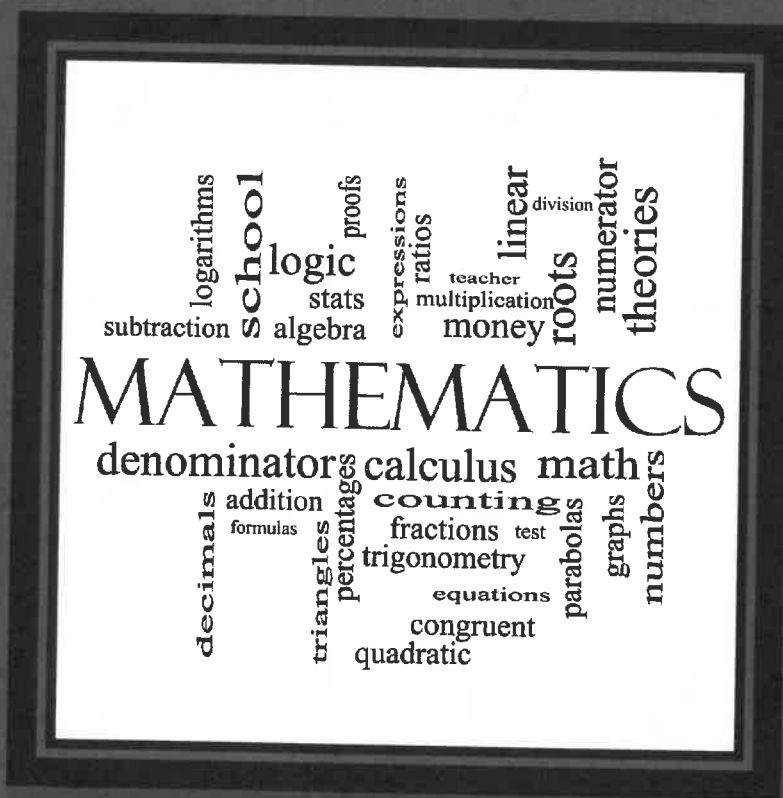


SUMMER 2017

Geometry 6500



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EXECUTIVE SUMMARY

This unit is designed to build geometry and measurement knowledge through a variety of games and activities. This unit aligns with the Minnesota K-12 Academic Standards under the Geometry and Measurement strand for Third Grade.

The goal of this unit is to provide students with multiple differentiated strategies to understand and describe geometric shapes in various contexts. The unit will also provide students with strategies to measure distances of area and perimeter within and around objects. There will be a pre and post-test. The expectation of the post-test is to observe students write, draw and verbalize examples of geometric shapes and differentiate between area and perimeter.

Resources for work pages were found on teacherspayteachers.com, Used Numbers- Real Data in the Classroom, and Math Expressions Grade 3 Volume 2.

19. The perimeter of a rectangle is 16 inches. Its length is 5 inches. What is its width?

1. 3 inches
2. 6 inches
3. 11 inches
4. 21 inches

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Geometry

Pre-test and Intro Activity (Day 1) Geometry

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

3.3.1.2. Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: To assess the students on their beginning knowledge of geometry skills by identifying shapes, lines, angles and understanding how to measure area and perimeter of objects.

Launch: Today we are going to start a new unit on geometry. But first, I need to understand what you already know about shapes, lines and measurement. After our pretest, I will put you into groups to sort out shapes (tangrams/pattern blocks) by things they have in common.

Explore: Give the assessment. Collect the pre-test after 15 minutes of work time, even if their work is incomplete. After the assessment they will explore the shapes and find things they have in common.

Share: Ask students to explain how they came up with their answers on the pre-test.

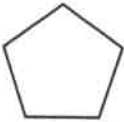
Summarize: Discuss what they found to be in common with their shapes. Have groups show different ways they sorted their shapes.

Name _____

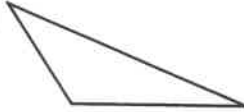
Copy and complete each exercise on a separate sheet of paper.

Name each figure. Then tell how many sides and vertices it has.

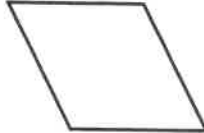
1.



2.



3.



4.



Draw on grid paper.

5.

a rhombus that is not a square

6.

rectangle with area of 18 square units

7.

L-shaped figure with area of 24 square units

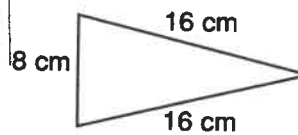
Solve.

8.

Kira uses two squares to make a shape with a total area of 41 square meters. The area of one square is 16 square meters. How long is one side of the other square?

Find the perimeter.

9.



Draw on grid paper.

10.

Two figures with the same area and different perimeters

Geometry

Measuring with Different Objects (Day 2)

Standard(s): Grade 3:

3.3.2. Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: Students will be able to estimate and measure length with nonstandard units.

Launch: Demonstrate how to measure the length of something in the classroom using non-standard measurement units. Ask what is measurement and bring out definitions to post on the wall.

Ask what careers do you think have to use measuring (chef, scientist, architect, construction workers, etc.) to introduce the word wall.

Explore: On the smart board, watch the YouTube video: "Sid the Science Kid" to demonstrate exploring measurements. Allow students to comment during and after the video.

Share: As a class, call students to come up to the board to participate in estimating and measuring items pulled up on the smart board. Introduce non-standard items (blocks, plastic teddy bears, paperclips, pencils, etc.) that students can also be used to measure items around the classroom.

Pair up students and have student's estimate and measure items around the classroom using the worksheet provided.

Summarize: Have students answer these questions about today's lesson.

What did you learn today?

What did you like about today's activity?

How can we use this outside of the classroom?



Name: _____

Measuring Around the Class (Customary Length)

inches

feet

yards

height of the classroom door	length of a paperclip
length of a piece of notebook paper	width of a student desk
length of a classmate's shoe	length of a pencil eraser
your choice: _____	your choice: _____

Geometry

Measuring in Inches (Day 3 & 4)

Day One: Introduce/Make/Measure your shoe

Standard(s): Grade 3:

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: Students will recognize the ruler as a tool that can be used to measure the attributes of length.

Launch: "Today we are going to learn about measuring our feet! But before we start measuring our feet, we will watch and listen to this short song and video about measurement." (<http://safeshare.tv/w/XYNeoIXcnH>)

Explore: Teach first demonstrates how to measure feet. Be sure to emphasize to leave no space between the edge of the shoe and the pencil.

Have students trace their left foot only. Have students help each other, if needed. Once their left foot is drawn on the tag board, have them cut out their foot.

Compare feet of students to the entire class. Ask the question... "What is the size of your foot?" to a few students and record their answers.

Now introduce the ruler. Explain how a ruler is a tool to measure objects in inches. An inch is a measure of length. It is a way to describe how long something is. Each number on the ruler represents that number of inches.

