

July Numeracy: Geometry

Identify 2D and 3D shapes. Recognize symmetrical shapes, lines of symmetry, and be able to complete symmetry in a shape. Calculate perimeter/circumference in polygons and circles. Calculate area in polygons and circles.

Materials include:

1. General explanation of unit
2. Terms for curriculum for all levels
3. Goals for each level
4. Suggested schedule for numeracy*
5. Content for teacher's "mini-lesson" per level
6. Worksheets per level
7. Instructions for class activity per level

General Explanation:

This month's numeracy lessons provide basic practice in geometry. Students will learn to identify shapes (including counting sides and vertices). They will learn about symmetry and how to calculate perimeter, circumference and area. The 10 Minute Review will focus on the basic shapes. There are two worksheets that can be used with all levels as a starting point for naming shapes and discussion of the features of shapes. There is also an idea sheet in ways to use the 10 Minute Reviews to focus on shapes.

Again, there may be a wide spectrum of ability in your classroom. Offer the appropriate levels (mini-lesson and worksheets) to your students. Choose and target your mini-lessons to the level of the majority of the class OR feel free to divide the class into two sections (or more) and offer two mini-lessons if there is a need to do so.

****Calculators are needed this month.**

July: Geometry

Terms for Curriculum for All Levels

Basic Numeracy Schedule: The schedule is designed as a four week unit. The teacher is responsible for configuring the schedule to the current month and year. Reviews, computer slots, and worksheet days are merely a suggestion. Adjust accordingly to meet the needs of your class.

mini-lesson: (ml) : Provided lesson plans for a short introduction to the material.

worksheet: (ws): Provided material for students; 3 per month.

Operation box: (ob): VSS worksheets in addition, subtraction, multiplication, and division**

10 minute review: Teacher picks a regular time every class for ten minutes of numeracy review. It is meant to be a quick practice of numeracy, primarily focused on receptive and expressive language.

The beginning of class or the end of class can be effective times. The teacher can have students turn to a clean notebook page, use their “math” notebook, or can have pre-cut papers ready to hand out.

Teacher reads: T reads and the class transcribes numbers

Student reads: S reads and the class transcribes (gives students practice speaking)

Checking Review Work: Students check their work. This can be a simple or creative process depending on time availability. Written answers are necessary in checking since the focus of the review is receptive/expressive language. This is also a time for practice with pronunciation or memorization of numbers/concept.

** Operation Boxes: (Continuation of October’s numeracy focus) I recommend that as a program you create four file boxes that contain practice worksheets for each of the functions (addition, subtraction, multiplication, division). It is best to offer a wide range of choices starting at very beginning levels and ending with more advanced worksheets. Students can then self-pace and work their way through the boxes during the year. Worksheets can come from websites offering free printables or workbooks.

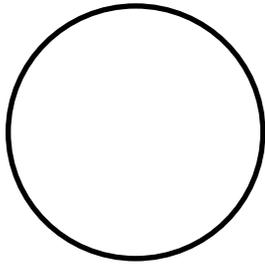
Level 1

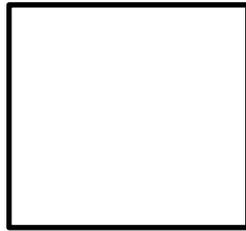
L1 Goals: Identify 2D shapes. Recognize symmetrical shapes, lines of symmetry, and be able to complete symmetry in a shape. Calculate perimeter in polygons.

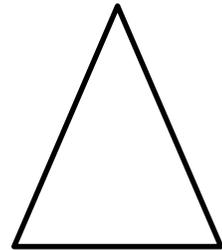
	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Shapes Practice (**Shape worksheets and Idea sheet included)	Computer	10 min review: operations box worksheet	ml 1; ws1	Shapes Practice
Week 2	Shapes Practice	Computer	10 min review: operations box worksheet	ml 2; ws 2	Shapes Practice
Week 3	Shapes Practice	Computer	10 min review: operations box worksheet	ml 3; ws 3	Shapes Practice
Week 4	Shapes Practice	Computer	10 min review: operations box worksheet	ml 4: Shape race	Shapes Practice

* Teachers are responsible for coming up with their own 10 minute reviews for shapes. The included shapes idea sheet will help you plan the 10 minute reviews and help organize a progression of challenges for all math levels.

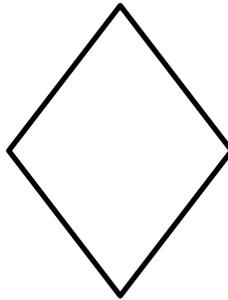
Shapes 1

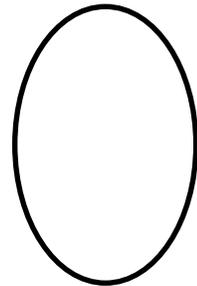


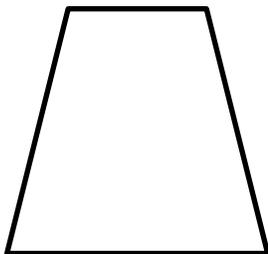


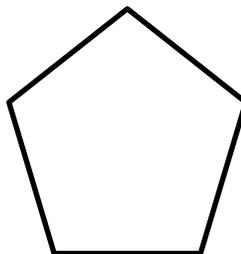


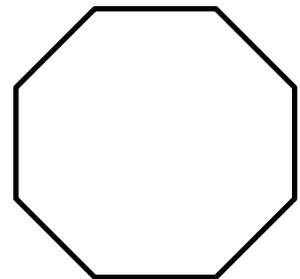












10 Minute Review Shape Ideas

You can vary the 10 minute review, by asking oral questions, writing them on the board as a question or a word problem, or playing a game.

1. Introduce the basic shapes using the Shapes Worksheet (you can do the whole sheet at once, or one shape per 10 minute review).
2. Find shapes around the room/outside/in the community...write names of shape and object.
3. Count the sides of shapes.
4. Count the vertices of shapes.
5. Name a shape: students draw, count sides and count vertices.
6. Draw a shape: have students name the shape.
7. Say several shapes and have students draw them (in, next to, between, etc.)
8. Name a shape and have student draw the line of symmetry, or multiple lines of symmetry
9. Name an object for students to draw (a tree, a lamp, a door, a person, etc.) and then draw lines of symmetry through the object
10. Name an object and have students write the name of the shape: (the sun...a circle, piece of pizza...triangle, etc.)
11. Name a shape with dimensions and have students find the perimeter
12. Use a tape measure and find the perimeter of classroom objects together, such as a table or whiteboard

July: Geometry

Level 1: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

20 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Mini-lesson Content:

1. Introduce 7 shapes:

- Circle, square, rectangle, triangle, oval, diamond, pentagon
- Draw each of these on the board, label, and discuss with students—what are the features? How many **sides**? How many **vertices**? (points or corners)
- Practice reading the words together; ask volunteers to read the names of shapes; go around the room reading names
- Erase names of shapes and ask class to recall names and re-write them on board.
- Erase names for worksheet, but leave the shapes up for visual support in drawing

July: Geometry

Level 1, WS 1

Name _____

Shapes

Partner A

Read to your partner.

