

Name: \_\_\_\_\_

Secondary 2H: UNIT 1  
Lesson 2

Warm-up:

<p>1. Write an equivalent expression</p> $(x + 4)(x - 5) =$	<p>2. Write an equivalent expression</p> $(y - 2)(y^2 + 3y - 1) =$
<p>3. Write an equivalent expression</p> $(x - 4)^2 =$	<p>4. Write an equivalent expression</p> $(x + 4)(x - 4) =$

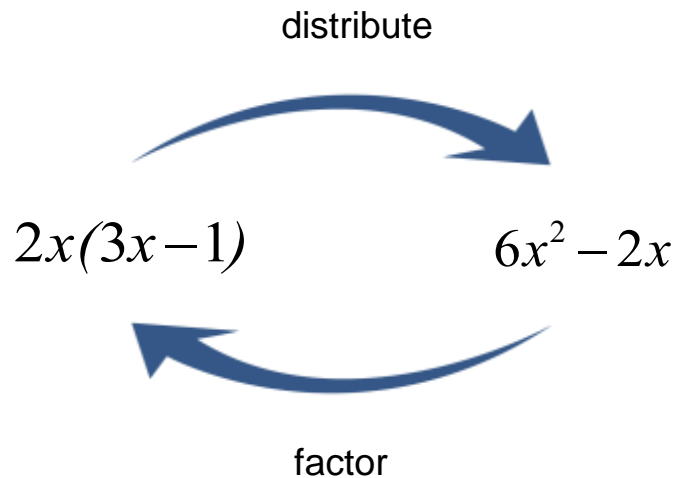
**By the end of this lesson, I can...**

- factor monomials. I can factor a trinomial in the form  $x^2 + bx + c$ . I can factor a difference of squares binomial
- extend the properties of integer exponents to rational exponents and use them to simplify expressions

**1.3 Factoring Polynomials**

FACTORIZING “UNDOES” DISTRIBUTING.

⇒ One way to factor a polynomial is to find the Greatest Common Factor (GCF)



An example: Factor  $12x^2 - 30x$ .

1. We start by finding the GCF of the two terms:

$$12x^2$$

$$30x$$

- The Greatest Common Factor (GCF) of  $12x^2$  and  $30x$  is \_\_\_\_\_.

2. Next, we divide each term by the GCF and rewrite our expression with the GCF outside the parenthesis.

$$12x^2 - 30x = (\quad)(\quad) - (\quad)(\quad) = (\quad)(\quad - \quad)$$

$\uparrow \qquad \qquad \qquad \uparrow \qquad \qquad \qquad \uparrow$   
*GCF \qquad \qquad \qquad GCF \qquad \qquad \qquad GCF*

3. Finally, we could check that we factored correctly by re-distributing the GCF.

Practice:

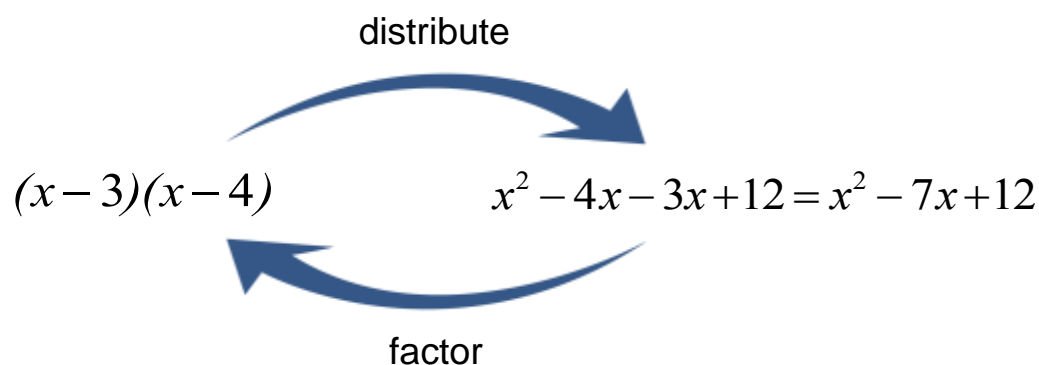
Factor each expression by finding the GCF.

1.  $-6x^3 - 21x^2$

2.  $18x^3 - 6$

3.  $4x^5 - 8x^4 + 12x^3$

$\Rightarrow$  We won't always have a GCF greater than 1. Another way to factor a polynomial is to "un-FOIL."



An example: Factor  $x^2 + 5x + 6$ .

To “un-FOIL,” we look for two numbers that multiply to \_\_\_\_\_ and add to \_\_\_\_\_.

Factors of 6    Sum of Factors

$$x^2 + 5x + 6 = ( \quad ) ( \quad )$$

Practice:

Factor each expression.

1.  $x^2 - 9x + 18$

2.  $x^2 - x - 2$

3.  $x^2 + 4x - 12$

4.  $x^2 - 6x + 8$

5.  $x^2 - 5x - 14$

6.  $x^2 + 6x - 7$

The next two examples might look different, but they can still be factored by “un-FOILing.”

7.  $x^2 - 9$

8.  $x^2 - 25$

9.  $x^2 + 16$

10. Write a rule for factoring polynomials of the form  $x^2 - a^2$ .

11. Explain why your rule won't work for polynomials of the form  $x^2 + a^2$ .