Teacher Work Sample – Electronic Submission Document

Introduction

Student Teacher Angela Bruhn
Cooperating Teacher Nick Restau
School Milford Jr./Sr. High School

Context of Teaching

My teacher work sample will be as I work with my 8th graders in the subject of Pre-Algebra. We will be covering the last part of my Geometry unit. We will begin this unit after taking a quiz over the beginning portion of the chapter. I have a couple of students, who are "slower" learners. They are bright kids; they just take longer to grasp certain concepts. I have complete leeway in creating my unit. My co-operating teacher has granted me permission to create and explore different options in creating my unit. He will be monitoring me as I go and will okay my material before I present it as well.

A brief overlay of what we will be covering: Day 1- Angles and Polygons, Day 2- Area of Certain Polygons, Day 3- Area and Circumference of a Circle, Day 4- Scavenger Hunt, and Day 5- Test.

Understanding by Design Stage One

Stage 1 – Identify Desired Results

Established Goals:

Students will have an understanding of relationships among the angles, side lengths, perimeters, and areas of similar objects.

http://www.nctm.org/standards/content.aspx?id=314

What understandings are desired?

Students will understand that…

Overarching:

- polygons have different representations in our world.

Topical:

- the sum of the angle measures in any polygon can be found and

applied to similar polygons.

- the area of polygons and circles can transfer to real-world applications.

What essential questions will be considered?

Overarching:

- In what ways are polygons represented in our world?

Topical:

- How can we find the angle measures in any polygon?
- How can we apply the angle measures of a polygon to similar polygons?
- In what ways do we see the area of polygons and circles transfer to real-world applications?

What key knowledge and skills will students acquire as a result of this unit?

Students will know. . .

- the equation to find the sum of angle measures of a polygon.
- the formulas to find the area of a triangle, trapezoid, and a parallelogram.
- The equations to find the area and circumference of a circle.
- the following key terms: regular polygon, irregular polygon, area, circumference, chord, radius, and diameter.

Students will be able to. . .

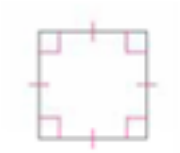
- find the sum of angle measures of a polygon.
- solve for missing angle measures of a polygon.
- calculate the area of a triangle, trapezoid, and a parallelogram.
- compute the circumference and area of a circle.

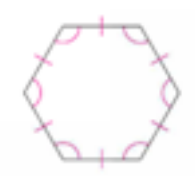
Pre-Assessment

The pre-assessment practice that I used follows here. Each student was to fill out the sheet in order to show me what they knew and also what they didn't know as well.

Pre-Assessment- Pre Algebra Name_____

Are the following polygons regular or irregular,,,

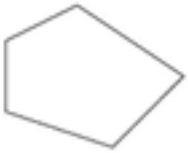
1. 

2. 

3. 

Classify each polygon by the number of its sides...

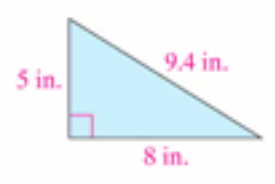
4. 

5. 

6. 

7. 

Find the area of this triangle...

8. 

Find the area and circumference of this circle...

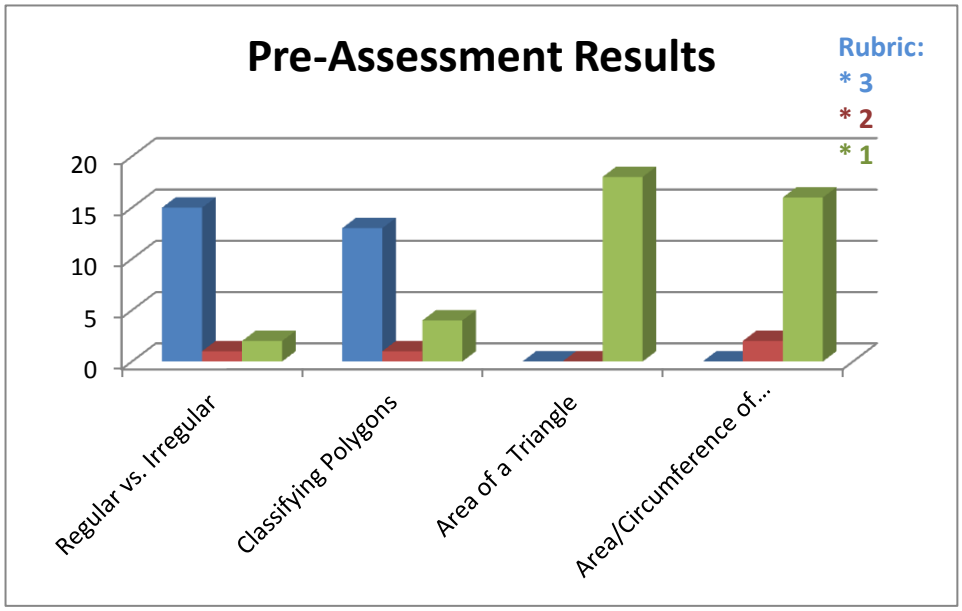
9. 

Pre-Assessment Rubric

Teacher Name: **Ms. Angela Bruhn**

Student Name: _____

CATEGORY	3	2	1
Able to determine polygons as regular or irregular	Student have a clear understanding of what a regular and an irregular polygon is.	Student appear to have an idea of regular and irregular polygons.	Student appear to not have a grasp on the idea of regular and irregular polygons.
Classifying Polygons by the number of sides	Student knows the specific names for all of the given polygons and are able to classify them by their sides.	Student is able to classify about half of the given polygons by their sides.	Student is unable to classify polygons by the number of sides.
Finding area of polygons (Specifically a triangle)	Student demonstrates the knowledge of the equation to use to find the area of the triangle and is able to calculate the area.	Student demonstrates an idea of what equation to use to find the area of a triangle.	Student is unable to demonstrate the equation to use for the area of a triangle and is unable to find the area.
Finding the circumference and area of a circle.	Student is able to find the area and circumference of the given circle.	Student is able to find or demonstrate understanding for either the area or the circumference of a circle.	Student is unable to demonstrate an understanding of finding the area or circumference of a circle.



In the above chart we see that the majority of students knew the difference between regular and irregular polygons. Most were also able to classify polygons and assign them their appropriate name. The thing we struggled with the most is finding the area of a triangle and the area and circumference of a circle.

This information gives me a great base to build upon. The students have a solid understanding of what a polygon is and even if certain students were unable to give them all a particular classification, they still were able to show a slight understanding of the classification each polygon has.

In light of the pre-assessment results, I realized that we were going to have to give a vast majority of our attention to finding area of different polygons and circles. Since the majority of my students have an understanding of polygons and their classifications, a great deal of that information will be review and reestablishing prior knowledge.

Understanding by Design Stage Two

Stage 2 – Determine Acceptable Evidence

What evidence will show that students understand?

Performance Tasks (summary in GRASPS form):*

G: Students will be able to successfully determine the answers to a score of mathematical problems that will be given in a scavenger hunt format.

R: The students themselves will either be a scribe, a checker, or a scout within their groups.

A: The target audience is their group members and I.

S: For the entire period the students will be working in groups of 3. They will find themselves playing one of the roles above and will be going through a series of problems throughout their scavenger hunt.

P: Students will be making their way through a series of 30 mathematical problems that all have to do with our geometry unit. They will be working in groups of three. They will all be given a starting position and once they are done answering that question, they will then move to the next problem that is indicated on the same card.

S: The standards are included in the rubric that can be found under post-assessment.

Other Evidence (quizzes, tests, prompts, observations, dialogues, work samples):

Along with the scavenger hunt, we had two separate homework assignments as well as a test.

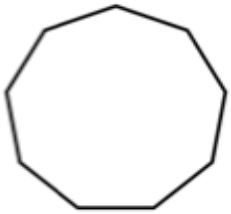
Homework for 7.5-7.6 was in several different colors. The student's worked on the problems individually during the class period and when they were done they had to pair up with the student who had the same color of sheet to compare and talk about their answers.

