

March 11, 2019, Monday

SAMPLE ITEMS

1. In which expression is the coefficient of the n term -17 ?

A. $3n^2 + 5n + 1$
 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 $8x$ ✓

Handwritten notes: $s = \text{side}$, $s = 8x$, $s^2 = (8x)^2$

Intro to Factoring Quadratics

1. Find two numbers that sum to 6 and have a product of 12. $2, 4$
 2. Find two numbers that sum to 5 and have a product of 0. $0, 5$
 3. Find two numbers that sum to 5 and have a product of -14 . $-2, -7$
 4. Find two numbers that sum to -8 and have a product of 42 . $-2, -6$
 5. Find two numbers that sum to 16 and have a product of 15. $1, 15$
 6. Find two numbers that sum to -4 and have a product of -21 . $-3, -7$
 7. Find two numbers that sum to 0 and have a product of -56 . $-7, 8$
 8. Find two numbers that sum to -14 and have a product of 40 . $-4, -10$
 9. Find two numbers that sum to 0 and have a product of -25 . $-5, 5$
 10. Find two numbers that sum to 8 and have a product of 16. $4, 4$

11. Multiply the following:

a. $(x+3)(x+6) = x^2 + 6x + 3x + 18 = x^2 + 9x + 18$
 b. $(x+7)(x-2) = x^2 - 2x + 7x - 14 = x^2 + 5x - 14$

Handwritten notes: $6+3=9$, $6 \cdot 3 = 18$, $7+(-2)=5$, $7 \cdot (-2) = -14$

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

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

MCC.9-12.A.SSE.3a: I can factor a quadratic expression to reveal the zeroes of the function it defines. Now let's factor trinomials! (3 terms)

Remember, we use multiplication.

Example 1: $x^2 + 5x + 6$
 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)? $1, 6$ and $2, 3$. Which pair adds to be 5? $(2, 3)$

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. $x^2 - 3x - 10$ $(x+3)(x-4)$	6. $x^2 - 2x - 24$ $(x-6)(x+4)$
7. $x^2 - 6x + 8$ $(x-2)(x-4)$	8. $x^2 - 11x + 24$ $(x-3)(x-8)$

GSE Algebra I Unit 3A - Factoring Quadratics

Name _____ Date _____

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

Factor each trinomial 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. $x^2 + 7x - 18$ $(x+9)(x-2)$
7. $x^2 - 6x - 16$ $(x+2)(x-8)$	8. $2x^2 + 12x + 18x$ GCF $2x(x+9)$ $2x(x+3)(x+3)$
9. $3x^2 + 12x - 63$ $3(x+7)(x-3)$	10. $2x^2 - 6x^2 - 20x$ $-4x(x+5)$

Algebra I Factoring In-Class Assignment

Factor the common factor out of each expression.

1) $-24x^2 + 36x + 24$
 $6(-4x^2 + 5x + 4)$

2) $-35r + 45$
 $5(-7r + 9)$

3) $70t^5 + 63t^2 - 42t$
 $7t(10t^3 + 9t - 6)$

4) $63r^3 - 28$
 $7(9r^3 - 4)$

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) $m^2 - 1$
 $(m+1)(m-1)$

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

10) $r^2 - 30r - 30$
 $(r-3)(r+10)$

Factor each completely. ALL have a GCF!!!

11) $5a^2 + 17a + 6$

12) $2x^2 - 15x + 28$

13) $8x^2 + 30x + 7$

14) $4x^2 - 17x + 4$

15) $3x^2 - 21x + 30$

16) $2x^2 + 18x - 20$

17) $4m^2 - 4$

18) $6x^2 + 30x - 36$

19) $4b^2 - 26b + 36$

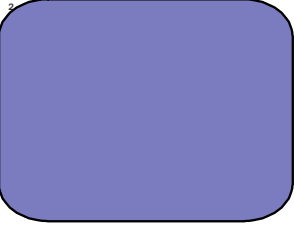
20) $20p^2 + 38p + 14$

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. $56x^2 - 3x + 20$

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



Factor by GCF:

$6^2 a^2 + 48b^2 = 6 \cdot 3 \cdot 3 \cdot b \cdot b + 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot b \cdot b$
 $6b^2(9a + 8)$

$9m^2 - 27m + 9m^3 = 3 \cdot 3 \cdot m \cdot m - 3 \cdot 3 \cdot 3 \cdot m + 3 \cdot 3 \cdot m \cdot m \cdot m$
 $9m(m - 3 + m^2)$

Factor by a = 1 (Factors of c that add to b)

$x^2 - 15x + 56 = (x - 7)(x - 8)$

$2x^2 + 2x - 4 = 2(x^2 + x - 2) = 2(x - 1)(x + 2)$

Factor by a ≠ 1 (Bottoms Up Method)

$9x^2 + 27x + 8 =$

$20x^2 - 38x + 12 =$

$a^2 - b^2 = (a+b)(a-b)$

$9 - 4x^2 = (3)^2 - (2x)^2 = 3 - 2x$

$4x^2 - 16 = (2x)^2 - (4)^2 = 2x - 4$

* Factor by a ≠ 1 (Bottoms Up Method)

