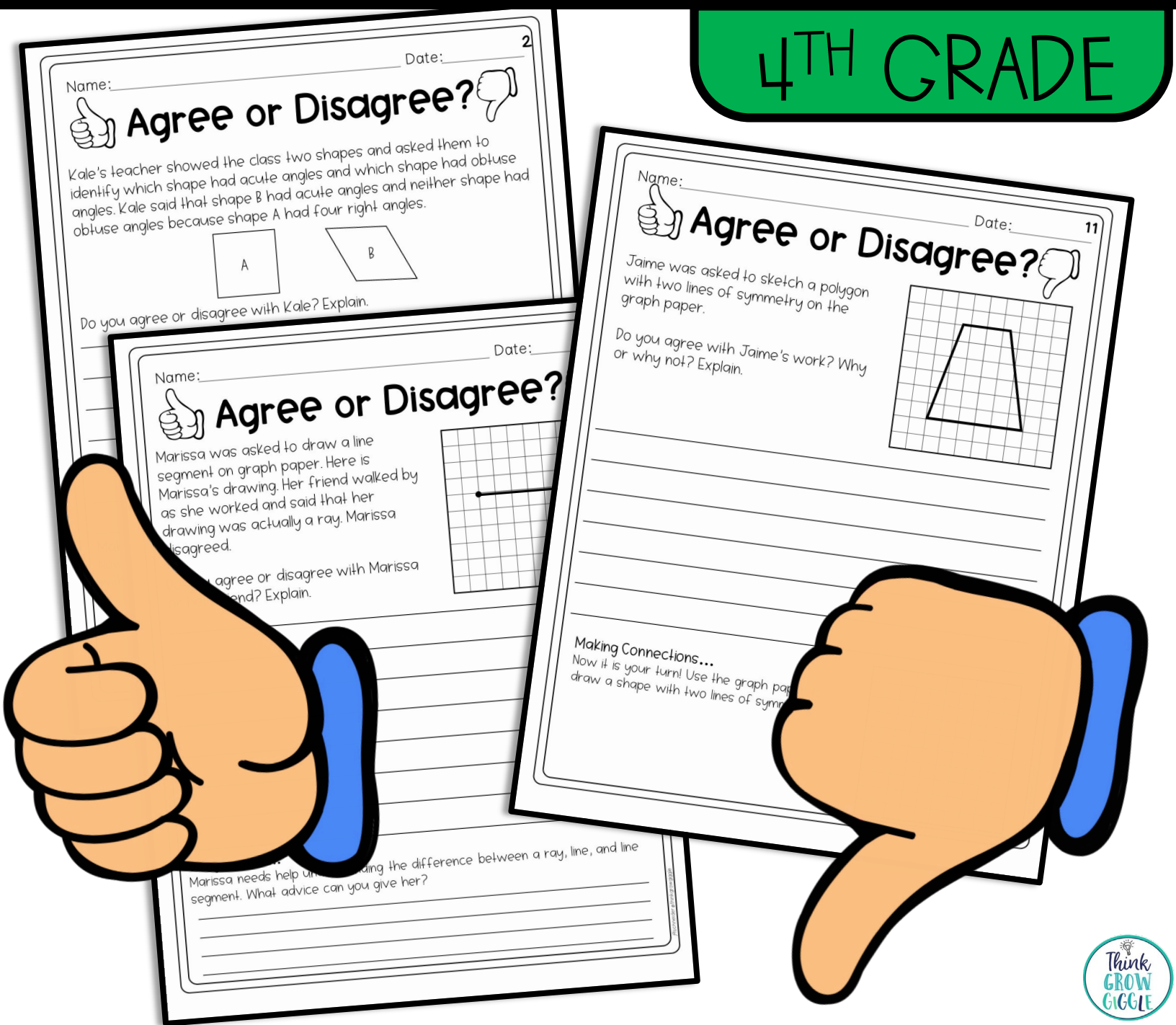
AGREE or DISAGREE?

GEOMETRY

Analyzing & Critiquing Math Problems

4TH GRADE



Contents

15 Geometry Agree/Disagree Problem Solving Tasks in 3 Formats:

-Activity Sheet Format
-Task Card Format
-Whole Class Power Point Format

Agree/Disagree Student Cards
(2 sizes included)

Student Discussion Stems and Questions

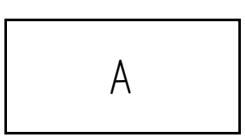
Answer Keys

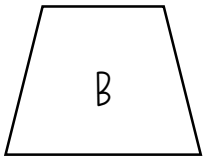
Teacher Suggestions

Name:_____ Date:_____

Agree or Disagree?

Kale was asked to draw two shapes. One shape had to have a set of parallel lines and one set had to have a set of perpendicular lines. She said that shape A had a set of parallel lines and shape B had a set of parallel and perpendicular lines.





Do you agree or disagree with Kale? Explain.

Making Connections...

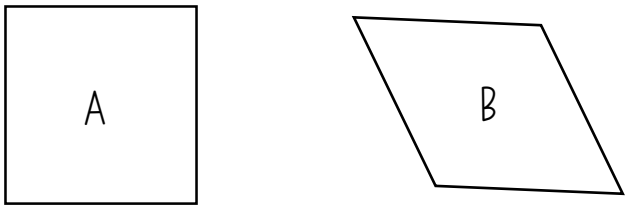
Now it is your turn! Use the space below to draw a shape with a set of parallel lines and a shape with perpendicular lines. Label each shape.

j@schneider @thinkgrowgiggle

Name:_____ Date:_____

Agree or Disagree?

Kale's teacher showed the class two shapes and asked them to identify which shape had acute angles and which shape had obtuse angles. Kale said that shape B had acute angles and neither shape had obtuse angles because shape A had four right angles.



Do you agree or disagree with Kale? Explain.

_____

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Making Connections...

Now it is your turn! Use the space below to draw a shape a right angle, a shape with an obtuse angle, and a shape with an acute angle. Label each shape.

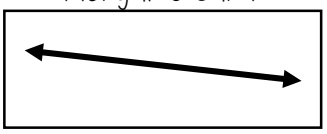
j@schneider @thinkgrowgiggle

Name:_____ Date:_____

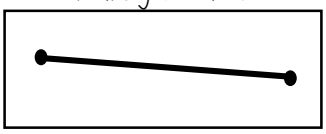
Agree or Disagree?

Morgan's class was going to play *Geometry Name It!* in math class today. Morgan was paired up with Kailey. Each student had to correctly name what they saw on each card they flipped over. Both students named what they saw as a line segment.

Morgan's card



Kailey's card



Do you agree with Morgan or Kailey? Why? Explain.

Going Further...

Morgan's teacher asked the students to create a sketch of intersecting line segments. Create a sketch in the space below to help the students complete this task.

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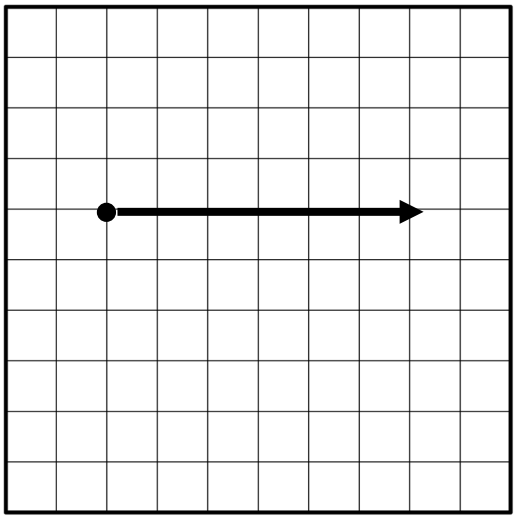
Name:_____ Date:_____

Agree or Disagree?

Marissa was asked to draw a line segment on graph paper. Here is Marissa's drawing. Her friend walked by as she worked and said that her drawing was actually a ray. Marissa disagreed.



Do you agree with Marissa or her friend? Explain.

Going Further...

Marissa needs help understanding the difference between a ray, line, and line segment. What advice can you give her?

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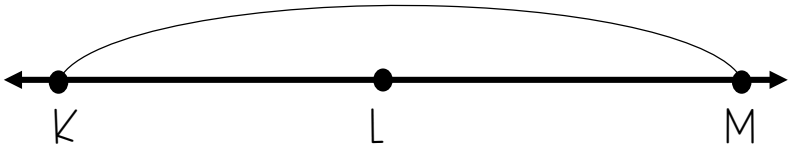
Name:_____ Date:_____

Agree or Disagree?

