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Sidewalk Chalk Math: Perimeter

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Sidewalk Chalk Math: Perimeter
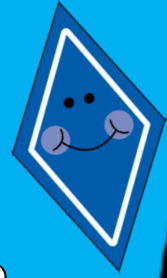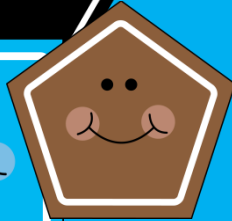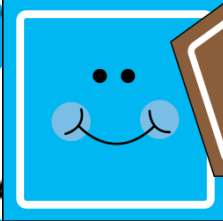
Lesson Includes:

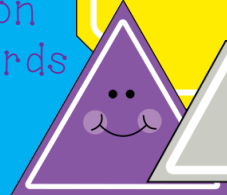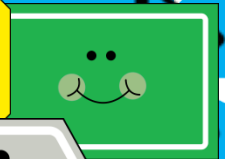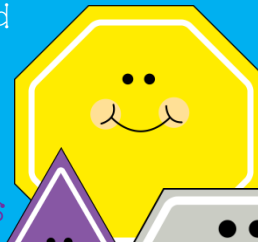- Differentiated, Fun, and Engaging Lesson Plan
- Builds on prior knowledge of 2D shapes/polygons
- Student "To Do" List
- Differentiated Student Group Cards
- Informative Posters/Anchor Charts
- Review "I Have...Who Has" 2D Shape Cards
- Differentiated Activity Sheets:
  - WS- working towards standard
  - MS- meeting standard
  - ES- exceeding standard

Aligned to Common
Core State Standards
Grades 2, 3, 4

Sidewalk Chalk Math: Perimeter
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Goals-

- Students will be able to create a 2-D shape, measure each side, and figure the perimeter by using an addition number model.

Common Core State Standards-

Grade 2: CCSS.Math.Content.2.G.A.1 CCSS.Math.Content.2.MD.A.1

Grade 3: CCSS.Math.Content.3.G.A.1 CCSS.Math.Content.3.MD.D.8

Grade 4: CCSS.Math.Content.4.G.A.1 CCSS.Math.Content.4.MD.A.3

Objectives-

- Students will demonstrate their understanding of the 2D shape by correctly drawing and identifying it by name.
- Students will also demonstrate their understanding of measurement by measuring each side of the shape and labeling the side in meters.
- Students will demonstrate their understanding of perimeter by calculating the perimeter of their drawn shape.

The students will meet these state standards by creating a 2-D shape, measuring the sides, using correct units, and calculating the perimeter. They will use a number model that will add the measurements together.

Materials Required-

- Chalk
- Meter Sticks *(lesson can be modified to use rulers, yard sticks, or measuring tapes)*
- Group Cards (included)
- To Do List, 1 per group (included)
- Differentiated Student Activity Sheets, 1 per student (included)
- Think About It Activity Sheet, for fast finishers and exceeding standard students (included)

Context-

- Prior knowledge: *2D shapes, polygons, addition with 3 or more addends, measurement*
- This lesson extends our understanding of how to measure a shape by introducing the term "perimeter" and allowing the kids to use kid-friendly materials in a familiar area they enjoy (the playground, outside of the classroom, on sidewalks, etc…) to practice using this concept.
- This lesson applies the concept of adding more than two numbers together to solve a number sentence. Students should have previously learned and practiced this skill in class. May also be known as: equation, number model, addition sentence, etc…
- This unit meets the unit goal by giving the students high interest applications of practical problems for life-long use. It is also providing them the opportunity to use materials they will enjoy using to create their 2-D shape including a meter stick and chalk.