7.5-7.6 Homework **Name**_____

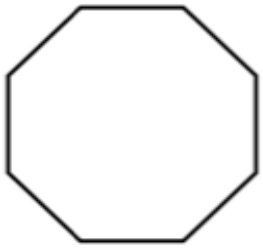
NAME AND FIND THE SUM OF THE INTERIOR ANGLES FOR THE FOLLOWING POLYGONS.

1.

2.

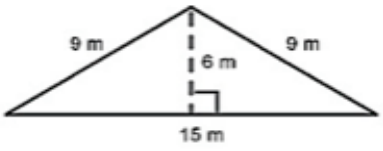


3.

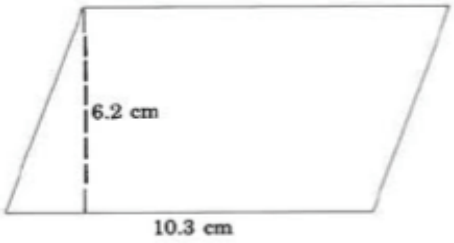


FIND THE AREA OF THE FOLLOWING POLYGONS:

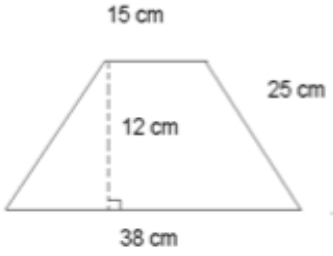
4.



5.



6.



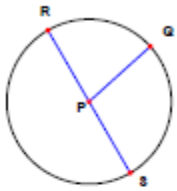
The next day's homework assignment was a take home assignment to give the students a change to practice finding the area and circumference of a circle.

Name : _____ Fit one full page to window

Teacher : _____ Date : _____

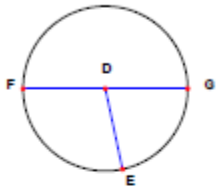
Solve the missing elements for each problem. Use 3.14 for Pi.

1)



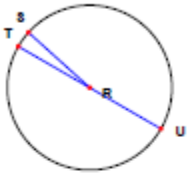
Radius: 14 inches
Diameter: _____
Circumference: _____
Area: _____

2)



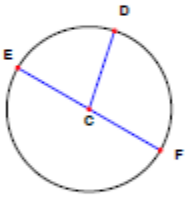
Radius: 3 ft
Diameter: _____
Circumference: _____
Area: _____

3)



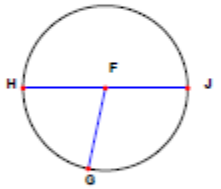
Radius: _____
Diameter: 4 yards
Circumference: _____
Area: _____

4)



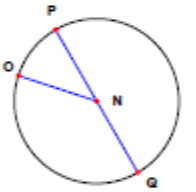
Radius: _____
Diameter: 8 cm
Circumference: _____
Area: _____

5)



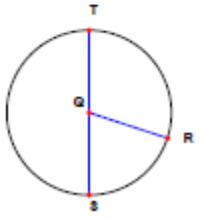
Radius: _____
Diameter: 26 mm
Circumference: _____
Area: _____

6)



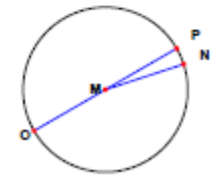
Radius: 9 inches
Diameter: _____
Circumference: _____
Area: _____

7)



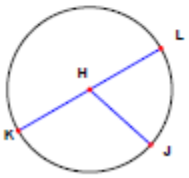
Radius: _____
Diameter: 14 ft
Circumference: _____

8)



Radius: 5 yards
Diameter: _____
Circumference: _____

9)



Radius: _____
Diameter: 12 cm
Circumference: _____

The test that the student's took on the last day of my work sample is the following:

Pre-Algebra Chapter 7 Exam *Name*_____

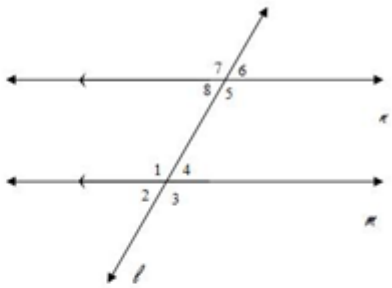
Name the following from the given diagram:

1. 3 pairs of Vertical Angles:

2. 3 pairs of Adjacent Angles:

3. 3 pairs of Corresponding Angles:

4. 2 pairs of Alternate Interior Angles:



Find the <u>Complement</u> and the <u>Supplement</u> to the following angles…

5. 72°

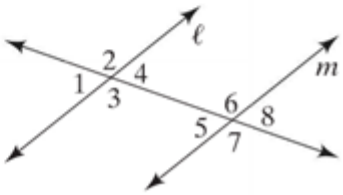
6. 88°

7. 3°

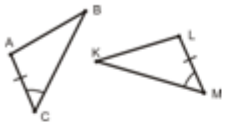
Find the missing angle measures…

8. If angle 1 = 46 what is the measure of the following angles:

- 2=
- 3=
- 4=
- 5=
- 6=
- 7=
- 8=



State whether the following triangles are congruent by SSS, SAS, ASA. State the congruency statement well!

9. 

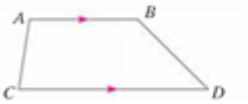
10. 

11. 

Classify the following Quadrilaterals with the best name to describe each...

12. 

13. 

14. 

15. 

16. 

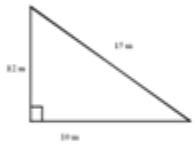
17. 

Find the sum of the interior angles AND each individual angle for the following REGULAR polygons:

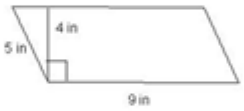
18. Nonagon 19. Pentagon 20. Polygon with 26 sides

Find the area of the following polygons:

21.



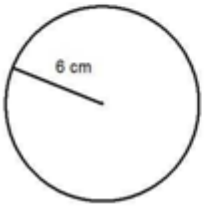
22.



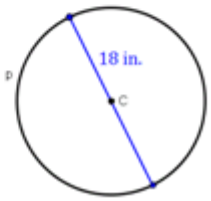
23.

Find the area AND circumference of the following circles:

24.



25.



Student Self-Assessment and Reflection:

1. Did you feel that the Scavenger Hunt (Review Activity) was helpful to you in reviewing for the test?

2. How would you describe your comfort level with the material that we covered in chapter 7?

3. How might I improve the unit to benefit your learning?

4. Did you enjoy this geometry unit?

Post-Assessment

Scavenger Hunt

Today's activity is a sort of "scavenger hunt". I will put you in groups of about 3 people. The following points are the directions for each group. If you have questions please feel free to ask!

- Each person will have a "job"
  - The scout (Finds the next problem for the group)
  - The scribe (Writes the problem number and it's answer)
  - The checker (Checks the scribe and makes sure that the group has the right answer)

- Each card will have your next destination. The scout is to find where the next problem is. **Make sure you are following the cards directions and you are going to the right card next.**

- You will start at the following number:

Make sure you get to as many cards as you can within the period. I will know if you are going in order or not by the number list. You should end up at the card you began with.

Please DO NOT write on the cards!

Scavenger Hunt

Teacher Name: **Ms. Bruhn**

Student Name: _____

CATEGORY	4	3	2	1
Amount of problems attempted	All 30 problems were attempted.	At least 24 problems were attempted	At least 18 problems were attempted	Less than 18 problems were attempted.
Solutions are accurate	At least 24 problems were accurate.	At least 20 problems were accurate.	At least 15 problems were accurate.	Less than 15 problems were accurate.
Active Participation	Student was actively participating the whole class period.	Student was actively participating about 75% of the time.	Student was participating randomly, but not often.	Student was more of a distraction to the process then a help.
Use of Class Time	Used time well during the class period. Focused on getting to the end. Never distracted others.	Used time well during the class period. Usually focused on getting to the end of the scavenger hunt and never distracted others.	Used some of the time well during the class period. There was some focus on getting to the end of the scavenger hunt done but occasionally distracted others.	Did not use class time to focus on the scavenger hunt OR often distracted others.

