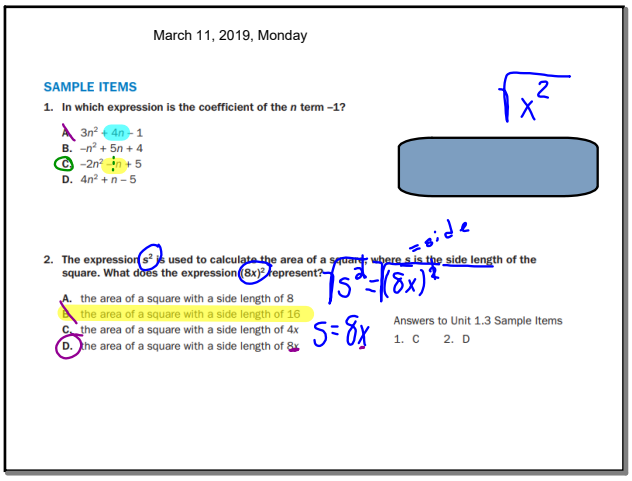


March 11, 2019, Monday

SAMPLE ITEMS

1. In which expression is the coefficient of the *n* term –1?

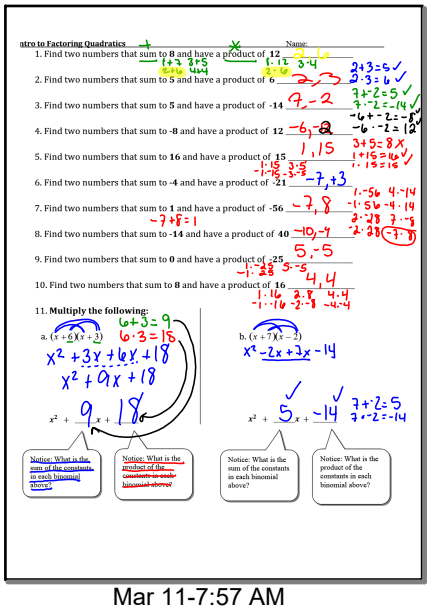
A. $3n^2 + 4n - 1$
B. $-n^2 + 5n + 4$
C. $-2n^2 - n + 5$
D. $4n^2 + n - 5$

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

Answers to Unit 1.3 Sample Items
1. C 2. D

Mar 6-8:21 AM



Intro to Factoring Quadratics Name:

1. Find two numbers that sum to **8** and have a product of **12**
2. Find two numbers that sum to **5** and have a product of **6**
3. Find two numbers that sum to **5** and have a product of **-14**
4. Find two numbers that sum to **-8** and have a product of **12**
5. Find two numbers that sum to **16** and have a product of **15**
6. Find two numbers that sum to **-4** and have a product of **-21**
7. Find two numbers that sum to **1** and have a product of **-56**
8. Find two numbers that sum to **-14** and have a product of **40**
9. Find two numbers that sum to **0** and have a product of **-25**
10. Find two numbers that sum to **8** and have a product of **16**
11. **Multiply the following:**

a. $(x+6)(x+3)$ b. $(x+7)(x-2)$

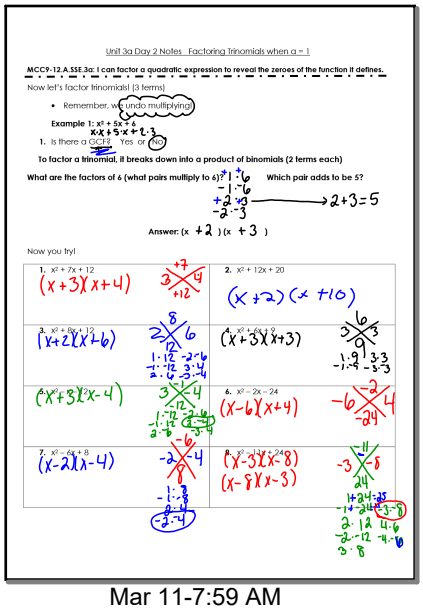
Notice: What is the sum of the constants in each binomial above?