Procedures-

- Begin with a warm up activity/review of 2D shapes/polygons. Students should be introduced to the term "perimeter." Include having the students naming different basic 2-D shapes and counting the number of sides for each shape in preparation for our lesson. Included is an anchor chart or informational poster as well as a review center activity or game for "I have…who has" shapes. Use anchor chart as needed.
- Introduce a meter stick: *(lesson can be modified to use rulers, yard sticks, or measuring tapes)*

- o What is this?
- o What does it measure?
- o What is its name?
- o What size things should we measure with this?
- After discussion on how to use the measurement tool, model using a meter stick rulers, yard sticks, or measuring tapes to measure a square. Model adding the sides together to find the perimeter of the shape. Demonstrate how a square with sides of 1 meter each has a perimeter of 4 meters.
- Pass out the differentiated group cards with different shapes on them. You should have previously cut apart and laminated them to allow for groups and measurements to be written on in markers that you can later wipe off. *You can choose if you give the students the measurements for each shape or if you want them to choose how big their shape is.* The cards should be given according to the ability of the students with appropriate groupings of 2, 3, or 4. Verbally explain the steps of our activity as well as providing each group a laminated "To Do List":

  - o Each pair will get one piece of chalk and a shape card.
  - o We will go outside and everyone will need to find space to draw their shape using a meter stick.
  - o After they finish, they will then use the meter stick to measure how long each side is and write the length in meters by each side.
  - o Each pair will write the number model to find the perimeter of each shape in chalk beside their shape.
  - o They will complete the differentiated activity sheets to accompany their shape.
    - ▪ *Labeled discreetly at the top of each page:*
    - ▪ WS- working towards standard
    - ▪ MS- meeting standard
    - ▪ ES- exceeding standard

- *The activity can be modified to drawing small 2-D shapes on paper and measuring in inches if the weather does not permit going outside.*
- Once the students finish their shape and worksheet, they have several opportunities for differentiated learning that the class refers to as "challenge activities". The abilities of many classes are varied, thus providing perfect opportunities to provide some students with additional, more independent, learning:
  - o They can choose another shape they would like to draw and find the perimeter for. They may find a new spot to do this and repeat the task with their own shape.
  - o They can work on a "Think About It Activity" sheet with some more opportunities to use their new knowledge on how to find perimeter using more advanced problems.
  - o They may calculate the perimeter of some options listed on the sheet.

Student Assessment-
- Students will have a formative assessment of their participation through class discussion, questions presented within the lesson, as well as their group participation and completion of their 2-D shape and perimeter measurements.
- Students can have a summative assessment of answering questions on their activity sheet at the end of the project and/or on their end of the unit test by correctly drawing shapes and calculating perimeter.

Sidewalk Chalk Math To Do List

*Follow each step below to finish your sidewalk chalk math.*

1. Each group will get a piece of sidewalk chalk, a shape card, and a measurement tool to take outside with them.

2. Find an area that is away from other groups but close enough for the teacher can see you. You will have to find a spot that you can write on with chalk (grass doesn't work!)

3. Start with the longest side on your shape. Measure how many units that side is supposed to be with your measurement tool. Draw the line using sidewalk chalk.

4. Go to the next side that connects to the side you already drew. Measure how long that side will be using your measurement tool. These will be long lines and very big shapes!

5. Keep measuring and drawing the sides of your shape until it is finished.

6. Stand up and look at your shape. Does it look like the shape on your card? Fix any mistakes.

7. Label the length of each side of your shape. You will use the chalk and write how long each side it. You will have one number written by each side of the shape. Don't forget the units!

8. Find the perimeter of your shape. The perimeter is the measurement of all of the sides of your shape. How long is it all the way around? You will add each side together to find the perimeter.

