

March 11, 2019, Monday

SAMPLE ITEMS

- In which expression is the coefficient of the n term -1?
 A. $3n^2 + 1$
 B. $-n^2 + 5n + 4$
 C. $-2n^2 + 5$ ✓
 D. $4n^2 + n - 5$

2. The expression s^2 is used to calculate the area of a square, where s is the side length of the square. What does the expression $(8x)^2$ represent?
 A. the area of a square with a side length of 8
 B. the area of a square with a side length of 16
 C. the area of a square with a side length of 4x
 D. the area of a square with a side length of 8x

side
 $(8x)$
 $s = 8x$

Name: _____

1. Find two numbers that sum to 8 and have a product of 12.
 $\frac{1}{2} \times \frac{6}{2} = 12$

2. Find two numbers that sum to 5 and have a product of 6.
 $\frac{2}{3} \times \frac{3}{2} = 6$

3. Find two numbers that sum to 5 and have a product of -12.
 $-2 \times -6 = 12$

4. Find two numbers that sum to -8 and have a product of 12.
 $-12 \times -1 = 12$

5. Find two numbers that sum to 16 and have a product of 15.
 $15 \times 1 = 15$

6. Find two numbers that sum to -4 and have a product of -21.
 $-7 \times 3 = -21$

7. Find two numbers that sum to 1 and have a product of -36.
 $-9 \times 4 = -36$

8. Find two numbers that sum to -14 and have a product of 40.
 $-10 \times -4 = 40$

9. Find two numbers that sum to 0 and have a product of -25.
 $-5 \times 5 = -25$

10. Find two numbers that sum to 8 and have a product of 16.
 $16 \times 1 = 16$

11. Multiply the following:
 a. $(x+6)(x+3)$
 $x^2 + 9x + 18$
 b. $(x+7)(x-2)$
 $x^2 - 2x + 7x - 14$

Note: What is the sum of the constants in each binomial above?

Note: What is the product of the constants in each binomial above?

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Mar 11-7:57 AM

Unit 3a Day 2 Notes: Factoring Trinomials when $a \geq 1$

MCC9-12.A.SSE.3 I can factor a quadratic expression to reveal the zeros of the function it defines.

Now let's factor trinomials (3 terms).
 • Remember, we do undo multiplying.

Example: $1: x^2 + 5x + 6$
 $x^2 + 5x + 6 = (x+2)(x+3)$

1. Is there a GCF? Yes or No? No

To factor a trinomial, it breaks down into a product of binomials (2 terms each).

What are the factors of 6 (what pairs multiply to 6)?
 $1, 6$
 $2, 3$
 Which pair adds to be $(2+3)$

Answer: $(x+2)(x+3)$

Now you try!

1. $x^2 + 7x + 12$ $(x+3)(x+4)$	2. $x^2 + 12x + 20$ $(x+2)(x+10)$
3. $x^2 + 8x + 12$ $(x+2)(x+6)$	4. $x^2 + 6x + 9$ $(x+3)(x+3)$
5. $x^2 - x - 12$ $(x+3)(x-4)$	6. $x^2 - 2x - 24$ $(x-6)(x+4)$
7. $x^2 - 6x + 8$ $(x-2)(x-4)$	8. $x^2 - 11x + 24$ $(x-3)(x-8)$

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GSE Algebra I Unit 3A – Factoring Quadratics Name: _____ Date: _____

Factoring Trinomials ($ax^2 + bx + c$)

Factor each binomial completely. Hint: #8-10 take out a GCF 1st*

1. $x^2 - 5x - 14$ $(x-7)(x+2)$	2. $x^2 - 2x - 24$ $(x-4)(x+6)$
3. $x^2 + x - 20$ $(x+5)(x-4)$	4. $x^2 - 5x - 66$ $(x+6)(x-11)$
5. $x^2 - 10x - 24$ $(x-12)(x+2)$	6. $x^2 + 2x - 16$ $(x+4)(x-4)$
7. $x^2 - 6x - 16$ $(x-8)(x+2)$	8. $2x^2 + 20x + 18x$ $\cancel{2x}(x^2 + 10x + 9)$ $\cancel{2x}(x+3)(x+3)$
9. $3x^2 + 12x - 63$	10. $2x^2 - 6x^2 - 20x$

*GCF

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Algebra I Name: _____ ID: 1

Factoring In-Class Assignment

Factor the common factor out of each expression.