Show the example with the foot the students just cut out. (Use a document camera so all students can observe) Place the ruler at the bottom of the student example. (Point out that the ruler starts at zero. Place the ruler at the bottom of the foot where the tracing starts.) Where the top of the foot meets the ruler, look at what number is the closest. That is how many inches long your foot is.

Share: Trade your foot with someone else in the room. Measure your friend's foot tracing and then compare your findings.

Summarize: Review the lesson by asking these guiding questions:

What is this tool? What is the ruler used for? What is an inch?

Geometry

Measuring in Inches (Day 3 & 4)

Day Two: Introduce/Make/Measure a Foot Stick

Standard(s): Grade 3:

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: Students will be able to make comparisons of length and finding out whether something is exactly the same length as a foot, or shorter, or longer.

Launch: Read the book "How Big is a Foot?" by Rolf Myller. This book gives examples of standard and non-standard measurement.

Today we are going to make our own measuring tool. It's not a ruler, it's called a foot stick! I have copies of foot sticks on cardstock and I need each of you to cut out your own.

Explore: Let's go around the room and find items that are almost the same length as your foot stick. (List a few on the board). Now let's pair up and find items in the room that are two foot sticks long. (List a few on the board). Next, let's go in groups of three and find items that are three foot sticks long. (List a few on the board). Demonstrate how three-foot sticks is the same as a yardstick.

Now we're going to make your foot stick into an inch stick. Have all students go back to their desks and start folding the foot stick into 12 equal parts. Show the students how to mark off "inches" and shade in every other inch. This means that students have to count the inches to make measurements of length, rather than read off a number that they may not understand.

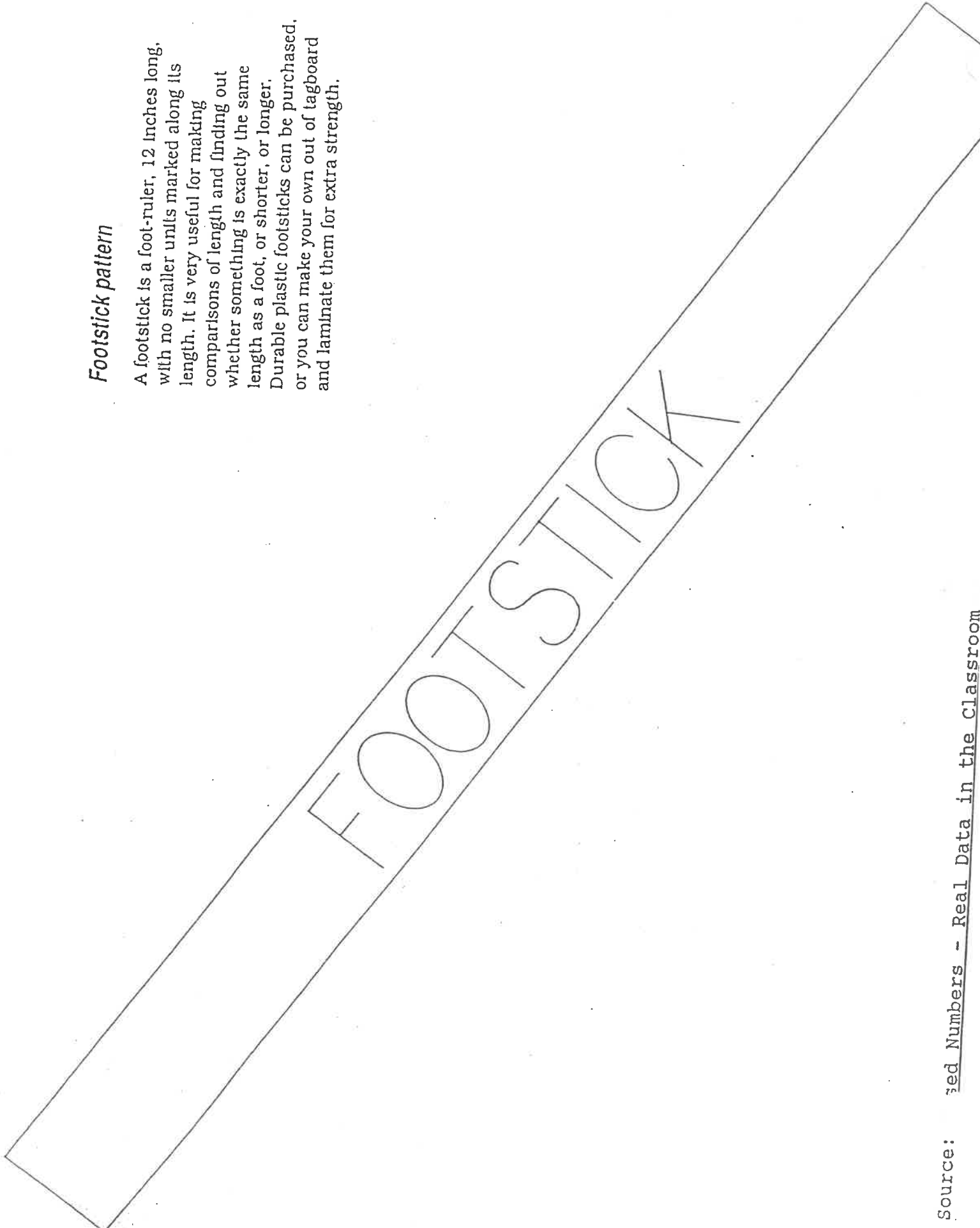
Share: Have students walk around the room and compare their inch sticks with other students to make sure they match up.

Finally, have the students find the measurement of the classroom width and/or length. Have each student lie down their foot stick to see how many it takes to cover the entire width or length.

Summarize: Write down the length and width of the classroom on the board because tomorrow's lesson has to do with area and perimeter. We will be able to calculate these measurements once we learn about these new terms.

Footstick pattern

A footstick is a foot-ruler, 12 inches long, with no smaller units marked along its length. It is very useful for making comparisons of length and finding out whether something is exactly the same length as a foot, or shorter, or longer. Durable plastic footsticks can be purchased, or you can make your own out of tagboard and laminate them for extra strength.



FOOTSTICK

Geometry

**CHEEZ-IT Activity (Day 5)
Area and Perimeter**

Standard(s): Grade 3:

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: This lesson will introduce the concept of area and perimeter to students. Students will be constructing rectangles with tiles with a given length and width. Students will be finding area and perimeter of these shapes, as well.

Launch: Have all students take out a blank sheet of paper and make a "T chart". Write "area" on one side of the T-chart and "perimeter" on the other. Ask students what they think area is and write their answers on one side of the T-chart. Do the same with perimeter on the other side of the T-chart.

Explore: Review with students how to tile shapes with square pattern blocks.

Allow students to have their own square pattern blocks and practice making tiling an empty rectangle. Ask students what the length and width of the rectangle is and write it on the board.

In addition, review with students how to construct rectangular shapes when given the length and width. Show an example on the smart board and have students draw their own shapes on a piece of paper. Talk about what the area and perimeter of the shape.