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.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 "undo multiplying"

Example 1: $x^2 + 5x + 6$

1. Is there a GCF? Yes or No

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

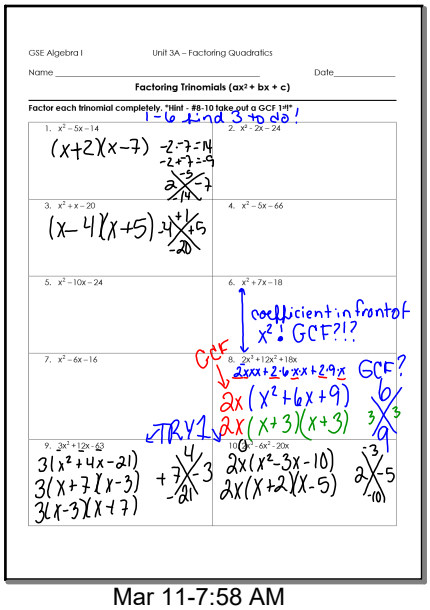
What are the factors of 6 (what pairs multiply to 6)? **Which pair adds to be 5?**

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

Now you try!

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

Mar 11-7:59 AM



GSE Algebra I Unit 3A – Factoring Quadratics

Name _____ Date _____

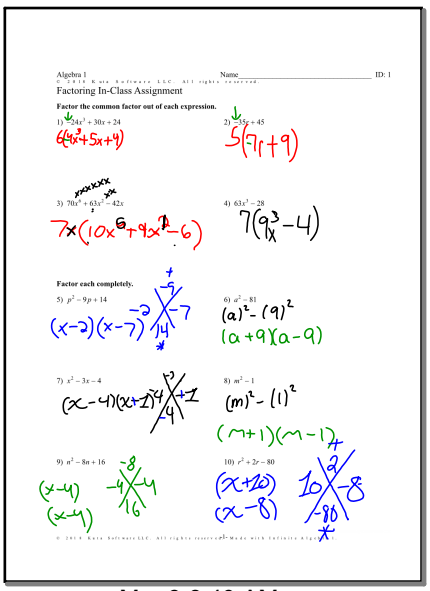
Factoring Trinomials ($ax^2 + bx + c$)

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

1. $x^2 - 5x - 14$
2. $x^2 - 2x - 24$
3. $x^2 + x - 20$
4. $x^2 - 5x - 66$
5. $x^2 - 10x - 24$
6. $x^2 + 7x - 18$
7. $x^2 - 6x - 16$
8. $2x^2 + 12x^2 + 10x$
9. $3x^2 + 12x - 63$
10. $10x^3 - 6x^2 - 20x$

coefficient in front of x^2 GCF?!?

Mar 11-7:58 AM



Algebra 1 Name _____ ID: 1

Factoring In-Class Assignment

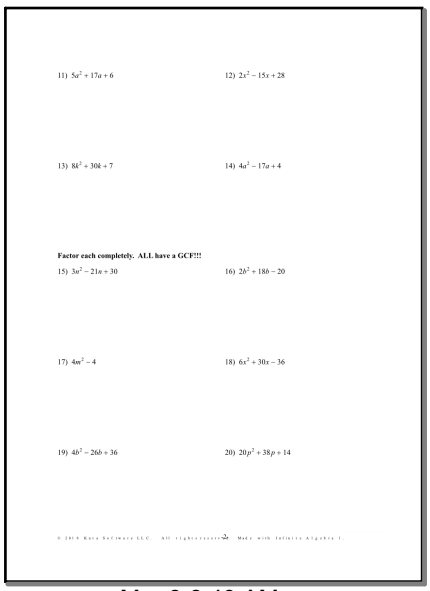
Factor the common factor out of each expression.

1) $-24x^2 + 30x + 24$
2) $-5x + 45$
3) $70x^3 + 63x^2 - 42x$
4) $63x^3 - 28$

Factor each completely.

5) $p^2 - 9p + 14$
6) $a^2 - 81$
7) $x^2 - 3x - 4$
8) $m^2 - 1$
9) $n^2 - 8n + 16$
10) $r^2 + 2r - 80$

Mar 6-8:40 AM



11) $5a^2 + 17a + 6$
12) $2x^2 - 15x + 28$
13) $8k^2 + 30k + 7$
14) $4a^2 - 17a + 4$

Factor each completely. ALL have a GCF!!!

