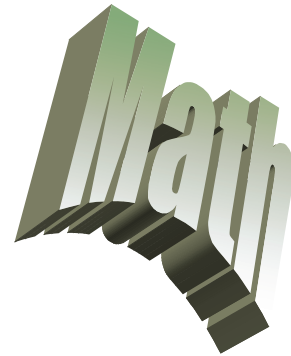# Algebra/Geometry Institute Summer 2005

Lesson Plan 3: Angles

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School: **Carver Upper Elementary School**
                Indianola, MS
Grade Level: 5th

1   Teaching objective(s): The student will be able to draw, label, describe, and classify angles (acute, obtuse, and right angle).

2   Instructional Activities:

   Note: Do a quick check to see whether students are familiar with the following vocabulary words and geometrical concepts: ray, endpoint and vertex. If students are not familiar with these geometrical concepts, it is necessary for you to discuss these ideas before beginning the lesson on angles.

   a. **Say:** People use cameras to make movies and to take pictures by frames. When making a movie the camera operator focuses on the action, he/she chooses the best _____ to use.

   **Ask**: What word will fill in the blank? (pause for suggested words)

   b. Write the following letter on the chalkboard in pairs, capital **L** and **T** and **V** and **W.** Have student discuss what they notice about the two different combinations of letters.

       Student may suggest if the capital T is turned upside down you have two capital Ls and if the w is split in half down the middle you have two vs.

       Teacher guides discussion in such a way that it relates to right angles and acute angles.

       Note: Teacher should have a clock available.

   c. **Say:** In this lesson we will draw, label, describe and classify angles. An angle is formed when two rays have the same endpoint. The endpoint of both of these rays is called the vertex. (Draw an example of an angle and identify the vertex)
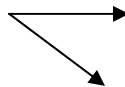
**Ask student to visualize each angle as a description is given of each.**

The **right angle** is formed on a clock when the long hand is on 12 and the short hand is on 3.

An **acute angle** is formed on a clock when the short hand is between 8 and 7 and the long hand is on 6.

An **obtuse angle** is formed on a clock when the long hand is on 10 and the short hand is between 3 and 4.

Ask: Using the clock, can you give other examples of theses angles? (pause for discussion)

Allow the student to draw and identify his/her angle according to the numbers and description he/she gave on the clock. Example, the long hand is on the 12 and the short hand is on the 9. This is a right angle.
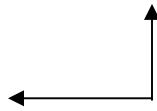
Say: Angles are measured in degrees. A degree is a unit of measurement used to tell the size of an angle.
A right angle measures exactly 90°. An acute angle measures between 0° and 90°. An obtuse angle measures between 90° and 180°. Draw an example showing these statements.

right 90° acute $< 90^o$ obtuse $> 90^o$
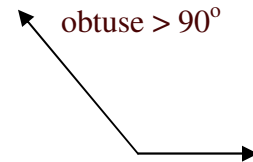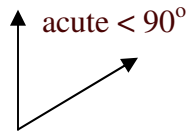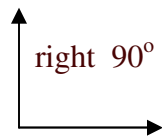
Ask: How many of you have a middle name?

Say: Write the initials for your name, first name initial, middle name initial and last name initial. Now write it in reverse.
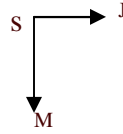For example: Martha Sue Jones   MSJ and JSM.

Have student discuss what they noticed about the middle initial.

Say: When you are labeling an angle the vertex is like your middle initial. It's always in the middle!
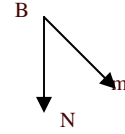
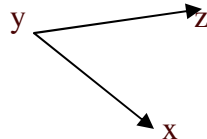**Draw angles using the students' initials to label each and name the angle.**

S   J   Mae Bell Nero   B

Martha Sue Jones

M   m

N

∠ MSJ or ∠ JSM   ∠NBM or ∠MBN

Now have the student to name this angle.

y   Z

X

∠XYZ or ∠ZYX

d. Have students estimate the following angle measurement by comparing it to the right angle. Then tell whether the angle is an acute, obtuse or right. Teacher informs students that the corner outside edge of their paper can serve as a guide to what a right angle is. Show student what you are referring to.