1. Triangle
2. Circle
3. Diamond
4. Rectangle

Listen to Partner B. Draw.

5.

6.

7.

8.

July: Geometry

Level 1, WS 1

Name _____

Shapes

Partner B

Listen to Partner A. Draw.

1.

2.

3.

4.

Read to your partner.

5. Oval

6. Pentagon

7. Square

8. Triangle

July: Geometry

Level 1: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

20 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Scissors for teacher

Mini-lesson Content:

1. Introduce Symmetry
 - Symmetry means one side is the same as the other side...like a mirror
 - Cut a paper in two and hold the halves together so students can see they are exactly equal
 - Hand out paper to students: fold the paper together in different ways to create symmetry...emphasize the line between the two halves
2. Is it symmetrical?
 - Brainstorm different shapes they remember and draw them on the board
 - Draw a line through each shape (some symmetrical and some not). Ask students to say “yes” or “no” if the line makes the shape symmetrical
3. Draw the line of symmetry
 - Erase all the lines in the shapes on the board
 - Ask volunteers to come up and draw lines through the shapes to make them symmetrical (show there are different ways to draw lines)
4. Finish the shape
 - Draw several half shapes on the board.
 - Ask volunteers to come up and finish drawing the whole shape/picture

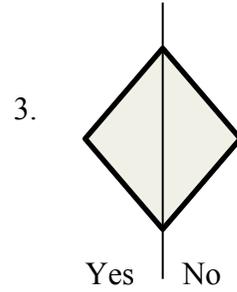
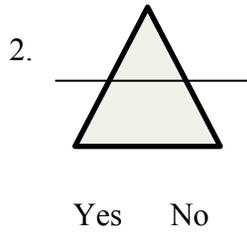
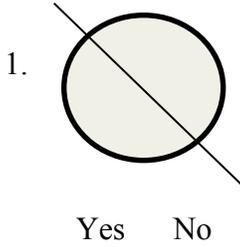
July: Geometry

Level 1, WS 2

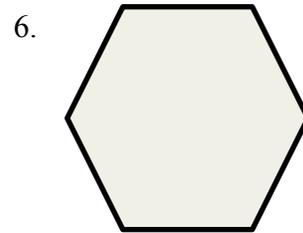
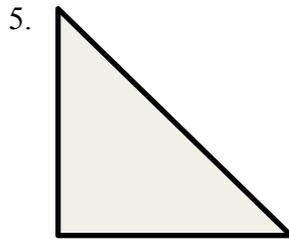
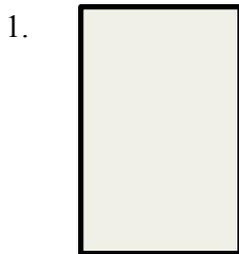
Name _____

Symmetry

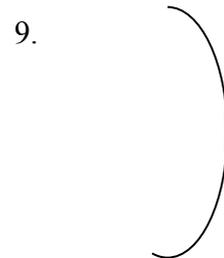
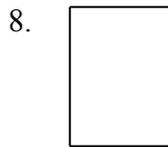
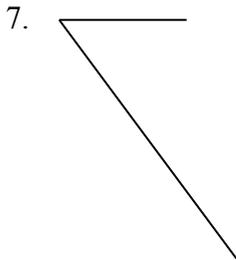
Is this symmetrical? Circle Yes or No.



Draw a line of symmetry.



Draw a symmetrical side.



Level 1: Mini lesson 3

Plan:

15 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

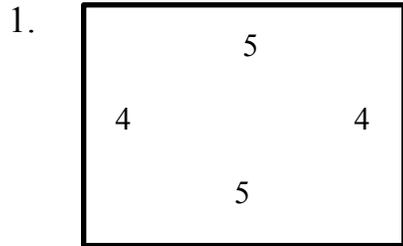
Tape measure

Mini-lesson Content:

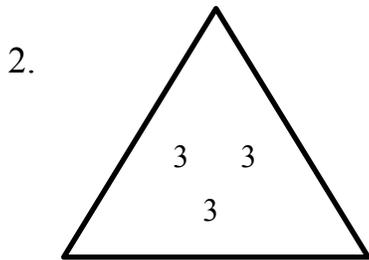
1. Introduce concept of “perimeter”
 - Perimeter is the distance around the shape
 - Physically demonstrate the perimeter of a classroom table. Draw it on the board. Measure one side of the actual table (use whole feet) and write it on the corresponding picture. Continue with all sides.
 - Explain if you walked all the way around the table you would be walking ___ feet. The perimeter = ___ feet.
2. Calculating perimeter
 - To calculate perimeter you just have to add all the sides together. However many sides a shape has is how many numbers you will add.
 - You can tell if sides are the same, longer or shorter than each other by the number.
 - Add all the numbers together and you have the perimeter.

Name _____

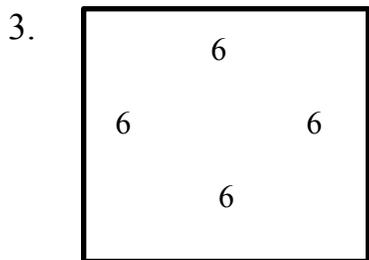
Perimeter



Rectangle: _____ + _____ + _____ + _____ = _____



Triangle: _____ + _____ + _____ = _____



Square: _____ + _____ + _____ + _____ = _____

July: Geometry

Level 1: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race

5-10 minutes for review (class, groups, pairs)

Materials Needed:

White board markers

Activity Goal: Students will show their geometry skills in a class race. They will show knowledge of shapes, symmetry and perimeter.

Activity Description: Students will be in two teams lined up in front of the white board. One student from each team will go to the board at a time to answer a question (questions can be weighted with points depending on how easy or difficult the question is). The first person to correctly answer the question wins the point(s).

- Review different shapes (including names), counting sides of shapes, and counting vertices
- Review how to make symmetry in shapes –where the line goes
- Review how to add the sides together to get the perimeter of the shape

Shape Race Questions/Ideas for Teacher

Teacher is responsible for asking/forming all questions. Here are ideas to aid that process.

