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Teacher Notes

I sincerely hope that you and your students enjoy this geometry unit! You'll probably notice that this unit is quite a bit shorter than the previous fourth grade units, which will give us just enough time for the next unit (measurement) to be taught before state testing begins. This unit has been designed around the Common Core Standards, but you should find the content useful in any fourth grade classroom. In this unit you will find performance tasks to conceptually teach new skills through the workshop model, as well as work station activities and games for review. Before beginning this unit, I like to send home a study guide of the vocabulary words included in the unit, because a great deal of geometry is dependent on basic vocabulary. I have included the study guide I sent home, as well as a geometry booklet that students can make to review geometric terms. I have also included a suggested pacing guide below. If you are in an absolute rush (I know, I know, I wish that never happened, but it does), I have included a one week consolidated pacing guide. As always, feel free to contact me if you have any questions. ashleigh_60@hotmail.com

Unit at a Glance

Lesson 1 Monster Symmetry Skill: Vocabulary Booklet	Lesson 2 Alphabet Symmetry Skill: Symmetry Practice and/or Add to Vocabulary Booklet	Lesson 3 Types of Angles Skill: Identify the Angle and/or Add to Vocabulary Booklet	Lesson 4 Finding Lines in Maps Skill: Types of Lines Sort	Lesson 5 Lines Art Project Skill: I Spy a Line
Lesson 6 Types of Triangles Skill: Triangles Practice	Lesson 7 Grandfather Tang's Story Skill: Quadrilateral Practice	Lesson 8 Sorting Shapes Skill: Drawing Quadrilaterals	Lesson 9 Geometry Stations Skill: Spin a Shape	Lesson 10 Geometry Park

If You're In a Rush::	Lesson 2 & 3 Types of Angles & Alphabet Symmetry Skill: Vocabulary Booklet	Lesson 4 & 6 Types of Lines in Maps & Types of Triangles	Lesson 8 Sorting Shapes Skill: Drawing Quadrilaterals	Lesson 9 Geometry Stations Skill: Drawing Quadrilaterals	Lesson 10 Geometry Park

10 Detailed Lesson Plans

Lesson I: Monster Symmetry

Standard 4.G.3: Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts and identify symmetric figures and draw lines of symmetry

Materials:

- Pattern Blocks
- Monster Symmetry Dot Paper
- Vocabulary Booklet-one word each day

Mini-lesson

In this activity students will explore symmetry by recognizing points where a shape has been reflected over a line of symmetry. Show students the Study Jams slide show

<http://studyjams.scholastic.com/studyjams/grades/math/geometry/line-of-symmetry.htm> Pattern blocks are used to show symmetry and can be divided down the middle to two congruent pieces that show symmetry. Discuss what symmetry is by showing students how you can fold different shapes in half and both sides of the figure are congruent. If you have dry erase boards, ask students to draw a symmetrical figure and to draw a line of symmetry in the figure. This can also be done on scrap paper. Show students how to create symmetrical shapes by tracing pattern blocks. Begin with one pattern block at a time and then have students group pattern blocks to create a larger figure.

After you feel that students have a solid grasp of drawing symmetrical figures, have students design their own symmetrical monster. Students may use the included dot paper to help them create their monster design. Students may want to fold their paper as they draw or to draw one section at a time.

Work Time

Have students work individually to complete their Symmetry Monster. Students may discuss their monsters at their group or table to ensure accuracy and for peer feedback. As students design their monster, monitor students. Pay attention to students who may need extra strategies or support. Some students may need assistance in learning how to count the dots to ensure symmetry.

Closing

Have students share their symmetrical monster and discuss how they found the line of symmetry in their figures. This makes a great hallway display!

Intervention

- Show students how to immediately flip the paper as they create their monster, rather than waiting until half of the image is complete.

Extension

- Have students fold their paper into four sections and create a monster that has four-fold symmetry.

Essential Questions

What is symmetry?
How do you create symmetrical figures?