1) $-24t + 30t + 24$
 2) $35x + 45$
 6) $6(-4x^2 + 5x + 4)$ 5) $5(-7r + 9)$

3) $70x^3 + 63x^2 - 42x$
 $7x(10x^2 + 9x - 6)$

4) $63x^2 - 28$
 $7(9x^2 - 4)$

Factor each completely.

5) $p^2 - 9p + 14$
 $(p-2)(p-7)$

6) $a^2 - 81$
 $(a-9)(a+9)$

7) $x^2 - 3x - 4$
 $(x+1)(x-4)$

8) $m^2 - 11m + 24$
 $(m+3)(m-8)$

9) $n^2 - 8n + 16$
 $(n-4)(n-4)$

10) $r^2 + 2r - 80$
 $(r-8)(r+10)$

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11) $5x^2 + 17x + 6$
 12) $2x^2 - 15x + 28$

13) $8k^2 + 30k + 7$
 14) $4a^2 - 17a + 4$

Factor each completely. ALL have a GCF!!!

15) $3x^2 - 21x + 30$
 16) $2b^2 + 18b - 20$

17) $4m^2 - 4$
 18) $6x^2 + 30x - 36$

19) $4b^2 - 26b + 36$
 20) $20p^2 + 38p + 14$

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March 12, 2019, Tuesday

1. What is the product of $7x - 4$ and $8x + 5$?
 A. $15x + 1$
 B. $30x + 2$
 C. $56x^2 + 3x - 20$
 D. $56x^2 - 3x + 20$

$(7x - 4)(8x + 5)$
 $56x^2 + 35x - 32x - 20$
 $56x^2 + 3x - 20$

$\frac{54}{16} \cdot \frac{48}{9} =$ $2 \cdot 3 \cdot 3 \cdot b \cdot b + 2 \cdot 2 \cdot 2 \cdot 3 \cdot b \cdot b$ $4b^2(9b + 8)$ $9m^2 - 27m + 9m^3 =$ $3 \cdot m \cdot m - 3 \cdot 3 \cdot m + 3 \cdot 3 \cdot m \cdot m \cdot m$ $9m(m - 3 + m^2)$	Factor by GCF: $9 - 4x^2 =$ $(3)^2 - (2x)^2$ $(3 + 2x)(3 - 2x)$ $4x^2 - 16 =$ $(2x)^2 - (4)^2$ $(2x + 4)(2x - 4)$
$x^2 - 15x + 56 =$ $(x-7)(x-8)$ $2x^2 + 2x - 4 =$ $2(x^2 + x - 2)$ $2(x-1)(x+2)$	Factor by DOTS (Difference of Squares) $a = 3$ $b = 2x$ $a = 2x$ $b = 4$ $(2x+4)(2x-4)$
$x^2 - 15x + 56 =$ $(x-7)(x-8)$ $2x^2 + 2x - 4 =$ $2(x^2 + x - 2)$ $2(x-1)(x+2)$	Factor by a = 1 (Factors of c that add to b) -7×8 $1 \cdot 56$ $2 \cdot 28$ $4 \cdot 14$ $-4 \cdot 14$ $(-1 \cdot 2)$ $1 \cdot -2$
	Factor by a ≠ 1 (Bottoms Up Method) $9x^2 + 27x + 8 =$ $20x^2 - 38x + 12 =$

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~~x~~ Factor by a ≠ 1 (Bottoms Up Method) ~~NO GCF!~~

$x^2 + 27x + 8 =$
 $x^2 + 27x + 72$
 $(x+3)(x+24)$
 $(x+\frac{1}{3})(x+\frac{8}{3})$
 $(3x+1)(3x+8)$
 $20x^2 - 39x + 12 =$
 $2(10x^2 - 19x + 6)$
 $2(x^2 - 19x + 6)$
 $2(x-1)(x-18)$
 $2(x-\frac{1}{2})(x-\frac{3}{2})$
 $2(5x-2)(2x-3)$

