

March 11, 2019, Monday

**SAMPLE ITEMS**

1. 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  $(8s)^2$  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  $4s$  ✓  
 D. the area of a square with a side length of  $8s$  ✓

$s = \text{side}$   
 $s = 8x$   
 $(8x)^2$

Mar 6-8:21 AM

**Intro to Factoring Quadratics**

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

11. Multiply the following:

a.  $(x+6)(x+3)$   
 $6+3=9$   
 $6 \cdot 3 = 18$   
 $x^2 + 3x + 6x + 18$

b.  $(x+7)(x-2)$   
 $7-2=5$   
 $7 \cdot -2 = -14$   
 $x^2 + 5x - 14$

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

Mar 11-7:57 AM

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

MCC9-12.A.5E.3a-1 can factor a quadratic expression to reveal the zeros of the function it defines.

Now let's factor trinomials (3 terms)

- Remember, we undo multiplying!

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

1. Is there a GCF? Yes or 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 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. $x^2 - x - 6$ $(x+3)(x-4)$	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!

1. $x^2 - 5x - 14$ $(x-7)(x+2)$	2. $x^2 - 2x - 24$ $(x-4)(x+6)$
3. $x^2 + x - 20$ $(x+6)(x-11)$	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. $x^2 - 6x - 16$ $(x-8)(x+2)$	8. $2x^2 + 12x + 18$ GCF: $2x(x+3)(x+3)$
9. $3x^2 + 12x - 63$ $3(x+7)(x-3)$	10. $2x^2 - 6x^2 - 20x$ $-4x^2 - 20x$

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Algebra I Name \_\_\_\_\_ ID: 1

Factoring In-Class Assignment

Factor the common factor out of each expression.

1)  $-24x^2 + 30x + 24$       2)  $-35x + 45$

3)  $70x^2 + 63x^2 - 42x$       4)  $63x^2 - 28$

Factor each completely.

5)  $p^2 - 9p + 14$       6)  $a^2 - 81$

7)  $x^2 - 31x - 4$       8)  $m^2 - 1$

9)  $m^2 - 8m + 16$       10)  $r^2 + 2r - 80$

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

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

Factor each completely. ALL have a GCF!!!

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

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


19)  $48x^2 - 26x + 36$       20)  $20p^2 + 38p + 14$

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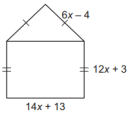
March 12, 2019, Tuesday

1. What is the product of  $7x - 4$  and  $8x + 5$ ?

A.  $15x + 1$   
 B.  $30x + 2$   
 C.  $56x^2 + 3x - 20$   
 D.  $56x^2 - 3x + 20$



2. A model of a house is shown.



What is the perimeter, in units, of the model?

A.  $32x + 12$   
 B.  $46x + 25$   
 C.  $50x + 11$   
 D.  $64x + 24$

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<p><b>Factor by GCF:</b></p> <p><math>54b^3 + 48b^2 =</math></p> <p><math>9m^2 - 27m + 9m^3 =</math></p>	<p><b>Factor by DOTS (Difference of 2 Squares)</b></p> <p><math>9 - 4x^2 =</math></p> <p><math>4x^2 - 16 =</math></p>
<p><b>Factor by a = 1 (Factors of c that add to b)</b></p> <p><math>x^2 - 15x + 56 =</math></p> <p><math>2x^2 + 2x - 4 =</math></p>	<p><b>Factor by a ≠ 1 (Bottoms Up Method)</b></p> <p><math>9x^2 + 27x + 8 =</math></p> <p><math>20x^2 - 38x + 12 =</math></p>

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March 13, 2019, Wednesday

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

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

2. What is a common factor for the expression  $24x^2 + 16x + 144$ ?

A. 18  
 B. 8x  
 C.  $3x^2 + 2x + 18$   
 D.  $8(x - 2)(3x^2 + 9)$

3. Which of these shows the complete factorization of  $6x^2y^2 - 9xy - 42$ ?

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

Answers to Unit 3.1 Sample Items  
 1. D 2. C 3. C

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March 14, 2019, Thursday

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

a. What is the coefficient of  $n$ ?

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

◆ Factor the expression  $16a^2 - 81$ .

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Algebra 1: Unit 3A Study Guide

Name: \_\_\_\_\_

Factor out the Greatest Common Factor		
1. $2x - 6$	2. $15x - 3y$	3. $xy - 7xy + x^2y$
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. $a^2 + 4a - 12$
Factor out the difference of squares.		
10. $3x^2 - 75$	11. $A^2 - 81$	12. $2a^2 - 50$
Factor out the trinomials when $a$ is greater than 1.		
13. $2a^2 - 5a - 3$	14. $3a^2 + 5a - 12$	15. $2a^2 + a - 15$
16. $5a^2 + 7a + 2$	17. $9a^2 - 6a + 1$	18. $2a^2 + 6a + 3$

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<p>19. Which of the following correctly factors out the greatest common factor of <math>5x^4 + 20x^3</math>?</p> <p>a) <math>5(x^4 + 4)</math>                  b) <math>5x^3(x + 4)</math>                  c) <math>5(x^2 + 4x)</math>                  d) <math>5x^3(x + 4x)</math></p>	<p>20. What is the correct factorization of <math>x^2 - 2x - 24</math>?</p> <p>a) <math>(x - 4)(x - 6)</math>                  b) <math>(x - 2)(x + 12)</math>                  c) <math>(x + 4)(x - 6)</math>                  d) <math>(x - 4)(x + 6)</math></p>	<p>21. Which value of <math>b</math> would make <math>x^2 + bx - 20</math> factorable?</p> <p>a) 8                  b) 4                  c) 10                  d) 2</p>
<p>22. The area of a rectangle is <math>3x^2 - 10x + 7</math>. The width is <math>3x - 7</math>. What is the length of the rectangle?</p> <p>a) <math>(x + 1)</math>                  b) <math>(x - 7)</math>                  c) <math>(x + 3)</math>                  d) <math>(x - 1)</math></p>	<p>23. Determine whether <math>x^2 - 36</math> is a difference of two squares. If so, choose the correct factorization.</p> <p>a) No                  b) Yes; <math>(x - 6)^2</math>                  c) Yes; <math>(x - 6)(x + 6)</math>                  d) Yes; <math>(x + 6)^2</math></p>	<p>24. When multiplied, which of the following gives you <math>x^2 + 2x - 3</math>?</p> <p>a) <math>(x + 3)(x - 1)</math>                  b) <math>(x - 3)(x + 1)</math>                  c) <math>(x + 3)(x + 1)</math>                  d) <math>(x - 3)(x - 1)</math></p>
<p>25. Which expression is a factor of <math>2x^3 - x^2 - 17</math>?</p> <p>a) <math>2x - 1</math>                  b) <math>2x + 1</math>                  c) <math>x + 2</math>                  d) <math>x - 2</math></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>
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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