

Name Key

Date _____

Factoring Polynomials Using the GCF

Factor and Check each polynomial using the GCF

1) $2x^2 + x$

$2x^2 + x$
 $GCF = x$
 $x(2x + 1)$
 $x \cdot 2x + x \cdot 1 = 2x^2 + x$ ✓

2) $6x^2 + 8x$

$6x^2 + 8x$
 $GCF = 2x$
 $2x(3x + 4)$
 $2x \cdot 3x + 2x \cdot 4 = 6x^2 + 8x$ ✓

3) $2x - 4y$

$2x - 4y$ $GCF = 2$
 $2(x - 2y)$
 $2 \cdot x - 2 \cdot 2y = 2x - 4y$ ✓

4) $18xy + 12x^2y$

$18xy + 12x^2y$
 $GCF = 3xy$
 $3xy(6 + 4x)$

$3xy \cdot 6 + 3xy \cdot 4x = 18xy + 12x^2y$ ✓

5) $10xy - 15x^2y^2$

$10xy - 15x^2y^2$
 $GCF = 5xy$
 $5xy(2 - 3xy)$

$5xy \cdot 2 - 5xy \cdot 3xy = 10xy - 15x^2y^2$ ✓

6) $21x^2y + 14y^2$

$21x^2y + 14y^2$
 $GCF = 7y$
 $7y(3x^2 + 2y)$
 $= 21x^2y + 14y^2$ ✓

7) $18xy + 12x^2 + 6xy^2$

$18xy + 12x^2 + 6xy^2$
 $GCF = 6x$
 $6x(3y + 2x + y^2)$

$6x \cdot 3y + 6x \cdot 2x + 6x \cdot y^2 = 18xy + 12x^2 + 6xy^2$ ✓

8) $2xy + 4x^2y^2 + 6xy^2$

$2xy + 4x^2y^2 + 6xy^2$
 $GCF = 2xy$
 $2xy(1 + 2xy + 3y)$

$2xy \cdot 1 + 2xy \cdot 2xy + 2xy \cdot 3y = 2xy + 4x^2y^2 + 6xy^2$ ✓

9) $3x^2yz^2 + 15x^2yz + 18xy^2z^2$

$3x^2yz^2 + 15x^2yz + 18xy^2z^2$
 $GCF = 3xyz$
 $3xyz(xz + 5x + 6yz)$

$3xyz \cdot xz + 3xyz \cdot 5x + 3xyz \cdot 6yz = 3x^2yz^2 + 15x^2yz + 18xy^2z^2$ ✓

10) $8xyz + 16x^2yz^2 - 32xy^2z$

$8xyz + 16x^2yz^2 - 32xy^2z$
 $GCF = 8xyz$
 $8xyz(1 + 2xz - 4y)$

$8xyz \cdot 1 + 8xyz \cdot 2xz - 8xyz \cdot 4y = 8xyz + 16x^2yz^2 - 32xy^2z$ ✓

11) $6xy + 10y^2z + 16xz^2$

$6xy + 10y^2z + 16xz^2$
 $GCF = 2$ Notice: No variables are common to all monomials.
 $2(3xy + 5y^2z + 8xz^2)$

$2 \cdot 3xy + 2 \cdot 5y^2z + 2 \cdot 8xz^2 = 6xy + 10y^2z + 16xz^2$ ✓

12) $3xyz + 5x^2z + 8xy^2$

$3xyz + 5x^2z + 8xy^2$
 $GCF = x$
 $x(3yz + 5xz + 8y^2)$

$x \cdot 3yz + x \cdot 5xz + x \cdot 8y^2 = 3xyz + 5x^2z + 8xy^2$ ✓