7th Grade *Algebra & Geometry* Main Lesson
Lesson Plan Summary

Day #1
- The essence of algebra: the universal language of mathematics.
- Give an example of how algebra can used be used to solve a difficult math puzzle.
- <u>Geometry:</u> outline of Greek mathematics:

Day #2
- The story of Carl Freidrich Gauss.
- car rental formula
- <u>Geometry:</u> In main lesson book: Geometric division.

Day #3
- Gauss's formula and Galileo's Law of Falling Bodies: $D = 16 \cdot T^2$
- End with question: Can you have less than nothing?
- <u>Geometry:</u> Intro the idea of the Great Greek Geometric Game

Day #4
- Intro negative numbers – use money, not pictures!
- <u>Geometry:</u> Pentagon drawing

Day #5
- combining like terms.
- $7 - 4$ is same as $-4 + 7$
- Intro idea of (simple) equation as a puzzle.
- <u>Geometry:</u> nested pentagons and pentagrams; Intro Golden Section

Day #6
- First worksheet (Algebra Sheet#1) done in groups
- <u>Geometry:</u> *The Golden Rectangle*

Day #7
- The scale puzzle!!
- Multiplying signed numbers.
- <u>Geometry:</u> More with the Golden Rectangle:

Day #8
- Review the scale puzzle thoroughly.
- History of Algebra and the Father of Algebra:
- <u>Geometry:</u> No geometry or catch-up day

Day #9
- The scale puzzle as an equation: $3x + 9 = 5x + 2$
- <u>Geometry:</u> Theorems (and proofs) from Two Parallel Lines and a Transversal.

Day #10
- The Golden Rule of Equations.
- Solving two more multi-step equations as class.
- <u>Geometry:</u> Students discover three angles in a triangle add to 180°.

Day #11
- students solve multi-step equations in groups
- <u>Geometry:</u> Half-Wheel Theorem proof
  - Cutout puzzle of Pythagorean Theorem (don't say what it is!)

Day #12
- Continue students solving multi-step equations in groups
- <u>Geometry:</u> Get statement from cutout puzzle.

Day #13
- Continue students solving multi-step equations in groups
- <u>Geometry:</u> Theorem of Morley

Day #14
- Test! (On algebra only) It should be simple and build confidence!