1. Ask students to draw a specific shape (circle, square, rectangle, triangle, pentagon, oval, octagon, trapezoid, diamond).
2. Ask students to draw two or more shapes (a little circle in a big triangle).
3. Write the name of the shape on the board and have students draw the shape.
4. Draw the shape on the board and have students try to write the name.
5. Use previous shapes from questions and ask students to draw a line of symmetry through the shape.
6. Ask for a second or different line of symmetry.
7. Ask for two students to go in a row: one draw a shape, the other draw the line of symmetry.
8. Give the number of sides or vertices and ask students to draw all the shapes they can think of (4 sides, 4 vertices: square, rectangle, trapezoid, diamond; 0 sides: circle, oval)
9. Give a shape and have students write down the number of sides or vertices
10. Give the measurements of a shape and have students solve the perimeter

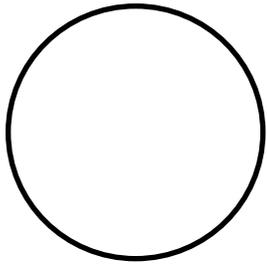
Level 2

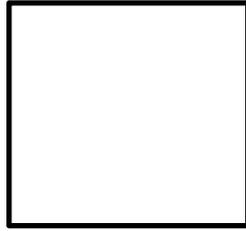
L2 Goals: Identify 2D shapes. Recognize symmetrical shapes, lines of symmetry, and be able to complete symmetry in a shape. Calculate perimeter in polygons.

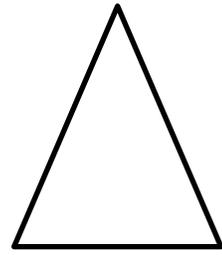
	Monday	Tuesday	Wednesday	Thursday	Friday
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Week 3	Shapes Practice	10 min review: operations box worksheet	computer	ml 3; ws 3	Shapes Practice
Week 4	Shapes Practice	10 min review: operations box worksheet	computer	ml 4: Shape race	Shapes Practice

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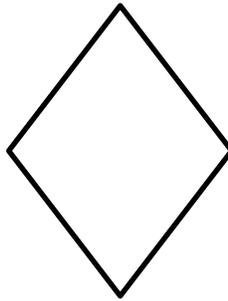
Shapes 1

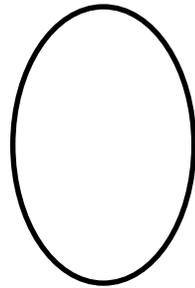


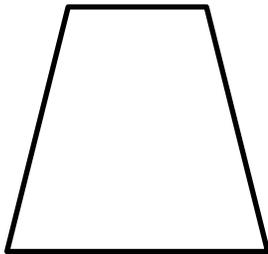


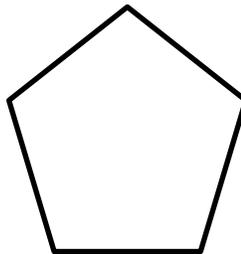


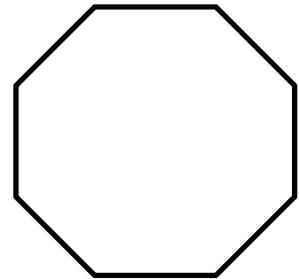












10 Minute Review Shape Ideas

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1. Introduce the basic shapes using the Shapes Worksheet (you can do the whole sheet at once, or one shape per 10 minute review).
2. Find shapes around the room/outside/in the community...write names of shape and object.
3. Count the sides of shapes.
4. Count the vertices of shapes.
5. Name a shape: students draw, count sides and count vertices.
6. Draw a shape: have students name the shape.
7. Say several shapes and have students draw them (in, next to, between, etc.)
8. Name a shape and have student draw the line of symmetry, or multiple lines of symmetry
9. Name an object for students to draw (a tree, a lamp, a door, a person, etc.) and then draw lines of symmetry through the object
10. Name an object and have students write the name of the shape: (the sun...a circle, piece of pizza...triangle, etc.)
11. Name a shape with dimensions and have students find the perimeter
12. Use a tape measure and find the perimeter of classroom objects together, such as a table or whiteboard

July: Geometry

Level 2: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

20 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Mini-lesson Content:

1. Introduce 9 shapes:

- Circle, square, rectangle, triangle, oval, diamond, pentagon, trapezoid, octagon
- Draw each of these on the board, label, and discuss with students—what are the features? How many **sides**? How many **vertices**? (points or corners)
- Practice drawing the shapes together
- Practice reading the words together; ask volunteers to read the names of shapes; go around the room reading names
- Erase names of shapes and ask class to recall names and re-write them on board.
- Erase names for worksheet, but leave the shapes up for visual support in drawing

Name _____

Shapes

Partner A

Read to your partner.

1. Triangle
2. Circle
3. Diamond
4. Rectangle
5. Trapezoid

Listen to Partner B. Draw.

6.

7.

8.

9.

10.

Name _____

Shapes

Partner B

Listen to Partner A. Draw.

1.

2.

3.

4.

5.

Read to your partner.

6. Oval

7. Pentagon

8. Square

9. Triangle

10. Octagon

July: Geometry

Level 2: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Scissors for teacher

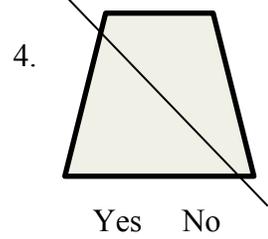
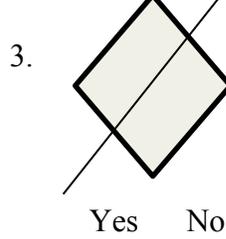
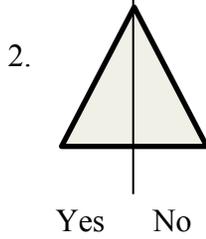
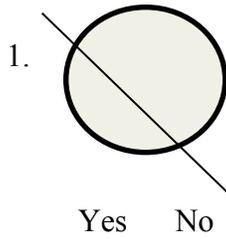
Mini-lesson Content:

1. Introduce Symmetry
 - Symmetry means one side is the same as the other side...like a mirror
 - Cut a paper in two and hold the halves together so students can see they are exactly equal
 - Hand out paper to students: fold the paper together in different ways to create symmetry...emphasize the line between the two halves
2. Is it symmetrical?
 - Brainstorm different shapes they remember and draw them on the board
 - Draw a line through each shape (some symmetrical and some not). Ask students to say “yes” or “no” if the line makes the shape symmetrical
3. Draw the line of symmetry
 - Erase all the lines in the shapes on the board
 - Ask volunteers to come up and draw lines through the shapes to make them symmetrical (show there are different ways to draw lines)
4. Finish the shape
 - Draw several half shapes on the board.
 - Ask volunteers to come up and finish drawing the whole shape/picture