Lesson Plans

Day One:

Student Teacher: Angela Bruhn **Grade Level: 8th Grade** **Date:** 2/19/2013

State Standard: In grades 6–8, all students should precisely describe, classify, and understand relationships among types of two- and three-dimensional objects using their defining properties.

Subject: Pre-Algebra **Name of Lesson: Angles and Polygons**

Period / Time: 6th 47 minutes

I. Goal: When given an irregular or regular polygon students will be able to find the sum of the interior angle measures.	**Required Adaptations/Modifications:**
II. Objectives: - When given a polygon, students will be able to calculate the total sum of the measures of the interior angles. - When given a regular polygon, students will be able to determine the value of each individual interior angle. - When there is only one missing angle measure, students will be able to develop an equation and determine the missing angle's value.	**Required Adaptations/Modifications:**
III: Faith / Values Integration:	**Required Adaptations/Modifications:**
IV. Integrated Technology: We will be using the overhead projector to project the keynote presentation for the lesson.	**Required Adaptations/Modifications:** Inherent in lesson design
V. Materials: Overhead projector, keynote, clicker, white board, expo markers, pencils, and notes.	**Required Adaptations/Modifications:**
VI: Procedure: A. Set / Hook: To start off today's lesson we are going to watch this short video that is an introduction to the essential question, "What is a polygon?" http://www.youtube.com/watch?v=9eSGGUKC1fk B. Transition: Now that you have been introduced to a couple of "polygons" we are going to move into our discussion of the wide variety of polygons that we have in our world today. C. Main Lesson: 1. We will start off by going through the following list of polygons and for some of them discuss where we see them in our world today.	For my different learners, I will provide a visual aspect to my lesson, a written explanation, and an oral overview of all the material that we are going to be covering.

Polygon Name	Number of Sides
Triangle	3
Quadrilateral	4
Pentagon	5
Hexagon	6
Heptagon	7

Polygon Name	Number of Sides
Octagon	8
Nonagon	9
Decagon	10
Dodecagon	12

2. Next, we are going to focus in on the interior angles of a polygon. First we will define what the interior angles are and then discuss how we can find the total sum of all of the interior angle measures.

KEY CONCEPTS **Polygon Angle Sum**

For a polygon with n sides, the sum of the measures of the interior angles is $(n - 2)180°$.

3. We will put our newly developed knowledge into practice with the following example as a class. The students will also individually work on a problem of their own and they will find the sum of the angle measures of a hexagon.

What is the sum of the measures of the interior angles of a nonagon?

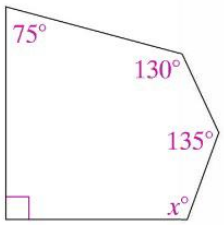
$(n - 2)180° = (9 - 2)180°$ ← A nonagon has nine sides. Substitute 9 for n.

$= 1{,}260°$ ← Simplify.

The sum of the angle measures of a nonagon is $1{,}260°$.

4. Then we are going to focus on how we can find missing angle measures of a polygon when we are given all but one angle measure. We will use the following example to explore this idea.

Algebra Find the missing angle measure in the pentagon at the right.



Step 1 Find the sum of the angle measures.

$(n - 2)180° = (5 - 2)180°$ ← Substitute 5 for n.

$= 540°$ ← Simplify.

Step 2 Write an equation. Let x = the missing angle measure.

$540° = 90° + 75° + 130° + 135° + x°$ ← Write an equation.

$540° = 430° + x°$ ← Simplify.

$110° = x°$ ← Subtract 430° from each side.

The missing angle measure is 110°.

5. The students will have a chance to practice their newly obtained knowledge with the following example: "A hexagon has five angles with measures of 142, 84, 123, 130, and 90. What is the measure of the sixth angle?"

6. The final main idea of this lesson is what is a regular and an irregular polygon. We will define what it means to be both a regular and an irregular polygon. Then we are going to use the following example to discuss how we can find the angle measures of all of the interior angles IF the polygon is REGULAR.

3 Multiple Choice A carpenter wants to know the angle measures of the window at the right in order to cut out the correct space in a wall. If the window is a regular octagon, what is the measure of each angle?

Ⓐ 85° Ⓑ 135° Ⓒ 142° Ⓓ 156°

$(n - 2)180° = (8 - 2)180°$ ← Substitute 8 for n.

$= 1{,}080°$ ← Simplify.

$1{,}080° \div 8 = 135°$ ← Divide the sum by the number of angles.

Each angle of a regular octagon has a measure of 135°. The correct answer is choice B.

7. The final slide of the keynote is a chance for students to practice what we have just covered. Each row will be assigned a specific polygon from the list on the slide. The students will work individually, but then we will come back together as a class and discuss each problem.

D. Transition: Now that we have covered angles and polygons, you should all be fluent in finding the sum of the angle measures in any polygon.

E. Conclusion: Now that we have established our polygons and are able to classify different polygons, tomorrow we will move into finding the area of certain polygons.

VII. Assessment:
Today's lesson is full of informal assessment. During individual work time, I will be able to check for understanding in all of my students.

Required Adaptations/Modifications:
For the students who struggle more often than not, I will be able to devote a little bit of extra support and time during work time throughout the lesson.

VIII. Assignment:
The assignment will be given with tomorrow's assignment.

Required Adaptations/Modifications:

IX. Self-Evaluation:
Today's lesson overall went fairly well. With the help of the pre-assessment I knew that the students had a great background knowledge with the different types of polygons. Therefore we were able to go over that portion of the lesson more quickly and move into the newer material.

I definitely needed work out more examples for the class before moving into their individual work time. I also would elaborate more on finding the individual angle for the regular polygons a bit more. Students caught on to the concept during the lesson, but with their practice problems they were a bit confused about when we could find the individual angle and when we couldn't.

X. Coop's Comments:

ANGLES AND POLYGONS

PRE-ALGEBRA SECTION 7.5

COMMON POLYGONS

Polygon Name	Number of Sides
Triangle	3
Quadrilateral	4
Pentagon	5
Hexagon	6
Heptagon	7

Polygon Name	Number of Sides
Octagon	8
Nonagon	9
Decagon	10
Dodecagon	12

DEFINITION/EQUATION

- Interior angles: Two consecutive sides form an interior angle.

KEY CONCEPTS **Polygon Angle Sum**

For a polygon with n sides, the sum of the measures of the interior angles is $(n - 2)180°$.

EXAMPLE!

What is the sum of the measures of the interior angles of a nonagon?

$(n - 2)180° = (9 - 2)180°$ ← A nonagon has nine sides. Substitute 9 for n.

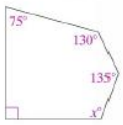
$= 1{,}260°$ ← Simplify.

The sum of the angle measures of a nonagon is 1,260°.

1. What is the sum of the measures of the interior angles of a heptagon?

FINDING MISSING MEASURES

Algebra Find the missing angle measure in the pentagon at the right.



Step 1 Find the sum of the angle measures.

$(n - 2)180° = (5 - 2)180°$ ← Substitute 5 for n.

$= 540°$ ← Simplify.

Step 2 Write an equation. Let x = the missing angle measure.

$540° = 90° + 75° + 130° + 135° + x°$ ← Write an equation.