William's teacher asked the students to describe the following:

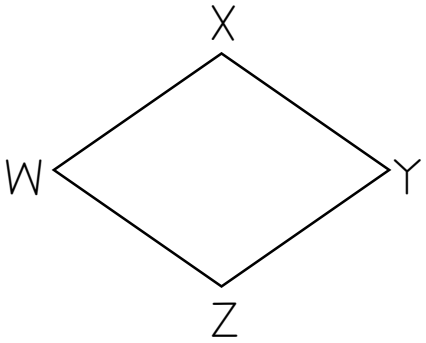


William called $\angle$KLM a line and Nathan called $\angle$KLM an obtuse angle. William thought that they were both right and Nathan disagreed.

Do you agree with William or Nathan, why? Explain.

Going Further...

Using the shape below, name at least two different angles.



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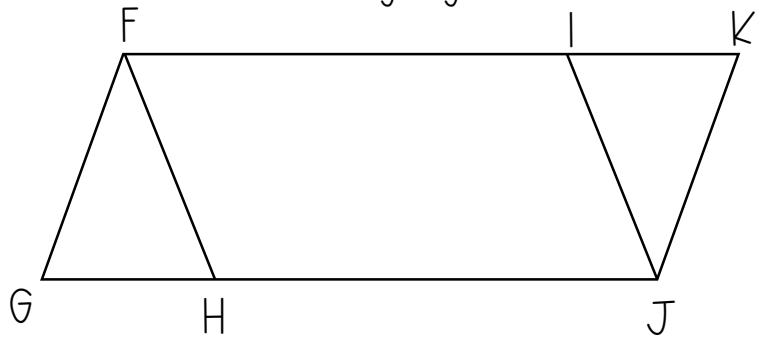
Name:_____ Date:_____

Agree or Disagree?

Nate's class was shown the following figure:



Nate's teacher asked him to make a true statement about the figure. He said that angle GFH and IJK were the same type of angles, obtuse.
Do you agree or disagree with Nate? Why? Explain.

_____

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Going Further...
Nate was asked to draw a line within the shape above to create a right angle. Help Nate by drawing a line to create a right angle. Name your angle. What is the name of the right angle you created?

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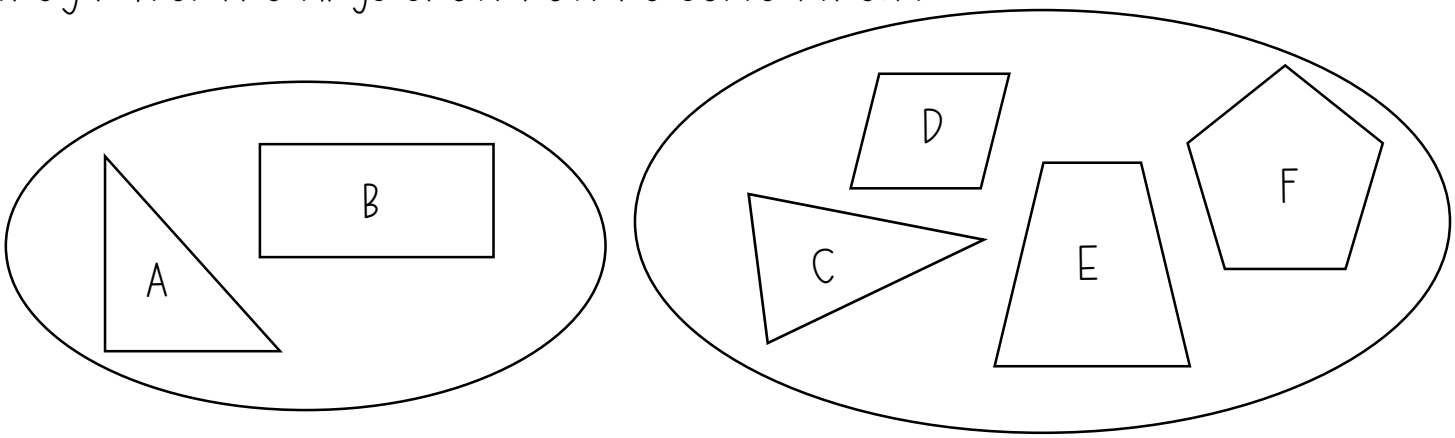
Name:_____ Date:_____

Agree or Disagree?

Marcus was asked to sort these polygons based on the types of angles they have. The rings show how he sorted them.



Do you agree or disagree with Marcus? Why? Explain.

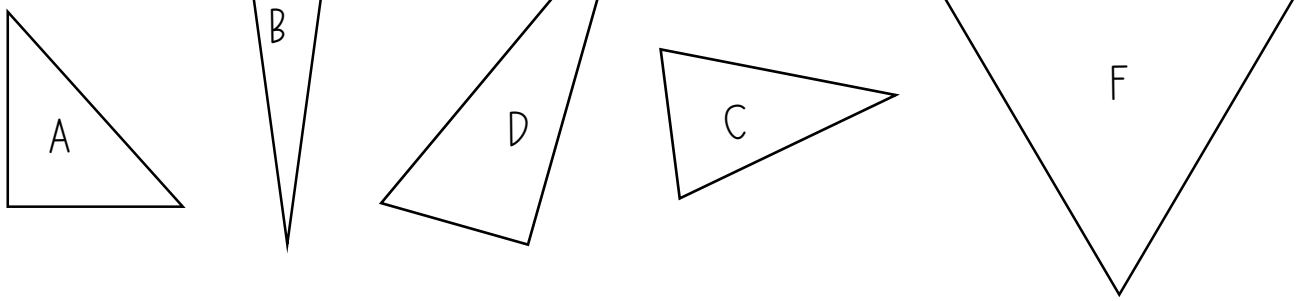
Making Connections...
What is another way to sort these polygons? Tell the letter of the shapes in each group and explain why you sorted them that way.

@schneider.thinkgrowwiggle

Name:_____ Date:_____

Agree or Disagree?

Mina was shown these triangles and asked to sort them. She said that they were already sorted because each of the triangles contained an obtuse angle.



Do you agree or disagree with Mina? Why? Explain.

Making Connections...
What is another way to sort these triangles? Tell the letter of the shapes in each group and explain why you sorted them that way.

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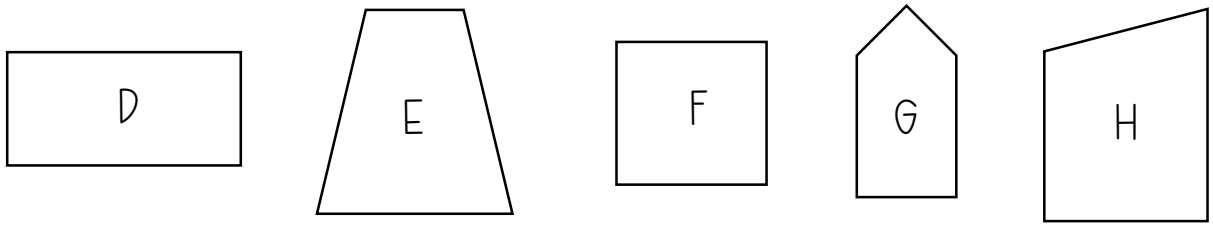
Name:_____ Date:_____

Agree or Disagree?

Tamara was told to pick one polygon from the group below that does not fit with all of the others. She picked F.



Do you agree or disagree with Tamara? Why? Explain.

Making Connections...
What is another way to sort these polygons? Tell the letter of the shapes in each group and explain why you sorted them that way.

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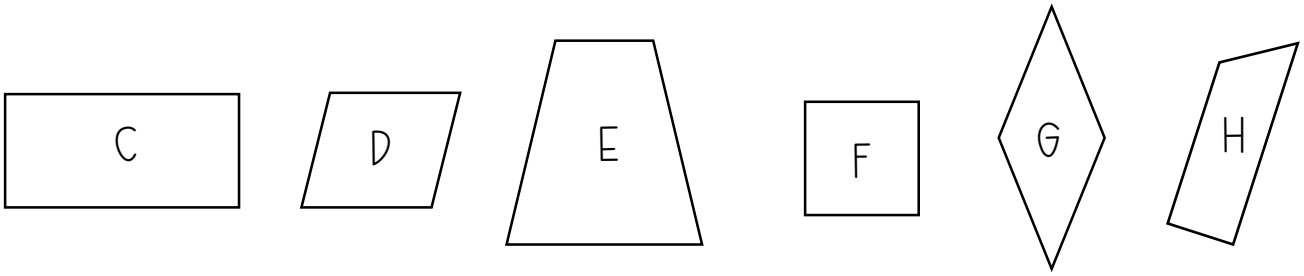
Name:_____ Date:_____

Agree or Disagree?

Danielle was shown these quadrilaterals and was asked to sort them into two groups based on their angles. She said it was impossible to group them because they are all different shapes.



