Name: Answers Period: _____

Algebra 1

Chapter 8 Part 2: Quadratic Expressions and Equations

Targets	Learning Targets	SQ Scores	List of problems to ask about:
T8-4	I can factor polynomials using the GCF (distributive property).		
T8-5	I can factor trinomials and binomials with a leading coefficient of one using any method.		
T8-6	I can factor trinomials and binomials with a leading coefficient greater than one using any method		
T8-7	I can use factoring and the zero product property to solve quadratic equations.		
T8-0	Computational Fluency – I can recite aloud the squares and square roots of the numbers 1-20.		

Target	Lesson/Activity	Homework Assignment o = only do odd problems	Finished? 1pt per stamp
4/20	Ch 8 Part 1 Test	Greatest Common Factor (GCF) **WS**	
4/22 **T8-4**	8.5 Greatest Common Factor Using the Distributive Property	8.5 Factoring by using GCF **WS**	
4/24 **T8-5**	8.6 Factoring a < 1	8.6 Pg. 507 #1-4all, 12-19all, 31, 41, 60 **Extra stamp for problem #40!**	
4/28 **T8-6**	8.7 Factoring by Grouping	8.7 Factoring by Grouping **WS**	
4/30 **T8-6**		Stamp for Factoring Connect Four Participation 8.7 Pg. 513 #10-22all	
5/4 **T8-6**	8.8 Difference of Squares 8.9 Perfect Squares	8.8 Pg. 519 #15-29o, **57** 8.9 Pg. 527 #23-33o, 81,83	
5/6 **T8-7**	Zero Product Property Solving by Factoring	Factoring (to solve) **WS**	
5/8	ART/Review	Review **Pg 532 #35-63o, 64, 65-83o**	
5/12	Chapter 8 Test Part 2	**You need 5 Stamps to be able to Retake **	

Helpful Videos Ch 8 Part 2
Search by the name of section/target topic at www.khanacademy.org

Retake Problems for Ch. 8 Part 1

T8-1	Retake WS
T8-2	Retake WS
T8-3	Retake WS

ANSWER KEY

Greatest Common Factor

When you find all the factors of two or more numbers, and you find some factors are the same ("common"), the largest of those common factors is the **Greatest Common Factor (GCF)**.

What are the factors of 12?	1, 2, 3, 4, 6, and 12
What are the factors of 20?	1, 2, 4, 5, 10, and 20
Which are the common factors?	1, 2, and 4
What is the GCF?	4

1. Find the GCF of 8 and 12.

List the factors of 8. 1, 2, 4, and 8

List the factors of 12. 1, 2, 3, 4, 6, and 12

List the common factors. 1, 2, and 4

What is the GCF? 4

2. Find the GCF of 15 and 20.

List the factors of 15. 1, 3, 5, and 15

List the factors of 20. 1, 2, 4, 5, and 20

List the common factors. 1 and 5

What is the GCF? 5

3. Find the GCF of 21 and 35.

List the factors of 21. 1, 3, 7, and 21

List the factors of 35. 1, 5, 7, and 35

List the common factors. 1 and 7

What is the GCF? 7

4. Find the GCF of 6 and 18.

List the factors of 6. 1, 2, 3, and 6

List the factors of 18. 1, 2, 3, 6, 9, 18

List the common factors. 1, 2, 3, and 6

What is the GCF? 6

Finding the Greatest Common Factor

Name: **Answer Key**

Determine the Greatest Common Factor (GCF) for the following problems.

Example

Ex) 12 , 15 To find the GCF of 12 & 15, first write down the factors of each number.

Factors of 12 **1 , 2 , 3 , 4 , 6 , 12**

Factors of 16 **1 , 2 , 4 , 8 16**

2 & 4 are factors both 12 and 16 have in common, with 4 being the greatest. So **4** is the GCF.

1) 9 , 6

9 **1 , 3 , 9**

6 **1 , 2 , 3 , 6**

2) 20 , 15

20 **1 , 2 , 4 , 5 , 10 , 20**

15 **1 , 3 , 5 , 15**

3) 20 , 28

20 **1 , 2 , 4 , 5 , 10 , 20**

28 **1 , 2 , 4 , 7 , 14 , 28**

4) 18 , 2

18 **1 , 2 , 3 , 6 , 9 , 18**

2 **1 , 2**

5) 42 , 12

42 **1 , 2 , 3 , 6 , 7 , 14 , 21 , 42**

12 **1 , 2 , 3 , 4 , 6 , 12**

6) 22 , 16

22 **1 , 2 , 11 , 22**

16 **1 , 2 , 4 , 8 , 16**

7) 20 , 30

20 **1 , 2 , 4 , 5 , 10 , 20**

30 **1 , 2 , 3 , 5 , 6 , 10 , 15 , 30**

8) 12 , 30

12 **1 , 2 , 3 , 4 , 6 , 12**

30 **1 , 2 , 3 , 5 , 6 , 10 , 15 , 30**

Answers

Ex. 4

1. 3
2. 5
3. 4
4. 2
5. 6
6. 2
7. 10
8. 6

1-8	88	75	63	50	38	25	13	0

Answers

Algebra 1 **Unit 8 Factoring by Using the GCF Worksheet**

For each problem below, factor by finding the GCF.

