5th Grade Assignment – Week #18

Notes:

- As always, everything that I give you is just a suggestion of possible assignments. The amount of material that is appropriate and healthy will vary depending upon the child. Please don't let it become burdensome!
- If you decide to follow my suggestion for Thursday's group assignment, then **on Tuesday** you will need to decide which student gets which "research assignment". See *Individual Work*, below, for details.
- The numerals for the Roman, Greek, and Egyptian systems are at the end of this document.
- In lecture #2 this week, we will work with Egyptian and Babylonian fractions, which can be quite challenging for 5th graders. Keep in mind that there is no intention for the children to become "good" at using these fractions. Rather, the purpose is to bring an awareness to the children that fractions can be expressed in a variety of ways, to give them a sense of the history behind this topic, and to help develop mathematical thinking. In the end, after we finally introduce decimals, I hope that the students will say: "Wow, this is so much easier!"
- With Babylonian fractions, the first number is a whole number, the second number represents a fraction with 60 in the denominator, and the third number represents a fraction with 3600 in the denominator.
  Example: 2, 18, 45 represents $2 + \frac{18}{60} + \frac{45}{3600}$, which happens to be equal to $2\frac{5}{16}$
- With Egyptian fractions, you cannot repeat the same fraction.
  For example, ⅔ cannot be written as ⅓ + ⅓, and ¾ cannot be written as ¼ + ¼ +¼.

Group Assignments:

For Tuesday

- For each pair of numbers, circle the one which is larger?

1) 30,000,000 and 28,965,645
2) (Roman) LII and XXXIV
3) (Roman) DCCXLVIII and DCCLXIV
4) (Roman) CDLXXXVII and D
5) $\frac{7}{8}$ and $\frac{3}{8}$
6) $\frac{4}{7}$ and $\frac{3}{8}$
7) $\frac{2}{5}$ and $\frac{3}{8}$
8) $\frac{5}{8}$ and $\frac{9}{14}$
9) $\frac{3}{11}$ and $\frac{4}{15}$

Which of the above problems were easy? Why?

Which of the above problems were difficult? Why?

For Thursday

- If the group decides to do so, then each student should briefly share their "research assignment" with the others in the group. See *Individual Work*, below for details.
- Alternatively, or if there is time after the above "sharing", the group can work on these puzzles:
  1) Find two numbers that add to 47 and subtract to 9.
  2) Find two numbers that multiply to 84 and add to 25.
  3) Find two numbers that multiply to 84 and subtract to 25.

Individual Work

- *Main Lesson Book Pages*.
    - You can create one or two pages on the numbers systems we have learned.
    - After lecture #2, you can create a page on "Alternate Fraction Representations", focusing on Egyptian fractions, and Babylonian sexagesimal fractions. (This was covered in the lecture.)
- *Research Assignment*.
    - The idea is for the child to learn something new about numbers, and then present it orally (and informally) to the other students in the group on Thursday.
    - There are many possibilities for topics. Here are few ideas:
        - Mayan number system
        - Hindi numbers
        - (Ancient) Chinese numbers
        - Invent your own number system!
        - An alternative method (from another culture, perhaps) for doing calculations.
    - There are different ways for the parent to teach/guide the student for this "research" assignment. Perhaps have your child read a section of a book (from the local library?) on this topic, or find something appropriate from the Internet (be careful!). If you do decide to use the Internet as a resource, then I recommend that the parent do all the searching without the child present, and then, after finding a reasonable amount of appropriate material, print it out for the child to read. I would not recommend having the child watch any videos.
    - This should be fun and educational – not onerous, or overwhelming! It should only take a maximum of a couple of hours.
- *Number Systems*.
    - Count to 50 (or 100?) with Roman numerals.
    - Fill out the table found on the next page.
- *Fraction Practice.*

    1) $\frac{8}{9} - \frac{1}{3}$ 3) $\frac{11}{12} + \frac{5}{8}$ 5) $\frac{3}{11} \times \frac{4}{15}$ 7) $\frac{4}{15} \div \frac{3}{11}$

    2) $\frac{8}{89} + \frac{11}{89}$ 4) $\frac{5}{6} \times \frac{2}{3}$ 6) $\frac{6}{7} \div \frac{2}{5}$ 8) *Challenge!* $\frac{3}{11} + \frac{4}{15}$
- 9) *Standard Long Division.* Just one problem $\rightarrow$ $9401 \div 8$
- *Additional Assignment* (optional – for those who would like a challenge!).

    Convert the following Babylonian fraction into a common (modern) fraction:

    10) 0, 20 11) 3, 37, 30 12) 2, 7, 12

    Convert the following common (modern) fraction into a Babylonian fraction:

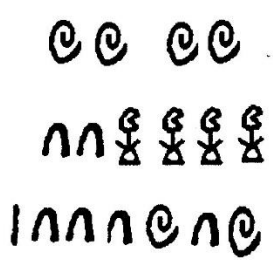
    13) $\frac{9}{20}$ 14) (extra challenge!) $\frac{5}{9}$

    Convert the following Egyptian fraction into a common (modern) fraction:

    15) $\frac{1}{2} + \frac{1}{10}$ 16) $\frac{1}{2} + \frac{1}{3} + \frac{1}{24}$

    Convert the following common (modern) fraction into an Egyptian fraction:

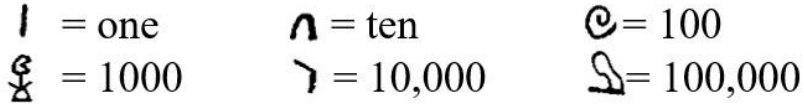
    17) $\frac{2}{3}$ 18) $\frac{9}{16}$ 19) $\frac{2}{7}$

Egyptian	Roman	Greek	Arabic
			
			97 3000 1446
		,βτμ5 φπθ υλ	
	CMXXIX XLVI MMMCMIV		

Roman Numerals

Symbol	I	V	X	L	C	D	M
Value	1	5	10	50	100	500	1,000

The Egyptian Number System



Ancient Greek Number System