Do you agree or disagree with Danielle? Why? Explain.

Making Connections...
Name a shape from above that has a set of parallel and perpendicular lines.

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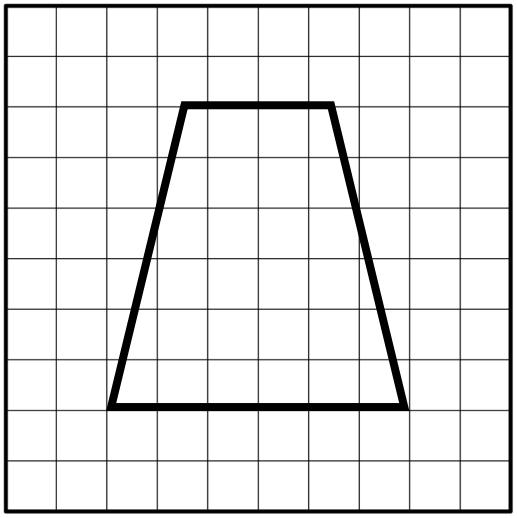
Name:_____ Date:_____

Agree or Disagree?

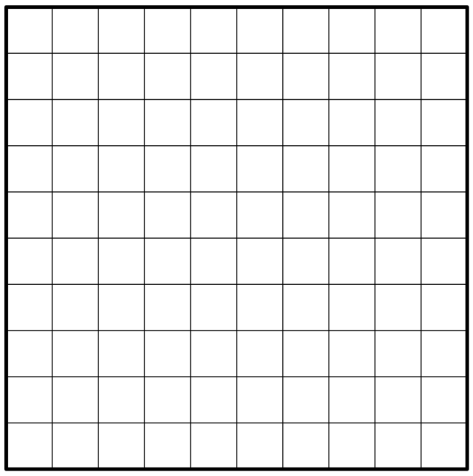
Jaime was asked to sketch a polygon with two lines of symmetry on the graph paper.



Do you agree with Jaime's work? Why or why not? Explain.

Making Connections...

Now it is your turn! Use the graph paper to draw a shape with two lines of symmetry.



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Name:_____ Date:_____

Agree or Disagree?

Kalissa's class was given a math art project. Each student had to draw a shape with one line of symmetry and a shape with at least three lines of symmetry. Kalissa said the only shape with at least three lines of symmetry was a circle. Her friend disagreed.

Do you agree will Kalissa or her friend? Why? Explain.

Making Connections...
What advice can you give Kalissa to help her understand what symmetry is. Draw a sketch of a shape with more than three lines of symmetry to help her understand.

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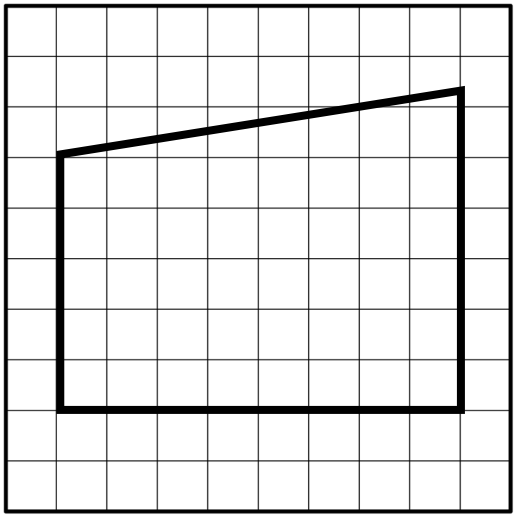
Name:_____ Date:_____

Agree or Disagree?

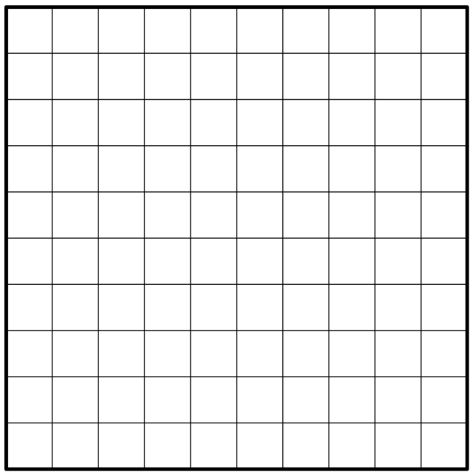
Taylor was asked to sketch a polygon with no lines of symmetry on the graph paper.



Do you agree with Taylor's work? Why or why not? Explain.

Making Connections...

Now it is your turn! Use the graph paper to draw a shape with no lines of symmetry.



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Name:_____ Date:_____

Agree or Disagree?

After designing a geometric poster for his math project, Tyler measured the sides of a quadrilateral he drew to see which type of polygon it was. The shape he drew had two obtuse angles and two acute angles. He decided that he must have drawn a trapezoid.

Do you agree with Tyler? Why or why not? Explain.

Making Connections...
Draw a sketch of a five-sided polygon with at least two acute angles. What shape did you draw? How do you know?

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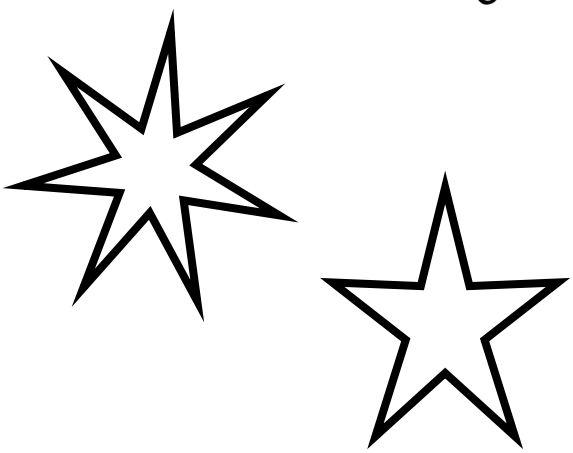
Name:_____ Date:_____

Agree or Disagree?

Larissa was shown these two polygons and asked to identify which one had more lines of symmetry. Larissa said that they both had an equal amount of symmetry.



Do you agree with Larissa's thinking? Why or why not? Explain.

Making Connections...
Larissa was asked what type of angles each of the stars had. She said they both had acute and obtuse angles, but neither had right angles. Do you agree with Larissa? Explain.

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1

Kale was asked to draw two shapes. One shape had to have a set of parallel lines and one set had to have a set of perpendicular lines. She said that shape A had a set of parallel lines and shape B had a set of parallel and perpendicular lines.

Do you agree or disagree with Kale? Explain.

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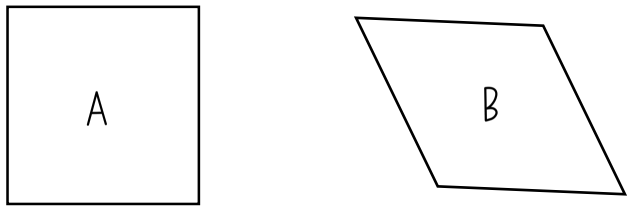
2

Kale's teacher showed the class two shapes and asked them to identify which shape had acute angles and which shape had obtuse angles. Kale said that shape B had acute angles and neither shape had obtuse angles because shape A had four right angles.



Do you agree or disagree with Kale? Explain.

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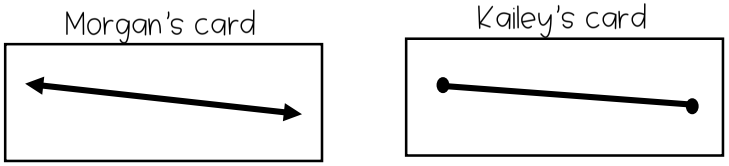
3

Morgan's class was going to play *Geometry Name It!* in math class today. Morgan was paired up with Kailey. Each student had to correctly name what they saw on each card they flipped over. Both students named what they saw as a line segment.



Do you agree with Morgan or Kailey? Why? Explain.

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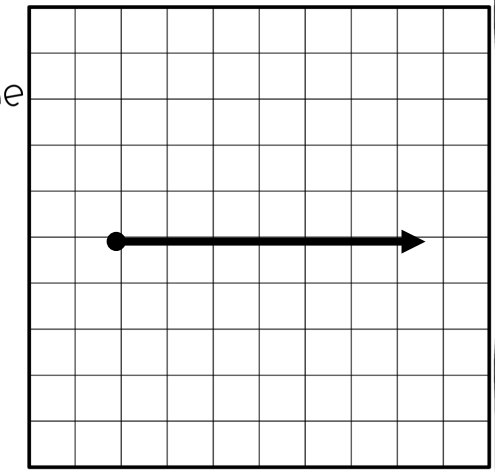
4

Marissa was asked to draw a line segment on graph paper. Here is Marissa's drawing. Her friend walked by as she worked and said that her drawing was actually a ray. Marissa disagreed.