Have students put their square tiles away and then tell the class that instead of using our regular tiles to tile the rectangles, we are going to be using CHEEZ-IT's.

Hand out the worksheet, a handful of crackers (tell the kids not to eat them at this time, but promise them some at the end of the activity). Give students the option to work alone or with a partner.

Share: Students will reflect on what they learned by constructing the shapes on their own and by calculating the area and perimeter of different CHEEZ-IT shape constructions.

Summarize: Today we learned how to measure area and perimeter with crackers. Everyone can eat their crackers (or throw them away) and turn in their papers.

Name _____

Date _____

FINDING AREA & PERIMETER WITH CHEEZ-ITS

Directions: Identify the perimeter and area of each shape you make.

1) Form your Cheez-Its into a 4 x 4 rectangle:

Area: _____

Perimeter: _____

2) Form your Cheez-Its into a 3 x 4 rectangle:

Area: _____

Perimeter: _____

3) Form your Cheez-Its into a 2 x 3 rectangle:

Area: _____

Perimeter: _____

4) Form your Cheez-Its into a 1 x 8 rectangle:

Area: _____

Perimeter: _____

5) Form your Cheez-Its into a 5 x 2 rectangle:

Area: _____

Perimeter: _____

Geometry

Gardening with Area & Perimeter (Day 6 & 7)

Day One: Introduce area & perimeter

Standard(s): Grade 3:

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: This lesson will introduce students to a garden. Students will measure the perimeter of the school garden (or one part of the garden) by using stakes and yarn.

Launch: Have all students gather on the carpet and sit in a group. (Make sure there is enough space for the teacher to walk around the entire group of students.) Discuss the word "perimeter" or the distance around an object. As you discuss the word perimeter, walk around the students. Walk in a series of straight lines, because perimeter is based on measuring polygons (closed figures) with straight lines (squares, rectangles, hexagons, etc.). Have a group of students follow the teacher's perimeter path.

Explore: Go outside and choose a section of the school garden that we will measure the perimeter of. Use a hammer and wooden stakes to mark off the perimeter. Tie yarn around the first stake, then keep it tight as you walk around the perimeter. Once you reach the starting point, cut the yarn. You should now have a piece of yarn that measures the distance of the perimeter.

Use rulers inside the classroom to measure the yarn, then calculate the perimeter.

Share: Have each student record the definition of perimeter and write one sentence about the perimeter of the garden.

- The garden has a perimeter of _____ inches and we used yarn to _____.

Summarize: Today we learned how to measure the distance or perimeter of the school garden. Tomorrow we will design your own garden on graph paper with choices of flowers and vegetables to find the area and perimeter.

Geometry

Gardening with Area & Perimeter (Day 6 & 7)**Day Two: Make Your Own Garden**

Standard(s): Grade 3:

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: This lesson will review how to identify and calculate the area and perimeter (in unit squares and square feet) of a garden in a worksheet style format.

Launch: Show the difference between surface area and perimeter by looking at a small football field covered in 1 x 1 unit squares. The football field is 10 yards long and 5 yards wide. If you stayed right on the border and walked all the way around the football field you would walk 30 yards or 30 unit squares. This is the perimeter!

If you had to put down a tarp to cover the entire football field so it wouldn't get wet, that would be the surface area. It's the area inside the football field. That can be calculated by taking the length (10 unit squares) multiplied by the width (5 unit squares). $A = L \times W$ ($10 \times 5 = 50$ unit squares)

Explore: Here is a fun worksheet to practice area and perimeter with gardens. As a class, we will figure out how much fencing and garden soil Jayla will need to buy for each section of her garden. Let's complete the table and help Jayla out.

Now, take out your markers, colored pencils or crayons and color each section of Jayla's garden to the coordinating flower. Remember to look at the table so you know what color each flower will be.

The next worksheet is even more fun! You will design your own garden! You will use two grid papers, one as a rough draft and one for your final draft. You can choose from the list of flowers and vegetables on the right side of the worksheet. You need to have at least 8 different flowers or vegetables. You might decide to only have a vegetable garden, only a plant garden, or a mixture of both. It's up to you. Remember to color code your garden.

(Make sure you check each child's rough draft before they start their final drafts)

Share: Under the document camera, have each child share and explain their garden to the class.

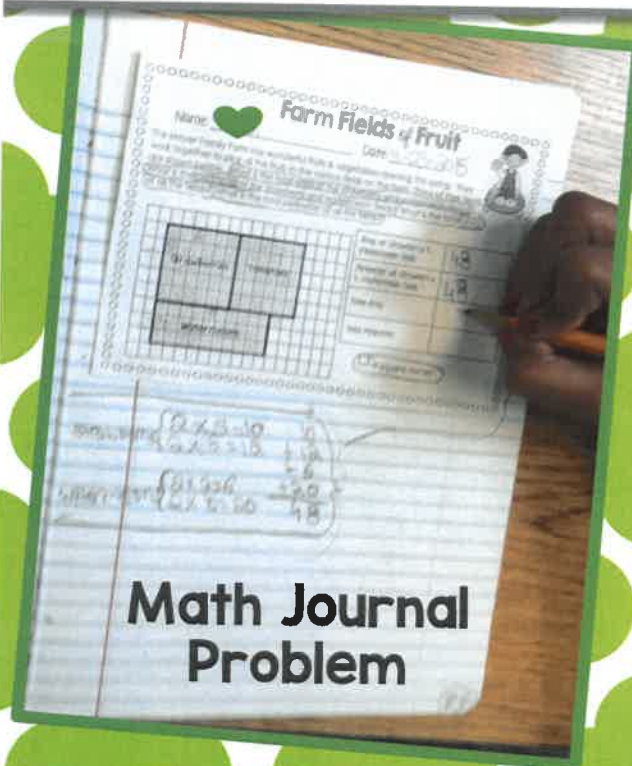
Geometry

Summarize: Today we designed our own gardens in a fun, creative way! There are many ways to create a garden other than rows. Tomorrow we will be learning about some geometry terms that relate to writing the entire alphabet on dot paper.