$x^2 + 27x + 8 = (x + 3)(x + 24)$

$20x^2 - 38x + 12 = 2(x^2 - 19x + 6) = 2(x - 4)(x - 15)$

$2(x - \frac{3}{2})(x - \frac{3}{2})$

$2(5x - 2)(2x - 3)$

$1 \cdot 72$
 $2 \cdot 36$
 $3 \cdot 24$

$1 \cdot 60$
 $2 \cdot 30$
 $3 \cdot 20$
 $4 \cdot 15$
 $6 \cdot 12$

March 13, 2019, Wednesday

1. Which expression is equivalent to $121x^2 - 64y^2$?

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

$(11x)^2 - (8y)^2 = (11x + 8y)(11x - 8y)$

Answers to Unit 1. D 2. C

2. What is a common factor for the expression $24x^2 + 16x + 44$?

A. 16
 B. $8x$
 C. $3x^2 + 2x + 38$
 D. $8x^2 - 2(2x + 11)$

GCF = 8

3. Which of these shows the complete factorization of $3x^2y^2 - 3xy - 14$?

A. $3(2xy^2 - 7)(xy^2 + 2)$
 B. $(3xy + 6)(2xy - 7)$
 C. $3(2xy - 7)(xy + 2)$
 D. $(3xy^2 + 6)(2xy^2 - 7)$

Quiz 1-2 Find the GCF
 3-6 pick 3 only
 7-10 pick 3

March 14, 2019, Thursday

Consider the expression $3n^2 + 7n + 2$.

a. What is the coefficient of n ?

1

HAPPY π DAY

Factor the expression $12x^2 + 14x - 6$.

$2(6x^2 + 7x - 3)$

$2(x^2 + 7x - 18)$

$2(x + 9)(x - 2)$

$2(x + \frac{3}{2})(x - \frac{3}{2})$

$2(2x + 3)(3x - 1)$

Algebra 1: Unit 3A Study Guide

Name: _____

Factor out the Greatest Common Factor

1. $2x - 8 = 2(x - 4)$

2. $\frac{15x}{3} = 5x$

3. $xy^2 - 7xy + x^2y^2 = xy(x^2 - 7 + xy)$

Factor trinomials when a = 1

4. $x^2 - 14x + 15 = (x - 15)(x + 1)$

5. $x^2 - 12x + 36 = (x - 6)(x - 6)$

6. $b^2 + 8b + 7 = (b + 1)(b + 7)$

7. $n^2 - 11n + 10 = (n - 1)(n - 10)$

8. $m^2 + m - 90 = (m - 9)(m + 10)$

9. $n^2 + 4n - 12 = (n - 2)(n + 6)$

Factor out the difference of squares

10. $3n^2 - 25 = 3(n^2 - \frac{25}{3})$

11. $n^2 - 9 = (n - 3)(n + 3)$

12. $25d^2 - 5 = 5(5d^2 - 1) = 5(5d - 1)(5d + 1)$

13. $x^2 - 5x - 6 = (x - 6)(x + 1)$

14. $5x^2 + 5x - 2 = (5x - 2)(x + 1)$

15. $2x^2 + 11x - 3 = (2x - 1)(x + 3)$

16. $x^2 + 7x + 10 = (x + 2)(x + 5)$

17. $9x^2 - 6x + 1 = (3x - 1)^2$

18. $2x^2 + 6x + 4 = 2(x + 1)(x + 2)$

19. $x^2 + 6x + 16$ NOT FACTORABLE

<p>19. Which of the following correctly factors out the greatest common factor of $5x^2 + 20x$?</p> <p>a) $5(x^2 + 4)$ b) $5x(x^2 + 4)$ c) $5(x^2 + 4x)$ d) $5x(x^2 + 4x)$</p>	<p>20. What is the correct factorization of $x^2 - 2x - 24$?</p> <p>a) $(x - 4)(x - 6)$ b) $(x - 2)(x + 12)$ c) $(x + 4)(x - 6)$ d) $(x - 4)(x + 6)$</p>	<p>21. Which value of b would make $x^2 + bx - 20$ factorable?</p> <p>a) 8 b) 4 c) 10 d) 2</p>
<p>22. The area of a rectangle is $3x^2 - 10x + 7$. The width is $3x - 7$. What is the length of the rectangle?</p> <p>a) $(x + 1)$ b) $(x - 7)$ c) $(x + 3)$ d) $(x - 1)$</p>	<p>23. Determine whether $x^2 - 36$ is a difference of two squares. If so, choose the correct factorization.</p> <p>a) No b) Yes: $(x - 6)^2$ c) Yes: $(x - 6)(x + 6)$ d) Yes: $(x + 6)^2$</p>	<p>24. When multiplied, which of the following gives you $x^2 + 2x - 3$?</p> <p>a) $(x + 3)(x - 1)$ b) $(x - 3)(x + 1)$ c) $(x + 3)(x + 1)$ d) $(x - 3)(x - 1)$</p>
<p>25. Which expression is a factor of $2x^2 - x - 1$?</p> <p>a) $2x - 1$ b) $2x + 1$ c) $x + 2$ d) $x - 2$</p>	<p>26. What type of equations do we factor?</p> <p style="color: red; font-size: 1.2em;">quadratics $2(x^2 - 16)$ $2x^2 - 32$</p>	<p>27. Write an example of an expression that would be factored using both GCF and difference of perfect squares.</p>
<p>Factor each expression completely.</p> <p>1. $7x^2 + 49$ 2. $x^2 - 11x$ 3. $3x^2 + 21x$</p> <p>4. $4x^2 - 36$ 5. $x^2 - 100$ 6. $9x^2 - 4$</p>		

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. $x^2 + 18x + 77$	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. $2x^2 - 10x - 28$

March 15, 2019, Friday

Factor completely, if possible...

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

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

$x^4 - y^4 =$

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

1) $20n^5 + 8r^2$ 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) $9n^2 - 46n + 5$

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