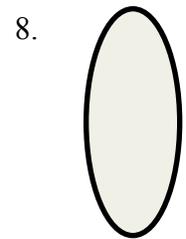
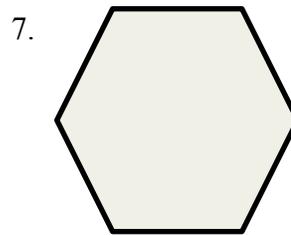
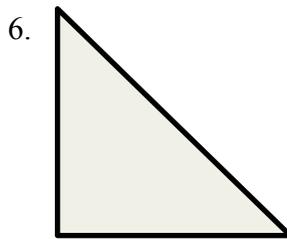
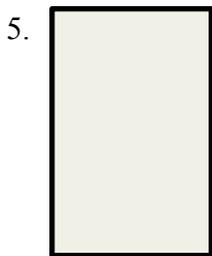
Name _____

Symmetry

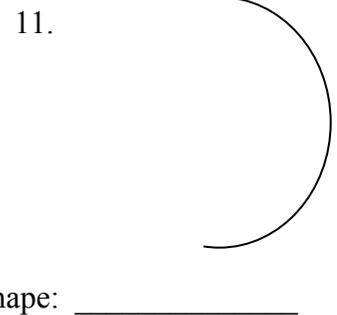
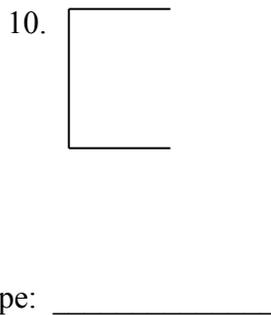
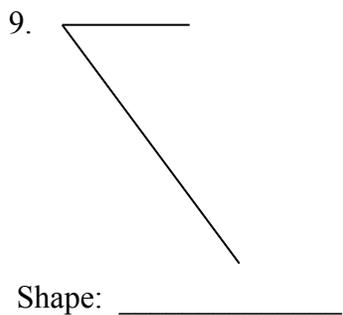
Is this symmetrical? Circle Yes or No.



Draw a line of symmetry.



Draw a symmetrical side.



July: Geometry

Level 2: Mini lesson 3

Plan:

15 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

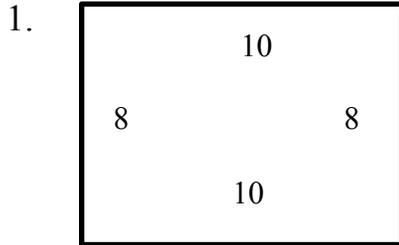
Tape measure

Mini-lesson Content:

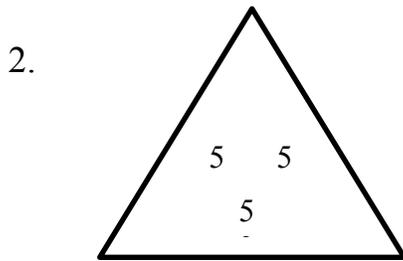
1. Introduce concept of “perimeter”
 - Perimeter is the distance around the shape (draw a rectangle on board)
 - Count and label the number of sides = (4)
 - Count and label the number of vertices (corners) = (4)
 - Physically demonstrate the perimeter of a classroom table. Measure one side of the actual table (use whole feet) and write it on the corresponding rectangle on the board. Continue with all sides.
 - Explain if you walked all the way around the table you would be walking ___ feet. The perimeter = ___ feet.
2. Calculating perimeter
 - To calculate perimeter you just have to add all the sides together. However many sides a shape has is how many numbers you will add.
 - You can tell if sides are the same, longer or shorter than each other by the number.
 - Add all the numbers together and you have the perimeter.

Name _____

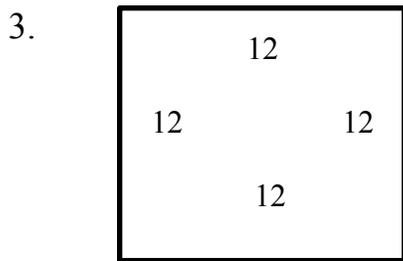
Perimeter



Sides = _____ Vertices = _____ Perimeter = _____



Sides = _____ Vertices = _____ Perimeter = _____



Sides = _____ Vertices = _____ Perimeter = _____

July: Geometry

Level 2: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race

5-10 minutes for review (class, groups, pairs)

Materials Needed:

White board markers

Activity Goal: Students will show their geometry skills in a class race. They will show knowledge of shapes, symmetry and perimeter.

Activity Description: Students will be in two teams lined up in front of the white board. One student from each team will go to the board at a time to answer a question (questions can be weighted with points depending on how easy or difficult the question is). The first person to correctly answer the question wins the point(s).

- Review different shapes (including names), counting sides of shapes, and counting vertices
- Review how to make symmetry in shapes –where the line goes
- Review how to add the sides together to get the perimeter of the shape

Shape Race Questions/Ideas for Teacher

Teacher is responsible for asking/forming all questions. Here are ideas to aid that process.

1. Ask students to draw a specific shape (circle, square, rectangle, triangle, pentagon, oval, octagon, trapezoid, diamond).
2. Ask students to draw two or more shapes (a little circle in a big triangle).
3. Write the name of the shape on the board and have students draw the shape.
4. Draw the shape on the board and have students try to write the name.
5. Use previous shapes from questions and ask students to draw a line of symmetry through the shape.
6. Ask for a second or different line of symmetry.
7. Ask for two students to go in a row: one draw a shape, the other draw the line of symmetry.
8. Give the number of sides or vertices and ask students to draw all the shapes they can think of (4 sides, 4 vertices: square, rectangle, trapezoid, diamond; 0 sides: circle, oval)
9. Give a shape and have students write down the number of sides or vertices
10. Give the measurements of a shape and have students solve the perimeter

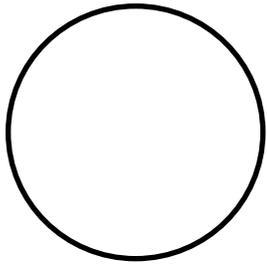
Level 3

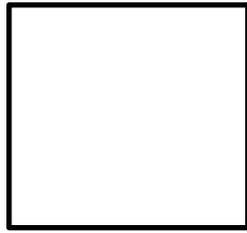
L3 Goals: Identify 2D and 3D shapes. Recognize symmetrical shapes, lines of symmetry, and be able to complete symmetry in a shape. Calculate perimeter/circumference in polygons and circles. Calculate area in squares, rectangles and circles.

