[UNIT 3A - FACTORING]

Algebra 1
Intro to Factoring – GCF

Name: _____
Date: _____

Use the Distributive Property to simplify.

1. $5(2x - 4)$ _____

2. $-7x^3y(2x - 4y)$ _____

Fill in each blank with a monomial that will make each equation true.

3. $10x - 20 =$ _____ $(2x - 4)$

4. $10x^2 - 15x =$ _____ $(2x - 3)$

5. $10x^4y - 20x^3y^2 =$ _____ $(2x - 4y)$

6. $8x^2 - 4x + 12 =$ _____ $(2x^2 - x + 3)$

Greatest Common Factor (GCF)

1. 3 9 12 _____

2. 8 12 20 _____

3. –9 15 –24 _____

4. 28 49 _____

5. x x^2 _____

6. x^3 x^2 x^7 _____

7. $6x^2$ $8x$ $14x^3$ _____

Factoring Polynomials

The GCF for a polynomial is the largest monomial that divides (is a factor of) into each term of the polynomial.

Ex: What is the GCF? **$4x^2 - 16x$** Answer: [ ]

Factor the following polynomials by removing the GCF.

1. $15x + 9xy$ _____

2. $12a^2b - 3a^2b^3 + 18a$ _____

3. $-8xy^3 + 20x^2y^2z - 4x$ _____

4. $32m^4n + 24mn^2 - 16mn$ _____

If an expression will not factor then it is said to be

Factor each. If it will not factor (does not have a GCF), write

1. $3x - 5x^2$ _____

2. $4ab + 5ba^2$ _____

3. $8z^2 + 21r^2$ _____

4. $4m^2 + 6m - 1$ _____

Factor the common factor out of each expression.

1) $9 + 8b^2$

2) $x - 5$

3) $45x^2 - 25$

4) $1 + 2n^2$

5) $56 - 35p$

6) $50x - 80y$

7) $7ab - 35a^2b$

8) $27x^2y^5 - 72x^3y^2$

9) $-3a^2b + 6a^3b^2$

10) $8x^3y^2 + 4x^3$

11) $-5x^2 - 5x^3 - 15x^4$

12) $-32n^9 + 32n^6 + 40n^5$

13) $20x^4 - 30x + 30$

14) $21p^6 + 30p^2 + 27$

15) $28m^4 + 40m^3 + 8$

16) $-10x^4 + 20x^2 + 12x$

17) $30b^9 + 5ab - 15a^2$

18) $27y^7 + 12y^2x + 9y^2$

19) $-48a^2b^2 - 56a^3b - 56a^5b$

20) $30m^6 + 15mn^2 - 25$

Factoring Trinomial Squares with Leading Coefficient Different from 1

Factor each completely.

1) $7m^2 + 6m - 1$

2) $3k^2 - 10k + 7$

3) $5x^2 - 36x - 81$

4) $2x^2 - 9x - 81$

5) $3n^2 - 16n + 20$

6) $2r^2 + 7r - 30$

7) $5k^2 + 8k + 80$

8) $5x^2 - 14x + 8$

9) $7p^2 - 20p + 12$

10) $3v^2 + 14v - 49$

11) $7x^2 - 26x - 45$

12) $5p^2 - 52p + 20$

13) $5x^2 - 43x + 24$

14) $5x^2 + 26x + 24$

15) $3r^2 + 40r + 100$

16) $2x^2 - 3x - 5$

17) $5p^2 + 19p + 12$

18) $2m^2 + 3m - 27$

19) $3n^2 + 10n - 8$

20) $2a^2 + 7a - 7$

21) $10n^2 - 21n - 49$

22) $6x^2 + 41x + 70$

23) $9x^2 + 9x - 40$

24) $8n^2 + 71n - 90$

25) $4m^2 - 4m - 63$

26) $6r^2 + 37r + 45$

27) $4x^2 - 35x + 24$

28) $10m^2 + 23m + 6$

29) $6k^2 - 10k + 50$

30) $6r^2 - 17r + 12$

Kuta Software - Infinite Algebra 2

Name_____

Factoring Quadratic Expressions

Date_____ Period____

Factor each completely.