Gardening with Area & Perimeter

Created by Teaching with Coffee

1. Students completed **Farm Fields of Fruit** in their Math Journal with a partner.

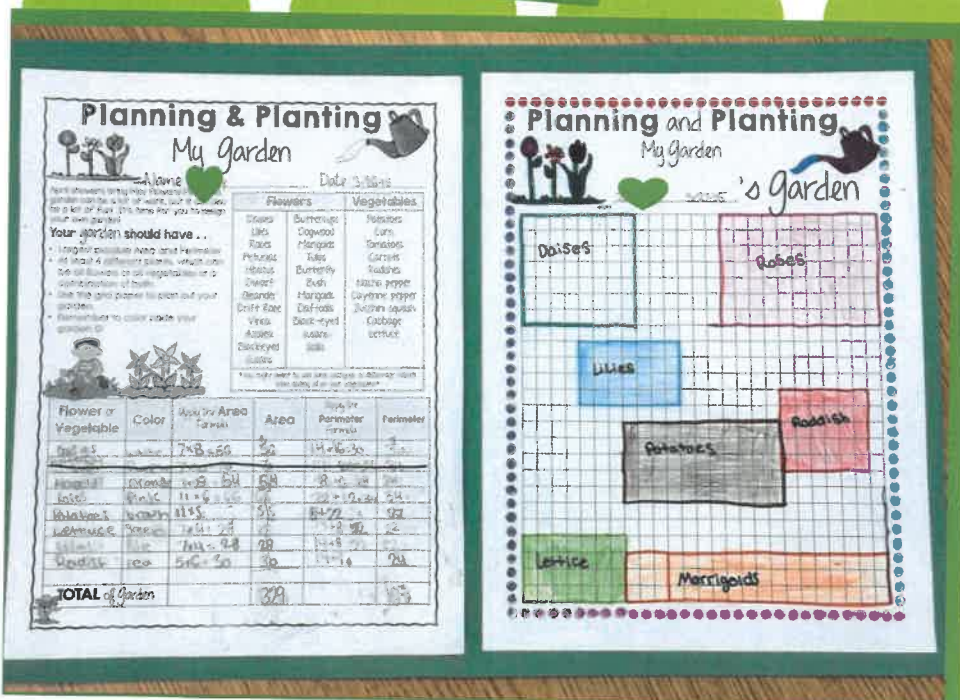


2. Students completed **Planning and Planting a Garden {Jayla's Garden}**



3. **Planning and Planting My Garden**

Students design their own garden with choices of flowers and vegetables. They sketched it out on the Rough Draft and then found the area and perimeter of each section. Finally, they made it pretty on the final draft!





Gardening with Area and Perimeter



Grades 3-4
3.MD.8
4.MD.1

Created by
Teaching With Coffee



About this Product

This product is a fun way to either introduce Area and Perimeter or as a review during the Spring months. Of course, it could always be used at other times throughout the year. ☺ Gardening is a wonderful way to teach area and perimeter.

This Product Includes:

Planning and Planting a Garden: Two story problems to introduce the activity. The first problem has students identify the area and perimeter in unit squares. The second problem has students identify the area and perimeter in square feet.

Planning and Planting My Garden: This activity allows students to get creative and design their own garden using a suggested list of flowers and/or vegetables. Students will color code their plan for a garden, then calculate the area and perimeter for each type of flower or section in their garden.

Planning and Planting My Garden {Version 2}: In this version, students will show how they applied the area and perimeter formula.

Planning and Planting My Garden Rough Draft Grid Paper: This page is for students' rough draft of their garden. Students can sketch out a plan and then calculate the area and perimeter.

Planning and Planting My Garden Grid Paper: This page is for students' final draft of their garden.

*You might also show your students pictures of each type of flowers to help them decide what types of flowers they would like to include. Google images works wonders! ☺ Students could also work in small groups on computers to search for the different types of flowers. These are just some suggestions to extend the activities.

Farm Fields of Fruit {Half Sheet}: This problem could be used as an exit slip, formative assessment, or simply as a classwork problem. Because there are so many steps, we used this problem in our notebooks as a math-rich problem.

Farm Fields of Fruit {Full Sheet with Work Space}: This is the same problem as above, but in a worksheet style format.

I hope you have as much fun as we did! Happy Gardening! ☺

-Jessica & Erin ☺

Planning and Planting a Garden



Name: _____

Date: _____

1. Jayla is planning on planting a garden in one area of her yard. She drew a plan for what her garden might look like. She picked out her favorite flowers, but now she needs to know how much fencing and garden soil to buy for each section of the garden. Complete the table below to help her find out the area and perimeter for each section of her garden.



= 1 square foot

f l o w e r s

Jayla's Garden

Daffodils				Daisies				Marigolds			
Lilies				Scilla				Tulips			

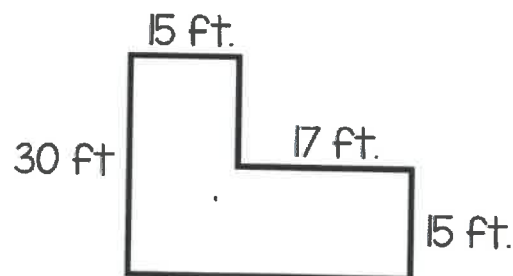
Flower	Color	Fencing	Garden Soil
Lilies	Purple		
Tulips	Red		
Marigolds	Orange		
Daisies	White		
Daffodils	Yellow		
Scilla	Blue		



2. Jayla and her mother are redesigning the rest of their backyard. Below is the shape of their yard. They want to know how much sod to buy to cover the entire yard. How many square feet of sod will they need? If they decided to put a large fence around the yard, how much fencing would they need?

Area of Yard = _____ square feet (ft²)
(Sod)

Perimeter of the Yard = _____ feet
(Fencing)



Planning and Planting



My Garden



Name: _____

Date: _____

April showers bring May flowers! Planting a garden can be a lot of work, but it can also be a lot of fun! It's time for you to design your own garden.

Directions:

You will use 2 grid papers: one as a rough draft and one for your final draft. You can choose from the list of flowers and vegetables on the right. You need to have at least 8 different flowers or vegetables. You might decide to only have a vegetable garden, only a plant garden, or a mixture of both! It is up to you! Remember to color code your garden!



Flowers	Vegetables
Daisies	Potatoes
Lilies	Corn
Roses	Watermelon
Petunias	Tomatoes
Hibiscus	Carrots
Vinca	Radishes
Azalea	Nacho pepper
Buttercups	Cayenne pepper
Dogwood	Zucchini squash
Tulips	Cabbage
Butterfly Bush	Lettuce
Marigolds	
Daffodils	
Black-eyed Susans	

You might want to add some marigolds to discourage rabbits from eating all of your vegetables!

Flower or Vegetable	Color	Area	Perimeter
TOTAL of Garden			



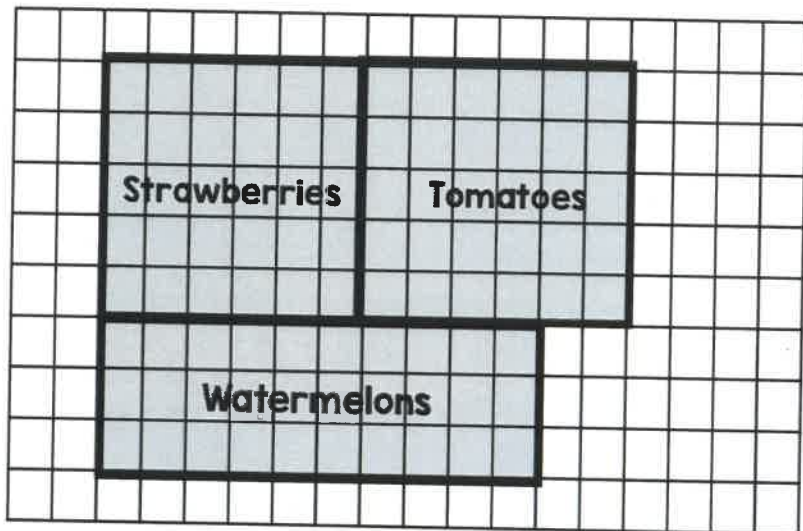
Farm Fields of Fruit



Name: _____

Date: _____

The Meyer Family Farm has wonderful fruits & vegetables ripening this spring. They work together to pick all the fruits in the various fields on the farm. Three of their fields are shown below. What is the combined area of the strawberry and watermelon fields? If the family wanted to put one fence around the strawberries and watermelon fields, how much fencing would they need? What is the **Total Area** of all the fields? What is the **Total Perimeter** of all the fields?