9. Write the number model or math problem that you used to find the perimeter using chalk by your shape.

10. Don't forget to write the units! What unit did you use measure your shape?
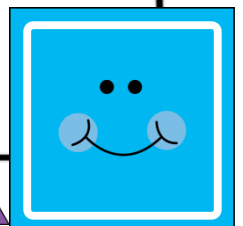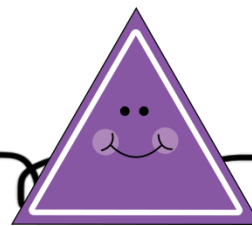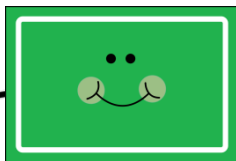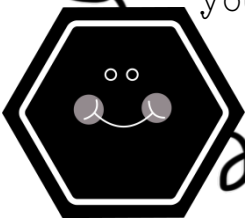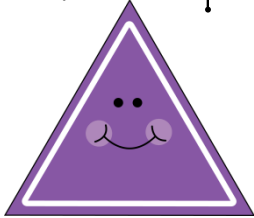
Group 1:
_____
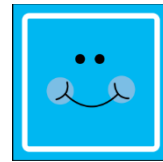Your shape is
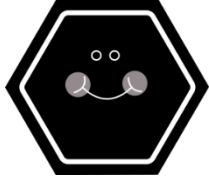
Group 2:
_____
Your shape is
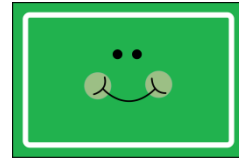
Group 3:
_____
Your shape is

Group 4:
_____
Your shape is

Group 5:
_____
Your shape is

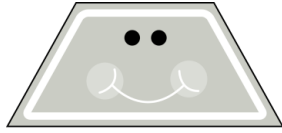## Group 6:
_____
Your shape is

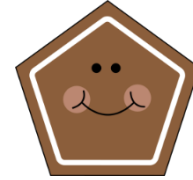## Group 7:

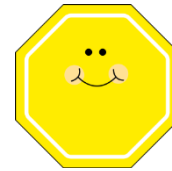_____

Your shape is
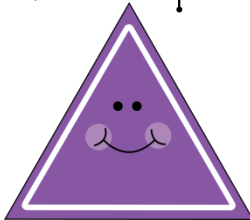
Group 8:

_____

Your shape is

Group 9:

_____

Your shape is

Group 10:

_____

Your shape is

Group 11:
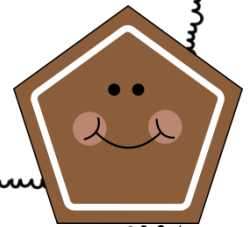
_____

Your shape is

Group 12:

_____

Your shape is
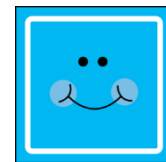
Name_____ Date_____

Sidewalk Chalk Math Activity Sheet

Answer the questions with your group using your shape and measurements.
Don't forget to write the underlined units! Try the "Think about It" questions.

1. What shape did your group draw?_____

2. How many sides did your shape have?_____

3. How long was the longest side of your shape?_____

4. What is the perimeter of your shape?_____

5. Write the number model you used to find the perimeter.

   _____

6. What tool did you use to help you measure the sides of your shape?

   _____

7. What does "perimeter" mean? _____

Think about It Questions

8. What other units or tools can you use to find the perimeter of shapes?

   _____

9. Can you think of anything in our classroom or at your house that you could measure the perimeter of? What is it? _____

   _____

10. Why would you want to know the perimeter? _____

   _____

11. Write the correct names for each shape on this page near each shape.

Name_____ Date_____

Sidewalk Chalk Math Activity Sheet

WS

Answer the questions with your group using your shape and measurements.
*Don't forget to write the <u>units</u>! Try the "Think about It" questions.*

1. Our shape is a:

   a. rectangle   b. triangle   c. square   d. hexagon   e. trapezoid

2. Our shape has _____ sides.

3. How long was the longest side of your shape?_____

4. <u>Perimeter</u> is the distance around the outside of a shape. To find perimeter, you add up all of the sides. What is the perimeter of your shape?_____

5. What numbers did you add together to find the perimeter of your shape? Write the number model or number problem you used to find the perimeter.

   ____+____+____+____=____   or   ____+____+____=____

6. What tool did you use to help you measure the sides of your shape?

   _____

7. _____ is the distance around the outside of a shape.

