Name _____ Class _____ Date _____

Reteaching 8-2

Multiplying and Factoring

OBJECTIVE: Factoring a monomial from a polynomial

MATERIALS: None

- To factor a polynomial you must find the **G**reatest **C**ommon **D**ivisor. The **GCD** is the greatest factor that divides evenly into each term.

Example

Factor $18x^3 + 6x^2 - 12x$.

a. First find the GCD.

$18x^3 = 2 \quad 3 \quad 3 \quad x \quad x \quad x$ ← **List the factors of each term. Circle the factors common to all terms.**

$6x^2 = 2 \quad 3 \quad x \quad x$

$12x = \quad 2 \quad 2 \quad 3 \quad x$

$2 \cdot 3 \cdot x = 6x$ ← **Multiply the circled terms together to get the GCD.**

b. Factor out the GCD from each term.

$\frac{18x^3}{6x} = 3x^2$ ← **Divide each term by the GCD.**

$\frac{6x^2}{6x} = x$

$\frac{-12x}{6x} = -2$

$6x(3x^2 + x - 2)$ ← **Solution**

Exercises

Use the GCD to factor each polynomial.

1. $21x - 14$

2. $5y^3 - 10y^2 + 15y$

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

4. $3x^2 + 6x^4$

5. $18x^3 - 6x^2 + 24x$

6. $z^3 - 3z^2$

7. $12k^3 + 6k^2 - 18k$

8. $6x^3 - 4x^2 + 8x$

9. $8p^4 + 12p^2 + 4p$

10. $36x^2 - 18x$

11. $6x^2 + 18x$

12. $6x^3 - 2x^2 + 8x$

13. $6x^3 + 6x^2 - 6x$

14. $5x^3 + 5x^2$

15. $3x^2 + 6x + 3$

16. $10x^2 + 35x$

17. $8x^5 + 16x^4 - 8x^3$

18. $9x^3 - 6x^2 - 15x$

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