1. On this page is a rubric to showcase the dimensions that I'll be grading you in.

2. On the next page are the Central Questions you can choose from

3. Your responsibility is to record yourself teaching a friend or family member via Zoom (or in person) all of the concepts involved in tackling the problem. My expectation is that you, acting as a teacher, will (1.) give a lesson, (2.) walk the learner through the problem, (3.) answer their questions, and (4.) give them a similar problem to try on their own. NOTE 1: You can take questions from our course text to satisfy condition #4, but your question must be asking the learner to demonstrate the same concepts as the Central Question you choose. NOTE 2: If a problem has more than one part, the expectation is that you generate a question for each part.

Evidence of falling short of benchmark	Benchmark and explanation	Evidence of exceeding benchmark
	The Lesson: Did you "equip" the learner with the various skills and understandings they need to follow the problem?	
	The Problem: Did you correctly do the problem? Did you do it in a way where the learner could follow along?	
	Questions: Throughout your lesson, did you successfully handle answering learners' questions?	
	The 2nd Problem: Did you select a problem in which the required skills align with your Central Question?	
	Organization: Was your way of explaining things well-organized or did you just run-through the information you knew?	

Central Questions

1. Express $2^2 \times 4^2 \times 8^2 \times 16^2 \times \cdots \times 1024^2$ as a power of 2.

2. Four-parter.

   a. The expression $2 \cdot 3 \cdot 4 \cdot 5 + 1$ is equal to 121. However, we can obtain values other than 121 for this expression if we are allowed to change it by inserting parentheses. Without re-ordering the terms, and including 121 itself, how many different values can we obtain?

   b. Demonstrate how to solve: $82 \cdot 15 + 5 \cdot 82 \cdot 10 + 7 \cdot 5 \cdot 82$ mentally.

   c. Same but for $10 \cdot 314 \cdot 250 \cdot 2 \cdot 4$.

   d. Demonstrate the easiest approach to $554 - 4 + 285 - 555 + 5 - 185$.

3. An annoyed teacher asked their students to do the following:

   First, start with the number 12.
   Second, negate the current number.
   Third, add 1 to that number.
   Finally, repeat steps 2 and 3 with the new number until you've gone through these steps 100 times.

   What number did the students stop on? What number would they stop on if they had to repeat this 200 times (total)?

4. Ten people are sitting in a row, and each is thinking of a negative integer no smaller than -15. Each person subtracts the number of their right-hand neighbor from the number they chose. (Note this means the rightmost individual did not do this). Instead, the rightmost person observes that all the differences were positive. Let x be the greatest integer chosen by one of the 10 people at the beginning. What is the minimum possible value of x?

5. If $a \neq 0$, calculate the following:

$$(a^2 + a) \cdot \frac{1}{a} - \frac{1}{a} \cdot \left(a + 1 - a^2 \cdot \left(\frac{1}{a} \right)^2 \right)^2$$

Additionally, you are expected to do the entirety of Chapter 6 on decimals. It is up to you which problems you do, however I recommend NOT taking shortcuts like only reviewing solutions or only doing a few problems per section. NOTE: You are not submitting anything. Proof of you doing the "right thing" will be found in your performance on the quiz after break.

Speaking of which, you will have a "quiz" that's more like an exam on the subject when you get back. I'm available by appointment to provide teaching and feedback on your understanding.