Think about It Questions

8. Can you think of anything in our classroom or at your house that you could measure the perimeter of? What is it? _____

   _____

9. Write the correct names for each shape on this page beside the shape. The names might be:

square   rectangle   triangle   trapezoid   rhombus   hexagon   octagon
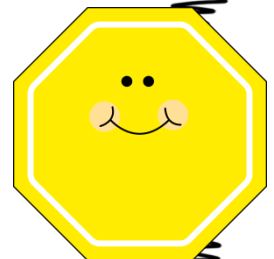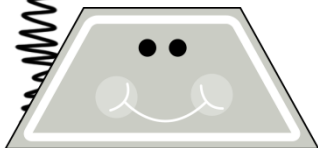
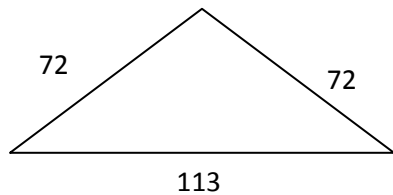# Sidewalk Chalk Math Think About It Activity

Pick one or more of the choices below as a challenge when you are finished with your shape and answering your questions. Don't forget to "Think About It!"

Choose another shape you would like to draw and find the perimeter. They may find a new spot on the blacktop and do the task again, following the directions just like the first time with your new shape. Show your teacher the new shape when you are finished. Do you know the name of your shape?
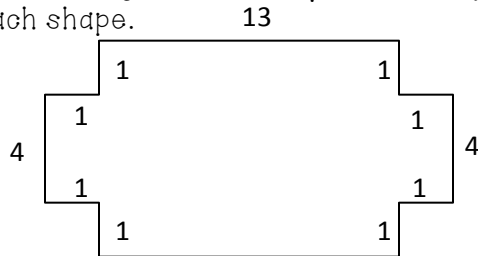
Finish the challenge problems below. Write the perimeter and number model or math problem for each shape. Add what units are being used to the problem. If you know it, write the name of the shape inside each shape.
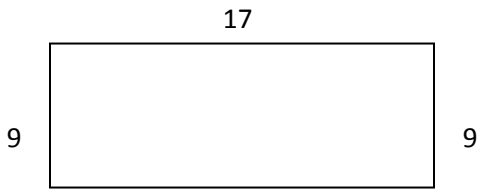
17

9   9

17

Number Model or Math Problem:
_____

13

1   1

1   1

4   4

1   1

1   1

13

Number Model or Math Problem:
_____

72   72

113

Number Model or Math Problem:
_____

21   38   21

25   25

21   21

38
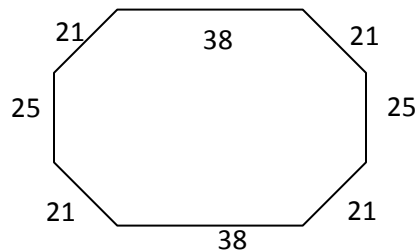
Number Model or Math Problem:
_____

Calculate the perimeter of an object you see. You may find the perimeter of the border something you see, a window, door, a table, or other items with straight sides that you can measure all the way around. Write your number models or math problem and the units you used. *What shape is it? What unit did you use?*
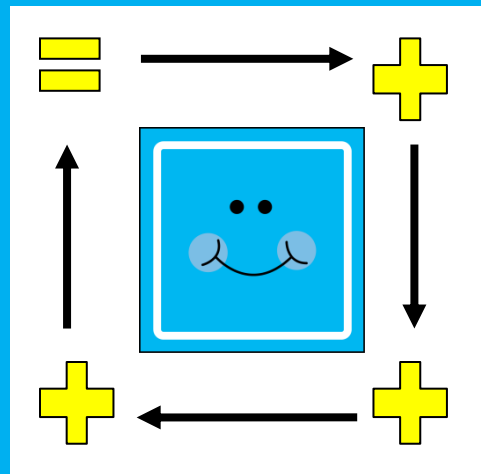
My object is _____.The shape is a _____.