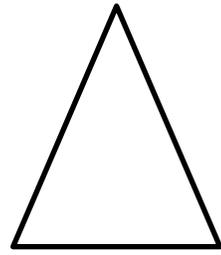
	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	computer	Shapes Practice (**Shape worksheets and Idea sheet included)	10 min review: operations box worksheet	ml 1, ws 1	Shapes Practice
Week 2	computer	Shapes Practice	10 min review: operations box worksheet	ml 2; ws 2	Shapes Practice
Week 3	computer	Shapes Practice	10 min review: operations box worksheet	ml 3; ws 3	Shapes Practice
Week 4	computer	Shapes Practice	10 min review: operations box worksheet	ml 4: Shape race	Shapes Practice

* Teachers are responsible for coming up with their own 10 minute reviews for shapes. The included shapes idea sheet will help you plan the 10 minute reviews and help organize a progression of challenges for all math levels.

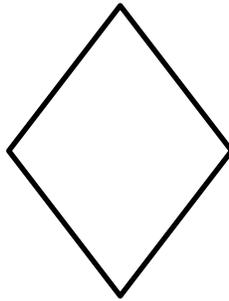
Shapes 1

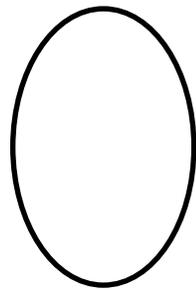


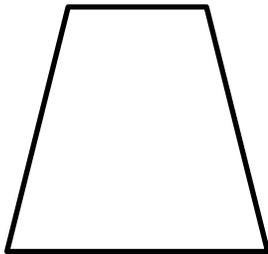


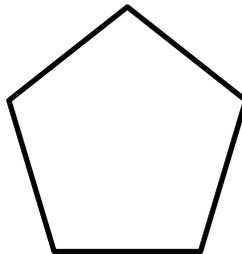


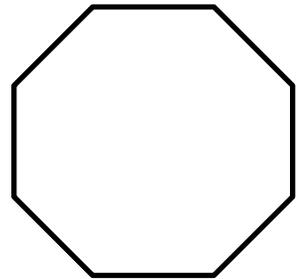




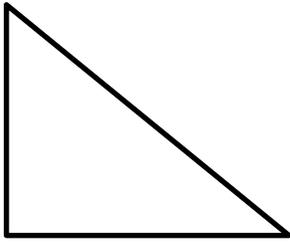


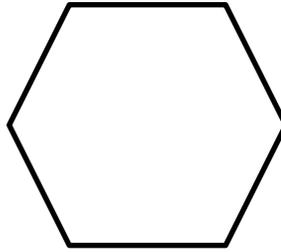


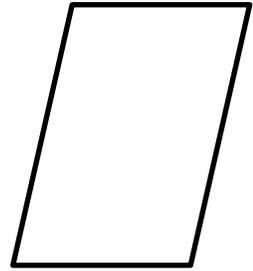


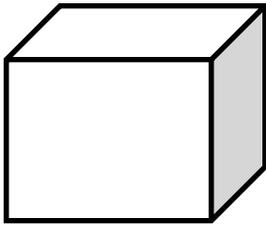


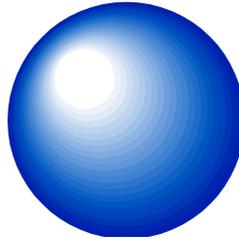
Shapes 2

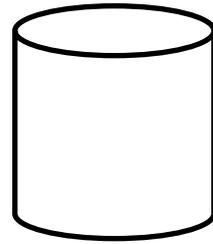


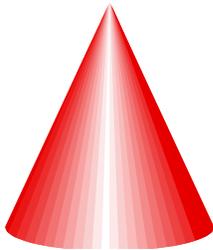












10 Minute Review Shape Ideas

You can vary the 10 minute review, by asking oral questions, writing them on the board as a question or a word problem, or playing a game.

1. Introduce the basic shapes using the Shapes Worksheets (you can do the whole sheet at once, or one shape per 10 minute review).
2. Find shapes around the room/outside/in the community...write names of shape and object.
3. Count the sides of shapes.
4. Count the vertices of shapes.
5. Name a shape: students draw, count sides and count vertices.
6. Draw a shape: have students name the shape.
7. Say several shapes and have students draw them (in, next to, between, etc.)
8. Name a shape and have student draw the line of symmetry, or multiple lines of symmetry
9. Name an object for students to draw (a tree, a lamp, a door, a person, etc.) and then draw lines of symmetry through the object
10. Name an object and have students write the name of the shape: (the sun...a circle, piece of pizza...triangle, etc.)
11. Name a shape with dimensions and have students find the perimeter/area
12. Use a tape measure and find the perimeter/area of classroom objects together, such as a table or whiteboard

July: Geometry

Level 3: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

20 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

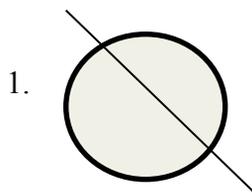
Mini-lesson Content:

1. Introduce 9 shapes:
 - Circle, square, rectangle, triangle, oval, diamond, pentagon, trapezoid, octagon
 - Draw each of these on the board, label, and discuss with students—what are the features? How many **sides**? How many **vertices**? (points or corners)
 - Practice drawing the shapes together
 - Erase names of shapes and ask class to recall names and re-write them on board.
2. Introduce Symmetry
 - Symmetry means one side is the same as the other side...like a mirror
 - Hand out paper to students: fold the paper together in different ways to create symmetry...emphasize the line between the two halves
3. Is it symmetrical?
 - Draw a line through each shape (some symmetrical and some not). Ask students to say “yes” or “no” if the line makes the shape symmetrical
4. Draw the line of symmetry
 - Erase all the lines in the shapes on the board
 - Ask volunteers to come up and draw lines through the shapes to make them symmetrical (show there are different ways to draw lines)
5. Finish the shape
 - Draw several half shapes on the board.
 - Ask volunteers to come up and finish drawing the whole shape/picture

Name _____

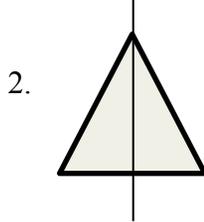
Symmetry

Is this symmetrical? Circle Yes or No.

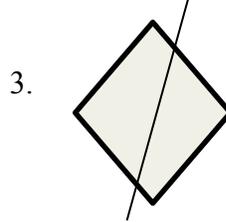


Yes No

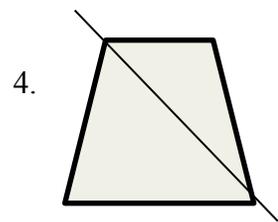
Shape: _____



Yes No



Yes No



Yes No

Draw the shape. Then draw a line of symmetry.

