Special Products

Agenda

Warm-Up

Schedule

Notes p.83

HW #1-15 ODDS

Reminders

HW 4.5 due LAST CALL TUESDAY 4:10PM

Bathroom Passes due WED end of class

Tests/Quizzes must be made up by WED 9AM

Essential Question

How do I factor a difference of squares?

Warm-Up Monday

1. Complete the chart:

$1^2 = $ **1** $2^2 = $ **4** $3^2 = $ **9** $4^2 = $ **16** $5^2 = $ **25** $6^2 = $ **36**

$\sqrt{49} = $ **7** $\sqrt{64} = $ **8** $\sqrt{81} = $ **9** $\sqrt{100} = $ **10** $\sqrt{121} = $ **11**

2. Put the trinomial in the box: a:1 b:-7 c:10

$$x^2 - 7x + 10$$

Then factor!

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

$a \cdot c$

10

$1 + 10 = 11$

$2 + 5 = 7$

$-2 + -5 = -7$

↑ add to -7

x	-5

x	x^2	-5x
-2	-2x	+10

Name: _____ Class Period: _____

EDITED SCHEDULE!   4.6

Algebra I Agenda

4th six weeks ends Thursday 2/11

				Stamp
Monday	2/8/2016	**Objective:**	Special Factors	
		Assignment:	Practice #1-15 odds	
Tuesday	2/9/2016	**Objective:**	Mixed Review	
		Assignment:	Punchline #1-6	
Wednesday	2/10/2016	**Objective:**	Mixed Review	
		Assignment:	Punchline #7-12	
Thursday	2/11/2016	**Objective:**	Mixed Review	
		Assignment:	Punchline #13-18	
Friday	2/12/2016	**Objective:**	Applications	
		Assignment:	Practice #1-6	

4.5 due by 4:10

Bathroom Passes due

All tests made up

Six weeks over

No School MONDAY 2/15

TEST over Unit 7 WEDNESDAY, 2/17

HW 4.6 due WEDNESDAY, 2/17

Final Weekly HW Grade: _____

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Essential question

How do I factor a difference of squares?

Factored Form	$(x+4)(x-4)$	$(2x+5)(2x-5)$	$(3x+2)(3x-2)$
Multiply	$x^2 + 4x - 4x - 16$ $$x^2 - 16$$	$4x^2 + 10x - 10x - 25$	$9x^2 + 6x - 6x - 4$
Simplified Form	$x^2 - 16$	$4x^2 - 25$	$9x^2 - 4$

What do you notice about each of these expressions in factored form?

Same terms but different signs(+/-)

What do you notice about each of these expressions in expanded form?

two terms, subtraction, b= 0, square #s

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Essential Question

How do I factor a difference of squares?

Create your own Rule: $(a+b)(a-b) = a^2 - b^2$

$a^2 + ab - ab - b^2$

	a	$+b$
a	a^2	$+ab$
$-b$	$-ab$	$-b^2$

Multiply the following using the above property:

1. $(x+9)(x-9)$

$(a+b)(a-b)$

$a = x$
$b = 9$

$a^2 - b^2$
$(x)^2 - (9)^2$

$\boxed{x^2 - 81}$

2. $(2x-7y)(2x+7y)$

$a : 2x \quad b : 7y$

$a^2 - b^2$
$(2x)^2 - (7y)^2$
$(2x)(2x) - (7y)(7y)$

$\boxed{4x^2 - 49y^2}$

3. $(6y+5)(6y-5)$

$a : 6y \quad b : 5$

$\boxed{36y^2 - 25}$

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Essential Question

How do I factor a difference of squares?

an algebraic expression with a rational square root

A **Perfect Square** is an expression w/ coefficient that is a square AND exponent is even (i.e. 2,4,6...)

$Y_1 = \#/x$

Determine whether or not each of the following is a perfect square:

4. $16x^2$

$16 = 4^2$ ✓
exp. even ✓

YES

5. $6y^2$

X 6 is not a square
exp. even ✓

NO

6. $25x^4$

$25 = 5^2$ ✓
exp. even ✓

YES

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Essential Question

How do I factor a difference of squares?

A **Difference of Squares** is an algebraic expression where two perfect squares are subtracted

~~minus~~

Difference of Two Squares: $a^2 - b^2 = (a + b)(a - b)$

Factor each of the following using properties of difference of squares:

7. $4x^2 - 81$

$a^2 - b^2$

$a: 2x \quad b: 9$

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

8. $9x^2 - 49$

$a: 3x \quad b: 7$

$(3x+7)(3x-7)$

9. $25x^2 - 16y^2$

$a: 5x \quad b: 4y$

$(5x+4y)(5x-4y)$

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Essential Question

How do I factor a difference of squares?