15) $3a^2 - 21a + 30$
16) $2b^2 + 18b - 20$
17) $4m^2 - 4$
18) $6x^2 + 30x - 36$
19) $4b^2 - 26b + 36$
20) $20p^2 + 38p + 14$

Mar 6-8:40 AM

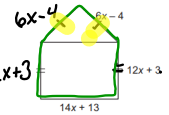
March 12, 2019, Tuesday

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

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

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

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. $64x + 24$

$6x-4+6x-4+12x+3+14x+13$
$+12x+3$
$50x + 11$

Mar 6-8:42 AM

Factor by GCF:

$54b^3 + 48b^2 =$
$2\cdot3\cdot3\cdot3\cdot b\cdot b\cdot b + 2\cdot2\cdot2\cdot2\cdot3\cdot b\cdot b$
$6b^2(9b + 8)$

$9m^2 - 27m + 9m^3 =$
$3\cdot3\cdot m\cdot m - 3\cdot3\cdot3\cdot m + 3\cdot3\cdot m\cdot m\cdot m$
$9m(m - 3 + m^2)$

Factor by DOTS (Difference of 2 Squares)

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

$9 - 4x^2 =$
$(3)^2 - (2x)^2$ $a=3$ $b=2x$
$(3+2x)(3-2x)$

$4x^2 - 16 =$
$(2x)^2 - (4)^2$ $a=2x$ $b=4$
$(2x+4)(2x-4)$

$a \neq 1$, NO GCF

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 $a \neq 1$ (Bottoms Up Method)

$x^2 + 27x + 8 =$
$x^2 + 27x + 72$
$(x+3)(x+24)$
$(x+3)(x+8)$

$20x^2 - 38x + 12 =$
$(3x+8)(3x+1)$

Mar 6-8:42 AM

$20x^2 - 38x + 12 =$
$2(10x^2 - 19x + 6)$
$2(x^2 - 19x + 60)$
$2(x-4)(x-15)$
$2(x-\frac{8}{10})(x-\frac{30}{10})$
$2(5x-2)(2x-3)$

Mar 12-9:21 AM

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. $(11x + 8y)(11x - 8y)$

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

A. 16
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

Mar 6-8:44 AM

March 14, 2019, Thursday

Consider the expression $3n^2 + n + 2$.
a. What is the coefficient of n? 1

b) What is the coefficient of n^2? 3

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

$(4a)^2 - (9)^2$
$(4a+9)(4a-b)$

Factor the expression $12x^2 + 14x - 6$ (no common factor)

$12 = 4\cdot3 = 2\cdot2\cdot3$
$14 = 2\cdot7$
$6 = 2\cdot3$

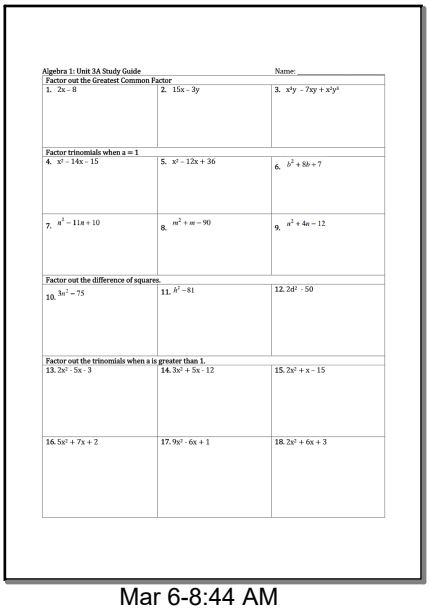
$2\cdot2\cdot3\cdot x\cdot x + 2\cdot7\cdot x - 2\cdot3$

$2(6x^2 + 7x - 3)$
$2(x^2 + 7x - 18)$
$2(x-2)(x+9)$
$2(x-\frac{2}{6})(x+\frac{18}{6})$
$2(3x-1)(2x+3)$

Mar 6-8:59 AM

Quiz
13, 2 only have a GCF
3 - 6 choose 3
7 - 10 choose 3

Mar 13-9:03 AM



Algebra 1: Unit 3A Study Guide Name: _____

Factor out the Greatest Common Factor

1. $2x - 8$	2. $15x - 3y$	3. $x^3y - 7xy + x^2y^3$

Factor trinomials when a = 1

4. $x^2 - 14x - 15$	5. $x^2 - 12x + 36$	6. $b^2 + 8b + 7$
7. $n^2 - 11n + 10$	8. $m^2 + m - 90$	9. $n^2 + 4n - 12$

