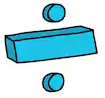
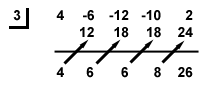
Module 2 Lesson #4:

Multiplying and Dividing Polynomials

Remainder Theorem

& Factor Theorem



SWUT:

Polynomials can be divided using a process similar to long-division of whole numbers.

You can divide polynomial by polynomial to get a polynomial quotient and a polynomial remainder, such that.

If then and are factors of.

Synthetic division simplifies the long division process for dividing by a liner expression

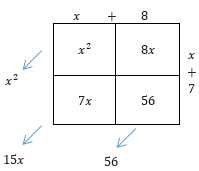
The Remainder Theorem states: If you divide a polynomial of degree by, the remainder is.

The Factor Theorem states: If then is a factor of and a is a root (zero).

**TABULAR METHOD**

Use tabular method to multiply and combine like terms.

(ALWAYS START \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)



Exercises 1–2

1. Use the tabular method to multiply and combine like terms.
2. Use the tabular method to multiply and combine like terms.

\*\*\*MUST FILL IN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\*\*\*

**Division by…Multiplication???**

Multiply these polynomials

Knowing that result, answer the following questions.

Divide

Divide

But how can we divide polynomials if we didn’t have the factors to start with?

**Intro to Reverse Tabular (multiplying back)**

The process….



What happens when there is a remainder?

x + 5 ) 4x2 + 23x - 16

So, when we divide two polynomials, we get another polynomial and usually a remainder. This is known as writing the rational expression in quotient-remainder form.

Try these:



Remainder Theorem:

Find the remainders of these division problems



What if the remainder is zero?

Now, using the remainder theorem, we can check if an expression is a factor of a polynomial.

1. Is a factor of? Why or why not?
2. Is a factor of ? Justify your answer.

**Using Synthetic Division**  \*\*\*divisor ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

1. PROCESS: