Topic: Long Division (Chapter 12.5)

Materials Needed: Computer, Textbook

Students will be able to access the assignment for Calamity day seven on my webpage under the files page or they may access the assignment from Mr. McCorkle's webpage. The students may also refer to their textbook (page 668 Ex. 4 and Ex. 5)

Students will use the website khan Academy (www.khanacademy.org) and watch the video on long division. Students should pay attention to the dividend possibly having missing exponents that require students to insert a zero for the coefficient of those missing terms

Assignment: Worksheet

Students will print the worksheets from the "Files Page" of my webpage. Since this lesson is a continuation of Calamity Day 6 the students will be asked to complete more long division problems and have some problems involving missing exponents in the division process. The homework assignment will be collected and graded on effort and accuracy.

Algebra I Lesson – Long Division

Now that you have been introduced to long division with Polynomials (Calamity Day six), you will see a few more complicated examples of the division process.

Ex. 1 $(x^3 - 34x + 45) \div (x - 5)$ ⋆ The answer is $x^2 + 5x - 9$

$$
\begin{array}{r}
x^2 + 5x - 9 \\
x-5 \,\overline{\big)\, x^3 + 0x^2 - 34x + 45} \\
\ominus\, x^3 \oplus 5x^2 \\
\hline
5x^2 - 34x + 45 \\
\ominus\, 5x^2 \oplus 25x \\
\hline
-9x + 45 \\
\oplus\, 9x \ominus 45 \\
\hline
0
\end{array}
$$

(x divides into x^3; x^2)
(Mult the divisor $x-5$ by the quotient x^2; $x^3 - 5x^2$)
(Change the signs and Add; $-x^3 + 5x^2$)
(Bring down the next terms and Repeat)
(x divides into $5x^2$; $5x$)
(Mult the divisor $x-5$ by the quotient $5x$; $5x^2 - 25x$)
(Change the signs and Add; $-5x^2 + 25x$)
(Bring down the next terms and Repeat)
(x divides into $-9x$; -9)
(Mult the divisor $x-5$ by the quotient -9; $-9x + 45$)
(Change the signs and Add; Remainder is 0)

Ex. 2 $(4p^4 - 17p^2 + 14p - 3) \div (2p - 3)$

$$
\begin{array}{r}
2p^3 + 3p^2 - 4p + 1 \\
2p-3 \,\overline{\big)\, 4p^4 + 0p^3 - 17p^2 + 14p - 3} \\
\ominus\, 4p^4 \oplus 6p^3 \\
\hline
6p^3 - 17p^2 + 14p - 3 \\
\ominus\, 6p^3 \oplus 9p^2 \\
\hline
-8p^2 + 14p - 3 \\
\ominus\, -8p^2 \oplus 12p \\
\hline
2p - 3 \\
\ominus\, 2p \oplus 3 \\
\hline
0
\end{array}
$$

($2p$ divides into $4p^4$; $2p^3$)
(Mult the divisor $2p-3$ by the quotient $2p^3$; $4p^4 - 6p^3$)
(Change the signs and Add; $-4p^4 + 6p^3$)
(Bring down the next terms and Repeat)
($2p$ divides into $6p^3$; $3p^2$)
(Mult the divisor $2p-3$ by the quotient $3p^2$; $6p^3 - 9p^2$)
(Change the signs and Add; $-6p^3 + 9p^2$)
(Bring down the next terms and Repeat)
($2p$ divides into $-8p^2$; $-4p$)
(Mult. the divisor $2p-3$ by the quotient $-4p$; $-8p^2 + 12p$)
(Change the signs and Add; $8p^2 - 12p$)
(Bring down the next terms and Repeat)
($2p$ divides into $2p$; 1)
(Mult. the divisor $2p-3$ by the quotient 1; $2p-3$)
(Change the signs and Add; Remainder is 0)

⋆ The answer is $2p^3 + 3p^2 - 4p + 1$

After previewing the examples given for long division your homework is to go to page 669 from the textbook and complete problems from 15 to 28. Students must show their work in order to receive full credit for the assignment. The work should match my examples or the examples from the book or even the examples from Khan Academy. The assignment must be completed and turned in to the teacher on time in order to receive full credit. If you have a question about what is expected of you for this assignment, you may consult with me before the due date.