Lesson 6.1 Factoring

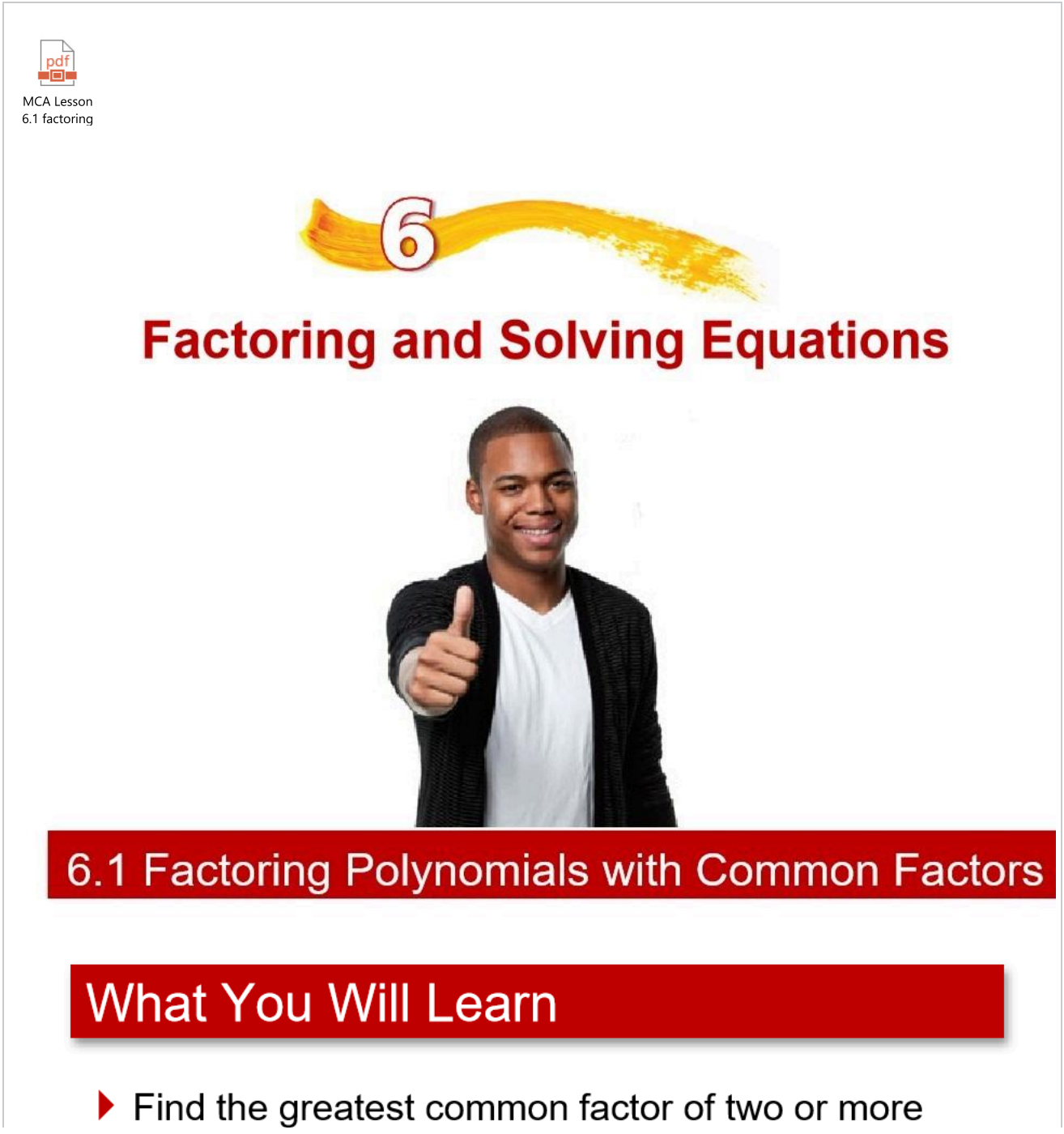
Thursday, February 20, 2025 7:46 PM

Click the link below for the interactive Pear Deck PowerPoint

https://app.peardeck.com/student/tuuyqgdye

From <https://app.peardeck.com/presenter/tuuyqgdye/projector?returnTo=powerpoint>

MCA Lesson 6.1 factoring



expressions.

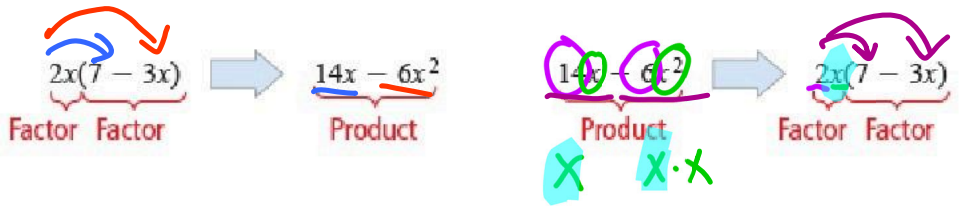
- Factor out the greatest common monomials factor from polynomials.
- Factor polynomials by grouping.

Greatest Common Factor

You have used the Distributive Property to multiply polynomials.

In this chapter, you will study the *reverse* process, which is **factoring.**

Multiplying Polynomials *Factoring Polynomials*



Example 1 – Finding the Greatest Common Factor

Find the greatest common factor of $5x^2y^2$ and $30x^3y$, first factor each term.

Find the greatest common factor of $8x^5$, $20x^3$, and $16x^4$, first factor each term.

$4x^3$

Factor out the greatest common monomial factor from $6x - 18$

$3(2x - 6)$

Example 4 – Greatest Common Monomial Factor

Factor out the greatest common monomial factor from $10y^3 - 25y^2$.

$5y^2(2y - 5)$

Factor out the greatest common monomial factor from $45x^3 - 15x^2 - 15$.

$15(3x^3 - x^2 - 1)$

Factor out the greatest common monomial factor from $3xy^2 - 15x^2y + 12xy$.

$3xy(y - 5x + 4)$

Example 7 – Greatest Common Monomial Factor

Factor out the greatest common monomial factor from

Factor out the greatest common monomial factor from $35y^3 - 7y^2 - 14y$.

$7y(5y^2 - y - 2)$

Factor the polynomial $-2x^2 + 8x - 12$

$-2(x^2 - 4x + 6)$

Example 9 – Common Binomial Factors

Factor each expression.

a. $5x^2(7x - 1) - 3(7x - 1)$

$(5x^2 - 3)(7x - 1)$

b. $2x(3x - 4) + 1(3x - 4)$

$(2x + 1)(3x - 4)$

c. $3y^2(y - 3) + 4(3 - y)$

$(3y^2 + 4)($

Factoring by Grouping 2

But suppose you *group* the first two terms together and the last two terms together.

$x^3 + 2x^2 + 3x + 6 = (x^3 + 2x^2) + (3x + 6)$ Group terms.

$x^2(x+2) + 3(x+2)$

$(x^2+3)(x+2)$

Example 10 – Factoring by Grouping

Factor $x^3 + 2x^2 + x + 2$.

$x^3 + x$ $\quad 2x^2 + 2$

$x(x^2+1) + 2(x^2+1)$

$(x+2)(x^2+1)$

Factor $3x^2 - 12x - 5x + 20$.

$3x(x-4) \quad -5(x-4)$

$(3x-5)(x-4)$

Example 12 – Geometry: Area of a Rectangle

The area of a rectangle of width $(2x - 1)$ feet is $(2x^3 + 4x - x^2 - 2)$ square feet, as shown below. Factor this expression to determine the length of the rectangle.