMON CORE STATE STANDARDS ADDRESSED	5.G.2
STANDARDS FOR MATHEMATICAL PRACTICE	1. Make sense of problems and persevere in solving them. 3. Construct viable arguments and critique the reasoning of others. 6. Attend to precision.

LAUNCH Students have found their group using the Collaborative Cards and they are sitting together in their groups. Show students the Venn Diagram below:

All sides are the same length. Sides are congruent.



Shape has at least one acute angle.

Ask students in what part of the Venn diagram they would place the following polygons: equilateral triangle, rectangle, rhombus, square, kite.

Tell students to think independently at first and then share their thinking with one partner in their group. Ask each pair of students to then justify their thinking to the other members of the group.

Ask: *Do both sets of partners have the same solutions? Is there more than one way to place these polygons?*

TASK Students follow the same process as they did in the launch. They work independently, then with one partner, and then the entire group discusses their results.

CLOSURE Ask students to reflect on sorting shapes. Ask: *What did you notice? Which shape has many of the characteristics of other shapes?*

Ask students to respond to each statement as being “always true,” “sometimes true,” or “never true”:

Every square is a rectangle.

Every rectangle is a parallelogram.

Every parallelogram is a rhombus.

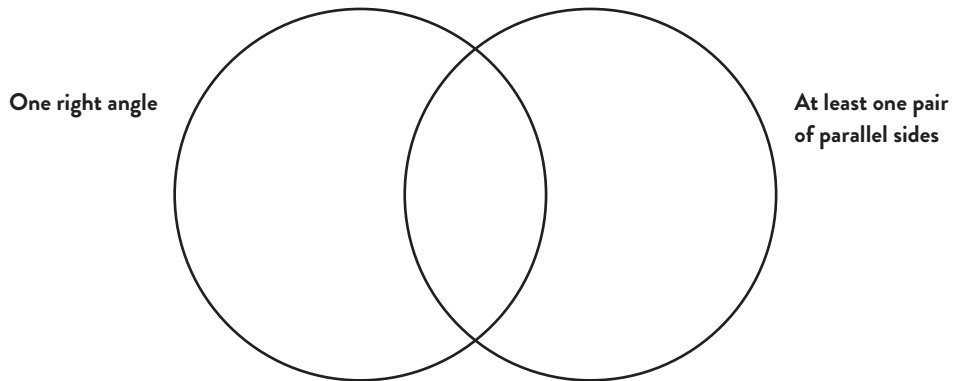
Every rhombus is a parallelogram.

SORTING SHAPES

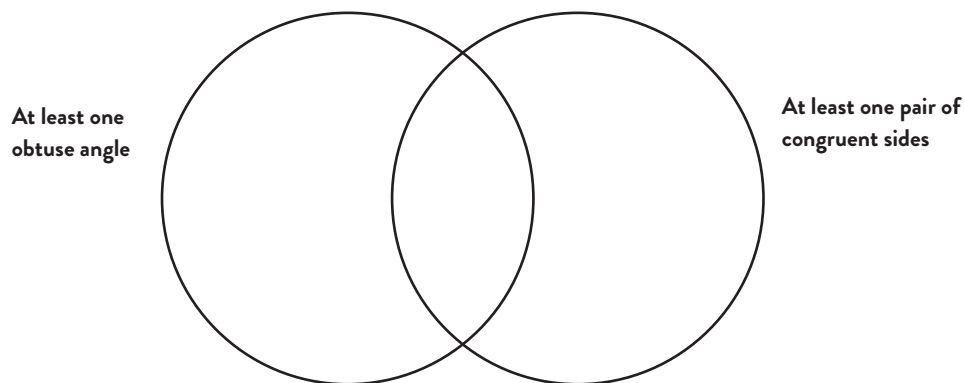


NAME _____

1. Place the following polygons in the Venn diagram below: square, right triangle, isosceles triangle, rhombus, parallelogram.



2. Place the following polygons in the Venn diagram below: trapezoid, square, rhombus, kite, rectangle, isosceles triangle, right triangle.



Work independently. Then compare drawings with your partner. Say why you think the polygons you drew fit the attributes described.

3. On a separate sheet of paper, draw a polygon that has the following attributes:
 - at least one acute angle
 - all sides are congruent
4. On a separate sheet of paper, draw a polygon that has the following attributes:
 - adjacent sides are perpendicular
 - at least one right angle
5. Create your own clues and share them with your partners. Do they get the answers you intended?