Area of Strawberry & Watermelon Fields	
Perimeter of Strawberry & Watermelon Fields	
Total Area	
Total Perimeter	

= 1 square meter

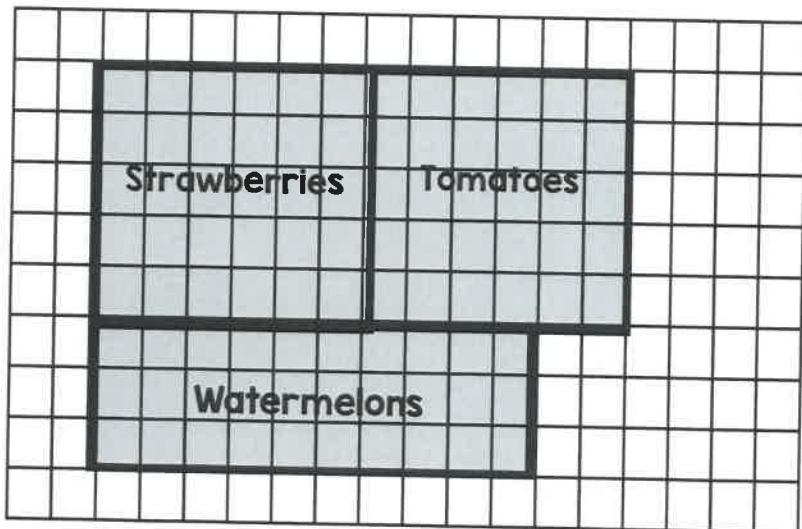
Farm Fields of Fruit



Name: _____

Date: _____

The Meyer Family Farm has wonderful fruits & vegetables ripening this spring. They work together to pick all the fruits in the various fields on the farm. Three of their fields are shown below. What is the combined area of the strawberry and watermelon fields? If the family wanted to put one fence around the strawberries and watermelon fields, how much fencing would they need? What is the **Total Area** of all the fields? What is the **Total Perimeter** of all the fields?



Area of Strawberry & Watermelon Fields	
Perimeter of Strawberry & Watermelon Fields	
Total Area	
Total Perimeter	

= 1 square meter

Geometry

Alphabet Lines (Day 8, 9 & 10)

Day One: MATH YOGA

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

Objective: Allow students a hands-on approach to learn and incorporate geometry using their bodies and then applying that knowledge to paper. Students will know the mathematical vocabulary of lines, parallel lines, intersecting lines and perpendicular line.

Launch: All students will find a partner and will have a set of pattern blocks. The pairs will construct a line, parallel lines, intersecting lines, and perpendicular lines as instructed by the teacher. Students will trace their lines onto graph paper, label and write a description in their own words under the tracing.

Explore: Since we've reviewed these lines, we will get out of our desks to practice some geometry basics. Let's pair each of you up (use a random draw) and I want you to find a space on the floor that is clear of desks.

Students partner up and take to the floor for what is called "Math Yoga". Students will make a line, parallel lines, perpendicular lines and intersecting lines using their bodies.

As you move through the unit, you can add other geometry terms. Such as a right angle, acute angle and an obtuse angle.

Share: Have each pair of students act out their parallel, perpendicular and intersecting lines to the rest of the class. In addition, have volunteers act out a right angle, acute angle and an obtuse angle.

Students can also color in their graph paper with the different lines traced and hang it up on a bulletin board.

Summarize: Today we learned geometry using lines. Tomorrow we will review a few more lines so we can write the entire alphabet using the geometric terms we've been learning.

Geometry

Alphabet Lines (Day 8, 9 & 10)

Day Two: Identifying different types of Lines

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

Objective: To identify and draw lines, line segments, and rays, as well as parallel and intersecting lines.

Launch: On the smart board, draw an array of straight and curved lines. Ask the students to identify which figures are curved and which are straight. Ask the students which figures could be part of a number line.

Explore: Take masking tape and make a number line on the floor. Make an arrowhead on each end. Call on a volunteer to walk along the number line from one arrowhead to the other. Then ask, "What do the arrowheads at the ends of the number line mean?" (The number line goes on forever in both directions.) Remind students that this figure is called a LINE. Remind students that the arrowhead at each end of the line indicates that the line continues forever in both directions.

Now remove the arrowheads from the number line and place one large counter at each end. Tell students to imagine that the counters are ENDPOINTS. Have a student start at one end and walk along the tape to the other end. Ask, "Can you continue walking along the tape?" (No) "Why not?" (There is an endpoint, or counter, at the end.) Tell the student to walk in the opposite direction to the other end and ask, "Can you continue walking?" (No, there is an endpoint) "What do the endpoints mean?" (This part of the line does not continue.) Tell the class that this figure is called a LINE SEGMENT. Remind students to see that they can identify part of a line as a LINE SEGMENT if it has two endpoints.

Finally, replace one counter with an arrowhead. Ask a volunteer to explain what the symbol at each end means. (Arrowhead – that part of the line goes on forever; Endpoint – that part of the line ends at that point.) Have a student start at the counter and walk to the arrowhead. Then ask the student to walk back to the counter, stopping at the endpoint. Explain that this figure is called a RAY. Remind students that a RAY has one arrowhead and one endpoint.

Share: Hand out the worksheet and ask volunteers to read each definition aloud. Relate each definition to the earlier demonstrations of masking tape on the floor.

Geometry

Before solving questions 9 and 10, draw a pair of parallel lines and a pair of intersecting lines on the smart board. As a volunteer to read aloud the definitions of parallel lines and intersecting lines on page 293. Have volunteers point out and label parallel and intersecting lines on the smart board. Point out that both line segments and lines can be intersecting or parallel.

Now complete the remainder of the worksheet as a class.

Summarize: Have students draw and label a line, line segment, ray, pair of intersecting lines and a pair of parallel lines in their math journal or on a separate sheet of paper.

Geometry

Alphabet Lines (Day 8, 9 & 10)**Day Three: Alphabet Project**

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

3.3.1.2. Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.

Objective: To identify and draw line segments, parallel lines, angles and right angles. To tell whether angles are greater than or less than a right angle.