Do you agree with Marissa or her friend? Explain.

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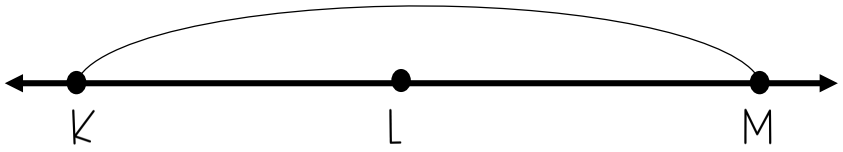
5

William's teacher asked the students to describe the following:



William called KLM a line and Nathan called KLM an obtuse angle. William thought that they were both right and Nathan disagreed.

Do you agree with William or Nathan, why? Explain.

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6

Nate's class was shown the following figure:

Nate's teacher asked him to make a true statement about the figure. He said that angle GFH and IJK were the same type of angles, obtuse. Do you agree or disagree with Nate? Why? Explain.

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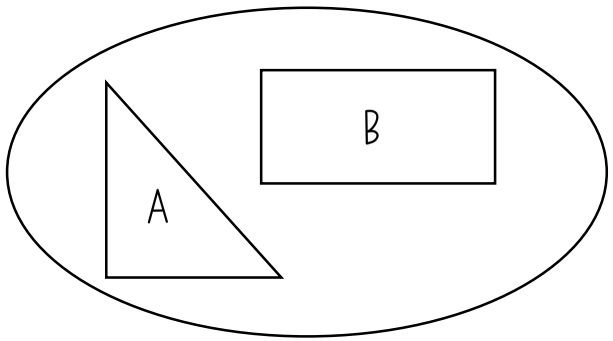
7

Marcus was asked to sort these polygons based on the types of angles they have. The rings show how he sorted them.



Do you agree or disagree with Marcus? Why? Explain.

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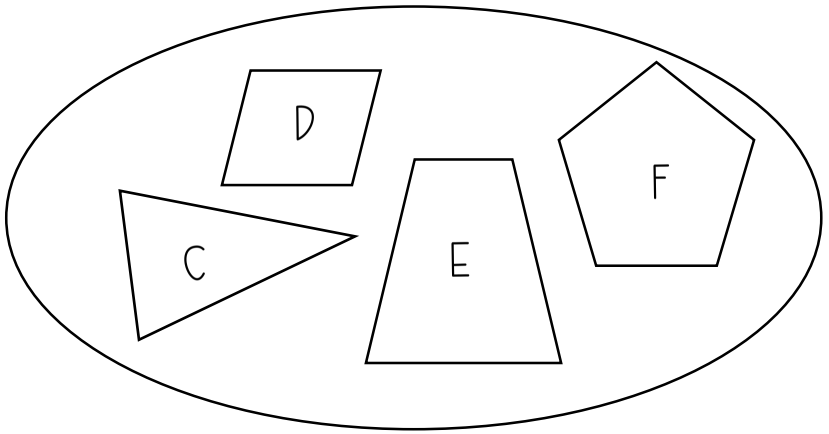
7



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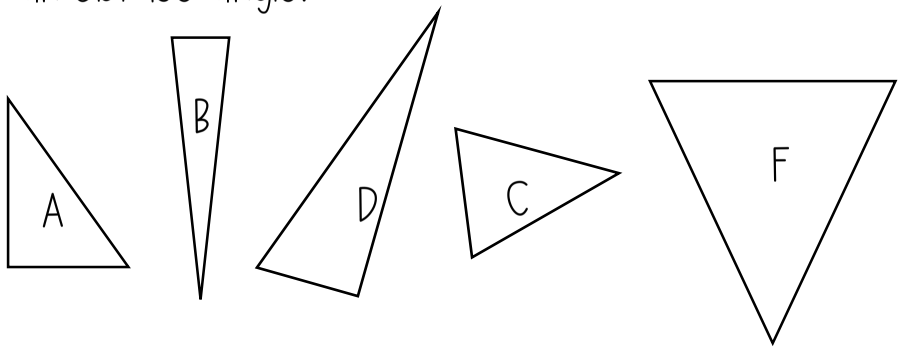
8

Mina was shown these triangles and asked to sort them. She said that they were already sorted because each of the triangles contained an obtuse angle.



Do you agree or disagree with Mina? Why? Explain.

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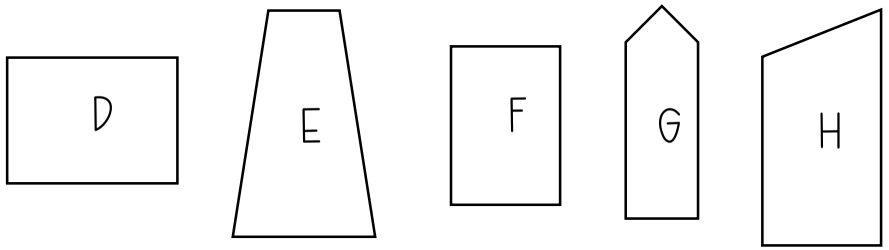
9

Tamara was told to pick one polygon from the group below that does not fit with all of the others. She picked F.



Do you agree or disagree with Tamara? Why? Explain.

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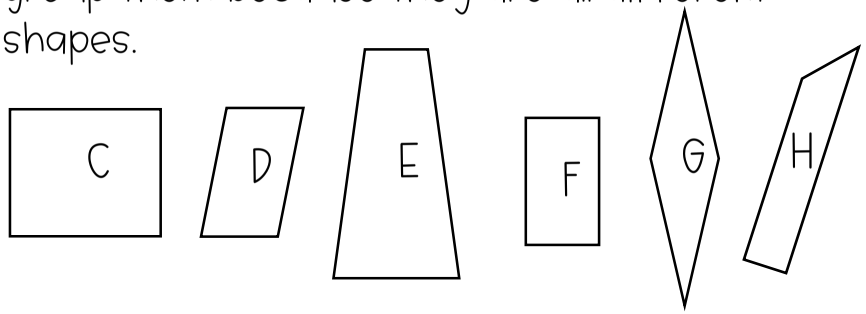
10

Danielle was shown these quadrilaterals and was asked to sort them into two groups based on their angles. She said it was impossible to group them because they are all different shapes.



Do you agree or disagree with Danielle? Why? Explain.

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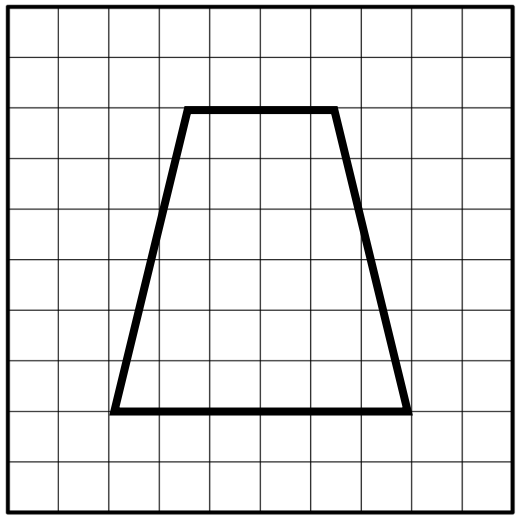
11

Jaime was asked to sketch a polygon with two lines of symmetry on the graph paper.

Do you agree with Jaime's work? Why or why not? Explain.



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12

Kalissa's class was given a math art project. Each student had to draw a shape with one line of symmetry and a shape with at least three lines of symmetry. Kalissa said the only shape with at least three lines of symmetry was a circle. Her friend disagreed.

Do you agree will Kalissa or her friend? Why? Explain.

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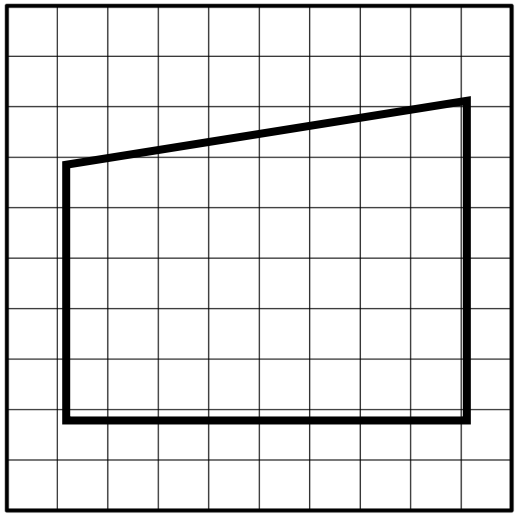
13

Taylor was asked to sketch a polygon with no lines of symmetry on the graph paper.

