8ᵗʰ Grade Assignment – Week #29

<u>Notes</u>:

- We are wrapping up with our algebra unit this week. I will give the **Algebra Test** as part of next week's assignment. You should consider **Sheet #5** and **Sheet #6** to be practice tests.

- We are now starting a unit on problem-solving and puzzles. During this time, it is extra important that you meet with your group twice per week.

<u>Group Assignments</u>: *For Tuesday and Thursday*:

1) *Number Circle Magic Trick.* At the end of Monday's lecture, I gave the following "magic trick":

   Choose any two-digit number. Double it. Add 7. Multiply it by 5. Add 13. Multiply by 10. Subtract 480. Divide by 100.

   Use algebra to show why you always get the same number you started with.

   (I will give the answer to this in Wednesday's lecture.)

2) *Clock Hands.* When are the minute and hour hands of a clock <u>exactly</u> together over the course of the day?

3) *Card Trick.* Figure out how the card trick worked that I demonstrated in Wednesday's lecture.

4) *Factors – Part I.* (Do this one only after working on the above problems first.)

   The number 40 has 8 factors (which are 1, 2, 4, 5, 8, 10, 20, 40)

   a) Give at least one number that has *exactly* 6 factors.

   b) Give at least one number that has *exactly* 10 factors.

   c) Give at least one number that has *exactly* 9 factors.

   d) Give at least one number that has *exactly* 7 factors.

   e) Give at least one number that has *exactly* 13 factors.

   f) How can you look at the prime factorization of a number and quickly know how many factors the number has? Experiment!

<u>Individual Work</u>

- Do *Algebra* **Practice Sheet #5**.

- Whatever problems you didn't complete from *Algebra* **Practice Sheet #6** (see last week's assignment) in last Friday's tutorial session, you should do on your own.

Algebra − Practice Sheet #5

Simplify.

1) $24 \div 3 + 9 \cdot 2$

2) $7 - 3 \cdot 2^3$

3) $6 + 36 \div 6 + 2 \cdot 2^2$

4) $9 - 7(8 - 5 \cdot 2)^2 - 5$

5) $9(317 - 320) - 8$

6) $9(3X - 4) - 3$

7) $x^6 \cdot x^3$

8) $a^3 \cdot a^5$

9) $(x^6)^2$

10) $3x^5 + 7x^5$

11) $6x^3 - x^3$

12) $6x^3 + 4x^2$

Evaluate each expression given that $X = -1; Y = 0; Z = 5.$

13) $Z^3 - 4XZ^2$

14) $7X^2Y^3Z^4$

15) $X^9 + 23Y^5 - 6Z$

Solve each equation.

16) $8 - X = 12$

17) $-6X = -24$

18) $-12X = 4$

19) $-1\frac{3}{5}X = \frac{4}{7}$

20) $-5X = -7\frac{1}{7}$

21) $2X - \frac{3}{4} = -3$

22) $\frac{-5}{3} = \frac{-4}{3X}$

23) $5X - 4 = 2X + 23$

24) $\frac{3}{X+5} = \frac{-4}{2X-5}$

25) $19 - 3(2X - 7) + 5X = 3X + 4(X - 8)$

26) $-\frac{1}{6}X + \frac{2}{3} - \frac{3}{4}X = \frac{7}{10} + \frac{2}{3}X - \frac{2}{5}$

27) $44X - 7 - 4(3X + 5) + 5 - 3(4X - 2) - 6 = 3X - 5X + 30 + 9(X - 2) - 8$