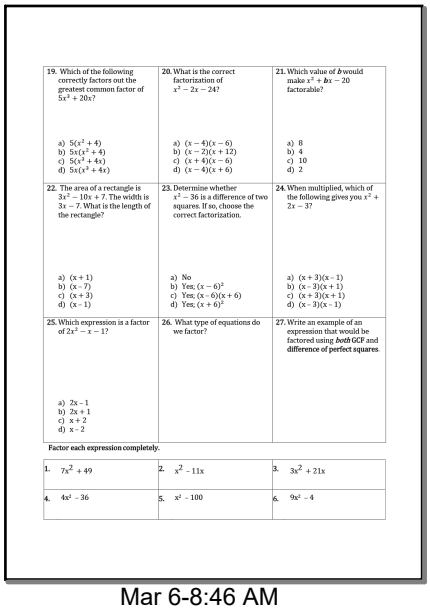
Factor out the difference of squares.

10. $3n^2 - 75$	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. $5x^2 + 7x + 2$	17. $9x^2 - 6x + 1$	18. $2x^2 + 6x + 3$

Mar 6-8:44 AM

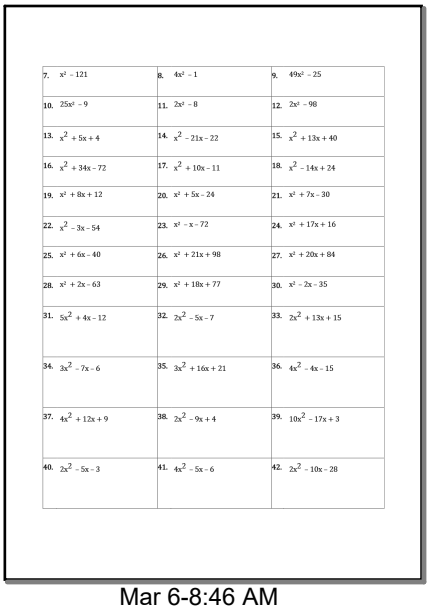


19. Which of the following correctly factors out the greatest common factor of $5x^4 + 20x$? a) $5(x^2 + 4)$ b) $5x(x^2 + 4)$ c) $5(x^4 + 4x)$ d) $5x(x^3 + 4x)$	20. What is the correct factorization of $x^2 - 2x - 24$? a) $(x - 4)(x - 6)$ b) $(x - 2)(x + 12)$ c) $(x + 4)(x - 6)$ d) $(x - 4)(x + 6)$	21. Which value of b would make $x^2 + bx - 20$ factorable? 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? a) $(x + 1)$ b) $(x - 7)$ c) $(x + 3)$ d) $(x - 1)$	23. Determine whether $x^2 - 36$ is a difference of two squares. If so, choose the correct factorization. a) No b) Yes; $(x - 6)^2$ c) Yes; $(x - 6)(x + 6)$ d) Yes; $(x + 6)^2$	24. When multiplied, which of the following gives you $x^2 + 2x - 3$? 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 $2x^2 - x - 1$? a) $2x - 1$ b) $2x + 1$ c) $x + 2$ d) $x - 2$	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**.

Factor each expression completely.

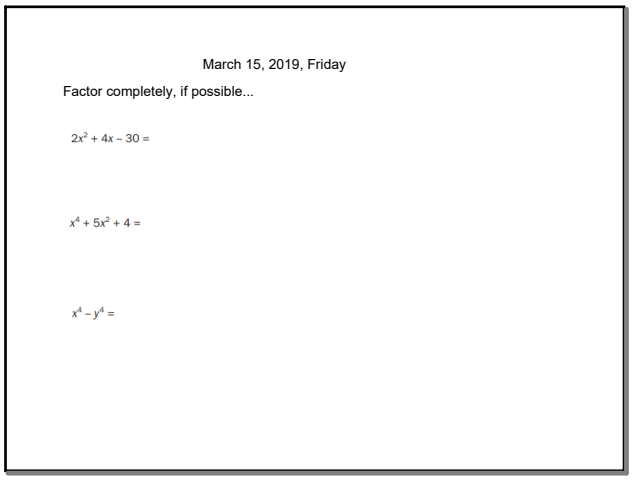
1. $7x^2 + 49$	2. $x^2 - 11x$	3. $3x^2 + 21x$
4. $4x^2 - 36$	5. $x^2 - 100$	6. $9x^2 - 4$