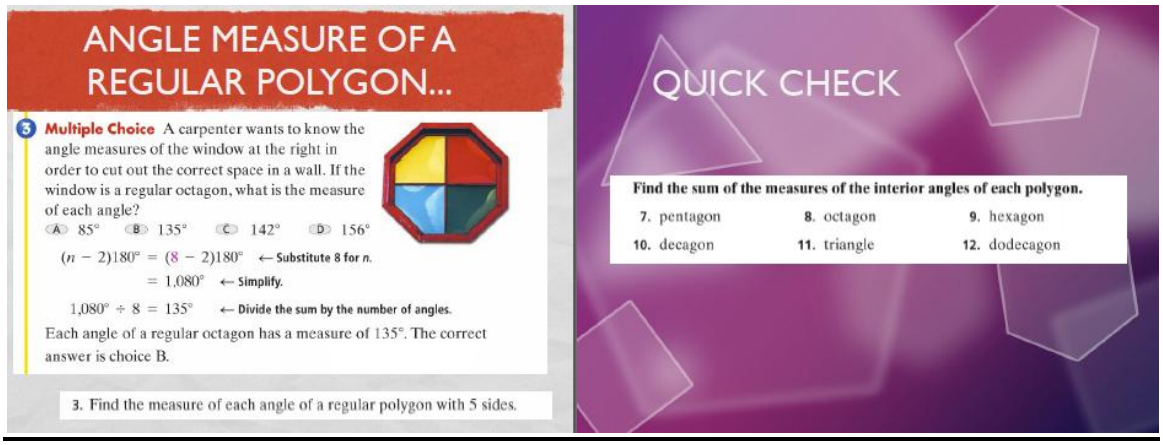
$540° = 430° + x°$ ← Simplify.

$110° = x°$ ← Subtract 430° from each side.

The missing angle measure is 110°.

REGULAR POLYGON

A **regular polygon** is a polygon with all sides congruent and all angles congruent. To find the measure of each angle of a regular polygon, divide the sum of the angle measures by the number of angles.



Day Two:

Student Teacher: Angela Bruhn **Grade Level: 8th Grade** **Date:** 2/19/2013

State Standard: In grades 6–8, all students should precisely describe, classify, and understand relationships among types of two- and three-dimensional objects using their defining properties.

Subject: Pre-Algebra **Name of Lesson: Angles and Polygons**

Period / Time: 6th 47 minutes

I. Goal: When given a parallelogram, a triangle, and a trapezoid, students will be able to determine the area of each polygon.	**Required Adaptations/Modifications:**
II. Objectives: - When given a parallelogram, students will be able to determine the area of the given parallelogram. - When given a triangle, students will be able to compute the area of the given triangle. - When given a trapezoid, students will be able to conclude what the area of the given trapezoid is.	**Required Adaptations/Modifications:**
III: Faith / Values Integration: I expect my students to be respectful of one another and when they are given time to work together, they need to be respectful of one another's work.	**Required Adaptations/Modifications:**
IV. Integrated Technology: We will be using the overhead projector to project the power point presentation for the lesson.	**Required Adaptations/Modifications:** Inherent in lesson design

V. Materials:
Overhead projector, power point, clicker, homework, white board, expo markers, pencils, and notes.

Required Adaptations/Modifications:

VI: Procedure:

A. Set / Hook: To start off today's lesson, we are going to review the procedure in which we are to use to find the area of a square or a rectangle.

B. Transition: Since we have recalled what we need to do to find the area of those two simple polygons, we are going to move into finding the area of three other polygons.

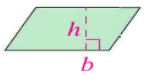
C. Main Lesson:

1. To start off we are going to focus on finding the area of a parallelogram. I will ask, "How do we know if a polygon is a parallelogram?"
2. I will discuss how the parts of a parallelogram that we will need to find the area and then we will take a look at the formula used for the area.

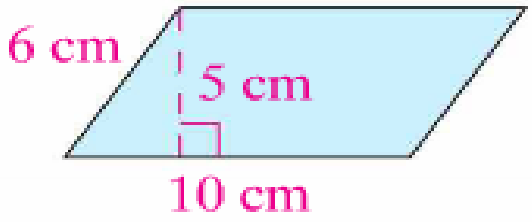
KEY CONCEPTS **Area of a Parallelogram**

The area of a parallelogram equals the product of any base length b and the corresponding height h.

$A = bh$



3. We will do the following example as a class to make the idea more concrete.



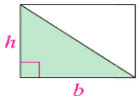
4. Next, is finding the area of a triangle. I will make sure that we make the connection that the area of a triangle is one half of the area of a parallelogram.

There will be several visual and orally presented examples. In order to reach as many students, I will do several examples and go into great detail of the processes in which we will need to find the area.

KEY CONCEPTS **Area of a Triangle**

The area of a triangle equals half the product of any base length b and the corresponding height h.

$$A = \frac{1}{2}bh$$



5. Then I will reveal the formula to find the area of a triangle and we will do an example of finding the area of a triangle.

Architecture An architect plans to cover the front triangular section of a townhouse with cedar shingles. Find the area of the triangle at the left.

$$A = \frac{1}{2}bh \quad \leftarrow \text{Use the formula for the area of a triangle.}$$

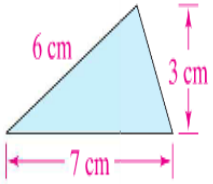
$$= \frac{1}{2} \cdot 24 \cdot 16 \quad \leftarrow \text{Substitute 24 for } b \text{ and 16 for } h.$$

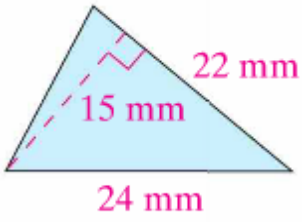
$$= 192 \quad \leftarrow \text{Multiply.}$$

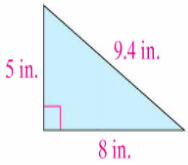
The area is 192 ft^2.

6. Then the students will be given a chance to practice this concept individually as well with the following examples.

Find the area of the triangle below.





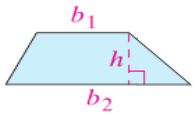


7. Finally we have the area of a trapezoid. We will discuss the formula for the area of a trapezoid and will do a practice problem as a class.

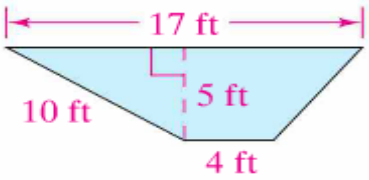
KEY CONCEPTS **Area of a Trapezoid**

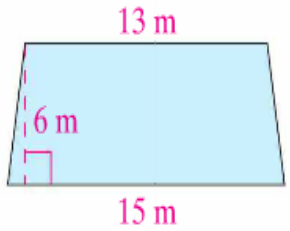
The area of a trapezoid is one half the product of the height and the sum of the lengths of the bases.

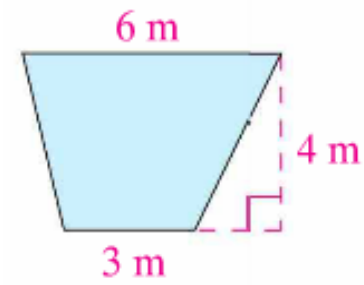
$$A = \frac{1}{2}h(b_1 + b_2)$$



8. I will then give the students some time to practice finding the area of a trapezoid individually, then compare with a partner, and then we will come to class and discuss the parts and pieces of finding the area of each trapezoid.





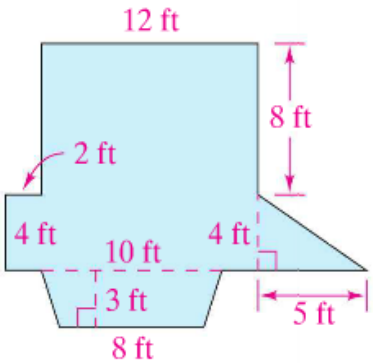


9. To wrap it up, I am going to present the students with all three formulas that we covered today. They will then need to assign the given polygon that each formula goes with.

Identify which polygon area each formula represents.

2. $A = bh$ **3.** $A = \frac{1}{2}bh$ **4.** $A = \frac{1}{2}h(b_1 + b_2)$

10. The last problem that I will do at the end of the lesson is the problem below. It is a more challenging portion of the lesson and it incorporates all that we have covered today all in one problem. We are going to find the area of the following polygon.