Launch: Take out the pattern blocks and review the concepts of corners and square corners. Have volunteers point out the corners of each figure. (Triangle, square, trapezoid, octagon, etc.)

Explore: Provide student pairs with a dot paper, index card, a straw and two paper clips. Tell students to cut the straw in half, link the two paper clips, and insert one paper clip into each piece of the straw. Ask students to open or close their straw models to any position on dot paper. Explain to students that they have just formed an ANGLE.

Now have students trace a corner of the index card on their dot paper and identify it as a SQUARE CORNER. Have them use their straw models to reproduce a square corner, explaining that it is called a RIGHT ANGLE.

On the smart board, draw an angle less than a right angle and an angle greater than a right angle. Have one angle open from the left and the other from the right. Then ask students to compare the angles on the board to the right angles they made earlier. Ask, "Which angles do you think are less than a right angle? Which do you think are greater than a right angle?" (Use the square corners of an index card to verify students' answers)

Share: Hand out a clean sheet of dot paper and begin writing the alphabet in capital letters. Ask how many line segments are needed to make the letter A? How many angles are there? Are they acute, obtuse, or right angles? Are any of the line segments perpendicular? Are any of the line segments parallel? As a class, continue on with all the letters in the alphabet.

Summarize: Have students draw the three angles (right, acute and obtuse) we learned about today in their math journal or on a separate sheet of paper.

A **line** is straight. It goes on forever in both directions.



A **line segment** is part of a line with two endpoints.



A **ray** is part of a line with one endpoint. It goes on forever in one direction.

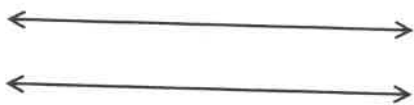


Name each: line, line segment, ray, or none of these.

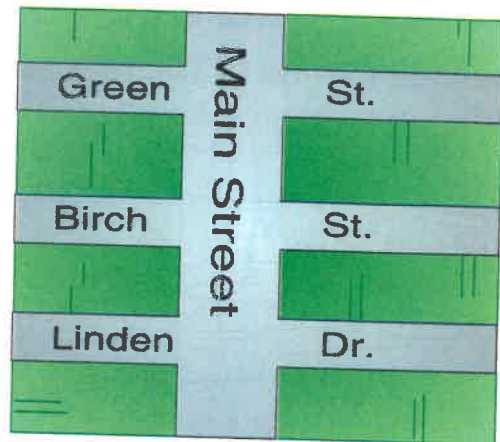


Special Lines

Parallel lines are lines on a flat surface that never meet.



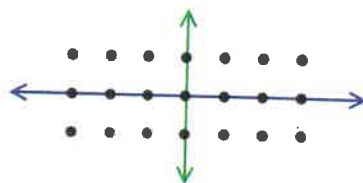
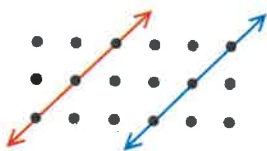
Intersecting lines are lines that meet at a common point.



Using the street map above, answer these questions.

9. Name two streets that are parallel.
10. Name two streets that intersect.

Copy these lines onto dot paper.



Draw a line that:

11. is parallel to the red line.
12. is parallel to the green line.
13. intersects the red line and the blue line.
14. intersects the green line and the purple line.



Critical Thinking

Communicate

15. Which picture is most like a ray? Explain.



Geometry

**Parallelograms, Rectangles, Squares, and Rhombuses
(Days 11, 12 & 13)****Day One: Parallelograms and Rectangles**

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

Objective: Students will define and identify parallelograms and rectangles.

Launch: Put students in groups of four and take to the floor for what is called "Math Yoga". They learned this earlier in the Geometry unit. Students will do their best to make parallelograms and rectangles using their bodies.

Explore: Using page 303 in the Math Expression journal, students will look at the row of parallelograms and the figures that are not parallelograms. Encourage lots of discussion about what is and what is not a parallelogram. Work together to complete a definition: A parallelogram is a quadrilateral in which both pairs of opposite sides are parallel. After the pairs do the "share" below, talk with them that a rectangle is a very special parallelogram. Talk about the how it needs four right angles. Give examples on the white board of different rectangles.

Share: Have the students work in groups of two to put the definition on a piece of 8.5x11 tag board. They can color and decorate the tag board. Give the students two pieces of tape and allow them to put the definition up in the room or in the hallway for others to see and be reminded.

Summarize: The students will do the short Math Expression technology piece on the district's "Think Central" website. These lessons serve as a great review for the classroom lesson they have done earlier.

Geometry

Parallelograms, Rectangles, Squares, and Rhombuses (Days 11, 12 & 13)

Day Two: Squares and Rhombuses

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

Objective: The students will define rectangles, squares and rhombuses and explain the relationships among them.

Launch: I will use the smart board to show them a smart exchange site that will introduce them to today's lesson. It is both informational and interactive. It is called "Polygons."

Explore: Students will be put into groups of four and each student will have their Math Expressions journals. Each group will take a few minutes to discuss the Smart Exchange site they saw in the launch. As a class we will discuss statements about squares and rhombuses, looking for similarities and differences. As we work through these discussions together, we will also be completing journal pages 304, 305 and 306. We will work as a class to complete the definitions of a square and rhombus. The students will be challenged to draw different squares and rhombuses on the white boards as other students come up and point out rules that apply to the shapes being drawn.

Share: Shapes K, L, M, N, O and P will be drawn on the smart board.

Students will be asked to come to the board and point out which shapes meet the criteria.

- Example: Which figure(s) have four right angles?

Summarize: The group will summarize their lesson as they complete Homework journal sheet (pg. 237) together. Once all groups are completed; we will correct them together in class using the document projector. Students will be called up randomly to help with the summary sheet.

Geometry

**Parallelograms, Rectangles, Squares, and Rhombuses
(Days 11, 12 & 13)****Day Three: Polygon Design Art**

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

Objective: To use different types of geometric shapes to create a colorful 8X8 design.

Launch: Find different polygon design outlines and show students ideas using the Smart Board.

Explore: Students will be given the opportunity to use different types of polygons including parallelograms, squares, rectangles, trapezoids and rhombuses to make a design for a puzzle. Students should trace the geometric figures on an 8X8 sheet of paper. Figures must connect without any gaps or overlaps. The students will be able to color them as they choose.

Share: After the project is completed, they are hung throughout the classroom for two weeks of observations.

Summarize: Once all projects are displayed, the students will be asked to choose two projects that were not made by them. They will be asked to tell and point out to the class three of the polygons that they see in each project.

Geometry

Prodigy Activity (Day 14)

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

3.3.1.2 Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: Students will play the Prodigy game as way to apply their knowledge of geometry.

* Prodigy is a free website with a diagnostic test to place students in the correct grade, embedded assessments, and automatic differentiation. Prodigy ensures that each one of my students succeed at their own pace. They have already taken the diagnostic text, so today's lesson is set up to just focus on geometry.*

Launch: Students go around the room describing their character's name and the latest prize they have uncovered. Ex. Tom-tom Excalibur, magic silver dragon, etc.

