HMH Algebra 1
Week 3

Factor & Solve Perfect Square/ difference of 2 Sq's

Example: (FACTOR)

① $x^2+10xy+25y^2$

25	+10
5·5	5+5=10

x^2	$5xy$
$5xy$	$25y^2$

x + 5y

The only difference here is that it has an x and y variable...

$$(x+5y)(x+5y) = (x+5y)^2$$

Example: FACTOR

③ $81x^2-121y^2$ ← difference of 2 squares

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

$$(9x-11y)(9x+11y)$$

WS 3.7 1-8 skip 7 use your own paper

Example

⑧ $\frac{4x^3}{4x}-\frac{16x}{4x}=0$

Factor out a common factor

$4x(x^2-4)=0$ → difference of 2 squares

$4x(x-2)(x+2)=0$

$\frac{4x}{4}=\frac{0}{4}$ $x-2=0$ $x+2=0$

$+2+2$ $-2-2$

$x=0$ $x=2$ $x=-2$

Name _____ Date _____ Class _____

LESSON 21-3

Using Special Factors to Solve Equations

Practice and Problem Solving: A/B

Factor using the perfect-square technique.

1. $x^2 + 10xy + 25y^2$

2. $32x^2 + 80xy + 50y^2$

_____ _____

Factor using the difference of squares technique.

3. $81x^2 - 121y^2$

4. $75x^3 - 48x$

_____ _____

Solve each equation with special factors.

5. $50x^2 = 72$

6. $18x^3 + 48x^2 = -32x$

_____ _____

Solve.

7. A projectile is launched from a hole in the ground one foot deep. Its height follows the equation $h = -16t^2 + 8t - 1$. Use factoring by perfect-squares to find the time when the projectile lands back on the ground. (Hint: Landing on the ground means projectile height is zero.)

_____

8. Which of the following are solutions to $4x^3 - 16x = 0$?

○ A -2 ○ B -1 ○ C 0 ○ D 1 ○ E 2

HMH Algebra 1

Week 3

This worksheet is just like ws 371

WS 371 1-8, skip 7

Name _____ Date _____ Class _____

LESSON 21-3

Using Special Factors to Solve Equations

Practice and Problem Solving: C

Factor using the perfect-square technique.

1. $27x^2 + 72xy + 48y^2$

2. $25x^3 - 60x^2y + 36xy^2$

Factor using the difference of squares technique.

3. $x^4 - 81$

4. $36x^4 - 16x^2y^2$

Solve each equation with special factors.

5. $-7x^3 + 100x = -75x$

6. $x^3 + 8x^2 + 4x = -x^3 - 4x$

Solve.

7. A projectile is launched from an underground silo 81 feet deep. Its height follows the equation $h = -16t^2 + 72t - 81$. Use factoring by perfect-squares to find the time when the projectile lands back on the ground.

8. Which of the following are solutions to $81x^3 = 256x$?

A $-\frac{16}{9}$ B $-\frac{4}{3}$ C 0 D $\frac{16}{9}$

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Week 3

Example ① don't worry about Algebra Tiles, just Factor

$x^2 - 10x + 25$

x^2	$-5x$	x
$-5x$	$+25$	-5

$x - 5$

$+25$	-10
$-5 \cdot -5$	$-5 + -5 = -10$ ✓

$(x-5)(x-5) = \boxed{(x-5)^2}$

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⑪ $25x^2 + 20x + 4 = 0$

$25x^2$	$10x$	$5x$
$10x$	$+4$	$+2$

$5x + 2$

100	$+20$
$10 \cdot 10$	$10 + 10$

$(5x+2)(5x+2) = 0$

$5x+2=0$ $\quad$ $5x+2=0$

$-2 \quad -2$ $\quad$ $-2 \quad -2$

$\frac{5x}{5} = \frac{-2}{5}$ $\quad$ $\frac{5x}{5} = \frac{-2}{5}$

$\boxed{x = -\frac{2}{5}}$

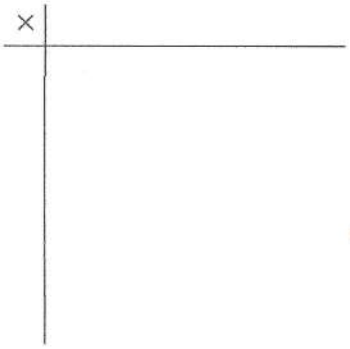
WS 1018 - 1019
1 - 18
This is a 2 day assignment

Evaluate: Homework and Practice

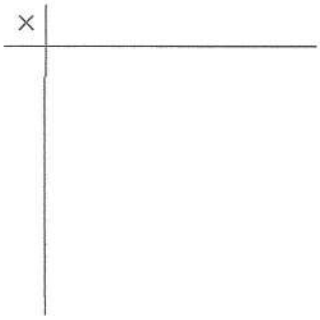
- Online Homework
- Hints and Help
- Extra Practice

For each trinomial, draw algebra tiles to show the factored form. Then, write the factored form.

1. $x^2 - 10x + 25$



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



Factor.

3. $4x^2 + 4x + 1$

4. $9x^2 - 18x + 9$

5. $16x^3 + 8x^2 + x$

6. $32x^3 - 16x^2 + 2x$

7. $x^2 - 169$

8. $4p^2 - 9q^4$

9. $32x^4 - 8x^2$

10. $2y^5 - 32z^4y$

Solve the following equations with special factors.

11. $25x^2 + 20x + 4 = 0$

12. $x^3 - 10x^2 + 25x = 0$

13. $4x^4 + 8x^3 + 4x^2 = 0$

14. $4x^2 - 8x + 4 = 0$

15. $x^2 - 81 = 0$

16. $2x^3 - 2x = 0$

17. $16q^2 - 81 = 0$

18. $4p^4 - 25p^2 = -16p^2$