D. Transition: We have just found the areas of all different kinds of polygons.

E. Conclusion: Now that we are able to find the area of different kinds of polygons, our next step is to focus on circles and how we are going to find the area and circumference of a circle.

VII. Assessment:
During work-time throughout the lesson, I will be doing an informal assessment to make sure my students are comprehending the topic we are on before we move on.

A more formal assessment can be found in the assignment portion.

Required Adaptations/Modifications:

VIII. Assignment:
The students are each given a colored sheet of paper that contains 6 problems from today and yesterday's lesson. There are six different colors. The students will be given enough time in class to finish the problems. When they finish the problems individually they will meet up with the people who have the same color of worksheet. They will then discuss the problems and if they have any disagreements they will be able to work them out together.

Required Adaptations/Modifications: More time will be given if students are in need of more time.

IX. Self-Evaluation:

This lesson was a fun lesson to teach. There were a variety of topics all circled around the area of different polygons. Students were actively involved in the

X. Coop's Comments:

conversation and had some really good questions. The last challenge problem was a lot of fun to do with the class. It also ties into the lesson for tomorrow.

Before finding the area of the trapezoid, I would first explain to the students about how we get the equation that we do.

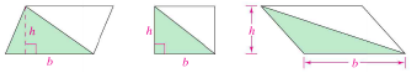
The "homework" activity was very effective. It was awesome to see students discussing their math problems and challenging each other if they were disagreeing. They were interacting with math as the center of the interaction.

Areas of Polygons

Pre-Algebra
Section 7.6

Area of a Parallelogram

A diagonal divides a parallelogram into two congruent triangles. The area of each triangle is *half* the area of the parallelogram.



Any side of a triangle can be the base. The height of a triangle is the perpendicular distance between the base and the opposite vertex.

Formula for the Area of a Parallelogram

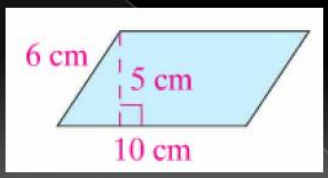
KEY CONCEPTS Area of a Parallelogram

The area of a parallelogram equals the product of any base length b and the corresponding height h.

$A = bh$

Example of Finding area of a parallelogram:

1.



Area of a Triangle

KEY CONCEPTS Area of a Triangle

The area of a triangle equals half the product of any base length b and the corresponding height h.

$A = \frac{1}{2}bh$

Example of Finding area of a triangle:

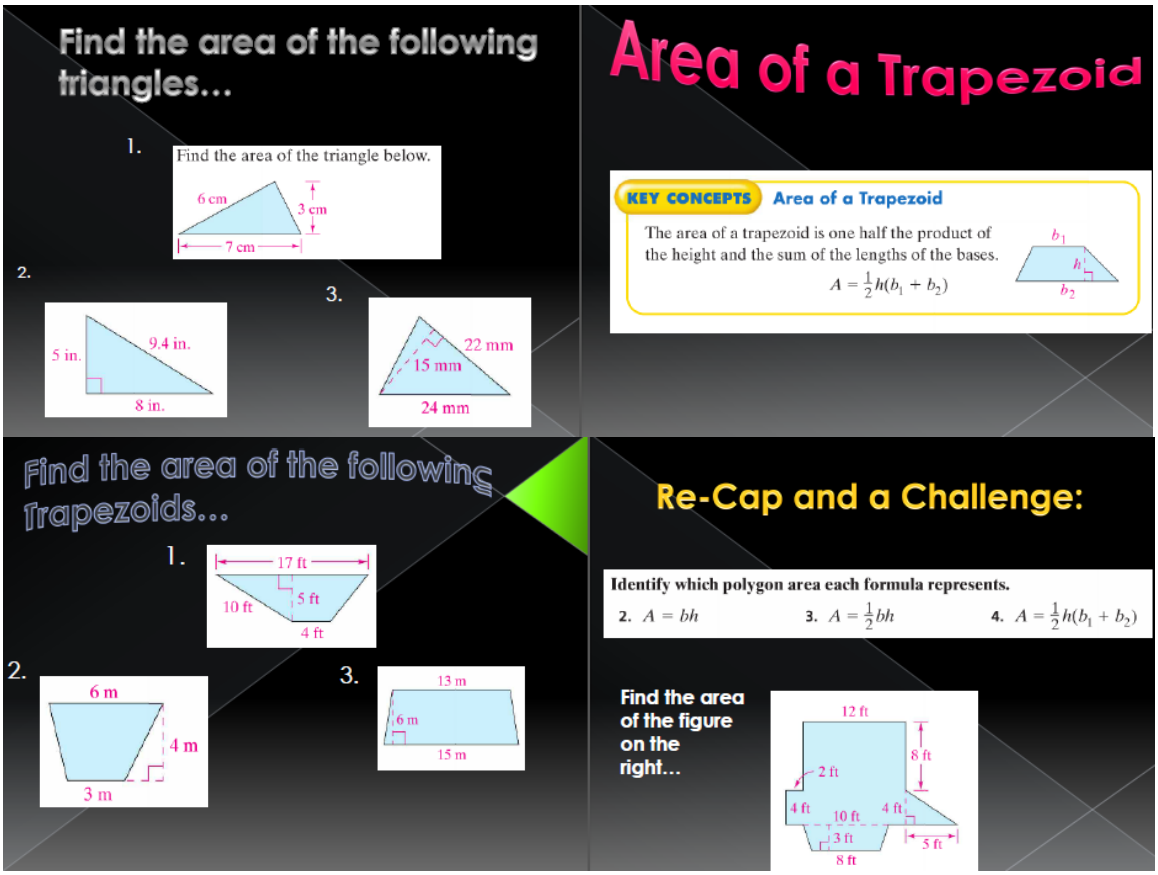
Architecture An architect plans to cover the front triangular section of a townhouse with cedar shingles. Find the area of the triangle at the left.

$A = \frac{1}{2}bh$ ← Use the formula for the area of a triangle.

$= \frac{1}{2} \cdot 24 \cdot 16$ ← Substitute 24 for b and 16 for h.

$= 192$ ← Multiply.

The area is 192 ft^2.



Day 3 Lesson Plan

I. Goal: Students will be able to find the circumference and area of a circle and find the area of irregular figures.	**Required Adaptations/Modifications:**
II. Objectives: - When given a circle, students will be able to classify parts of that circle. - When given a circle and its radius, students will be able to compute the circumference of the circle. - When given a circle and its radius, students will be able to determine the area of the circle.	**Required Adaptations/Modifications:**
III: Faith / Values Integration:	**Required Adaptations/Modifications:**
IV. Integrated Technology: We will be using the overhead projector to project the power-point presentation for the lesson.	**Required Adaptations/Modifications:** Inherent in lesson design

V. Materials:
Overhead projector, power-point, clicker, homework, white board, expo markers, pencils, and notes.

Required Adaptations/Modifications:

VI: Procedure:

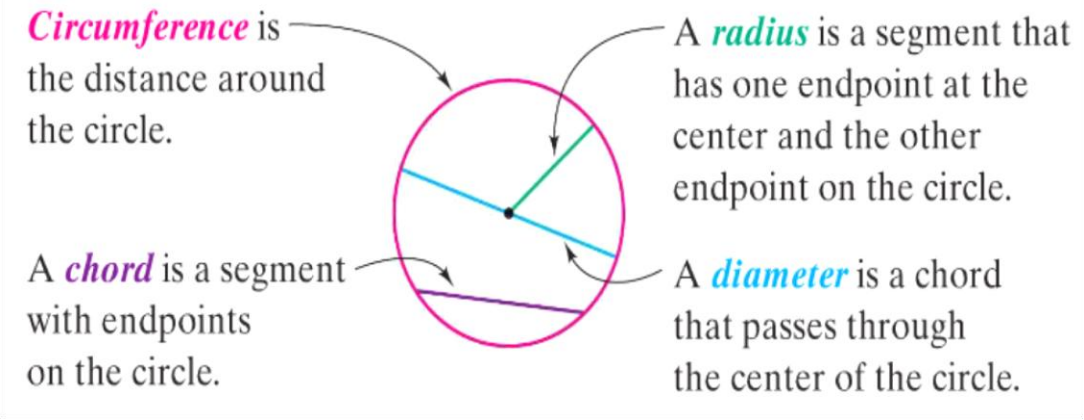
A. Set / Hook: We are going to a quick overview of yesterday's lesson. I will ask them to give me the three polygons that we found the areas of and also the formula used to find the area for those three.