Explore: The students will be playing the preset Prodigy lesson which has them traveling through their adventurous world. Along the way, they will be asked questions about geometric shapes and based on the accuracy of their answers will be battling other characters in the game.

Share: At the end of the lesson, we will get up from our computers and do a museum walk around the lab looking at each other's characters. We will also share two geometry things they did during today's lesson.

Summarize: In today's lesson we review key components of our geometry unit through the use of technology.

Geometry

Post-Test and Ending Activity (Day 15)

Standard(s): Grade 3:

3.3.1 Use geometric attributes to describe and create shapes in various contexts.

3.3.1.1. Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right angles, rectangles, parallelograms and trapezoids.

3.3.1.2 Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.

3.3.2 Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances.

3.3.2.1. Use half units when measuring distances

3.3.2.2. Find the perimeter of a polygon by adding the lengths of the sides.

3.3.2.3. Measure distances around objects.

Objective: To assess the students on their ending knowledge of geometry skills by identifying shapes, lines, angles and understanding how to measure area and perimeter of objects.

Launch: Today we are going to see how much we have learned in the last three weeks about shapes, lines, area and perimeter. When our post test is complete, I have an area and perimeter board game we will play in groups of four. (Game is attached and should be printed on cardstock)

Explore: Give the assessment.

Share: As students hand in their tests, ask students to explain how they came up with a few of their answers.

Summarize: Students are able to write, draw and verbalize shapes, lines, angles, area and perimeter.



Post Test Chapter 9

Name _____

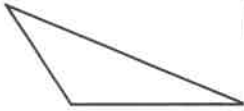
Copy and complete each exercise on a separate sheet of paper.

Name each figure. Then tell how many sides and vertices it has.

1.



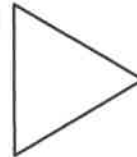
2.



3.



4.



Draw on grid paper.

5.

a rhombus that is not a square

6.

rectangle with area of 18 square units

7.

L-shaped figure with area of 24 square units

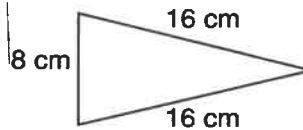
Solve.

8.

Kira uses two squares to make a shape with a total area of 41 square meters. The area of one square is 16 square meters. How long is one side of the other square?

Find the perimeter.

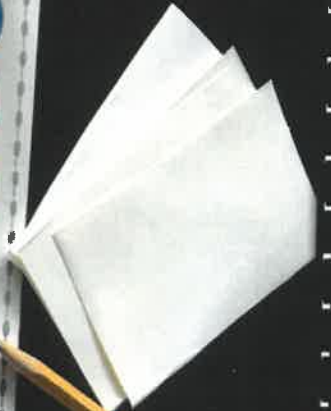
9.



Draw on grid paper.

10.

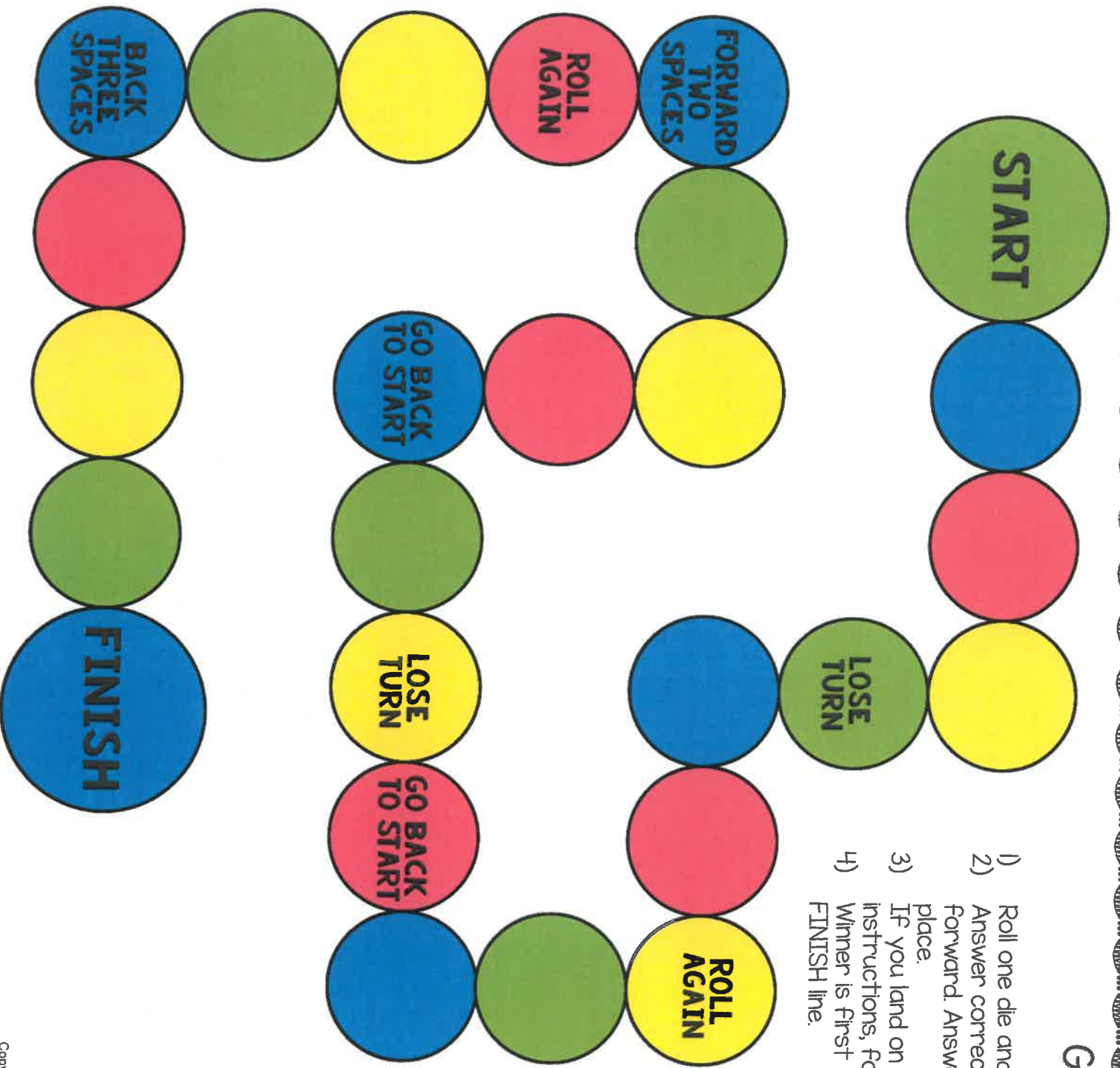
Two figures with the same area and different perimeters