1) $2a^4+8a$ GCF: $2a$ $2a(a^3+4)$	2) $5x^3-10$ 5 $5(x^3-2)$
3) $8ab^2-12a^2b^3$ $4ab^2$ $4ab^2(2-3ab)$	4) $10c^3d^2-15cd^3$ $5cd^2$ $5cd^2(2c^2-3d)$
5) $15f-20g^2$ $5(3f-4g^2)$	6) $3y^4+9y^2-15$ 3 $3(y^4+3y^2-5)$
7) $10d^7+2d^5$ $2d^5$ $2d^5(5d^2+1)$	8) $7w^5-35w^2$ $7w^2$ $7w^2(w^3-5)$
9) $2x+2y$ 2 $2(x+y)$	10) $-32y^2-24y$ $8y$ $8y(-4y-3)$ or $-8y(4y+3)$
11) $6x^2yz+2xy^2z-4xyz$ $2xyz$ $2xyz(3x+y-2)$	12) $12a^4b^3c^2-4a^3bc^2+8a^2c-16ab$ $4a$ $4a(3a^3b^3c^2-a^2bc^2-4b)$

Review – Multiply and simplify.

13) $(2x-9)(x+4)$ $2x^2+8x-9x-36$ $2x^2-x-36$	14) $(x-4)(2x^2-3x+5)$ $2x^3-3x^2+5x$ $-4x^2+12x-20$ $2x^3-7x^2+17x-20$
15) $(3x+10)(3x+10)$ $9x^2+60x+100$	16) $(7x-8)(7x+8)$ $49x^2-64$

Review – Add or subtract.

17) $(x^3-2x^2+8x-4)+(x^2+9x-7)$ $+x^2+9x-7$ $x^3-x^2+17x-11$	18) $(5x^2-4)-(8x^2+3x-9)$ $-8x^2-3x+9$ $-3x^2-3x+5$

Review – Write the polynomial in standard form, then tell what type the polynomial is.

19) $5x^2-8-2x^4$ $-2x^4+5x^2-8$ Trinomial 4th Deg LC: -2	20) $4+2x^3$ $2x^3+4$ Binomial 3rd Deg LC: 2

Verification: Write your answers to #1-12 in each box. Perform the Distributive Property.
Do your answers match the original problems given?

1. $2a(a^3+4)$ $2a^4+8a$ ✓	2. $5(x^3-2)$ $5x^3-10$ ✓
3. $4ab^2(2-3ab)$ $8ab^2-12a^2b^3$ ✓	4. $5cd^2(2c^2-3d)$ $10c^3d^2-15cd^3$ ✓
5. $5(3f-4g^2)$ $15f-20g^2$ ✓	6. $3y^4+9y^2-15$
7.	8.
9.	10.
11.	12.

NAME Answers DATE PERIOD

8.7 Factoring by Grouping WS

Factor each polynomial by grouping, if possible. If the polynomial cannot be factored using integers, write *prime*.

