

Lesson Title: The Golden Ratio
Unit: Proportions
Grade Level: 6 th Grade
Estimated time requirement: 1 class period
Summary (25-50 words): Students will look at various examples of the golden ratio. They will discover the properties that make them golden ratios. Students will conduct a survey to determine if a “golden” rectangle is more pleasing to the eye. Their results will be graphed individually and as a class.
Objectives: <ul style="list-style-type: none"> • Student will learn what the golden ratio and the golden rectangle are. • Student will see the presence of the golden rectangle in art, architecture and nature. • Student will conduct a survey to see if the golden rectangle is more pleasing to the eye.
Texas Essential Knowledge and Skills: 1B, 3A, 3B, 3C, 10D, 12A
Assessment: <ul style="list-style-type: none"> • Student completion of handout. • Student completion of survey.
Materials: <ul style="list-style-type: none"> • Teacher made power point presentation explaining the golden ratio. • Student hand out. • Millimeter Rulers • TI-73 calculator.
Resources: <ul style="list-style-type: none"> • Garland, Trudi Hammel. <u>Fascinating Fibonacci Mystery and Magic in Numbers</u>: Dale Seymour Publication, 1987. • http://www.goldenumber.net/ • Garland, Trudi Hammel. <u>Fibonacci Fun Fascinating Activities with Intriguing Numbers</u>: Dale Seymour Publication, 1997.
Prior Knowledge/Skills: Graphing statistical information.
Procedures: The students will watch a power point about the golden ratio and how it is used in architecture, art, and nature. Students will then measure their textbook, finger rectangle, 8 1/2 X 11 paper, 3 x 5 index card, the columns of the Parthenon, Mona Lisa’s head, pentagon, cross and triangle to the nearest millimeter. (All of these are found on the Student handout.) Students will record the measurements in the given table and then each measurement will be set up in a ratio. After finding each individual ratio, students will determine the average ratio of the lengths. A calculator can be used to determine the average ratio converted to a decimal place. It should be very close to the golden ratio (1.61). Students will be asked to conduct the Most Beautiful Rectangle survey. They are to survey at least 25 people, outside of school, to pick the most beautiful rectangle out of a set of 5 rectangles. Students must complete a frequency table and create a bar graph that conveys the

survey results. Rectangle D is closest to a golden rectangle and should show up to be the “most” beautiful.

Modifications:

- Calculators will be used to find equivalent forms of ratios.

Technology Infusion:

- Teacher made power point presentation.
- TI-73 calculator

Cultural Connections: The power point shows how different cultures were involved in finding the golden ratio. It also shows how some artists use the golden rectangle in their paintings.

Family Connection:

Students will survey family members to see if the “golden” rectangle is most pleasing to the eye.

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