B. Transition: Now that we have found the areas of several different polygons, we are going to transition into circles and finding the circumference and area of a circle.

C. Main Lesson:

For my different learners, I will provide a visual aspect to my lesson, a written explanation, and an oral overview of all the material that we are going to be covering

1. To start off today's lesson we are going to break the circle down into 4 main parts with the following diagram:



2. Then we are going to zoom in on the topic of (Pi) and its significance in circles. First I will define that $\pi = \frac{C}{d}$. And then how we manipulate that equation into the formula for the circumference (C).
3. We will watch this short video that describes the significance of pi in greater detail.

   http://www.youtube.com/watch?v=TlY-Sh9Rzas
4. Next we will discuss the formula for finding the area of a circle.

$$A = \pi r^2$$

5. Now that we have looked at the formulas to finding the circumference and the area. We will put that into practice with the following example:

Sports Equipment Find the circumference and area of the basketball hoop at the right.

$C = \pi d$ ← Use the formula for circumference.

$= \pi(45)$ ← Substitute 45 for d.

π × 45 = 141.3716694 ← Use a calculator.

The circumference is about 141.4 cm.

$A = \pi r^2$ ← Use the formula for the area of a circle.

$= \pi(22.5)^2$ ← The radius is 45 ÷ 2, or 22.5. Substitute 22.5 for r.

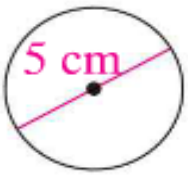
π × 22.5 x^2 = 1590.43128 ← Use a calculator.

The area is about 1,590 cm^2.

6. Then I will give the students a chance to practice finding the area and the circumference with the following three examples. I will let the students choose one that we will do as a class and then they will need to do the other two individually before we do them as a class.

8.

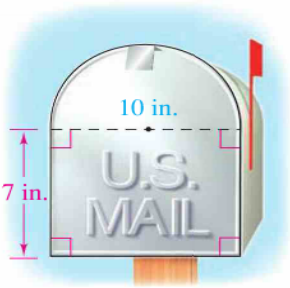
9.



10.

7. The final topic of today's lesson is finding the area of an irregular figure. This encompasses what we covered the previous day as well as today. We will do the following examples as a class: (the last three you will find the area of the shaded region)

Find the area of the front of the mailbox.



Step 1 Find the area of the half circle.

$A = \frac{1}{2}\pi r^2$ ← Multiply the formula for the area of a circle by $\frac{1}{2}$.

$= \frac{1}{2}\pi(5)^2$ ← Substitute 5 for r.

≈ 39.3 ← Multiply. Round to the nearest tenth.

Step 2 Find the area of the rectangle.

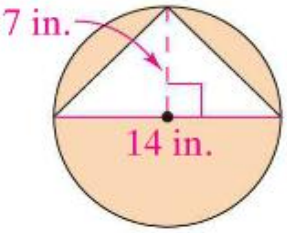
$A = bh$ ← Use the formula for the area of a rectangle.

$= 10 \cdot 7 = 70$

Step 3 Add the two are

The area of the front of

21.



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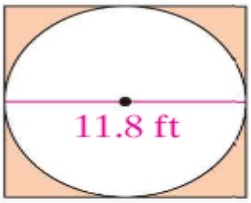
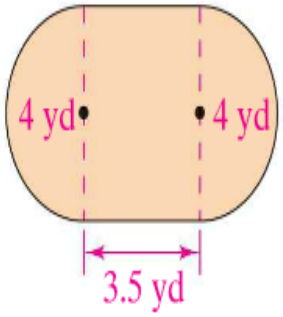




D. Transition: We now have combined all that we have covered into simple problems.

E. Conclusion: This is our last topic for this chapter and in the last few days we have looked at different polygons and finding the sum of the interior angles, we have found out how to find the area of triangles, parallelograms, and trapezoids; and finally finding the area and circumference of a circle.

VII. Assessment:
I conducted some quick informal assessments during work time as well as the formal assessment that is also their assignment.

Required Adaptations/Modifications:

VIII. Assignment:
They will have a worksheet to practice finding the area and circumference of a circle.

Required Adaptations/Modifications:

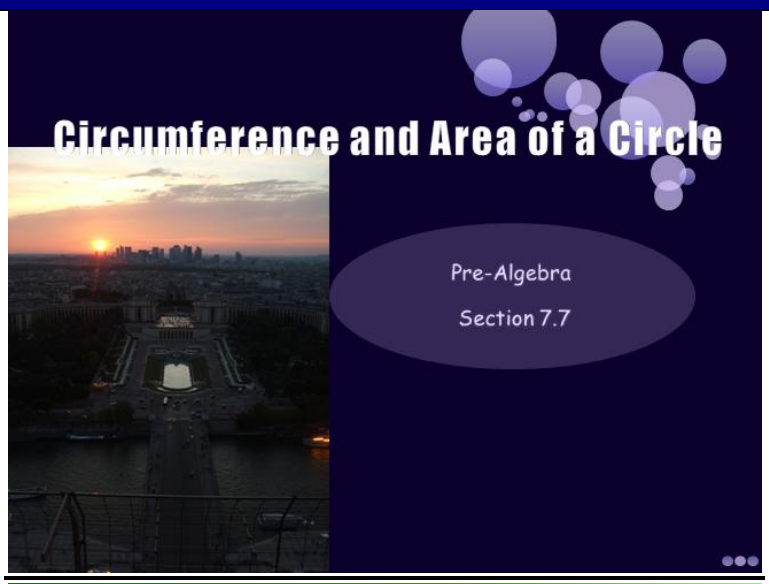
IX. Self-Evaluation:

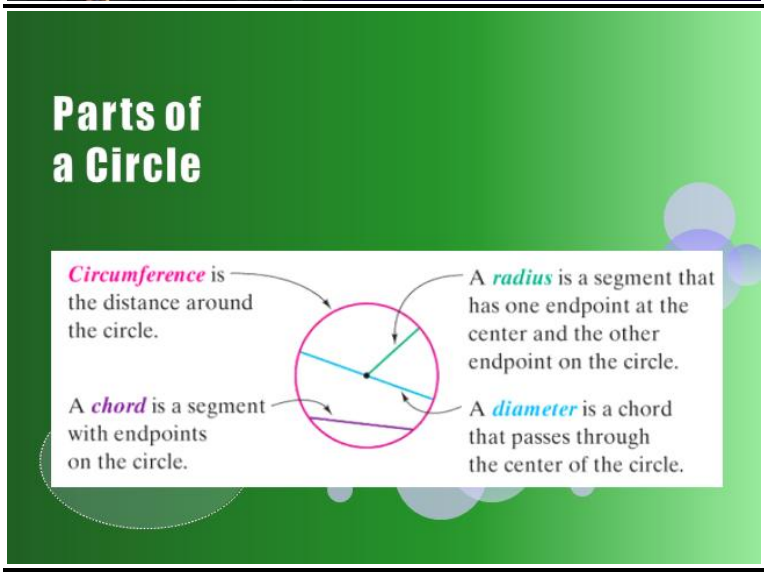
The video, was a bit of a side point, but the students were surprised by the information that it provided and it was a different tool for instruction to mix things up for them as well.

It was very helpful to review the parts of the circle even if they have seen them before. It got them thinking and the wheels turning to get us going.

I didn't allow enough time to discuss the irregular figures as much as I had hoped. So allowing more time to cover that topic would be a good idea.

