Tutorial Session Notes
Grade 8
Quarter #2 (Week 9-16)

About these notes:

- These notes are primarily for those who are acting as the tutor – either a parent or a class teacher.
- In the first year of JYMA, Maria (our JYMA tutor) and I met every week and talked about grades 5-8, and we made a list of suggested topics for the Friday tutorial session.
- In order to support those who are acting as the tutor for their child or a whole class, I am sharing these notes with those who are acting as the tutor.
- Of course, these tutorial sessions are also an opportunity for the students to ask their tutor questions.
- If you are acting as the tutor, it may be helpful to read the section of the JYMA Handbook titled "The Role of the Tutor".

Week #9

- In preparation for the upcoming test, go over any questions from the homework from Practice Sheet #4 & #5
- Go over group assignment problems.
    - Part II (on Ptolemy's Quadrilateral Th.) is quite challenging.
      Here are hints/answers for Part II:
        - You can work w. Pythagorean triples
        - part 2 answers
            - long diagonal = 170
            - short side = 26
            - To find the short diagonal (x):
                - $170*x = 72*168 + 26*154$ Therefore x = approx 94.7
        - Now you can find the area of the whole quadrilateral
   area = ½ x 26 x 168 + ½ x 72 x 154 = **7728 cm²**

Week #10

- Go over the derivation of the formula for the area of the circle (from the group assignment, p25 #1). Did they come up with a formula? Perhaps they can explain it. Here is a youtube video of me explaining it during a lecture.
- Circle practice problems:
    - (1) Find the diameter of a circle that has circumference of 10m.
      You can do this 3 different ways. $10 \div 3.14 \approx 3.185$, $10 * ^7/_{22} = 3\ ^2/_{11}$, or $10 * 0.318 = 3.18$.
    - (2) Find circumference of a circle if D = 7.
      3 ways to do this: $7 * 3.14$, $7 \div 0.318$, or $7 * ^{22}/_7$
- Go over #3, 5, 6, 7 on p. 25.
- If extra time, make up volume questions similar to those found on p25.

Week #11

- Ask if any questions from hw.
- Making a titled pyramid
    - This was the hardest thing in the group assignment.
    - You can see the titled pyramid in Monday's lecture (Week #11, Lecture #1)
    - It could be valuable to spend much of the tutorial session discussing how to do this.
    - Ask about what their ideas were to make this.
    - Try not to give it to them, but (perhaps) carefully guide them to discover how to do it.
    - It is perhaps best to first imagine cutting a (completed) paper model of a tilted pyramid
    - <u>Note/hint for the tutor</u>: All 4 triangles are right triangles.
- Here is a Geogebra "manipulative" for the tilted pyramid: <u>https://www.geogebra.org/m/gngntwux</u>
- Find the volume of a pyramid where all the edges of the pyramid are 8cm
    - <u>note</u>: the challenge is to find the height of the pyramid
    - Answer: 120.7 cm^3
- If extra time:
    - Find the area of a right triangle where hypotenuse = 29 ft, leg = 20 ft, and the third side is not given.
        - Hint: Use Pythagorean triple to find the missing side
        - Answer: 210 ft^2
    - Find the area of a circle with a circumference of 10m
        - Hint: Find the radius first $\approx$ 1.59m
        - Answer: area is ≈ 7.95 m^2

Week #12

- Thoroughly, make sure that everything is understood from both the <u>groupwork assignment</u> and <u>from p28</u>.
  There is a lot here!!!
- If needed, make up more problems similar to p31.
- Make sure that they understood Archimedes' drawing from the lecture (see below). Perhaps discuss how they think you can use the drawing to prove that the sphere is ⅔ the volume of the cylinder.
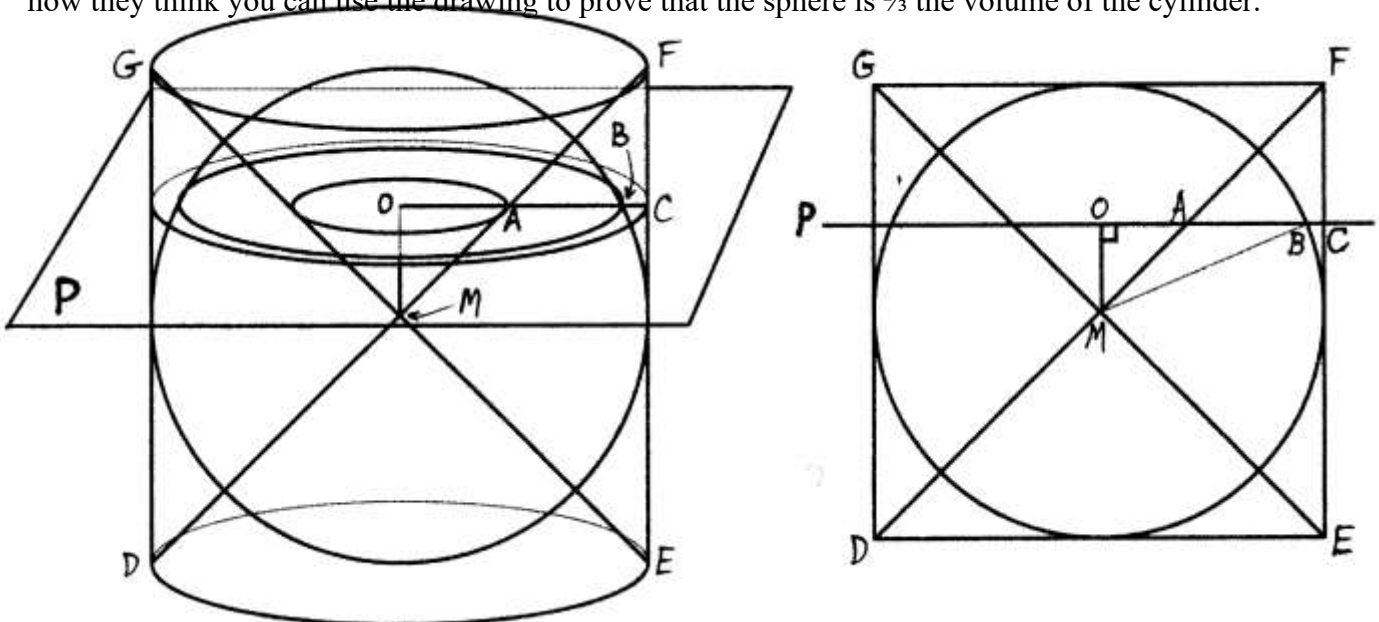
Week #13

- Do things in this order:
    1. Really make sure they understand everything that was assigned for individual homework.
    2. Go over #3 on Group worksheet #3 (p.30)
    3. If time, ask them if they want to go over the locker puzzle from the group assignment (which is problem # 123 from the puzzle book). (Answer is that the square numbers are left open.)

Week #14

- Important! Go over the Tuesday group assignment.
- Make sure they really understand everything on Practice Sheet #5 (p31). Perhaps give other problems similar to that.
- Practice Heron's Formula. Find the area of the triangle with sides of 12, 7, 9m.
  Solution: S=14. Area = $\sqrt{(14 \cdot 2 \cdot 7 \cdot 5)} \approx 31.3$
- Ask about the Thursday group assignment challenge puzzle (with a cone). Does anyone have an idea of how to solve this?
  (Answer: V = 23.7 in^3)
- Ask if they have any ideas about how to solve the challenge problem from Practice sheet #5 (p. 31). Jamie will go over it in the next lecture.

Week #15

- Go over the practice test.
- Make sure they understand everything from Practice Sheets #4, #5, and #6.
- If extra time, then go over the group assignment, including puzzles.

Week #16

- Note to tutor: do not use algebra on any problem in this unit.
- Percents Flashcards
    - Test to see how they are with the percents flashcards. They likely don't know these facts yet, but need to work on them in the coming weeks. Knowing these facts is important for the work to be done in this unit. These flashcards are found at end of assignment this week.
- Percents Review Sheets
    - These sheets were given as part of this week's assignment
    - Make sure they really understand everything from the 2 review sheets.
    - Try to determine how much work is needed to learn the material from the review sheets.
- If time allows, do these problems:
    - If you have a bank account with $3,000 initially, and you have 10% interest every year, what is your balance after 5 years?
    - 800 is what percent more than 500? and 500 is what percent less than 800?
    - Go over puzzle from group assignment (puzzle #123 from puzzle book – "Shaking Hands")
    - 53 is 20% of what number?