Mar 6-8:46 AM



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. $2x^2 - 10x - 28$

Mar 6-8:46 AM



March 15, 2019, Friday

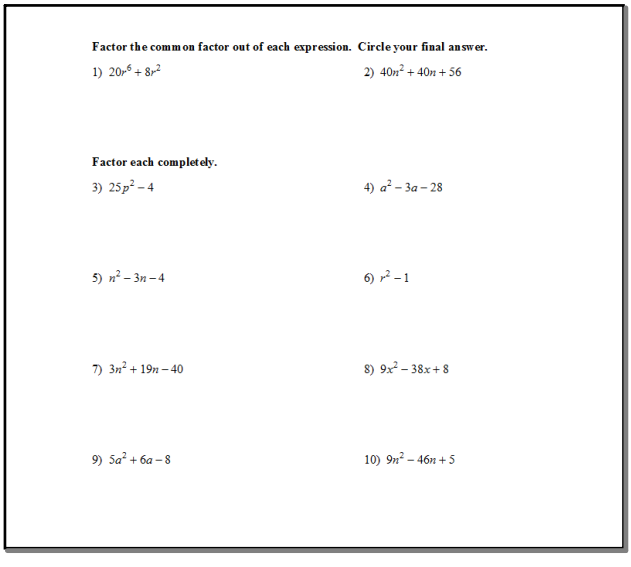
Factor completely, if possible...

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

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

$x^4 - y^4 =$

Mar 6-9:01 AM



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) $r^2 - 1$

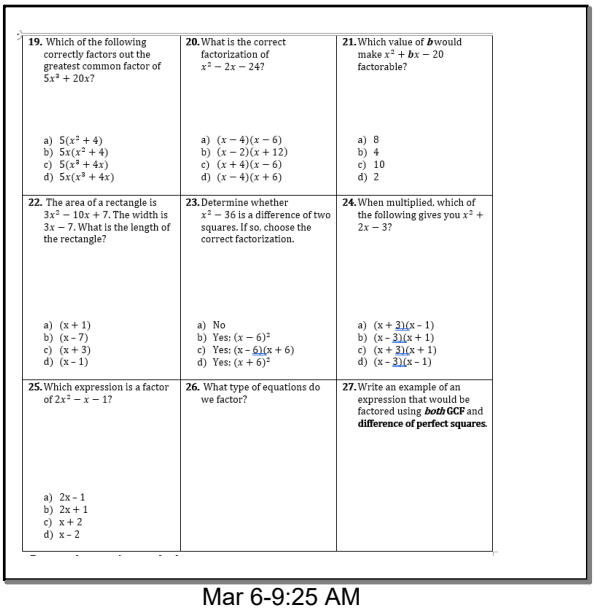
7) $3n^2 + 19n - 40$

8) $9x^2 - 38x + 8$

9) $5a^2 + 6a - 8$

10) $9n^2 - 46n + 5$

Mar 6-9:24 AM



19. Which of the following correctly factors out the greatest common factor of $5x^4 + 20x$? a) $5(x^2 + 4)$ b) $5x(x^2 + 4)$ c) $5(x^4 + 4x)$ d) $5x(x^3 + 4x)$	**20.** What is the correct factorization of $x^2 - 2x - 24$? a) $(x - 4)(x - 6)$ b) $(x - 2)(x + 12)$ c) $(x + 4)(x - 6)$ d) $(x - 4)(x + 6)$	**21.** Which value of b would make $x^2 + bx - 20$ factorable? 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? a) $(x + 1)$ b) $(x - 7)$ c) $(x + 3)$ d) $(x - 1)$	**23.** Determine whether $x^2 - 36$ is a difference of two squares. If so, choose the correct factorization. a) No b) Yes; $(x - 6)^2$ c) Yes; $(x - 6)(x + 6)$ d) Yes; $(x + 6)^2$	**24.** When multiplied, which of the following gives you $x^2 + 2x - 3$? 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 $2x^2 - x - 1$? a) $2x - 1$ b) $2x + 1$ c) $x + 2$ d) $x - 2$	**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**.

Mar 6-9:25 AM