

Name: Kelly
UNIT 1

Date: _____
LESSON 2

AIM: HOW DO WE DIVIDE POLYNOMIALS? (DAY 1)

Do Now: Use long division to find the quotient:

a.
$$\begin{array}{r} \boxed{37} \\ 5\overline{)185} \\ \underline{-15} \\ 35 \\ \underline{-35} \\ 0 \end{array}$$

b.
$$\begin{array}{r} \boxed{23} \\ 11\overline{)253} \\ \underline{-22} \\ 33 \\ \underline{-33} \\ 0 \end{array}$$

We will now apply the same process to divide polynomials!

* Don't forget to change the signs!!!

1)
$$\begin{array}{r} 2x^2 + 5x + 3 \\ x + 1 \\ \hline \boxed{2x + 3} \\ x + 1 \overline{) 2x^2 + 5x + 3} \\ \underline{-2x^2 + 2x} \\ 3x + 3 \\ \underline{-3x + 3} \\ 0 \end{array}$$

2)
$$\begin{array}{r} 2x^2 + x - 10 \\ x - 2 \\ \hline 2x + 5 \\ x - 2 \overline{) 2x^2 + x - 10} \\ \underline{-2x^2 + 4x} \\ 5x - 10 \\ \underline{-5x + 10} \\ 0 \end{array}$$

DIVIDEND: what is being divided ex) $2x^2 + 5x + 3$

DIVISOR: what you are dividing ex) $x + 1$

The answer to the division problem is called the QUOTIENT

$$3) (x^2 - 2x - 15) \div (x + 3)$$

$$\begin{array}{r} x-5 \\ x+3 \overline{) x^2 - 2x - 15} \\ \underline{-x^2 + 3x} \\ -5x - 15 \\ \underline{+5x + 15} \\ 0 \end{array}$$

$$\boxed{x-5}$$

$$4) (2x^3 + x^2 - 16x + 15) \div (2x - 3)$$

$$\begin{array}{r} x^2 + 2x + 5 \\ 2x-3 \overline{) 2x^3 + x^2 - 16x + 15} \\ \underline{-2x^3 + 3x^2} \\ 4x^2 - 16x \\ \underline{-4x^2 + 12x} \\ -10x + 15 \\ \underline{+10x + 15} \\ 0 \end{array}$$

$$\boxed{x^2 + 2x - 5}$$

PRACTICE:

$$5) (x^2 + 6x + 9) \div (x + 3)$$

$$\begin{array}{r} x+3 \\ x+3 \overline{) x^2 + 6x + 9} \\ \underline{-x^2 + 3x} \\ 3x + 9 \\ \underline{-3x + 9} \\ 0 \end{array}$$

$$\boxed{x+3}$$

$$6) \frac{x^3 + 2x^2 + 2x + 1}{x^2 + x + 1}$$

$$\begin{array}{r} x+1 \\ x+1 \overline{) x^3 + 2x^2 + 2x + 1} \\ \underline{-x^3 + x^2} \\ x^2 + 2x \\ \underline{-x^2 + x} \\ x + 1 \\ \underline{-x + 1} \\ 0 \end{array}$$

$$\boxed{x^2 + x + 1}$$

$$7) (7x^3 - 8x^2 - 13x + 2) \div (7x - 1)$$

$$\begin{array}{r} x^2 - x - 2 \\ 7x-1 \overline{) 7x^3 - 8x^2 - 13x + 2} \\ \underline{-7x^3 + x^2} \\ -7x^2 - 13x \\ \underline{+7x^2 + x} \\ -14x + 2 \\ \underline{+14x + 2} \\ 0 \end{array}$$

$$\boxed{x^2 - x - 2}$$

$$8) \frac{2x^3 - 13x^2 - x + 3}{2x + 1}$$

$$\begin{array}{r} x^2 - 7x + 3 \\ 2x+1 \overline{) 2x^3 - 13x^2 - x + 3} \\ \underline{-2x^3 + x^2} \\ -14x^2 - x \\ \underline{+14x^2 + 7x} \\ 6x + 3 \\ \underline{-6x + 3} \\ 0 \end{array}$$

$$\boxed{x^2 - 7x + 3}$$