1) $x^2 - 7x - 18$

2) $p^2 - 5p - 14$

3) $m^2 - 9m + 8$

4) $x^2 - 16x + 63$

5) $7x^2 - 31x - 20$

6) $7k^2 + 9k$

7) $7x^2 - 45x - 28$

8) $2b^2 + 17b + 21$

9) $5p^2 - p - 18$

10) $28n^4 + 16n^3 - 80n^2$

6.2 Practice - Grouping

Factor each completely. ODDS

1) $40r^3 - 8r^2 - 25r + 5$

3) $3n^3 - 2n^2 - 9n + 6$

5) $15b^3 + 21b^2 - 35b - 49$

7) $3x^3 + 15x^2 + 2x + 10$

9) $35x^3 - 28x^2 - 20x + 16$

11) $7xy - 49x + 5y - 35$

13) $32xy + 40x^2 + 12y + 15x$

15) $16xy - 56x + 2y - 7$

17) $2xy - 8x^2 + 7y^3 - 28y^2x$

19) $40xy + 35x - 8y^2 - 7y$

21) $32uv - 20u + 24v - 15$

23) $10xy + 30 + 25x + 12y$

25) $3uv + 14u - 6u^2 - 7v$

27) $16xy - 3x - 6x^2 + 8y$

Factoring the Difference of Squares

Factor each completely.

1) $9x^2 - 1$

2) $4n^2 - 49$

3) $36k^2 - 1$

4) $p^2 - 36$

5) $2x^2 - 18$

6) $196n^2 - 144$

7) $180m^2 - 5$

8) $294r^2 - 150$

9) $150k^2 - 216$

10) $20a^2 - 45$

11) $3n^2 - 75$

12) $24x^3 - 54x$

13) $a^2 - 25b^2$

14) $4x^2 + 49y^2$

15) $25x^2 + 16y^2$

16) $6a^2 + 96b^2$

17) $x^2 - 9y^2$

18) $49x^2 - 25y^2$

19) $9x^2 - 16y^2$

20) $54v^2 - 6u^2$

21) $36a^4 - 25b^4$

22) $2x^4r - 72y^4r$

23) $125m^4 - 20n^4$

24) $216x^4ay - 6y^5a$

25) $4x^4 - 144y^4$

26) $4x^4m - 36y^4m$

27) $7x^4 - 28y^4$

28) $7x^4 - 343y^4$

29) $16m^6 - n^6$

30) $64x^6 - y^6$

Algebra 1
Test Review – Factoring

Name _____
Date _____ Period __

Method 1: Remove the GCF

1. $7x^2 + 28x$
2. $12a^2b - 15ab^2$
3. $9m^4 - 12m^2 + 3m$
4. $2t^3 - 6t^2 + 10t$

Method 2: Trinomials with a lead coefficient of 1 (a = 1)

5. $x^2 + 9x + 18$
6. $w^2 - 6w - 40$
7. $y^2 - 14yz + 24z^2$
8. $x^4 + 2x^2 - 3$

Method 3: Trinomials with a lead coefficient greater than 1 (a > 1)

9. $2x^2 + 9x + 10$
10. $6n^2 + 13n - 8$
11. $10z^2 + 10z - 120$
12. $3x^2 + 8x + 4$

Method 4: Grouping

13. $ax + 3ay + 2x + 6y$
14. $4m^2n - 2mn^2 - 6m + 3n$
15. $4xy - 12x + 8y - 24$

16. $x^3 - 11x^2 + 20x + 32$
17. $x^4 - 4x^3 + 2x^2 - 8x$
18. $3x^3 - 6x^2 + 15x - 30$

Method 5: Difference of Squares

19. $x^2 - 100$
20. $36m^4 - 1$
21. $64a^8 - b^{20}$
22. $16x^2 + 4$

Putting it all together!

1. $x^2 - 12x + 36$
2. $5a^2 - 5a - 30$
3. $2s^2 - 3s - 5$

4. $49x^4 - 144y^{12}$
5. $n^3 + 9n^2 - 25n - 225$
6. $2x^3 + 20x^2 - 3x - 30$