Do you agree with Taylor's work? Why or why not? Explain.



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14

After designing a geometric poster for his math project, Tyler measured the sides of a quadrilateral he drew to see which type of polygon it was. The shape he drew had two obtuse angles and two acute angles. He decided that he must have drawn a trapezoid.

Do you agree with Tyler? Why or why not? Explain.

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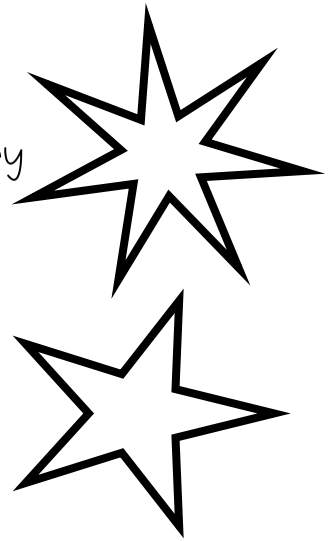
15

Larissa was shown these two polygons and asked to identify which one had more lines of symmetry. Larissa said that they both had an equal amount of symmetry.

Do you agree with Larissa's thinking? Why or why not? Explain.



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Name:_____ Date:_____

Geometry

Read each task card. Answer the question in the space below. Be sure to include your mathematical reasoning.

1	
2	
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Name:_____ Date:_____

Geometry

Read each task card. Answer the question in the space below. Be sure to include your mathematical reasoning.

6	
7	
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9	
10	

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Name:_____ Date:_____

Geometry

Read each task card. Answer the question in the space below. Be sure to include your mathematical reasoning.

11	
12	
13	
14	
15	

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AGREE

j9schneider@thinkgrowgiggle

AGREE

j9schneider@thinkgrowgiggle

j9schneider @thinkgrowgiggle

AGREE

j9schneider @thinkgrowgiggle

AGREE

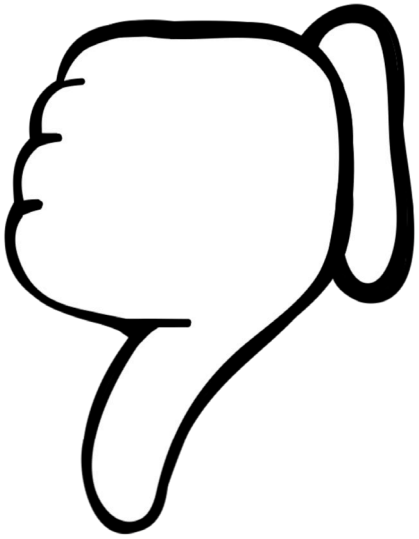
j9schneider @thinkgrowgiggle

AGREE

j9schneider @thinkgrowgiggle

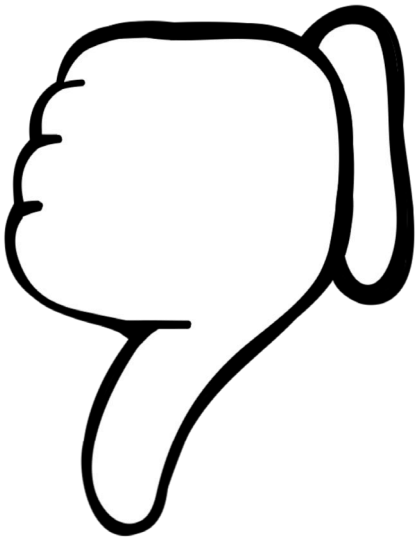
AGREE

DISAGREE



j9schneider@thinkgrowgiggle

DISAGREE



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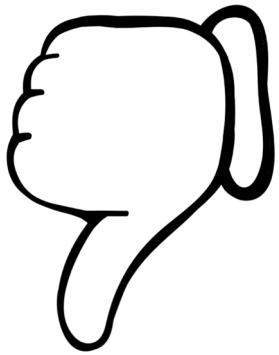
DISAGREE



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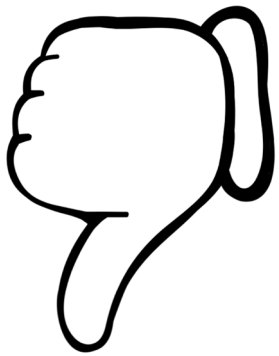
DISAGREE



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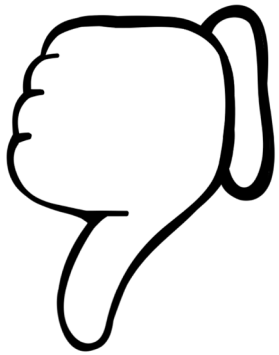

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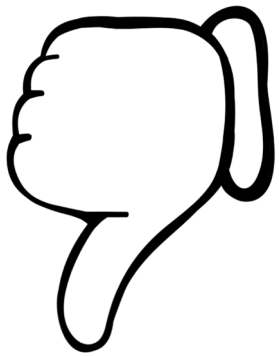
DISAGREE



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Math Discussion Stems

- ✓ First let's...
- ✓ I can solve it by...
- ✓ Another way to solve it is...
- ✓ I think...
- ✓ Here is another idea...
- ✓ When I first saw the problem, I thought...
- ✓ I did it this way, because...
- ✓ I agree because...
- ✓ I disagree because...
- ✓ My work shows that I...
- ✓ Let's challenge ourselves to...

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Math Discussion Questions

- ✓ What should our plan be to solve this?
- ✓ How did you reach that answer?
- ✓ What strategy did you use?
- ✓ Can you think of another strategy to solve this?
- ✓ Can you explain how you organized your work?
- ✓ Can you explain your thinking with math drawings?
- ✓ What strategy do you think works best?

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ANSWER KEYS

Name: ANSWER KEY Date:

Agree or Disagree?

Kale was asked to draw two shapes. One shape had to have a set of parallel lines and one set had to have a set of perpendicular lines. She said that shape A had a set of parallel lines and shape B had a set of parallel and perpendicular lines.

Do you agree or disagree with Kale? Explain.

Disagree with Kale.

Shape A has at least one set of parallel lines and perpendicular lines and shape B has a set of parallel and no perpendicular lines.

Making Connections...

Now it is your turn! Use the space below to draw a shape with a set of parallel lines and a shape with perpendicular lines. Label each shape.

Answers will vary.

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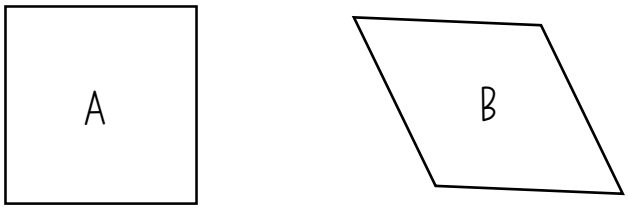
Name: ANSWER KEY Date:

Agree or Disagree?

Kale's teacher showed the class two shapes and asked them to identify which shape had acute angles and which shape had obtuse angles. Kale said that shape B had acute angles and neither shape had obtuse angles because shape A had four right angles.



Do you agree or disagree with Kale? Explain.

Disagree with Kale.

Shape B has both acute and obtuse angles.

Making Connections...

Now it is your turn! Use the space below to draw a shape a right angle, a shape with an obtuse angle, and a shape with an acute angle. Label each shape.

Answers will vary.

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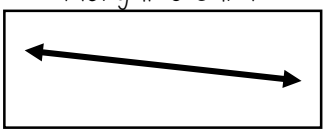
Name: ANSWER KEY Date: _____

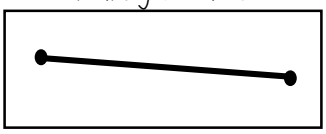
Agree or Disagree?

Morgan's class was going to play *Geometry Name It!* in math class today. Morgan was paired up with Kailey. Each student had to correctly name what they saw on each card they flipped over. Both students named what they saw as a line segment.

Morgan's card



Kailey's card



Do you agree with Morgan or Kailey? Why? Explain.

Agree with Kailey. Her card is a line segment because it has end points. Morgan's card is a line that goes on indefinitely marked with arrows.

Going Further...

Morgan's teacher asked the students to create a sketch of intersecting line segments. Create a sketch in the space below to help the students complete this task.

Answers will vary.

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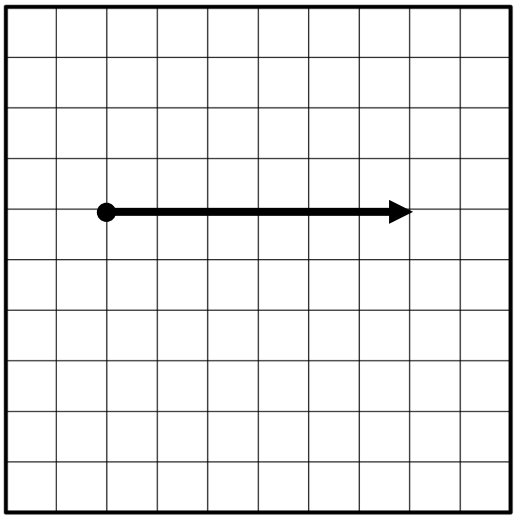
Name: ANSWER KEY Date: _____

Agree or Disagree?

