# Math Virtual Learning 

# Algebra 2A <br> Polynomial Long Division 

## April 15, 2020

## Lesson: <br> Polynomial Long Division

## Learning Target:

LT D2 I can perform polynomial division (long and synthetic) and apply the remainder theorem.

## Objective:

Students will be able to long divide polynomials with a linear divisor.

## Lesson

## You need to watch these videos:

Intro to Long Division of Polynomials
How to Divide a Binomial Polynomial into a Quadratic Polynomial

## Lesson

Things to remember when dividing polynomials.

1. Write your polynomials in descending order.
2. Stack like terms in your problem.
3. Be very careful with your subtraction sign - make sure it gets distributed to both terms.

## Practice

Try these four problems on your own. Your answers may have remainders.

1. $\left(2 x^{2}+7 x+6\right) \div(x+2)$
2. $\left(x^{2}+7 x+12\right) \div(x+3)$
3. $\left(x^{2}-4 x-45\right) \div(x-9)$
4. $\left(2 x^{2}-5 x+3\right) \div(2 x-1)$

Worked Example

$$
\left(2 x^{2}+7 x+6\right) \div(x+2)
$$

Like terms
Steps 1. Set up problem
Step 2. $x \cdot \frac{2 x}{x}=2 x^{2}$

$$
\begin{array}{r}
x + 2 \longdiv { 2 x ^ { 2 } + 7 x + 6 } \\
\Theta \frac{2 x^{2}+4 x}{0 x^{2}+3 x+6} \\
\text { Goal } \Theta \frac{3 x+6}{0}
\end{array}
$$

this
Step 3: $2 x(x+2)=2 x^{2}+4 x$
Step 4: Subtract Down your first term will be zero
Step 5. Repeat
Answer: $2 x+3$

Answers

1. $2 x+3$
2. $x+4$
3. $x+5$
4. $x-2+\frac{1}{2 x-1}$

## Additional Practice

## Khan Academy

Khan Academy
Kuta Dividing Polynomials

## Additional Resources

Math is Fun

Dividing by a Polynomial Containing More Than One Term