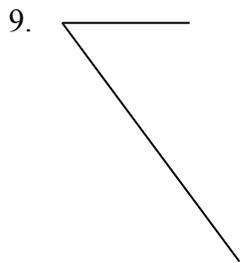
5. square

6. oval

7. diamond

8. trapezoid

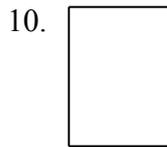
Draw a symmetrical side.

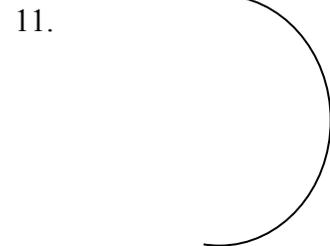


Shape: _____

Sides: _____

Vertices: _____





July: Geometry

Level 3: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce concept of “perimeter”
 - Perimeter is the distance around the shape (draw a rectangle on board)
 - Use a classroom table as an example.
 - Explain if you walked all the way around the table you would be walking ___ feet. The perimeter = ___ feet.
2. Calculating perimeter in polygons
 - To calculate perimeter you just have to add all the sides together. However many sides a shape has is how many numbers you will add.
 - You can tell if sides are the same, longer or shorter than each other by the number. Also, if you understand what makes up a shape, you can tell what the numbers will be if you already have a few numbers.
 - Give example: square = all sides are equal
 - Rectangle= 2 sides are equal and short and 2 sides are equal and long
 - Diamond
 - Add all the numbers together and you have the perimeter.
3. Calculating circumference in circles (perimeter in circles)
 - Formula: $2 \pi r$
 $\pi = 3.14$
 $r =$ radius = the distance from the center of the circle to the outside edge
example: draw a circle and make a radius from the center to the edge=4
Into calculator: $2 \times 3.14 \times 4 =$ circumference

Name _____

Perimeter

Draw the shape and label the sides/measurements.

1. Rectangle: long sides 10, short sides 5

Perimeter = _____

2. Triangle: all sides 9

Perimeter = _____

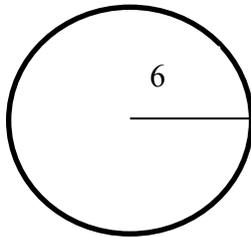
3. Square: all sides 7

Perimeter = _____

4. Octagon: all sides 4

Perimeter = _____

- 5.



Circumference formula: $2\pi r$

Circumference = _____

6. Circle: radius of 9

Circumference = _____

Level 3: Mini lesson 3

Plan:

15 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce concept of “area”
 - If you are going to re-tile the floor of the classroom, how much tile you need is the area...the total amount of space on the floor
 - Perimeter is around the outside, area is measuring the whole space
2. Calculating area in squares and rectangles
 - To calculate the area in squares and rectangles (other shapes are different), you have to multiply the lengths of two sides together
 - Example: Square: What are all sides? (Equal or the same)
 - If one side is 3 what are the other sides?
 - You need two lengths: 3(inches) x 3 = 9inches²
 - You read the answer 9 inches squared---the squared is important because that gives specific area dimensions
3. Calculating area in circles
 - Formula: πr^2 (read: pie r squared)
Pie = Π = 3.14
 r = radius = the distance from the center of the circle to the outside edge
radius squared means radius x radius (NOT radius x 2!!)
example: draw a circle and make a radius from the center to the edge=4
Into calculator: 3.14 x 4 x 4 = area² (must use squared again)

Name _____

Area

Area for rectangles and squares = length x width

Area for circles = πr^2

$\pi = 3.14$

Draw the shape and label the sides/measurements.

1. Rectangle: long side 8, short side 5

Area = _____

2. Square: side 6

Area = _____

3. Square: 12

Area = _____

4. Rectangle: short side 4.5, long side 7

Area = _____

5. Circle: radius of 9

Area = _____

6. Circle: radius of 5

Area = _____

July: Geometry

Level 3: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race

5-10 minutes for review (class, groups, pairs)

Materials Needed:

White board markers

Calculators

Activity Goal: Students will show their geometry skills in a class race. They will show knowledge of shapes, symmetry and perimeter.

Activity Description: Students will be in two teams lined up in front of the white board. One student from each team will go to the board at a time to answer a question (questions can be weighted with points depending on how easy or difficult the question is). The first person to correctly answer the question wins the point(s).

- Review different shapes (including names), counting sides of shapes, and counting vertices
- Review how to make symmetry in shapes –where the line goes
- Review how to add the sides together to get the perimeter of the shape
- Review how to find the circumference of a circle: $2\pi r$
- Review how to find area of squares and rectangle: length x width = $__$ ²
- Review how to find area of circle: πr^2
- $\pi=3.14$

Shape Race Questions/Ideas for Teacher

Teacher is responsible for asking/forming all questions. Here are ideas to aid that process.

1. Ask students to draw a specific shape (circle, square, rectangle, triangle, pentagon, oval, octagon, trapezoid, diamond).
2. Ask students to draw two or more shapes (a little circle in a big triangle).
3. Ask students to draw 3D shapes (cubes, spheres, cylinders)
4. Write the name of the shape on the board and have students draw the shape.
5. Draw the shape on the board and have students try to write the name.
6. Use previous shapes from questions and ask students to draw a line of symmetry through the shape.
7. Ask for a second or different line of symmetry.
8. Ask for two students to go in a row: one draw a shape, the other draw the line of symmetry.
9. Give the number of sides or vertices and ask students to draw all the shapes they can think of (4 sides, 4 vertices: square, rectangle, trapezoid, diamond; 0 sides: circle, oval)
10. Give a shape and have students write down the number of sides or vertices
11. Give the measurements of a shape and have students solve the perimeter
12. Ask what pie equals?
13. Ask what the formula is for circumference/ area of circle/ area of squares and rectangles
14. Give dimensions and ask for area (squared)
15. Give radius and ask for circumference or area

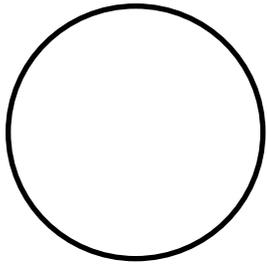
Level 4

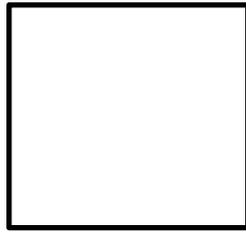
Level 4 Goals: Identify 2D and 3D shapes. Recognize symmetrical shapes, lines of symmetry, and be able to complete symmetry in a shape. Calculate perimeter/circumference in polygons and circles. Calculate area in squares, rectangles and circles.