1. $a^2 + 10a + 24$

24 | 10
12·2 | 6·4

$(a+6)(a+4)$

2. $2x^2 + 5x + 2$

$4x^2$ | 5x
4x·1x | 4+1

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

$2x(x+2)+1(x+2)$ GCF $(x+2)$

$(x+2)(2x+1)$

3. $h^2 + 12h + 27$

27 | 12
3·9 | 3+9

$(h+3)(h+9)$

4. $2t^2 + 9t - 5$

$-10t^2$ | $+9t$
$-1t \cdot 10t$ | $-1t + 10t$

$(2t^2+10t)+(-1t-5)$

$2t(t+5)-1(t+5)$

$(t+5)(2t-1)$

5. $g^2 - 2g - 63$

-63 | -2
7·9 | 7+-9

$(g+7)(g-9)$

6. $3g^2 - 7g + 2$

$6g^2$ | $-7g$
$-6g \cdot -1g$ | $-6g + -1g$

$(3g^2-6g)+(-1g+2)$

$3g(g-2)-1(g-2)$

$(g-2)(3g-1)$

7. $w^2 + w - 56$

-56 | 1
-7·8 |

$(w-7)(w+8)$

8. $2t^2 - 11t + 15$

$30t^2$ | $-11t$
$-5t \cdot -6t$ | $-5t + -6t$

$(2t^2-6t)+(-5t+15)$

$2t(t-3)-5(t-3)$

$(t-3)(2t-5)$

9. $3n^2 + 5n + 2$

$6n^2$ | 5n
3n·2n | 3n+2n

$(3n^2+3n)+(2n+2)$

$3n(n+1)+2(n+1)$

$(n+1)(3n+2)$

10. $n^2 - 3n - 28$

-28 | -3
-7·4 |

$(n-7)(n+4)$

NAME _____ DATE _____ PERIOD _____

8.7 Factoring WS continued
Factor by Grouping w/GCF

Factor each polynomial by first factoring out GCF, then factor by grouping.
If the polynomial cannot be factored using integers, write *prime*.

11. $12x - 45 + 9x^2$

$9x^2 + 12x - 45$

$3(3x^2 + 4x - 15)$

12. $24x^2 + 108x - 60$

$12(2x^2 + 9x - 5)$

13. $70b^2 + 98b - 84$

$14(5b^2 + 7b - 6)$

$70 = 7 \cdot 2 \cdot 5$
$98 = 2 \cdot 7 \cdot 7$
$84 = 2 \cdot 2 \cdot 3 \cdot 7$
14

14. $12x^2 - 14x - 6$

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

15. $60y^2 + 180y + 135$

$15(4y^2 + 12y + 9)$

$135 = 5 \cdot 3 \cdot 3 \cdot 3$
$180 = 2 \cdot 2 \cdot 5 \cdot 3 \cdot 3$
$60 = 2 \cdot 2 \cdot 3 \cdot 5$
15

16. $2x^2 + 4x + 2$

$2(x^2 + 2x + 1)$

17. $18t^2 - 78t - 90$

$6(3t^2 - 13t - 15)$

$18 = 2 \cdot 3 \cdot 3$
$78 = 2 \cdot 3 \cdot 13$
$90 = 2 \cdot 5 \cdot 3 \cdot 3$
6

18. $80h^2 - 88h - 48$

$8(10h^2 - 11h - 6)$

19. $8x^2 + 8x - 16$

$8(x^2 + x - 2)$

20. $21b^2 + 7b - 70$

$7(3b^2 + b - 10)$

NAME _____ DATE _____ PERIOD _____

Factoring (to solve) WS

Solve each equation.

1. $(x + 4)(x - 3) = 0$

2. $x(x + 12) = 0$

3. $4x(x + 2)(3x - 5) = 0$

4. $(x - 9)^2 = 0$

5. $15n^2 - n = 2$

6. $12k^2 + 15k = 16k + 20$

7. $x^2 - 6x + 6 = -3$

8. $9z^2 = -6z + 15$

9. $4y^2 = 81$

10. $64p^2 = 9$

11. $98b^2 - 50 = 0$

12. $-9 - 8x + x^2 = 0$

NAME _____ DATE _____ PERIOD _____

13. GEOMETRY The length of a garden is 20 feet greater than its width. What are the dimensions? Draw a picture.

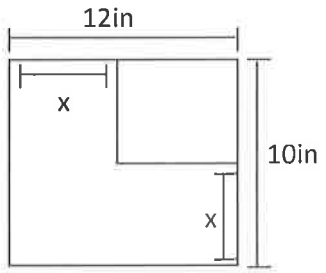
a. Write an expression for the area of the garden.

b. Find the dimensions of the garden if it has an area of 300 square feet.

14. WEB DESIGN Janeel has a 10-inch by 12-inch photograph. She wants to scan the photograph, then reduce the result by the same amount in each dimension to post on her Web site. Janeel wants the area of the image to be one eighth that of the original photograph.

a. Write an equation to represent the area of the reduced image.

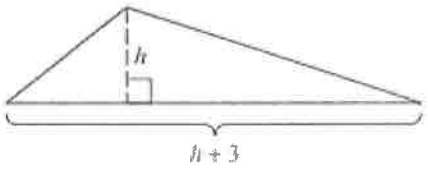
b. Find the dimensions of the reduced image.



15. TRIANGLE The area of a triangular sheet of paper is 14 square inches. One side of the triangle is 3 inches longer than the height. Find the length of the one side and the length of the height.

a. Write an equation to represent the area of the triangle.

b. Find the height and side length of the triangle.



16. FLOOR The room that is shown in the figure below has a floor space of $2x^2 + x - 15$ square feet. Find the length and width of the room.