Formative Assessment

- Observe students as they work
- Look for misconceptions or

Formative Assessment

Lesson I: Monster Symmetry		Materials: <ul style="list-style-type: none">• Pattern Blocks• Monster Symmetry Dot Paper• Vocabulary Booklet-add a few words each day
Standard: 4.G.3: Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts and identify line-symmetric figures and draw lines of symmetry		
Mini-lesson		
<p>In this activity students will explore congruency and symmetry by recognizing points where a shape has been reflected over a line of symmetry. Show students the Study Jams slide show.</p> <p>http://studyjams.scholastic.com/studyjams/jams/math/geometry/lines-of-symmetry.htm Pattern blocks are used to show symmetry and can be divided down the middle to two congruent pieces that show symmetry. Discuss what symmetry is by showing students how you can fold different shapes in half and both sides of the figure are congruent. If you have dry erase boards, ask students to draw a symmetrical figure and to draw a line of symmetry in the figure. This can also be done on scrap paper. Show students how to create symmetrical shapes by tracing pattern blocks. Begin with one pattern block at a time and then have students group pattern blocks to create a larger figure.</p> <p>After you feel that students have a solid grasp of drawing symmetrical figures, have students design their own symmetrical monster. Students may use the included dot paper to help them create their monster design. Students may want to fold their paper as they draw or to draw one section at a time.</p>		
Work Time		
Have students work individually to complete their Symmetry Monster. Students may discuss their monsters at their group or table to ensure accuracy and for peer feedback. As students design their monster, monitor students. Pay attention to students who may need extra strategies or support. Some students may need assistance in learning how to count the dots to ensure symmetry.		
Closing		
Have students share their symmetry monsters. Ask students to find the line of symmetry in their figures. This makes a great hallway display!		
Intervention	Extension	
<ul style="list-style-type: none">• Show students how to immediately flip shapes and trace as they create their monster, rather than waiting until half of the image is complete.	<ul style="list-style-type: none">• Have students fold their paper into four squares and create a monster that has two lines of symmetry.	
Essential Questions	Formative Assessment	
<ul style="list-style-type: none">• What is symmetry?• How can I create symmetrical figures?	<ul style="list-style-type: none">• Observe students as they work.• Look for misconceptions or misunderstandings.	

10 Conceptual Lessons



Name _____ Date _____

I SPY A LINE

- Play this game with a partner.
- Take turns looking for different types of lines: perpendicular and parallel.
- When you find a set of lines, highlight the lines (use one color for perpendicular and a different color for parallel).
- Once a line has been highlighted, you cannot use that line again.
- Take turns highlighting lines and see how many of each type of line you can highlight.

Name _____ Date _____

SHAPE SORTING

Directions: Using your Venn Diagram labels and shapes, label each Venn Diagram below with corresponding labels and add the letters naming each shape in the correct location in the Venn Diagram. Explain what conclusions can be drawn from each sort.

_____ _____ _____	_____ _____ _____
_____ _____ _____	_____ _____ _____

Name _____ Date _____

TYPES OF TRIANGLES

1. Is it possible to make a three-sided polygon that is not a triangle?

2. Can a triangle have two right angles?

3. How many different types of triangles can you create?

4. How many right triangles can you create?

See Example Lesson

Lesson 6: Types of Triangles		Materials: <ul style="list-style-type: none">Types of Triangles Printable
Standard: 4.G.1: Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Identify these in two dimensional figures. 4.G.2: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.		
Mini-lesson Review geometry vocabulary and pay particular attention to types of triangles. I have found types of triangles to be quite challenging to students, because of the complex terminology and needed memorization. Explain that the side across from an angle on a triangle is described as an opposite side. Show students how to use a ruler to measure the side length of the sides of a triangle.		
Work Time In this task students will explore the properties of triangles. Students will identify the attributes of each triangle and compare and contrast the attributes of different triangles. On the printable, there are four different geoboards. Students will use the geoboards to answer each of the four questions: Is it possible to make a three sided polygon that is not a triangle? Can a triangle have two right angles? How many different types of triangles can you create? How many right triangles can you create? Students should draw their work to show their thinking on the geoboard and the explain their answers on the lines provided.		
Closing Allow students to share their answers for each problem. Have students justify their responses, and if a student disagrees with the response or explanation, allow that student the opportunity to justify their thinking. Ask students to share how their understanding of types of triangles impacted their thinking and reasoning in today's task.		
Intervention <ul style="list-style-type: none">Have students work with manipulatives such as Anglegs.	Extension <ul style="list-style-type: none">Have students create an artifact to share with the class that explains the types of triangles.	
Essential Questions <ul style="list-style-type: none">How can I create different types of triangles?How are triangles alike and different?What are the properties of triangles?	Formative Assessment <ul style="list-style-type: none">Observe students as they work.Check for accuracy in student work.Listen to student conversations.	

