Algebra: Essential Factoring Techniques

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Name: _____ Date: _____ Score: / 10

DIRECTIONS *Factor each expression using GCF, difference of squares, sum/difference of cubes, or trinomials*

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1 Factor (sum of cubes):

$$x^3 + 27$$

Answer: _____

2 Factor (sum of cubes):

$$x^3 + 8$$

Answer: _____

3 Factor (difference of squares):

$$x^2 - 1$$

Answer: _____

4 Factor the trinomial:

$$x^2 + 8x + 15$$

Answer: _____

5 Factor the trinomial:

$$x^2 - x - 2$$

Answer: _____

6 Factor out the GCF:

$$4x^2 + 4x$$

Answer: _____

7 Factor (difference of cubes):

$$x^3 - 27$$

Answer: _____

8 Factor out the GCF:

$$20x^2 + 20x$$

Answer: _____

9 Factor (difference of squares):

$$x^2 - 1$$

Answer: _____

10 Factor out the GCF:

$$8x^2 + 12x$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES *Always factor out GCF first. Then check: diff of squares? Sum/diff of cubes? Trinomial?*

1 Factor (sum of cubes):

$= (x+3)(x^2-3x+9)$

x^3+27

2 Factor (sum of cubes):

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

x^3+8

3 Factor (difference of squares):

$= (x-1)(x+1)$

x^2-1

4 Factor the trinomial:

$= (x--5)(x--3)$

$x^2+8x+15$

5 Factor the trinomial:

$= (x--1)(x-2)$

x^2-x-2

6 Factor out the GCF:

$= 2x(2x+2)$

$4x^2+4x$

7 Factor (difference of cubes):

$= (x-3)(x^2+3x+9)$

x^3-27

8 Factor out the GCF:

$= 4x(5x+5)$

$20x^2+20x$

9 Factor (difference of squares):

$= (x-1)(x+1)$

x^2-1

10 Factor out the GCF:

$= 4x(2x+3)$

$8x^2+12x$