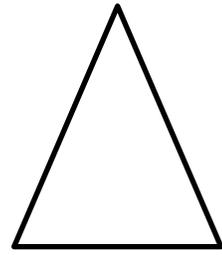
	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Shapes Practice (**Shape worksheets and Idea sheet included)	ml 1, ws 1	10 min review: operations box worksheet	computer	Shapes Practice
Week 2	Shapes Practice	ml 2; ws 2	10 min review: operations box worksheet	Computer	Shapes Practice
Week 3	Shapes Practice	ml 3; ws 3	10 min review: operations box worksheet	Computer	Shapes Practice
Week 4	Shapes Practice	ml 4: Shape race	10 min review: operations box worksheet	Computer	Shapes Practice

* Teachers are responsible for coming up with their own 10 minute reviews for shapes. The included shapes idea sheet will help you plan the 10 minute reviews and help organize a progression of challenges for all math levels.

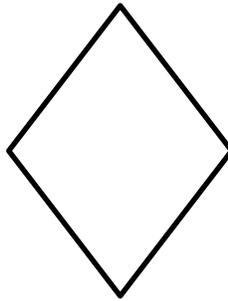
Shapes 1

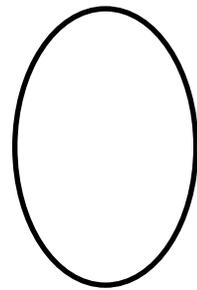


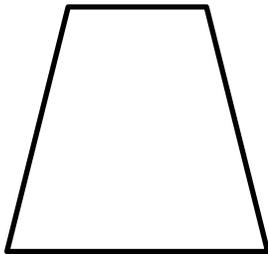


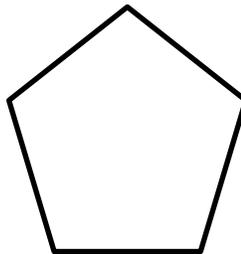


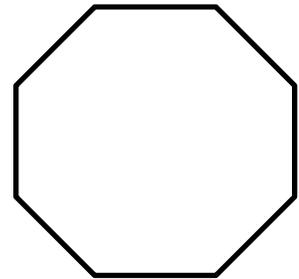




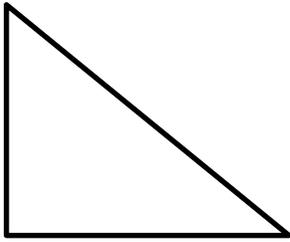


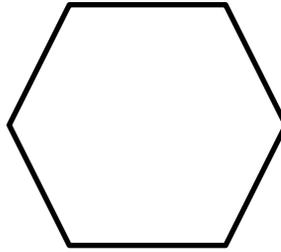


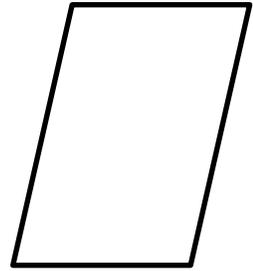


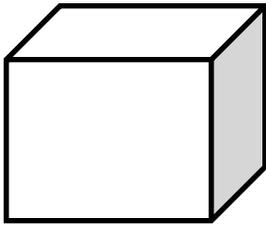


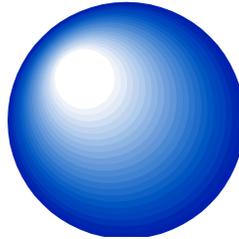
Shapes 2

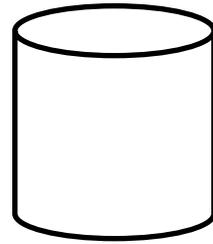


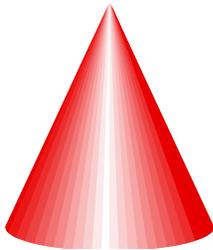












10 Minute Review Shape Ideas

You can vary the 10 minute review, by asking oral questions, writing them on the board as a question or a word problem, or playing a game.

1. Introduce the basic shapes using the Shapes Worksheets (you can do the whole sheet at once, or one shape per 10 minute review).
2. Find shapes around the room/outside/in the community...write names of shape and object.
3. Count the sides of shapes.
4. Count the vertices of shapes.
5. Name a shape: students draw, count sides and count vertices.
6. Draw a shape: have students name the shape.
7. Say several shapes and have students draw them (in, next to, between, etc.)
8. Name a shape and have student draw the line of symmetry, or multiple lines of symmetry
9. Name an object for students to draw (a tree, a lamp, a door, a person, etc.) and then draw lines of symmetry through the object
10. Name an object and have students write the name of the shape: (the sun...a circle, piece of pizza...triangle, etc.)
11. Name a shape with dimensions and have students find the perimeter/area
12. Use a tape measure and find the perimeter/area of classroom objects together, such as a table or whiteboard

Level 4: Mini lesson 1

Plan:

10 minutes for mini lesson (teacher led instruction)

20 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

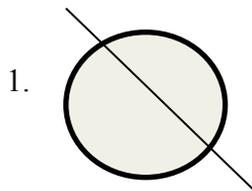
Mini-lesson Content:

1. Introduce 9 2D shapes:
 - What is two dimension? Examples?
 - Circle, square, rectangle, triangle, oval, diamond, pentagon, trapezoid, octagon
 - What is 3D/ three dimension? Examples?
 - Draw each of these on the board, label, and discuss with students—what are the features? How many **sides**? How many **vertices**? (points or corners)
 - Practice drawing the shapes together
 - Erase names of shapes and ask class to recall names and re-write them on board.
2. Introduce Symmetry
 - Symmetry means one side is the same as the other side...like a mirror
 - Hand out paper to students: fold the paper together in different ways to create symmetry...emphasize the line between the two halves
3. Is it symmetrical?
 - Draw a line through each shape (some symmetrical and some not). Ask students to say “yes” or “no” if the line makes the shape symmetrical
4. Draw the line of symmetry
 - Erase all the lines in the shapes on the board
 - Ask volunteers to come up and draw lines through the shapes to make them symmetrical (show there are different ways to draw lines)
5. Finish the shape
 - Draw several half shapes on the board.
 - Ask volunteers to come up and finish drawing the whole shape/picture

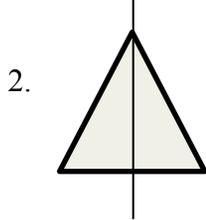
Name _____

Symmetry

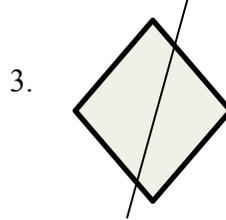
Is this symmetrical? Circle Yes or No.