AREA and PERIMETER Board Game FREEBIE

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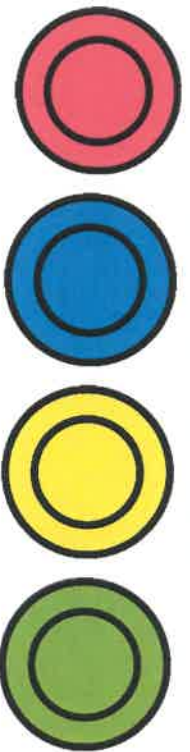
GAME BOARD



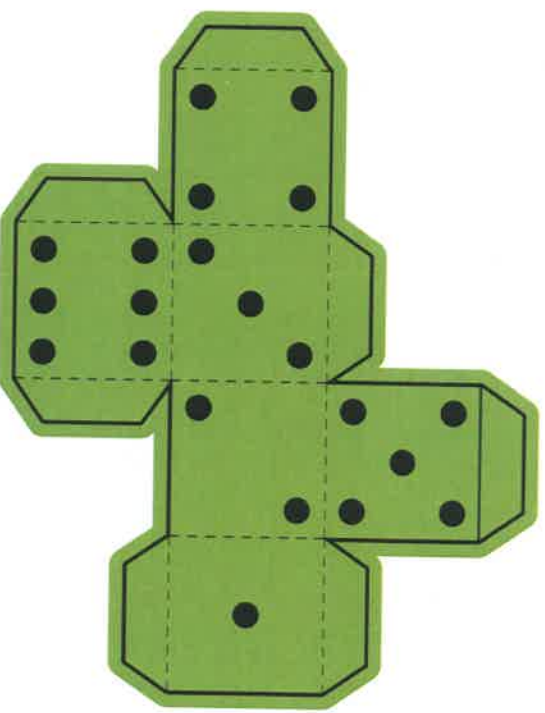
Game Rules

- 1) Roll one die and pick a card
- 2) Answer correctly and move forward. Answer incorrectly, stay in place.
- 3) If you land on spaces marked with instructions, follow such prompts.
- 4) Winner is first person to reach FINISH line.

4 GAME PIECES TO CHOOSE FROM



DIE - PRINT ON CARDSTOCK



Teacher Directions:

- Print one game board per group of students (works best on cardstock)
- Print question cards and answer cards (works best on cardstock)
- Optional (print game pieces and die on this page). You can use your own die and replace game pieces by coins, beans, connecting cubes, or any small objects)
- Answer cards are provided so students can check their own work!

1

Area and Perimeter

Find the perimeter of a square whose length is 6 inches.

2

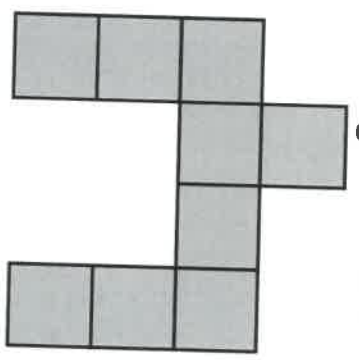
Area and Perimeter

Find the area of a rectangle whose length is 8 feet and width is 7 feet.

3

Area and Perimeter

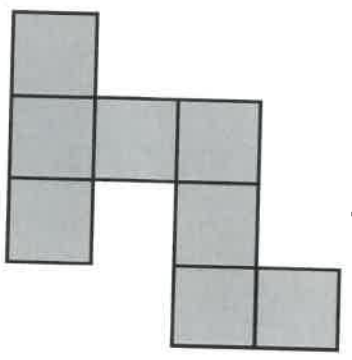
Find the perimeter of the figure below.



4

Area and Perimeter

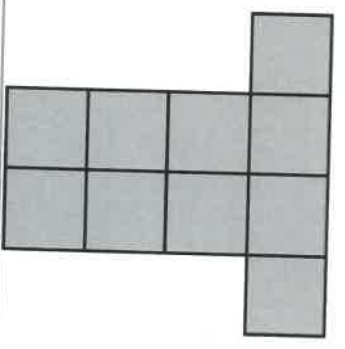
Find the perimeter of the figure below.



5

Area and Perimeter

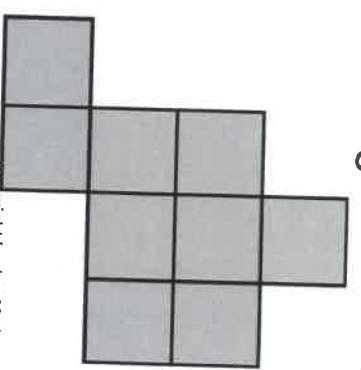
Find the area of the figure below.



6

Area and Perimeter

Find the area of the figure below.



7

Area and Perimeter

A rectangle has an area of 21 square units. Its length is 7 units. What is its width?

10

Area and Perimeter

Anna wants to replace the carpet on her bedroom floor. The floor measures 10 ft. long by 9 ft. wide. How much carpet will she need?

8

Area and Perimeter

A rectangle has a perimeter of 30 feet. Its width is 5 ft. How long is the rectangle?

11

Area and Perimeter

Find the area of the figure below.

9

Area and Perimeter

Mr. Brown wants to put a fence around his vegetable garden. A diagram of his garden is shown below. How many feet of fencing will he need?

12

Area and Perimeter

Find the area of the figure below.

13

Area and Perimeter

A SQUARE has an area of 49 square units. What are its dimensions?

14

Area and Perimeter

A rectangle has a perimeter of 36 feet. Its width is 11 ft. How long is the rectangle?

15

Area and Perimeter

Susan is decorating a rectangular frame with ribbon. She wants to put ribbon around the frame. The dimensions of the frame are 7 in. by 5 in. How many inches of ribbon will she need?

16

Area and Perimeter

Jake wants to replace the tiles on his kitchen floor. The floor measures 8 ft. long by 9 ft. wide. How many square feet of tile will he need?

17

Area and Perimeter

Find the perimeter of the figure below.

18

Area and Perimeter

Find the area of the figure below.

1

Area and
Perimeter

ANSWER

24 inches

4

Area and
Perimeter

ANSWER

18 units

2

Area and
Perimeter

ANSWER

56 square feet

5

Area and
Perimeter

ANSWER

10 square units

3

Area and
Perimeter

ANSWER

20 units

6

Area and
Perimeter

ANSWER

9 square units

7

Area and
Perimeter

ANSWER

3 units

10

Area and
Perimeter

ANSWER

90 sq. ft. of carpet

8

Area and
Perimeter

ANSWER

10 ft. long

11

Area and
Perimeter

ANSWER

126 sq. ft.

9

Area and
Perimeter

ANSWER

22 ft. of fencing

12

Area and
Perimeter

ANSWER

53 sq. ft.

13

Area and
Perimeter

ANSWER

7 units

16

Area and
Perimeter

ANSWER

72 square feet.

14

Area and
Perimeter

ANSWER

7 feet

17

Area and
Perimeter

ANSWER

30 units

15

Area and
Perimeter

ANSWER

24 inches

18

Area and
Perimeter

ANSWER

5 square units