Algebra/Geometry Institute Summer 2003
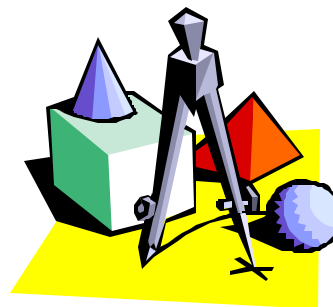
Lesson Plan 1

Faculty Name: Stanley S. House
School: East Side High School
City: Cleveland, MS
Grade Level: 9-10 (Transition to Algebra)

1 Teaching Objective(s)

MS Framework Competencies:
- 2a-Use formulas (e.g. circumference) to solve problems
- The students will be able to find the circumference of various objects by using physical measurement of the circumference.
- The students will be able to find the diameter and radius of the same objects after determining the circumference of the objects by using the two formulas for the circumference of a circle.

2 Instructional Activities

- **Warm-up Exercises:** Give several multiplication problems that involve the fractional and decimal approximations of Pi (π). Such as: 4 x $\dfrac{22}{7}$ x 12, 3.14 x 3.

- Teacher will review vocabulary terms such as: Circle, Center, Radius, Radii, Chord Diameter, Circumference, Approximation, and Pi (π).
- Teacher will introduce (review) the two formulas for circumference of a circle. $C = \pi d$ and $C = 2\pi r$.
- Teacher will model the physical measurement of an object within the classroom. (e.g. classroom clock using string and a tape measure for the approximate measurement. The teacher will the record his/her measurement and ask at least three other students to measure the same item and record their measurement. Measurements may and should vary a little because of π and because all measurement is really an approximation.
- Students will break out into five groups to measure the circumference of the five circular balls used in sports activity (golf ball, baseball, softball, volleyball, and basketball). Each group will record their individual measurements on the chart provided on the board.
- Teacher will the demonstrate how to determine the radius and diameter of the clock using the formulas presented earlier.
- Students will then determine the diameter and radius of each of the five sports balls and record the results on the same chart on the board.
- Students, still in their groups, will then design and dimension a packaging container for each of the sports balls that would contain three balls each. Once completed, the teacher

will ask open ended questions trying to establish the connection between the height of the container as it relates to the circumference of one the balls in the container. (The connection should show that the height of the container for three balls is slightly larger than three times the diameter of one ball. The connection between circumference, diameter, and π can be more clearly seen.)

- **Homework:** Student will find the circumference, diameter and radius of five circular objects from their homes. The objects can be one or three dimensional. Stress that the students must show their physical measurements and compare the physical measurements to the measures determined by using the formulas.

3   Materials and Resources

- McDougal Littell / Houghton Mifflin, *Mathematical Connections* 1997
- String
- Tape measure
- Golf ball, Baseball, Softball, Volleyball, and Basketball.

4   Assessment

- Teacher observation of activities
- Comparison of results from each group
- Grading of homework activity
- Journal entry