The units I am using: inches   centimeters   feet   meters

Number Model or Math Problem:_____

Perimeter=

Perimeter

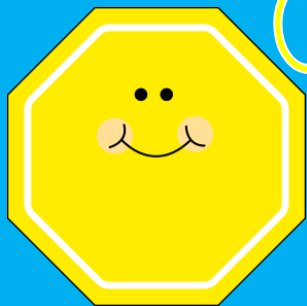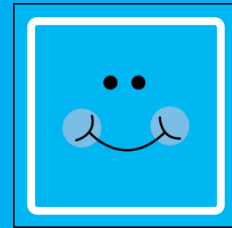is the measurement or distance around the outside of a 2D shape.

___ + ___ + ___ + ___ = ___

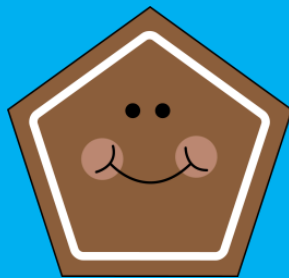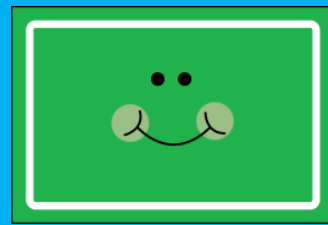Add all of the sides together to find the perimeter!
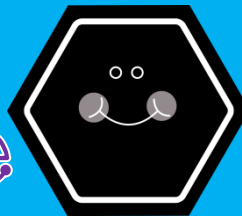
2D Shapes

Octagon
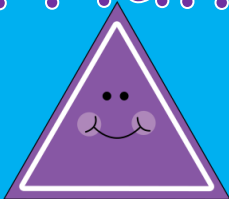
Square

Pentagon

Rectangle
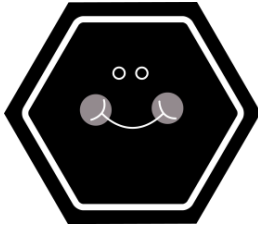
Kite
Rhombus
Diamond

Star

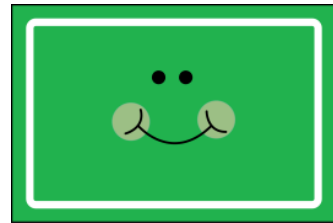Triangle

Hexagon
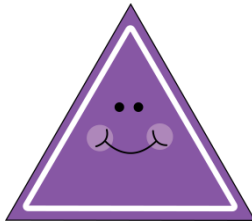
Trapezoid

"I have...who has?" Shape Review Cards

I have a square...
who has a:

I have a hexagon...
who has a:

I have a rectangle...
who has a:
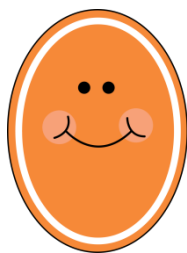
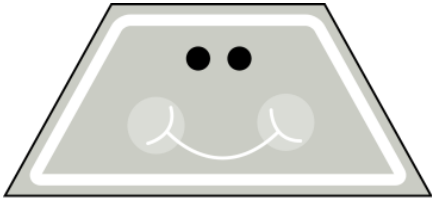I have a triangle...
who has a:

I have a circle...
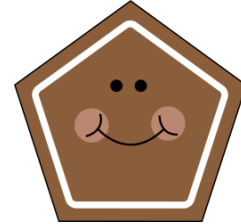who has an:

I have an oval...
who has a:

"I have...who has?" Shape Review Cards
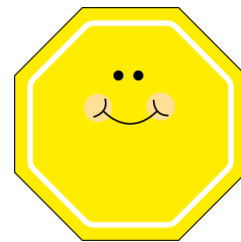
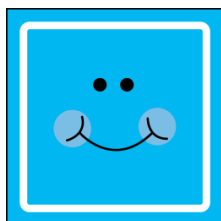I have a rhombus...
who has a:

I have a trapezoid...
who has a:

I have a pentagon...
who has a:

I have a star...
who has a:

I have an octagon...
who has a:

I have a_____...
who has a: