

Tutorial Session Notes

Grade 6

Quarter #3 (Week 17-24)

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 #17

- Again, with prime factorization, don't use “Factor Tress”. Use the method I showed in the lecture.
- See if they understand the shortcut for prime factorization, then find the prime factorization of these:
 - 17,000.
 - 310,000
 - 40,000
 - 125,000,000
- See if there are any other questions from the group assignment.
- Give all the factors of the following:
 - 22
 - 45
 - 112
 - 1,080 - clue: has 32 factors
- Write the prime factorization of 1,080.
- Draw various angles and see if they can guess how big the angles are.

Week #18

- Given that we are just beginning the Business Math main lesson, there isn't much need for skills practice. Therefore, it's a good time to play a game. Perhaps teach them the game called “thirty scratch” (See Puzzle Book).
- If extra time, play Line of Four from Week #5

Week #19

- Go over group assignments from Tuesday and especially Thursday
- Make sure understand per capita GDP (total GDP divide by total people in the country)
- Go over basic percents
- Convert from decimal to percent:
 - 0.49
 - 0.638
 - 0.3
 - 0.03
 - 0.0413
 - 0.008
- convert percent to reduced fractions and decimals:
 - 87%
 - 15%
 - 9%
 - 90%
 - 83.7%
 - 200%
- Convert from fraction to percent:
 - $74/100$
 - $7/100$
 - $8/10$
 - $4/5$
 - $23/80$
- Percent practice problems
 - What is 38% of 300?
 - 210 is what % of 280?
- If time, play game

Week #20

- Make sure they understand the 3 business calculation formulas
 - rate of pay,
 - price after tax,
 - price after discount
- Give a few of practice problems for practicing the 2 percent calculations:
 - What is 20% of 55,000?
 - What is 17% of 600?
 - 490 is what percent of 700?
 - 52 is what percent of 400?
 - 13 is what percent of 15? (long division)
- Have they been doing their presentations with their groups?
- Ask if they have anything to share about their readings about business math as it appears in the media.
- If time, play a game.

Week #21

- Ask if they understand the difference between mean and median
 - ex: If the weight of 3 people are 80 lbs, 120 lbs, and 200 lbs, find the mean and the median. (Ans: median = 120; mean \approx 133)
- Make sure they understand how to take half of a fraction.
 - half of $\frac{8}{13}$ halve the numerator,
 - half of $\frac{5}{6}$, double the denominator.
- Find the abundance quotient of 66, and 16. Identify which one is abundant which one if deficient.
 - (Answer: $66 \rightarrow AQ \approx 1.182$ abundant; $16 \rightarrow AQ = 0.9375$ deficient)
- Ask how they did on the group assignment with finding perfect numbers.
 - The first two perfect numbers are 6 and 28.
 - Did they show that 496 is perfect – go over with them.
- Go over Tuesday's group assignment business calculations, practice a couple of similar problems.
- Ask them to guess what they think the 1st odd abundant number is. (the first 231 are even!)
- If extra time, game.

Week #22

- Go over Sheet #18, ask if have questions about it
- Give a few easy percent practice questions:
 - what is 1% of 7,800?
 - what is 10% of 62?
 - what is 71% of 5,000?
 - what is 75% of 160?
 - 440 is what % of 550?
 - 5 is what % of 40?
 - 33 is what % of 40?
- Ask if any questions about Tuesday's group work
- Thursday's Group Work assignment (to find the 4th and 5th perfect numbers) is a huge challenge!!

Notes:

- With the first 3 perfect numbers, when we write down the factors in columns, the left column doubles every time, the right column cuts in half every time.
 - Example: for the third perfect number, 496

1	496
2	248
4	124
8	62
16	31
 - The bottom right column is $16 \times 2 - 1 = 31$, and double going up.
 - All (even) perfect numbers follow this pattern, but not all numbers that follow the pattern are perfect. Example: 120

1	120
2	60
4	30
8	15

Why isn't 120 a perfect number?
- Perhaps go over Puzzles from Tuesday group assignment
 - Finding the abundance quotient for 945.
- If time, play game

Week #23

- Ask if there are questions from worksheet #19
 - Especially go over #35 – the pie chart problem
- Ask if they had any success in their groups figuring out the 4th and 5th number. (Jamie will go over it in next Monday's lecture.)
- Ask if they want to go over any of the puzzles.
- Play 30-Scratch with them using magic numbers 2,4,7,9.
(This was described in Wednesday's lecture. Also see the rules, below.)

Instructions for the Game Thirty-Scratch

Someone in the group writes down the numbers 1 through 30 on a piece of paper. The objective is to formulate expressions to create as many numbers between 1 and 30 as possible. Each time we create one of these numbers, we "scratch" it off the list. The students should keep a written record of how they created each number so that the parent/teacher/tutor can check to see if it is correct. If groups are competing, then we can award one point for each number correctly scratched off.

Rules

- Before play starts, the class picks four "magic numbers" between 1 and 9 that everyone will be using.
- Each magic number must be used once and only once in the expression.
- The expressions can involve any of the normal four processes, and exponents as well.

Examples

Here are some possible solutions using 3, 5, 6, 9 as the magic numbers:

$$\begin{array}{lll} \underline{23} = 5 + 6 + 3 + 9 ; & \underline{21} = (9 - 5) \times 6 - 3 ; & \underline{12} = (9 - 5) \times (6 - 3) \\ \underline{20} = 9 \times 5 \div 3 + 5 ; & \underline{4} = (6 - 5)^9 + 3 ; & \underline{9} = (9 - 6)^{(5 - 3)} \end{array}$$

Week #24

- Ask how their group did with 30-scratch in group work using 2,5,7,8
- Ask them to share pie charts from problem #44, sheet 20.
- Ask if they have any questions from homework (Sheet #20).
- More practice problems:
 - $5\frac{1}{3} \times 6$
 - $7\frac{3}{5} \div 4$
 - $(2\frac{1}{4})^3$
- Find area and perimeter of a rectangle that has dimensions of 5in x 6 in
- Find the area and perimeter of a right triangle with sides length 6cm, 8cm, 10cm.
 - Don't give a formula – see if they can figure it out.
- Measurement practice
 - 7 quarts = ? pints
 - 20 yd = ? ft
 - 20 ft = ? yds
 - 20 lbs = ? oz
 - 40 oz = ? lbs
 - 80 cups = ? quarts
- (If extra time) Which of the following numbers is prime?
 - 583, 499, 879, 735 (answer: only 499 is prime)