X. Coop's Comments:





Circumference of a Circle

- Pi (π) is the special name for the ratio of the circumference C of a circle to the diameter d of the circle.

$$\pi = \frac{C}{d}$$

- The equation to the find the circumference is

$$C = \pi d$$

or

$$C = 2\pi r$$

Circumference and Pi

Area of a Circle

- The area of a circle is the product of π and the square of the radius r.

$$A = \pi r^2$$

Example of finding both circumference and area:

Sports Equipment Find the circumference and area of the basketball hoop at the right.

$C = \pi d$ ← Use the formula for circumference.

$= \pi(45)$ ← Substitute 45 for d.

$\pi \times 45 = 141.3716694$ ← Use a calculator.

The circumference is about 141.4 cm.

$A = \pi r^2$ ← Use the formula for the area of a circle.

$= \pi(22.5)^2$ ← The radius is 45 ÷ 2, or 22.5. Substitute 22.5 for r.

$\pi \times 22.5 \; x^2 = 1590.43128$ ← Use a calculator.

The area is about 1,590 cm^2.

Find the Circumference and Area:

8.

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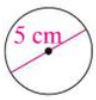

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Finding the Area of an Irregular Figure

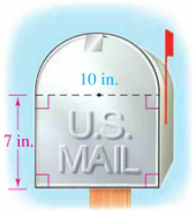
Find the area of the front of the mailbox.

Step 1 Find the area of the half circle.

$A = \frac{1}{2}\pi r^2$ ← Multiply the formula for the area of a circle by $\frac{1}{2}$.

$= \frac{1}{2}\pi(5)^2$ ← Substitute 5 for r.

≈ 39.3 ← Multiply. Round to the nearest tenth.



Step 2 Find the area of the rectangle.

$A = bh$ ← Use the formula for the area of a rectangle.

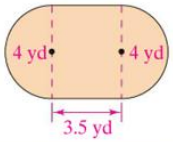
$= 10 \cdot 7 = 70$ ← Substitute 10 for b and 7 for h.

Step 3 Add the two areas: $39.3 + 70 = 109.3$.

The area of the front of the mailbox is about 109.3 in.^{2}.

Find the Area of the shaded region to the nearest tenth.

20.



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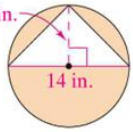
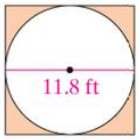
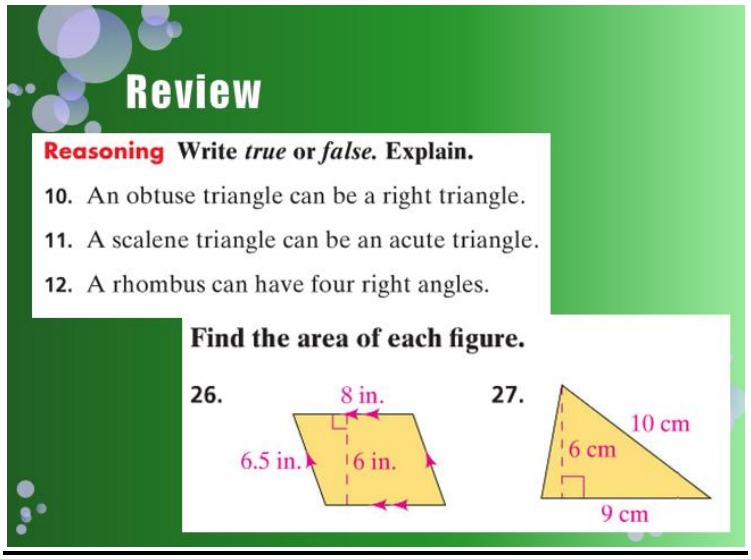


22.





Co-op's Comments: (An overview of the project and the test along with 2 lesson's detailed comments)

Pre-Algebra (8th Grade)
Unit 7
"Summation of Thoughts" regarding Unit 7 Review Activity and Unit 7 Exam.

Student Teacher: Ms. Angela Bruhn
Cooperating Teacher: Mr. Nick Restau

Unit 7
7-1 Pairs of Angles
7-2 Angles and Parallel Lines
7-3 Congruent Polygons
7-4 Classifying Triangles and Quadrilaterals
7-5 Angles and Polygons
7-6 Areas of Polygons
7-7 Circumference and Area of a Circle

Unit 7 Review

For the review activity, Ms. Bruhn developed a "solve and search" activity in which students would be engaged out of their desks, moving around the room. In this activity, cards with problems were placed throughout the room. Once solved, students would continue on the established sequence of problems, moving in order from one to the next. There were 30 cards total. Students worked in pairs or groups of three as they progressed through the task. This was a great opportunity for peer learning and interaction.

As the students engaged in the activity, Ms. Bruhn floated throughout the room, making sure to check in with each group, answering questions, probing for understanding, and maintaining control over the group.

The willingness and creativity that Ms. Bruhn has in regards to this activity and the others implemented in her time here at Milford Public Schools has proven to be a great strength of hers as she develops her teaching practices. This ability directly translates into student engagement, which in turn leads to higher student achievement.

Unit 7 Exam

This unit exam is one of many that Ms. Bruhn has created in her student teaching experience here at Milford Public Schools. Her assessment development has been more than adequate, providing clear and concrete directions, adequate space for student work, as well as appropriate questions. The sections were clearly marked and ordered as the curriculum was delivered to the students. This organization is well received by the students.

The overall results of the exam were very well. The lessons leading up this exam were well developed, and the conceptual knowledge grounded into the students. This exam focused on two major components found in a geometry unit, application of definitions and terminology, and computation utilizing formulas. Students were successful in both areas. Overall, a very well done unit.

Areas of Polygons

Pre-Algebra

Section 7.6

Nick Restivo

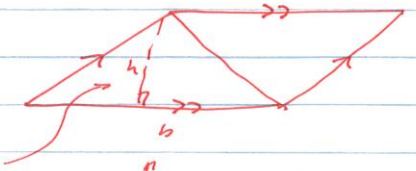
- went through quiz, reinforced ideas/concepts of vertical angles, adjacent angles, corresponding angles, and alternate interior angles.

- went through rest of quiz, good discussion and provided clarity when needed.

1:03 Began the powerpoint

- Before moving into 1st slide, you did a good job at feeling out where the students currently are w/ board examples.

Sketch on board

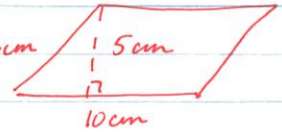


define height.

↳ make sure to refer to base as the entire side

↳ said in slide, but re-say.

Why isn't this the height? →



← I use a room example. Can I measure the height using the walls?

After each slide you did a good job at checking student understanding.
- Maybe take this further by asking questions before moving on to engage those we may "worry" about.

- I liked how worked the examples out, very organized and clear.

- Did a great job discussing the figures.

- If a student asks, "Where do we get the formula for a trapezoid?" Can you tell them.
  - you illustrated the triangle and parallelogram well.
  - just wondering? Gotta anticipate such questions.

1:21 Trapezoids - good timing today.

↳ Dillon Asked! Amazing!
- explanation - use two trapezoids to make a parallelogram. The height is the same for the parallelogram as it is for the trapezoid. The base of the parallelogram is (b_1+b_2). Then cut in 1/2 to get one trapezoid.

- Challenge Question is Awesome.
  ↳ maybe use different colors of markers.
  ↳ pizza out, good job, kids engaged.

• New Homework Activity

Friday, Feb. 22nd. Nick Rustan

- Circumference and Area of Circles

Question: what is the conceptual difference between Area & Circ.? Space vs. measurement.

$C = 2\pi r$ or $C = \pi d$ $A = \pi r^2$

- Did a good job w/ example: #10

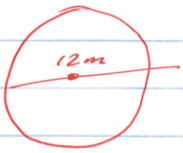
↳ I liked your organization, took time to identify all the pieces and formulas needed.

↳ worked out example very well.

↳ When you multiplied 28 and π, you did $28.00 \cdot 3.14$

I would have done $3.14 \cdot 28$ easier for everyone to visualize as you work through the problem.

