M^2 = Math Mediator Lesson 2: Order of Operations

***NOTE: This lesson requires some prep and materials: See the second and third items.**

Direct Instruction (5 minutes approx.)	WELCOME! Collect contact sheets. Mention other policies that will be posted in the classroom: tardy, late work, make up work, homework, projects, discipline issues and awards.
Assessment (15 minutes if tables, 20 minutes if desks, approx.) Materials: -Prepared small problem sheets. -Shoe boxes to put finished sheets into.	(Continued from Lesson 1): You want to confirm that each student is correctly placed in your Algebra 2 class. In order to do this, and have a little fun, the students will have up to 5 stations (break the class into 5 groups) with small sheets of paper with about 4 problems on them. They will have 2 minutes at each station. The groups will be: **1) Perimeter/Area/Volume:** a) The perimeter of a rectangle with length of 4" and width of 3" is what?; b) The area of that same rectangle is what?; c) The volume of a cube, consisting of the same rectangle and 6" height is what?; d) The perimeter of a circle with a diameter of $(6/\pi)$ is what? 2) **Circles**: a) The term for a line that touches the edge of a circle in only one place is called what?; b) The term for the chord of a circle that passes through the center of the circle is what?; c) The area of a circle with a radius of $\frac{3}{\sqrt{\pi}}$ is what?; d) How many degrees in a semi-circle? 3) **Quadrilaterals**: a) A quadrilateral is a __ sided polygon.; b) A rectangle has __ right angles.; c) Opposite angles of a rhombus are _____.; d) The bases of a trapezoid are _____. 4) **Triangles:** a) What is the name of a triangle with all angles less than 90 degrees?; b) All angles of a triangle add up to how many degrees?; c) A triangle with only two equal sides and two equal base angles is called what?; d) What is the third angle of a right triangle with one angle measuring 60°? Print up enough small sheets of paper (if you type this in Word and copy it 3 times you can fit 4 of these per page) for each student. Put them upsidedown at each station and start the timer. They need to put their name on the paper and write down the answers. After two minutes, have them put the papers into the box at the station. Then rotate stations: 1 to2; 2to3; 3to4; 4to5; and 5to1. This is a great assessment for placement.

Activity (7 minutes approx.)
-Slide: Career/Salary
-3x5 cards
	Career information/motivation:
	- Show the slide with career/salary information
	- On a 3x5 card, have students write down the following
	  o Short term goals (grade for this class, plans for next holiday)
	  o Long term goals (where you want to be in 5 years)
	  o Career choice
	- Share and collect cards, students are encouraged to put names on them.

Direct Instruction	Travel: Formulas and Equations

and Practice (15 minutes approx.) -Warm-up for **CA Std 1.0**	1. Yesterday students wrote down some details about a trip. Take 2 minutes and write down all the math equations related to that or another trip. (examples: start/stop times; travel time; expenses; mileage; etc...) 2. Share some of these math equations with class. 3. Equations/expressions: a. Time at Disneyland: 8 a.m. to 10 p.m. = ? hours i. (12-8) + (10) = x hours (Order of operations) ii. solve 12-8 first, then add 10 to get 14. iii. PEMDAS (Order of Operations) b. U-DO: Students work individually to simplify the following 3 expressions: i. $15 - 12 \bullet 2 + (2 + 1)^2 - 4$ (Ans: -4) ii. $15 \div 3 + 2 \bullet 5$ (Ans: 15) iii. $\frac{3 \cdot 4 - 1}{3 + 5 \cdot 6}$ (Ans: 1/3) 4. Formulas: $d = r \bullet t$ (d = distance (miles); r = rate (miles/hour); t = time (hours)). a. 100 miles to travel at an average speed of 65 miles per hour. How long will it take? Show how to manipulate the formula and solve for time. (100/65 = approximately 1.5 hours). b. U-DO: Students work on two problems: i. How far would you go for 3 hours at 55 miles/hour? ii. If you had to go 240 miles and the average speed was 60 miles/hour; how long would it take?
Assessment: (10 minutes approx.)	1. Create and simplify equations to solve for unknowns: a. A ladder base is 10 feet away from a wall. It is a 25 foot ladder. How high on the wall is the top of the ladder? (Pythagoran Theorem). b. Downloading songs: songs are $1.00 each, videos are $15.00 each. i. What is the cost for 15 songs and 2 movies? ii. List two combinations of songs and movies adding up to $50.00. 2. Formulas: manipulate the formulas to solve for the unknown a. Temperature: $F = \frac{9}{5}C + 32$ i. The temperature in Canada is 35°C, what is that in °F?

	b. Perimeter of a rectangle = $2l + 2w$ i. Mr. Louis made a flower bed and bought 36 feet of fence to keep the rabbits out. If the length is 12 feet, what is the maximum width he can have fenced in?
Wrap-up (3 minutes approx.)	Wrap up closing comments and housekeeping.