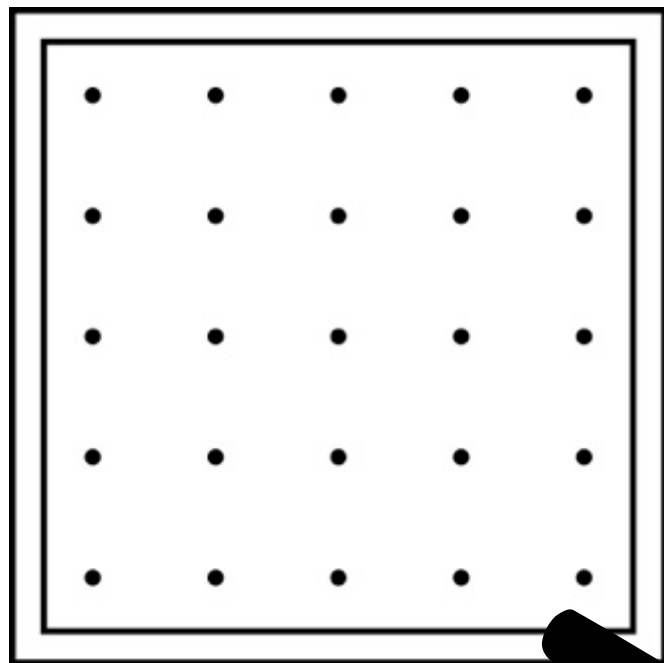
Name _____

TYPES OF TRIANGLES

Date _____

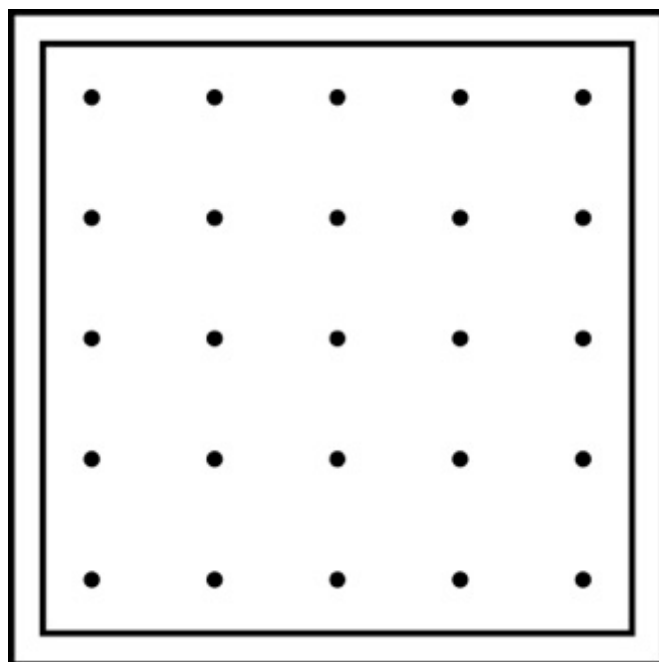
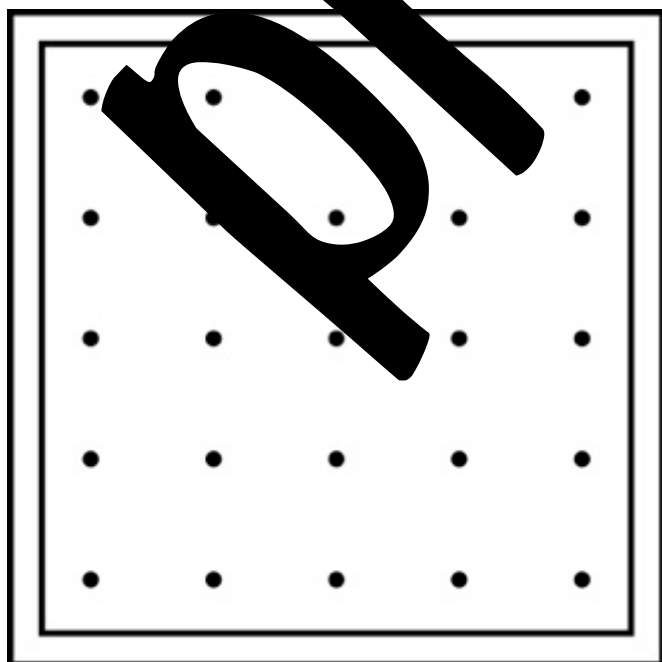
1. Is it possible to make a three sided polygon that is not a triangle?