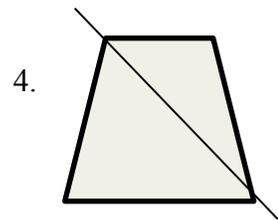
Yes No



Yes No



Yes No



Yes No

Shape: _____

Vertices: _____

Sides: _____

Draw the shape. Then draw THREE lines of symmetry per shape.

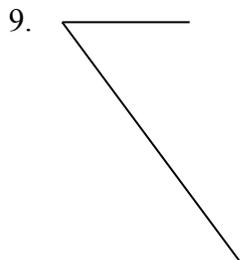
5. square

6. oval

7. diamond

8. trapezoid

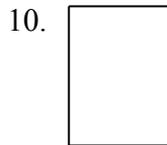
Draw a symmetrical side.

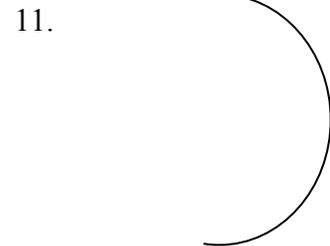


Shape: _____

Sides: _____

Vertices: _____





Level 4: Mini lesson 2

Plan:

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce concept of “perimeter”
 - Perimeter is the distance around the shape (draw a rectangle on board)
 - Use a classroom table as an example.
 - Explain if you walked all the way around the table you would be walking ___ feet. The perimeter = ___ feet.
2. Calculating perimeter in polygons
 - To calculate perimeter you just have to add all the sides together. However many sides a shape has is how many numbers you will add.
 - You can tell if sides are the same, longer or shorter than each other by the number. Also, if you understand what makes up a shape, you can tell what the numbers will be if you already have a few numbers.
 - Give example: square = all sides are equal
 - Rectangle= 2 sides are equal and short and 2 sides are equal and long
 - Diamond
 - Add all the numbers together and you have the perimeter.
3. Calculating circumference in circles (perimeter in circles)
 - Formula: $2 \pi r$
 $\pi = 3.14$
 $r =$ radius = the distance from the center of the circle to the outside edge
example: draw a circle and make a radius from the center to the edge=4
Into calculator: $2 \times 3.14 \times 4 =$ circumference

Name _____

Perimeter

Draw the shape and label the sides/measurements.

1. Rectangle: 10,5

Perimeter = _____

2. Triangle: two sides 9, 4

Perimeter = _____

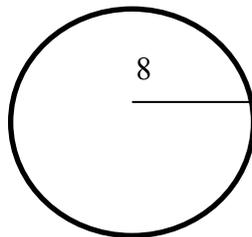
3. Square: 7

Perimeter = _____

4. Octagon: 4

Perimeter = _____

- 5.



Circumference formula: $2\pi r$

Circumference = _____

6. Circle: radius of $7\frac{1}{2}$

Circumference = _____

7. The perimeter of a classroom is 76 feet. It is 24 feet long. How wide is the classroom? _____

8. A rectangular table is four feet wide and 8 feet long. What is the perimeter of the table? _____

Level 4: Mini lesson 3

Plan:

15 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

Materials Needed:

Calculators

Mini-lesson Content:

1. Introduce concept of “area”
 - If you are going to re-tile the floor of the classroom, how much tile you need is the area...the total amount of space on the floor
 - Perimeter is around the outside, area is measuring the whole space
2. Calculating area in squares and rectangles
 - To calculate the area in squares and rectangles (other shapes are different), you have to multiply the lengths of two sides together
 - Example: Square: What are all sides? (Equal or the same)
 - If one side is 3 what are the other sides?
 - You need two lengths: 3(inches) x 3 = 9inches²
 - You read the answer 9 inches squared---the squared is important because that gives specific area dimensions
3. Calculating area in circles
 - Formula: πr^2 (read: pie r squared)
Pie = Π = 3.14
 r = radius = the distance from the center of the circle to the outside edge
radius squared means radius x radius (NOT radius x 2!!)
example: draw a circle and make a radius from the center to the edge=4
Into calculator: 3.14 x 4 x 4 = area² (must use squared again)

Name _____

Area

Area for rectangles and squares = length x width

Area for circles = πr^2

$\pi = 3.14$

Draw the shape and label the sides/measurements.

1. Rectangle: 6.5, 8

Area = _____

2. Square: 14

Area = _____

3. Square: $3\frac{1}{2}$

Area = _____

4. Rectangle: 5, 8.5

Area = _____

5. Circle: radius of 2.25

Area = _____

6. Circle: radius of 9

Area = _____

7. The area of a living room is 60 feet². The length of the room is 10 feet. What is the width of the room? _____

July: Geometry

Level 4: Culminating Group Activity

Plan:

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race

5-10 minutes for review (class, groups, pairs)

Materials Needed:

White board markers

Calculators

Activity Goal: Students will show their geometry skills in a class race. They will show knowledge of shapes, symmetry and perimeter.

Activity Description: Students will be in two teams lined up in front of the white board. One student from each team will go to the board at a time to answer a question (questions can be weighted with points depending on how easy or difficult the question is). The first person to correctly answer the question wins the point(s).

- Review different shapes (including names), counting sides of shapes, and counting vertices
- Review how to make symmetry in shapes –where the line goes
- Review how to add the sides together to get the perimeter of the shape
- Review how to find the circumference of a circle: $2\pi r$
- Review how to find area of squares and rectangle: length x width = $__$ ²
- Review how to find area of circle: πr^2
- $\pi=3.14$

Shape Race Questions/Ideas for Teacher

Teacher is responsible for asking/forming all questions. Here are ideas to aid that process.

1. Ask students to draw a specific shape (circle, square, rectangle, triangle, pentagon, oval, octagon, trapezoid, diamond).
2. Ask students to draw two or more shapes (a little circle in a big triangle).
3. Ask students to draw 3D shapes (cubes, spheres, cylinders)
4. Write the name of the shape on the board and have students draw the shape.
5. Draw the shape on the board and have students try to write the name.
6. Use previous shapes from questions and ask students to draw a line of symmetry through the shape.
7. Ask for a second or different line of symmetry.
8. Ask for two students to go in a row: one draw a shape, the other draw the line of symmetry.
9. Give the number of sides or vertices and ask students to draw all the shapes they can think of (4 sides, 4 vertices: square, rectangle, trapezoid, diamond; 0 sides: circle, oval)
10. Give a shape and have students write down the number of sides or vertices
11. Give the measurements of a shape and have students solve the perimeter
12. Ask what pie equals?
13. Ask what the formula is for circumference/ area of circle/ area of squares and rectangles
14. Give dimensions and ask for area (squared)
15. Give radius and ask for circumference or area
16. Give word problems for perimeter or area.