Marissa was asked to draw a line segment on graph paper. Here is Marissa's drawing. Her friend walked by as she worked and said that her drawing was actually a ray. Marissa disagreed.



Do you agree with Marissa or her friend? Explain.

Agree with Marissa's friend.

Marissa drew a ray. A ray is part of a line that has a fixed starting point but no end point.

Going Further...
Marissa needs help understanding the difference between a ray, line, and line segment. What advice can you give her?

Line goes on indefinitely.
Line segment has clear end points.

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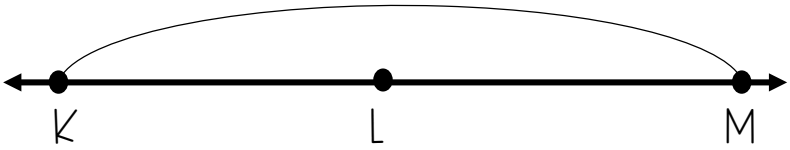
Name: ANSWER KEY Date:

Agree or Disagree?

William's teacher asked the students to describe the following:



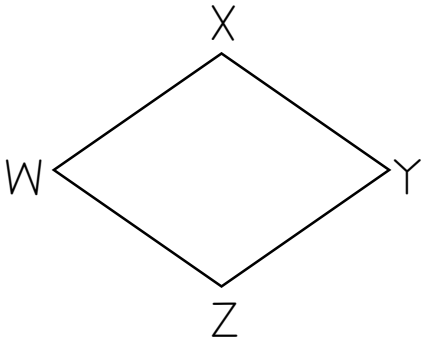
William called $\angle KLM$ a line and Nathan called $\angle KLM$ an obtuse angle. William thought that they were both right and Nathan disagreed.

Do you agree with William or Nathan, why? Explain.

Agree with William since they are looking at a line that measures 180 degrees. It cannot be both as an obtuse angle measures between 90 and 180degrees.

Going Further...

Using the shape below, name at least two different angles. Answers will vary.



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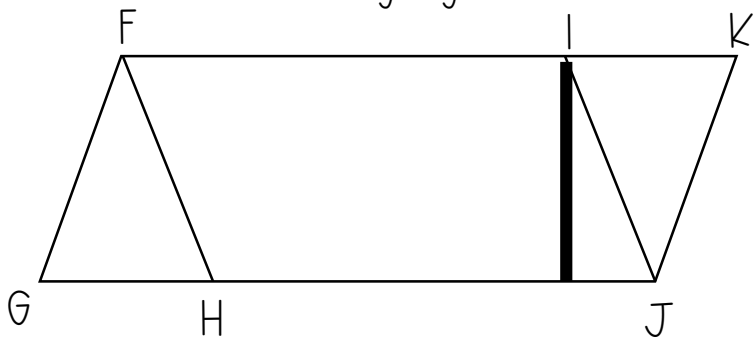
Name: ANSWER KEY Date: 6

Agree or Disagree?

Nate's class was shown the following figure:



Nate's teacher asked him to make a true statement about the figure. He said that angle GFH and IJK were the same type of angles, obtuse.
Do you agree or disagree with Nate? Why? Explain.

Disagree with Nate. Although they are the same type of angle, they are both an acute angle, not obtuse.

Going Further...
Nate was asked to draw a line within the shape above to create a right angle. Help Nate by drawing a line to create a right angle. Name your angle. What is the name of the right angle you created?

See above for suggested answer.

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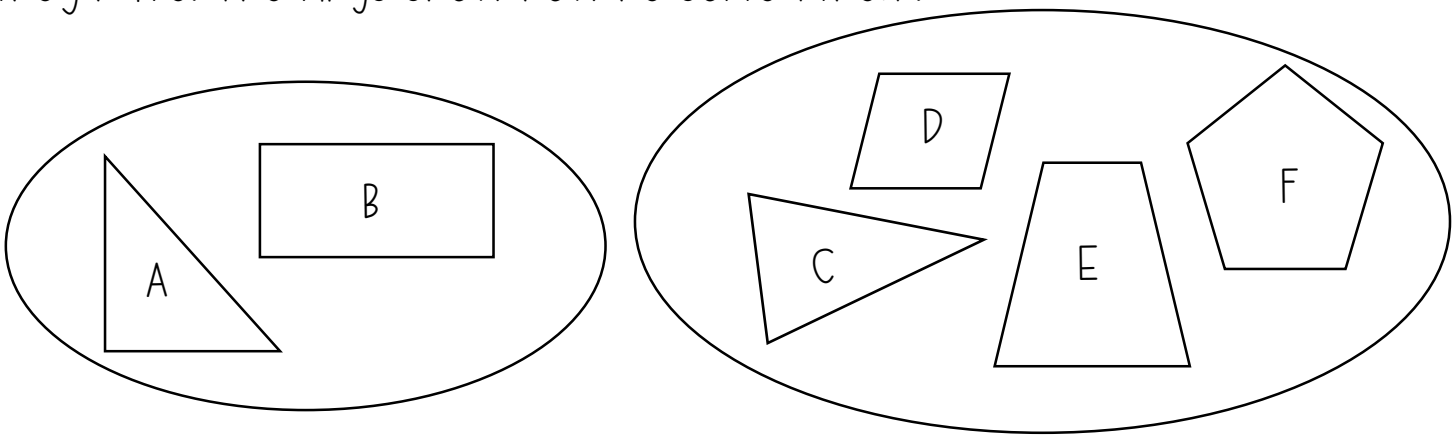
Name: ANSWER KEY Date: _____

Agree or Disagree?

Marcus was asked to sort these polygons based on the types of angles they have. The rings show how he sorted them.



Do you agree or disagree with Marcus? Why? Explain.

Agree with Marcus.

The first group has at least one right angle.

The shapes in the second groups have no right angles.

Making Connections...
What is another way to sort these polygons? Tell the letter of the shapes in each group and explain why you sorted them that way.

Answers will vary.

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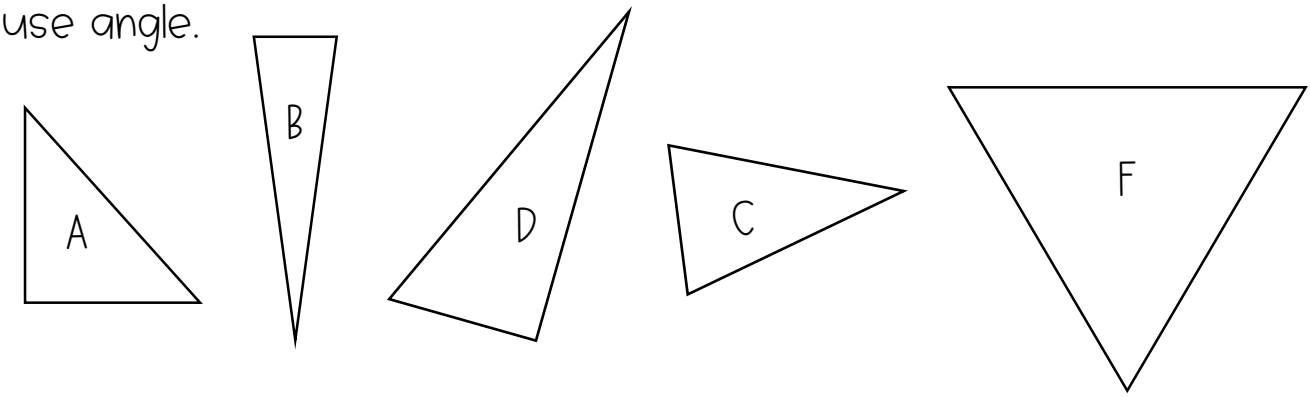
Name: ANSWER KEY Date: 8

Agree or Disagree?

Mina was shown these triangles and asked to sort them. She said that they were already sorted because each of the triangles contained an obtuse angle.



Do you agree or disagree with Mina? Why? Explain.

Disagree with Mina.

None of the shapes have an obtuse angle. Mina can say they are sorted because they are all missing an obtuse angle or because they all have an acute angle.

Making Connections...

What is another way to sort these triangles? Tell the letter of the shapes in each group and explain why you sorted them that way.

Answers will vary.