2. Can a triangle have two right angles?



3. How many different types of triangles can you create?

How many right triangles can you create?



10 Skills Practice Printables

Name _____ Date _____

Drawing Quadrilaterals

Use the geoboard to draw the quadrilaterals described in the table below.

four congruent sides with no right angles	four congruent sides and four right angles	one set of parallel sides and no right angles
two sets of parallel lines and opposite sides are congruent	one set of parallel lines and one right angle	no right angles

Geoboard area for drawing quadrilaterals.

Name _____ Date _____

Quadrilateral Practice

	Number of Right Angles	Number of Pairs of Parallel Sides	Equal Sides (all, opposite, or none)

Classify each figure below in as many as possible using the terms: polygon, rhombus, rectangle, or square.

Name _____ Date _____

Sorting Lines

Represent the decimals in different forms: fraction, decimal, and word form.

Intersecting	Parallel	Perpendicular

Name _____ Date _____

Triangle Practice

	Number of Acute Angles	Number of Right Angles	Number of Obtuse Angles	Class

Name each triangle below three different ways.

Name _____ Date _____

SYMMETRY PRACTICE

- Draw a figure that does not have any lines of symmetry.
- Draw a figure that has EXACTLY two lines of symmetry.
- Draw a figure that has EXACTLY four lines of symmetry.
- Draw a figure that has EXACTLY three lines of symmetry.

Name _____ Date _____

IDENTIFY THE ANGLES

Identify the angles in the figures below.

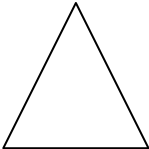
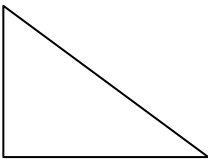
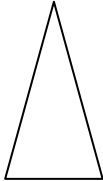
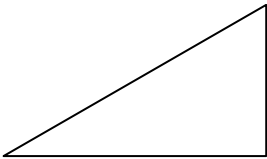
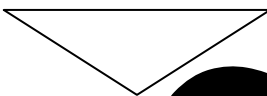
Aligned to Each Lesson

Name _____

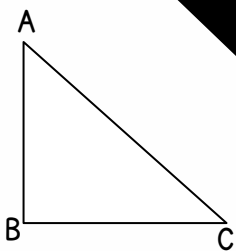
Date _____

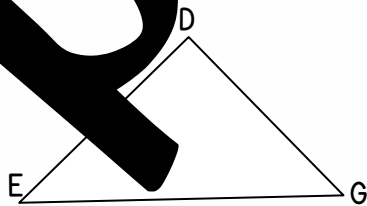
Triangle Practice

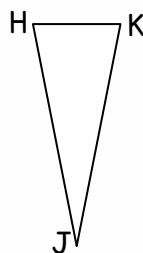


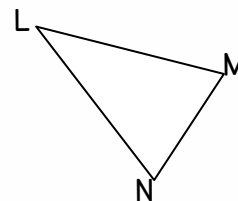
	Number of Acute Angles	Number of Right Angles	Number of Obtuse Angles	Classify Triangle
				
				
				
				
				

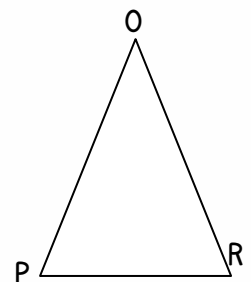
Name each triangle below three different ways.











