

Name: _____ Date: _____ Period: _____

Key

Factoring Using GCF Notes

When factoring polynomials, the first step is to find the greatest common factor (GCF) between among the terms.

Example: $5a + 35$

$$\begin{aligned} 5a &= \textcircled{5} \cdot a \\ 35 &= \textcircled{5} \cdot 7 \end{aligned}$$

The GCF is 5What is "left over" from each term? $a + 7$ The factored polynomial is $5(a + 7)$

Check your answer using the distributive property.

$$5(a + 7) = 5a + 35 \quad \checkmark$$

Factoring polynomials is just like doing the distributive property backwards!!!

Factor each polynomial.

1. $3x - 9$

$3(x - 3)$

2. $4x + 16$

$4(x + 4)$

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

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

4. $15x^4 - 25x^3 + 2x^2$

$x^2(15x^2 - 25x + 2)$

5. $-12x^3 - 6x$

$-6x(2x^2 + 1)$

6. $-6c^2 - 3$

$-3(2c^2 + 1)$

7. $4k^3r^2q - k^2rq^2 - 10kq$

$$kq(4k^2r^2 - krq - 10)$$

8. $4x^2y^2 + 16xy$

$$4xy(xy + 4)$$

9. $108c^2n^2z^5 - 35c^4nz^4$

$$c^2nz^4(108n^{\cancel{2}} - 35c^2)$$

10. $3k - 12k^2g + 30k^5$

$$3k(1 - 4kg + 10k^4)$$

Find the missing factor.

11. $y^5 = (?) (y^3)$

$$\frac{y^2}{\underline{\hspace{2cm}}}$$

12. $c^7 = (?) (c^3)$

$$\frac{c^4}{\underline{\hspace{2cm}}}$$

13. $7x^2 = (?) (-7x)$

$$\frac{-x}{\underline{\hspace{2cm}}}$$

14. $-6x^5 = (?) (6x^4)$

$$\frac{-x}{\underline{\hspace{2cm}}}$$

14. $4x^3 - 7x^2 = (?) (4x - 7)$

$$\frac{x^2}{\underline{\hspace{2cm}}}$$

16. $10x + 30 = (?) (2x + 6)$

$$\frac{5}{\underline{\hspace{2cm}}}$$