1.
less than 90°
acute

2.
90°
right angle

3.
greater than 90°
obtuse angle

4.
less than 90°
acute

5.
greater than 90°
obtuse
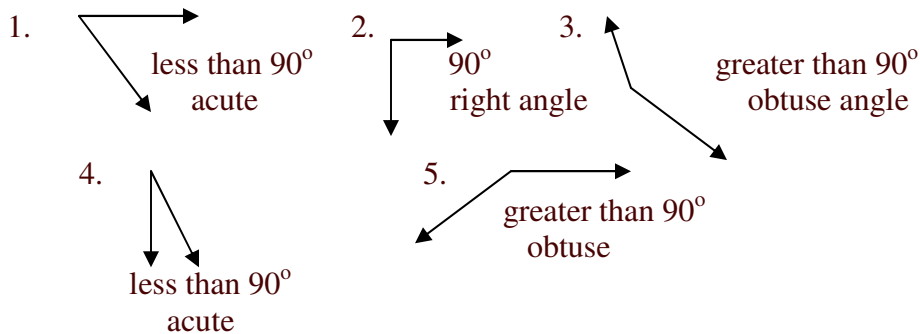
Note: Make sure you have enough geoboards for each student to receive one.

e. Give each student a geoboard. Using the overhead projector, explain and show students how to use the geoboard for this activity.

Examples: Make a four-sided figure with:
2 right angles
1 acute angle
1 obtuse angle

Make a five-sided figure with:
1 right angle
1 acute angle
3 obtuse angles

Have students try the following:

Make a four-sided figure with:
0 right angles
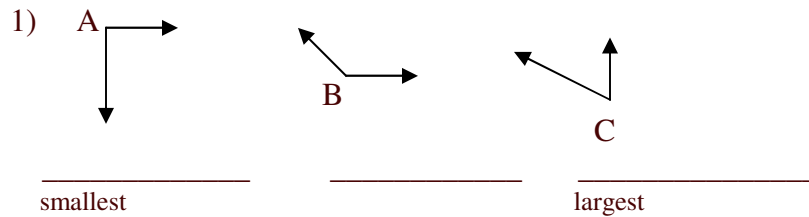2 acute angles
2 obtuse angles

Make a six-sided figure with:
2 right angles
0 acute angles
4 obtuse angles

Students may discuss with each other strategies used to complete the activity.

f. **Say:** Now it's your turn to show what you have learned.
Give each student a worksheet to solve independently.
(Student's copy is attached.)

Teacher's copy of the student's worksheet

Look at the following angles. Write the letter of the angle from smallest to
largest according to measurement.

1)   A

B

C

_____   _____   _____
smallest   largest

2) Draw an obtuse angle. Label it using the letters R, P, and T. Let R be the
vertex.
3) What type of angle measures between 0° and 90°?
4) Draw the angle that measures exactly 90°.

Study the angles. Follow the direction given for 5 -7.
aa.   bb.   cc.

5) Put an A on the acute angle.
6) Put an O on the obtuse angle.
7) Put a R on the right angle.

1) c, a, b   2) P R T   3) acute   4)   5) bb –A   6) cc –O   7) aa - R

3   Materials and Resources
     chalkboard
     clock
     paper
     pencil
     worksheet
     geoboards (teacher and students)
     overhead projector

4   Assessment
     oral observation
     class participation
     Students complete worksheet independently and grade is recorded as a
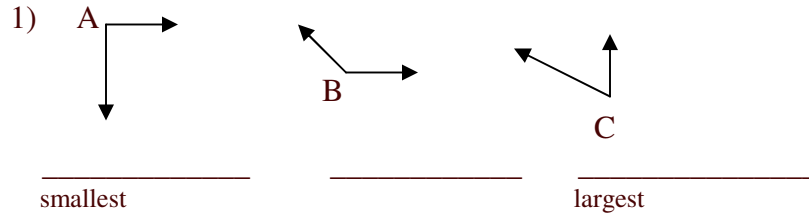   daily work.

Resources:
Ideas adapted from <u>Maneuvers with Angles</u>, Dale Seymour Publications, 1993.
Ideas adapted from <u>Mathematics Today 2nd Edition</u>, Harcourt Brace Jovanovich, 1985

Name _____ Date _____

Look at the following angles. Write the letter of the angle from smallest to largest according to measurement.

1)   A

B

C

_____   _____   _____
smallest   largest

2) Draw an obtuse angle. Label it using the letters R, P, and T. Let R be the vertex.

3) What type of angle that measures between 0° and 90°?

4) Draw the angle that measures exactly 90°.

Study the angle. Follow the direction given for 5 -7.
aa.   bb.   cc.

5)   Put an A on the acute angle.

6)   Put an O on the obtuse angle.

7)   Put a R on the right angle.