° Then you gave kids opportunity to do #8 on their own, finding area and circumference.



- always be sure you're moving quickly through getting to each student.
- you did good at doing this.

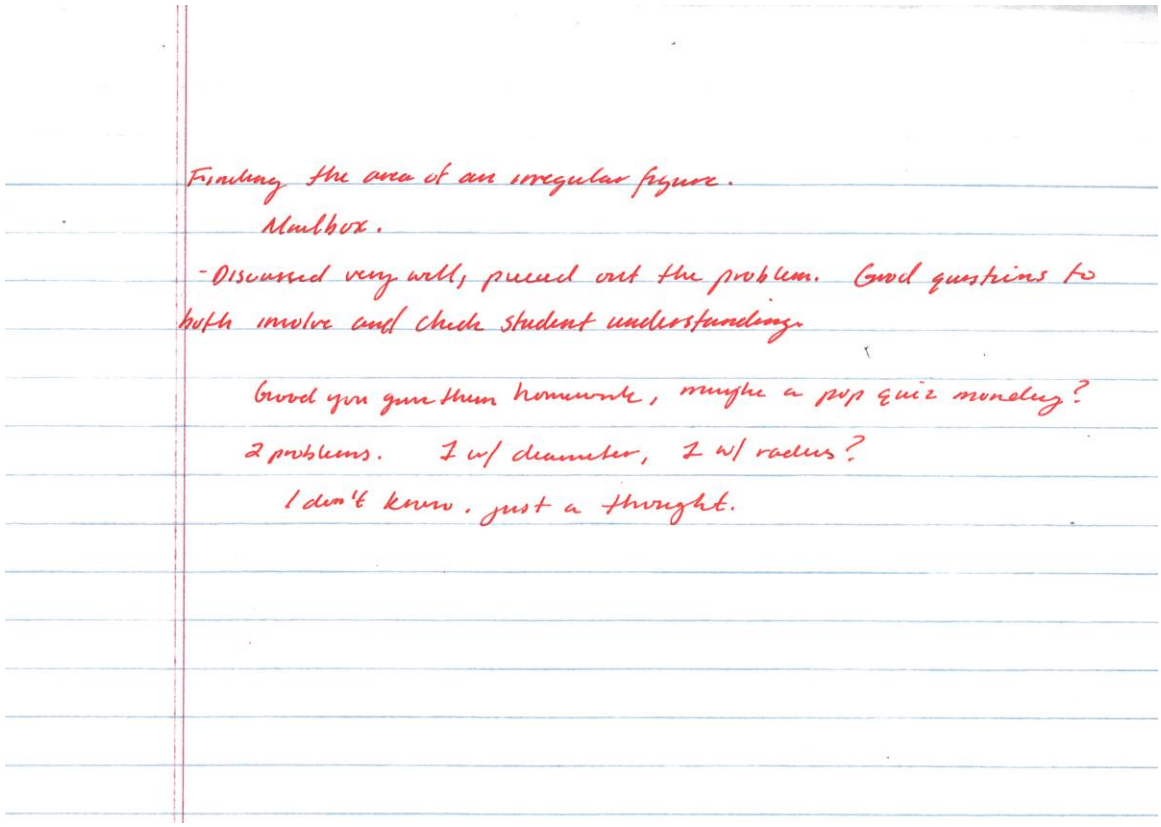
↳ Area = πr^2

↳ might be good to reinforce PEMDAS.

exponents before multiplication

° I know you showed this in your example, yet always good to show.

- Sometimes I set a time to this, but I liked how you brought everyone back together on the board, to check solutions.

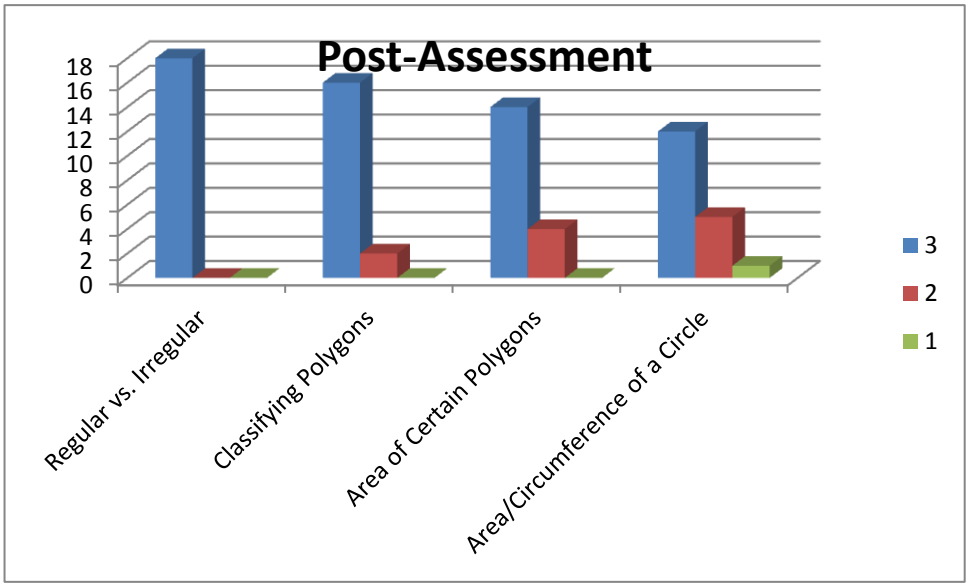


Reflection

Student Learning Progress

1. When you look at the pre-assessment and the post-assessment you see a drastic change in the understanding that the students have in regards to polygons, area, and circles. A few students had an idea of how to find the area of a triangle before the lesson began, but after we covered the topic of finding area they were not only able to find the area of a triangle; but, also the area of a trapezoid, circle, and parallelogram.

   The student's who didn't have a very good understanding of what the area would be for a triangle, grasped the idea of finding area of a triangle, trapezoid, a circle, and a parallelogram. This is reflected in the post-assessment in the scavenger hunt and the test. Below is some of the results of the post assessment. Using the same rubric from the pre-assessment and from the results of the test we see a drastic improvement in all areas. Not all students were able to grasp all of the concepts, but there was improvement in their abilities as a math student.



2. I believe the unit objectives were met. Students were exposed to different polygons in a variety of representations in our world. Through the post-assessment we see that their overall idea of polygons and the different things we can do to find out information about them has been enhanced. The majority of students were able to find the area of different polygons and circles.

3. There was a bit of a lack of growth in a couple of students. One student in particular lacks confidence in her abilities. She is a very bright student she is just constantly second guessing herself. She needs some extra attention to formulize the concepts as we go on with our lesson. One other young gentleman has some fairly large learning gaps. He needs things to be slowed down a great deal and explained in great detail. He doesn't have the background knowledge that a lot of the students do. It isn't a bad thing, it is just something that I may not have addressed enough to make him more successful.

4. If I were to teach this unit again, I would incorporate more hands on learning activities. Reading over my students self-reflections I realized that they really like a lot of variety and that is something that I need to work on to make my students stay involved in their own learning.

Personal Professional Growth

1. What did you learn about effective instruction as a result of this experience? Effective instruction can make or break a lesson. If you are not prepared to deliever a lesson with enthusiasm and with great clarity, you risk losing the motivation from your students. Effective instruction doesn't just happen within the class period itself. It happens long before you deliver your lesson, with you planning and preparations for that class period.

The more time you take to prepare for your lessons the more you are ready for anything the class can throw at you. Knowing what questions may arise from your students is also very crucial in being an effective teacher. You need to listen to your students and be prepared for things that may come up.

2. How has this experience changed your perception of yourself as a teacher?

Before my student teaching experience began, I was very nervous that I would suddenly question my choice of becoming a teacher. Thus far into my student teaching experience as well as throughout this work sample, I see myself as a teacher. Nonetheless, I am a teacher that has a lot to improve on, but also a teacher who has a lot of heart and passion for the profession.