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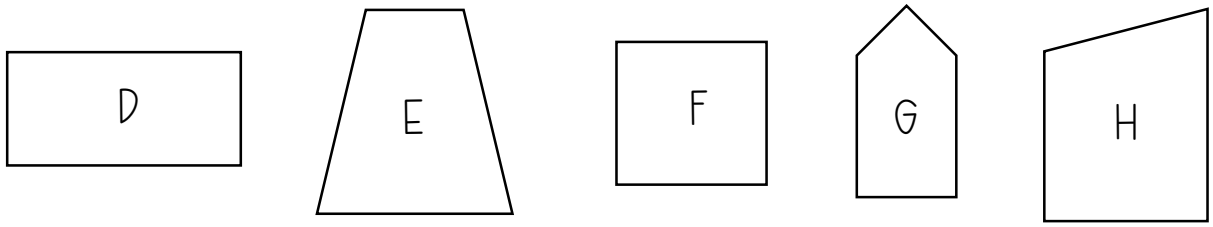
Name: ANSWER KEY Date: 9

Agree or Disagree?

Tamara was told to pick one polygon from the group below that does not fit with all of the others. She picked F.



Do you agree or disagree with Tamara? Why? Explain.

Disagree. Tamara can pick G because it has a different number of sides, or she can pick E because it does not have a right angle.

Making Connections...
What is another way to sort these polygons? Tell the letter of the shapes in each group and explain why you sorted them that way.

Answers will vary.

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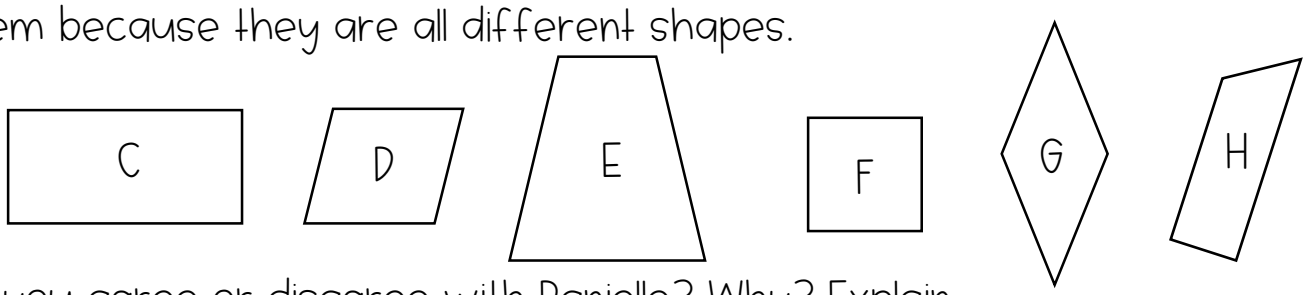
Name: ANSWER KEY Date: _____

Agree or Disagree?

Danielle was shown these quadrilaterals and was asked to sort them into two groups based on their angles. She said it was impossible to group them because they are all different shapes.



Do you agree or disagree with Danielle? Why? Explain.

Disagree with Danielle. Even though they are different shapes they can have the same type of angle. One way that she can sort the shapes is by placing shapes C and F into one group because they have four right angles.

Making Connections...
Name a shape from above that has a set of parallel and perpendicular lines.

Shape C

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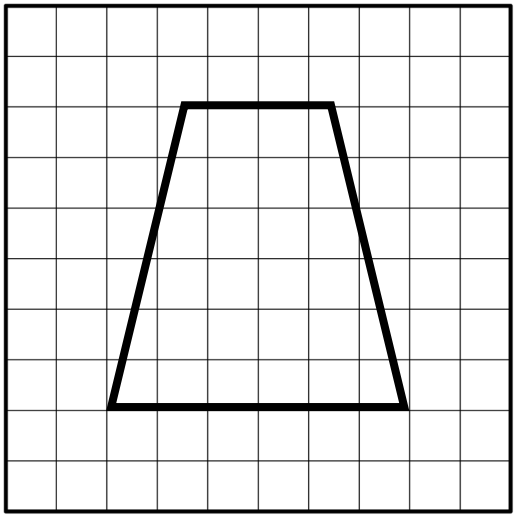
Name: ANSWER KEY Date: _____

Agree or Disagree?

Jaime was asked to sketch a polygon with two lines of symmetry on the graph paper.



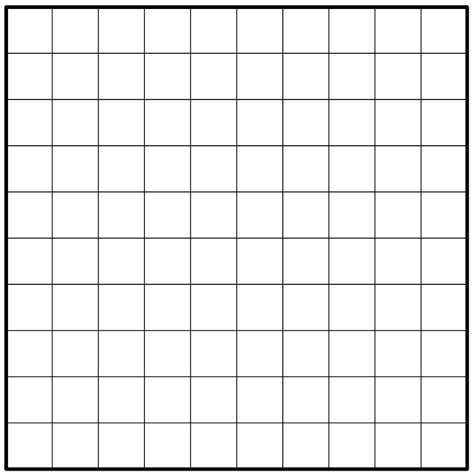
Do you agree with Jaime's work? Why or why not? Explain.

Disagree with Jaime. This shape has only one line of symmetry that runs vertically.

Making Connections...

Now it is your turn! Use the graph paper to draw a shape with two lines of symmetry.

Answers will vary.



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Name: ANSWER KEY Date:

Agree or Disagree?

Kalissa's class was given a math art project to complete. Each student had to draw a shape with one line of symmetry and a shape with at least three lines of symmetry. Kalissa said the only shape with at least three lines of symmetry was a circle. Her friend disagreed.

Do you agree will Kalissa or her friend? Why? Explain.

Agree with Kalissa's friend. A square has four lines of symmetry.

Making Connections...
What advice can you give Kalissa to help her understand what symmetry is. Draw a sketch of a shape with more than three lines of symmetry to help her understand.

Answers will vary.

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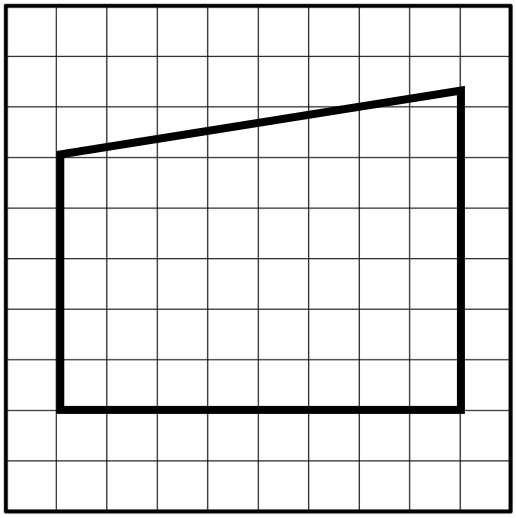
Name: ANSWER KEY Date: _____

Agree or Disagree?



Taylor was asked to sketch a polygon with no lines of symmetry on the graph paper.

Do you agree with Taylor's work? Why or why not? Explain.

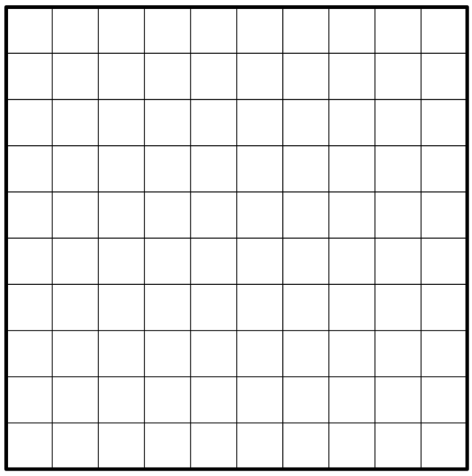
Agree with Taylor.

This shape has no lines of symmetry.

Making Connections...

Now it is your turn! Use the graph paper to draw a shape with no lines of symmetry.

Answers will vary.



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Name: ANSWER KEY Date:

Agree or Disagree?

After designing a geometric poster for his math project, Tyler measured the sides of a quadrilateral he drew to see which type of polygon it was. The shape he drew had two obtuse angles and two acute angles. He decided that he must have drawn a trapezoid.

Do you agree with Tyler? Why or why not? Explain.

Disagree with Tyler, it can be a trapezoid but it can also be a kite.

Making Connections...
Draw a sketch of a five-sided polygon with at least two acute angles. What shape did you draw? How do you know?

Answers will vary.