10. A designer is going to change the dimensions of a square plate to create a new rectangular plate. He will increase the length by 4 inches and decrease the width by 4 inches. Write the area of the new rectangular plate in terms of the original side length of the square plate, x.

$x+4$

$x-4$

4
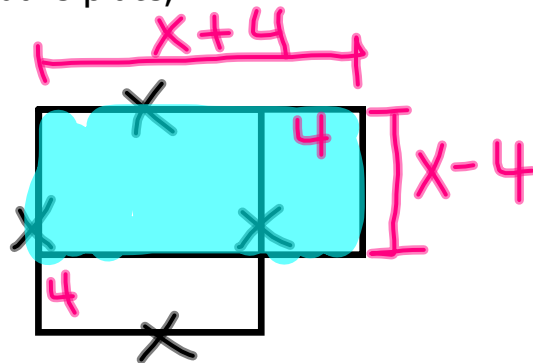
$A = L * W$

$= (x+4)(x-4)$

$a: x \quad b: 4$

$x^2 - 16 \ in^2$

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Essential question

How do I factor a difference of squares?

Perfect Square Trinomials

Rules:

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

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

Multiply the following using the above property:

11. $(x + 9)(x + 9)$ 12. $(2y + 1)(2y + 1)$ 13. $(6c - 7d)(6c - 7d)$

Factor the following using the perfect squares rule:

14. $x^2 + 10x + 25$ 15. $x^2 + 14x + 49$

ODDS

Algebra I Unit 7 Factoring
Student Practice – Difference of Squares & Perfect Square Trinomials

Name _____ Date _____ Period _____

> Difference of Two Squares: $a^2 - b^2 = (a-b)(a+b)$

Multiply using the property of Difference of Squares:
1. $(x+3)(x-3)$ 2. $(3x+10)(3x-10)$

Determine whether or not each of the following is a perfect square:
3. $18x^2$ 4. $4y^2$

Factor each difference of two squares using the property of difference of squares.
5. $9x^2 - 16$ 6. $25x^2 - 64$

7. $8x^2 - 50y^2$ 8. $18x^2 - 98x^4$

9. Nancy is removing the lace from a square table cloth to make a new table cloth. The dimensions of the table cloth will be adjusted so that the length is increased by 6 inches and the width is decreased by 6 inches. Find the area of the new table cloth in terms of the old side length, x.

Algebra I Unit 7 Factoring

2 Special Products:

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

Multiply using the property of Special Products:

10. $(x + 6)(x + 6)$

11. $(5a - b)^2$

Factor each of the following using properties of difference of squares:

12. $x^2 + 8x + 16$

13. $x^2 + 20x + 100$

14. A square is going to be enlarges so that the new side length will be 4 more than three times the length of the original side length, x. Write the area of the new square in terms of the original length, x.

15. The volume of a rectangular prism is given by the V=Bh. The volume is represented following expression $18x^2 - 24x + 8$. The height of the cylinder is 2.
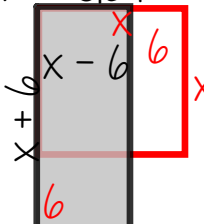
a. Find the possible area of the base, B, in terms of x.

b. If the base is a square, find the length of each side in terms of x.

HW Help: Special Products

No Work = No Credit = No Kidding!

Hints...

1. $a = x$, $b = 3$ 2. $a = 3x$, $b = 10$... you can always use a box to multiply binomials!

3. x has an even power, but 18 is not a perfect square

4. 4 is a perfect square and y has an even power

#5-8. You can always use the box method with $b=0$.

5. $a = 3x$, $b = 4$ 6. $a=5x$, $b=8$

7. You must find the gcf of 2 before starting!

8. The GCF here is $2x^2$...then factor!

9.   A=l*w, so multiply $(x-6)(x+6)$

10 & 11. Use a 2x2 box!

12.
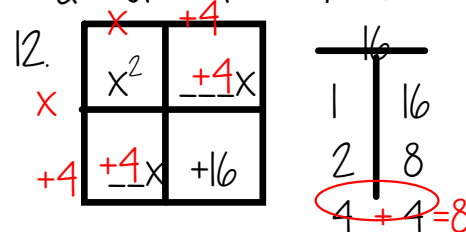
13. You try!

14 & 15 you try! Draw a picture to help!

Solutions

1. $x^2 - 9$

2. $9x^2 - 100$

3. No

4. Yes

5. $(3x-4)(3x+4)$

6. $(5x-8)(5x+8)$

7. $2(2x-5y)(2x+5y)$

8. $2x^2(3-7x)(3+7x)$

9. $x^2 - 36$

10. $x^2 + 12x + 36$

11. $25a^2 - 10ab + b^2$

12. $(x+4)(x+4)$

13. $(x+10)(x+10)$

14. $16 + 24x + 9x^2$

15. A. $9x^2 - 12x + 4$

     B. $(3x-2)(3x-2)$