March 13, 2019, Wednesday

1. Which expression is equivalent to $121x^2 - 64y^2$? ~~DOTS~~ $a^2 - b^2 = (a+b)(a-b)$

A. $(11x)^2 - (8y)^2$
 B. $(11x - 16)(11x + 16y)$
 C. $(11x + 8y)(11x - 8y)$
 D. $(11x + 8y)(11x - 8y)$

$a = 11x$
 $b = 8y$

G'

2. What is a common factor for the expression $24x^2 + 16x + 144$?
 A. $8x$
 B. $3x^2 + 2x + 18$
 C. $8(x^2 + 2x + 9)$
 D. $2(3x^2 + 2x + 18)$

$2(2x+3), 2(2x+3), 2(2x+3)$
 $(3x^2 + 2x + 18)$

3. Which of these shows the complete factorization of $6x^2 - 9xy - 42$?
 A. $3(2x^2 - 7)(xy + 2)$
 B. $(3x + 7)(2xy - 2)$
 C. $3(2x^2 - 7)(xy + 2)$
 D. $(3x + 7)(2xy - 2)$

Quiz 1-2 Find the GCF
 3-6 pick 3 only
 7-10 pick 3
 $3(xy+4)(xy-7)$
 $3(xy+2)(2xy-7)$

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March 14, 2019, Thursday

Consider the expression $3n^2 + n + 2$.

a. What is the coefficient of n ?
 b. Factor the expression $12x^2 + 14x - 6$.
 c. Factor the expression $16a^2 - 81$.

Algebra 1: Unit 3A Study Guide		
Factor out the Greatest Common Factor		
1. $2x - 8$	2. $15x - 3y$	3. $x^2y - 7xy + x^2y^2$
Factor trinomials when $a = 1$		
4. $x^2 - 14x - 15$	5. $x^2 - 12x + 36$	6. $y^2 + 8y + 7$
7. $a^2 - 11a + 10$	8. $m^2 + m - 90$	9. $n^2 + 4n - 12$
Factor out the difference of squares.		
10. $3a^2 - 75$	11. $b^2 - 81$	12. $2d^2 - 50$
Factor out the trinomials when a is greater than 1.		
13. $2x^2 - 5x - 3$	14. $3x^2 + 5x - 12$	15. $2x^2 + x - 15$
16. $5y^2 + 7y + 2$	17. $9x^2 - 6x + 1$	18. $2x^2 + 6x + 3$

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19. Which of the following correctly factors out the greatest common factor of $5x^2 + 20x$?	20. What is the correct factorization of $x^2 - 2x - 24$?	21. Which value of b would make $x^2 + bx - 20$ factorable?
a) $5(x^2 + 4)$ b) $5x(x^2 + 4)$ c) $5(x^2 + 4x)$ d) $5x(x^2 + 4x)$	a) $(x - 4)(x - 6)$ b) $(x - 2)(x + 12)$ c) $(x + 4)(x - 6)$ d) $(x - 4)(x + 6)$	a) 8 b) 4 c) 10 d) 2
22. The area of a rectangle is $3x^2 - 10x + 7$. The width is $3x - 7$. What is the length of the rectangle?	23. Determine whether $x^2 - 36$ is a difference of two squares. If so, choose the correct factorization.	24. When multiplied, which of the following gives you $x^2 + 2x - 37$?
a) $(x + 1)$ b) $(x - 7)$ c) $(x + 3)$ d) $(x - 1)$	a) No b) Yes; $(x - 6)^2$ c) Yes; $(x - 6)(x + 6)$ d) Yes; $(x + 6)^2$	a) $(x + 3)(x - 1)$ b) $(x - 3)(x + 1)$ c) $(x + 3)(x + 1)$ d) $(x - 3)(x - 1)$
25. Which expression is a factor of $2x^2 - x - 17$?	26. What type of equations do we factor?	27. Write an example of an expression that would be factored using both GCF and difference of perfect squares.
a) $2x - 1$ b) $2x + 1$ c) $x + 2$ d) $x - 2$		
Factor each expression completely.		
1. $7x^2 + 49$	2. $x^2 - 11x$	3. $3x^2 + 21x$
4. $4x^2 - 36$	5. $x^2 - 100$	6. $9x^2 - 4$