Name _____

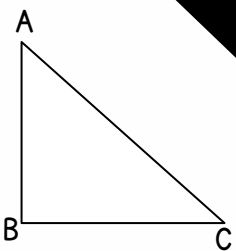
Date _____

Triangle Practice

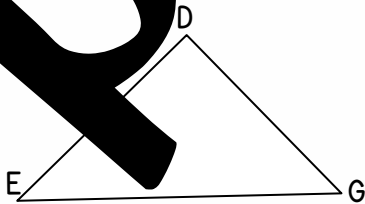


	Number of Acute Angles	Number of Right Angles	Number of Obtuse Angles	Classify Triangle
	3	0	0	equilateral
	2	1	0	right isosceles
	3	0	0	isosceles
	2	1	0	right isosceles
	2	0	1	isosceles

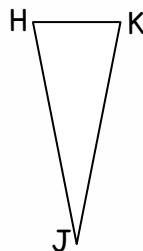
Name each triangle below three different ways.



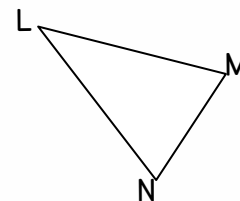
ABC
 ACB
 BAC



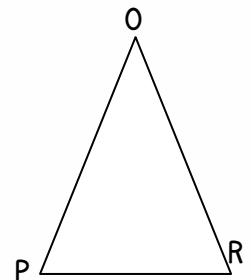
EDG
 DGE
 GED



JHK
 HKJ
 KJH



LMN
 MNL
 NLM



POR
 ORP
 RPO

Vocabulary Booklet

GEOMETRY VOCABULARY BOOKLET



By: _____

GEOMETRY VOCABULARY BOOKLET



By: _____

Term	Definition
angle	
acute angle	
right angle	
obtuse angle	

Definition:

Draw a Picture:

ANGLE

Real-World Example:

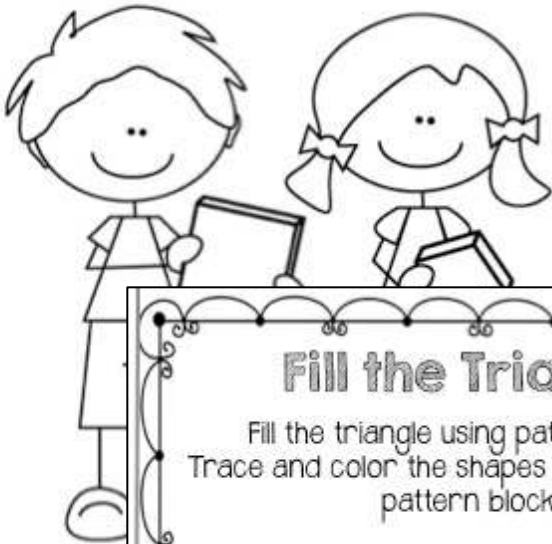
Use in a Sentence:

2

Versions

Geometry Stations

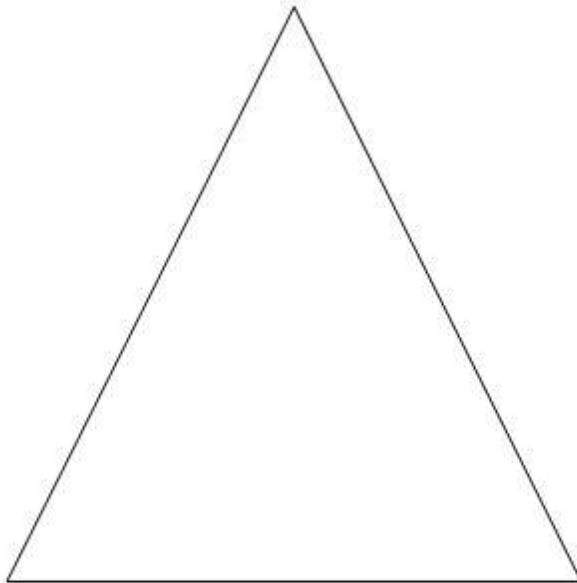
Geometry Stations



By: _____

Fill the Triangle

Fill the triangle using pattern blocks.
Trace and color the shapes to represent the pattern blocks.



Station 2

Comparing Quadrilaterals

Use the chart below to compare a square and rhombus.

Similarities	Differences
.	.
.	.
.	.

Quadrilateral Flow Chart

Use the words in the word bank to fill in the squares below.

parallelogram square trapezoid
rectangle quadrilateral rhombus

all polygons with 4 sides

2 pairs
of parallel sides

1 pair
of parallel sides

4 right angles

no right angles

4 equal sides

Station 7

9 Stations