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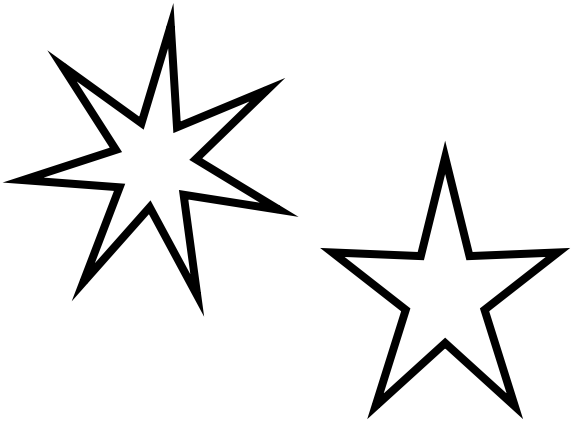
Name: ANSWER KEY Date: _____

Agree or Disagree?

Larissa was shown these two polygons and asked to identify which one had more lines of symmetry. Larissa said that they both had an equal amount of symmetry.



Do you agree with Larissa's thinking? Why or why not? Explain.

Disagree with Larissa.

The star with five points has five lines of symmetry and the star with seven points has seven lines of symmetry.

Making Connections...
Larissa was asked what type of angles each of the stars had. She said they both had acute and obtuse angles, but neither had right angles. Do you agree with Larissa? Explain.

Agree with Larissa.

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Teacher Suggestions

These mathematical critiquing problems were created to use with my fifth grade students. These problem solving activities require the students to problem solve, make decisions, and critique the work of others. Students must also defend their mathematical thinking with words, numbers and any other format that they choose. I intentionally left the labels off of the coordinate grids so that students could practice labeling with numbers to help them find solutions to the problems.

These problems reinforce student reading, writing, and debating skills. Included are agree/disagree cards, as well as math discussion stems and questions to help students engage in meaningful discourse in whole group, small group, or partner settings focused around these problems.

Included are 15 problems in three different format. This means that the same problems are presented on worksheets, task cards, and Power Point slides. Use all of one format or mix it up to meet the needs of your students.

NOTE: Going further challenge questions are only on the worksheet form.

When introducing students to these type of problems complete one or two together. This will allow you to set the example of what you expect in the written response section. I encourage my students to work out the problems on the back, labeling each step as they work. Their labeled mathematical work serves as a great reference for them, when they go to complete the written component of each problem.

Here are some ways I have used these activities in my classroom:

- ✓ Math centers or stations
- ✓ Small group work and partnership activities
- ✓ Formal or informal assessments
- ✓ Independent Practice/Reinforcement
- ✓ Homework or Classwork Review
- ✓ Test Prep
- ✓ Whole Class Bell Ringers

Enjoy!

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Jeanine

About the Teacher-Author

Hi, I'm Jeanine from Think Grow Giggle! I have loved spending the past 17 years in the classroom teaching! I graduated with a bachelor degree in Elementary Education and American Studies. I hold two master's degrees; one in educational technology and one in reading instruction. I am currently teaching 5th graders after spending 16 years teaching 3rd graders. I am certified to be both a classroom teacher and reading specialist. I enjoy living by the beach on Long Island and spending free time with my husband and children.

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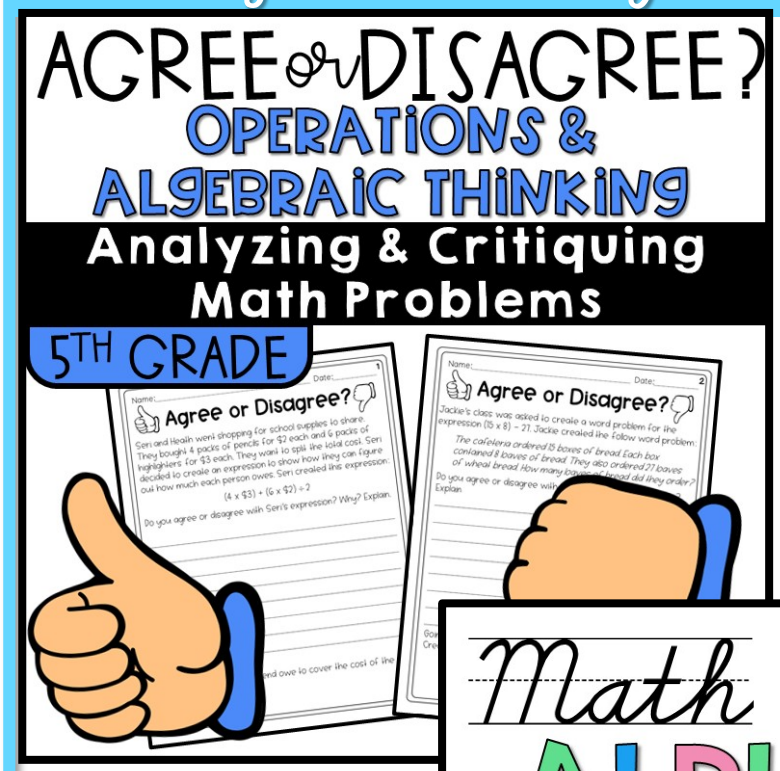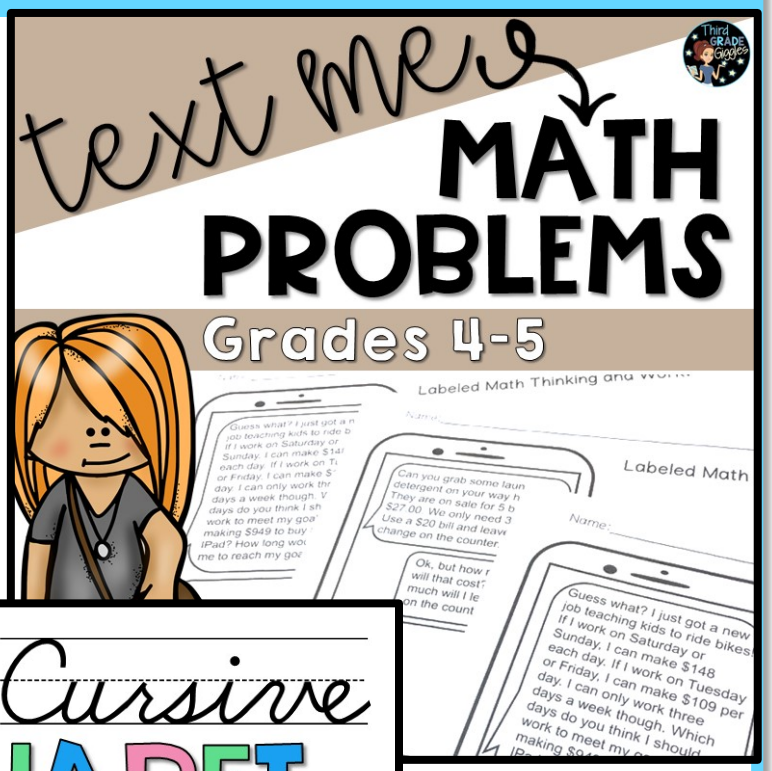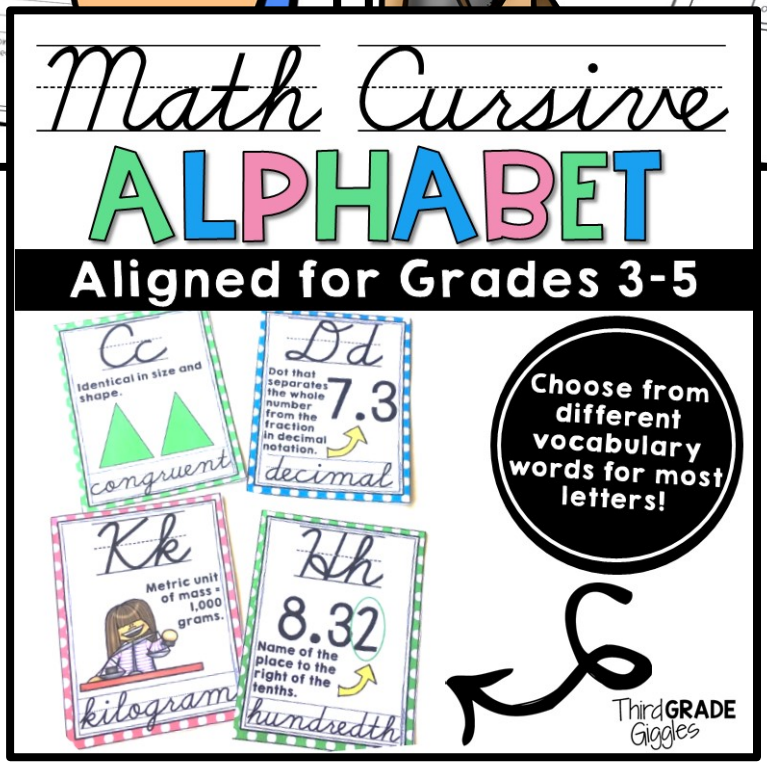
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