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7. $x^2 - 121$	8. $4x^2 - 1$	9. $49x^2 - 25$
10. $25x^2 - 9$	11. $2x^2 - 8$	12. $2x^2 - 98$
13. $x^2 + 5x + 4$	14. $x^2 - 21x - 22$	15. $x^2 + 13x + 40$
16. $x^2 + 34x - 72$	17. $x^2 + 10x - 11$	18. $x^2 - 14x + 24$
19. $x^2 + 8x + 12$	20. $x^2 + 5x - 24$	21. $x^2 + 7x - 30$
22. $x^2 - 3x - 54$	23. $x^2 - x - 72$	24. $x^2 + 17x + 16$
25. $x^2 + 6x - 40$	26. $x^2 + 21x + 98$	27. $x^2 + 20x + 84$
28. $x^2 + 2x - 63$	29. $x^2 + 10x + 77$	30. $x^2 - 2x - 35$
31. $5x^2 + 4x - 12$	32. $2x^2 - 5x - 7$	33. $2x^2 + 13x + 15$
34. $3x^2 - 7x - 6$	35. $3x^2 + 16x + 21$	36. $4x^2 - 4x - 15$
37. $4x^2 + 12x + 9$	38. $2x^2 - 9x + 4$	39. $10x^2 - 17x + 3$
40. $2x^2 - 5x - 3$	41. $4x^2 - 5x - 6$	42. $2x^2 - 10x - 28$

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March 15, 2019, Friday

Factor completely, if possible...

$2x^2 + 4x - 30 =$

$x^4 + 5x^2 + 4 =$

$x^4 - y^4 =$

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Factor the common factor out of each expression. Circle your final answer.

1) $20r^6 + 8r^2$
2) $40n^2 + 40n + 56$

Factor each completely.

3) $25p^2 - 4$
4) $a^2 - 3a - 28$

5) $n^2 - 3n - 4$
6) $r^2 - 1$

7) $3n^2 + 19n - 40$
8) $9x^2 - 38x + 8$

9) $5a^2 + 6a - 8$
10) $9n^2 - 46n + 5$

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19. Which of the following correctly factors out the greatest common factor of $5x^2 + 20x$?	20. What is the correct factorization of $x^2 - 2x - 24$?	21. Which value of b would make $x^2 + bx - 20$ factorable?
a) $5(x^2 + 4)$ b) $5x(x^2 + 4)$ c) $5(x^2 + 4x)$ d) $5x(x^2 + 4x)$	a) $(x - 4)(x - 6)$ b) $(x - 2)(x + 12)$ c) $(x + 4)(x - 6)$ d) $(x - 4)(x + 6)$	a) 8 b) 4 c) 10 d) 2
22. The area of a rectangle is $3x^2 - 10x + 7$. The width is $3x - 7$. What is the length of the rectangle?	23. Determine whether $x^2 - 36$ is a difference of two squares. If so, choose the correct factorization.	24. When multiplied, which of the following gives you $x^2 + 2x - 37$?
a) $(x + 1)$ b) $(x - 7)$ c) $(x + 3)$ d) $(x - 1)$	a) No b) Yes; $(x - 6)^2$ c) Yes; $(x - 6)(x + 6)$ d) Yes; $(x + 6)^2$	a) $(x + 3)(x - 1)$ b) $(x - 3)(x + 1)$ c) $(x + 3)(x + 1)$ d) $(x - 3)(x - 1)$
25. Which expression is a factor of $2x^2 - x - 17$?	26. What type of equations do we factor?	27. Write an example of an expression that would be factored using both GCF and difference of perfect squares.
a) $2x - 1$ b) $2x + 1$ c) $x + 2$ d) $x - 2$		

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