Webster County Schools

95 CLARK AVENUE – EUPORA, MS 39744

Office of Curriculum

662-258-5551, Extension 15

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Algebra II

Packet 2

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MDE Learning-at-Home Resources for Districts

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Resources have been divided into the following categories:

- Internet Services
- Multiple Content Area Resources
- Arts (Dance, Music, Theatre, Visual Arts) Resources
- Career Pathway Experiences (CPE) Alternative Resources
- English Language Arts Resources
- Mathematics Resources
- Science Resources
- Social Studies Resources
- World Language Resources
- Counselor Resources
- English Learner Resources
- Virtual Learning Resources

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At-Home Learning Packet Schedule:

- Packet 2- April 20, 2020
- Packet 3- May 4, 2020
- Packet 4- May 18, 2020

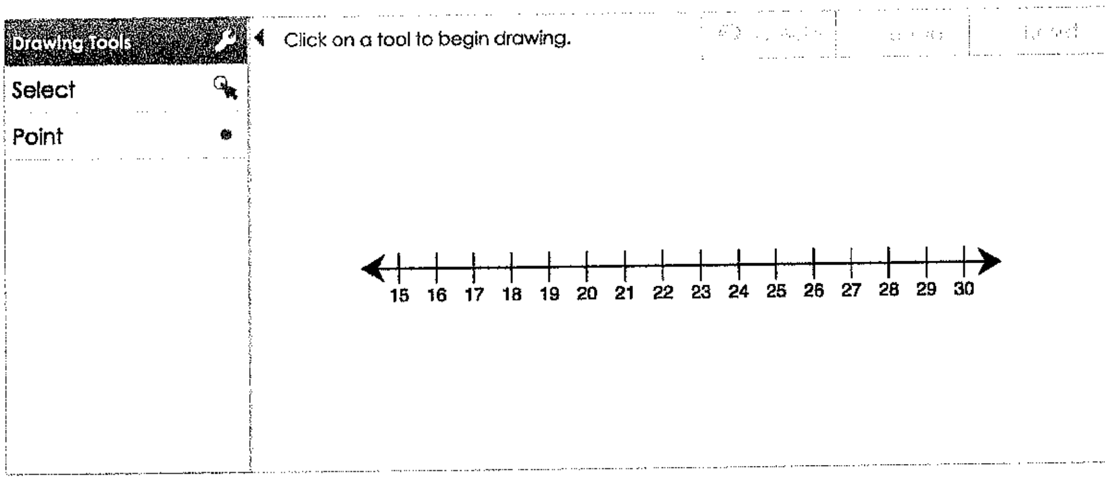
Rational Exponents

Question 1 .

Directions: Use the drawing tool(s) to form the correct answer on the provided number line.

Simplify the following expressions, and plot the greater of the two values on the number line provided.

$64^{\frac{2}{3}}$ $\left(\sqrt[5]{243}\right)^3$



Question 2 .

$$3^{\frac{1}{4}} + 6^3$$

Which of the following is equivalent to the expression above?

A. $\sqrt[3]{4} + 216$

B. $\sqrt[4]{3} + 216$

C. $\sqrt[4]{3} + 18$

D. $\frac{1}{3^4} + 216$

Question 3 .

$$8^3 + 3^{\frac{1}{2}}$$

Which of the following is equivalent to the expression above?

A. $512 + \sqrt[3]{2}$

B. $24 + \sqrt{3}$

C. $512 + \frac{1}{3^2}$

D. $512 + \sqrt{3}$

Question 4 .

Which of the following shows that $\sqrt[3]{2} = 2^{\frac{1}{3}}$?

A. $\left(2^{\frac{1}{3}}\right)^3 = 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} = 2^{\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}} = 2^{\frac{3}{3}} = 2^1 = 2$

B. $\left(2^{\frac{1}{3}}\right)^3 = 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} = 3 \cdot 2^{\frac{1}{3}} = 3 \cdot \frac{1}{3} \cdot 2 = 2$

C. $\left(2^{\frac{1}{3}}\right)^3 = 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} = 2^{\frac{1}{3}+\frac{1}{3}+\frac{1}{3}} = 2^{\frac{3}{3}} = 2^1 = 2$

D. $\left(2^{\frac{1}{3}}\right)^3 = 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} \cdot 2^{\frac{1}{3}} = 2 \cdot \left(\frac{1}{3} + \frac{1}{3} + \frac{1}{3}\right) = 2\frac{3}{3} = 2$

Question 5 .

Simplify.

$$343^{\frac{1}{3}}$$

A. $\frac{343}{3}$

B. $\frac{1}{1{,}029}$

C. 7

D. 49

Question 6 .

$$\sqrt[3]{2} = ?$$

A. $2^{\frac{1}{3}}$

B. $3^{\frac{1}{2}}$

C. $\frac{1}{2^3}$

D. $\frac{2}{3}$

Question 7 .

Rewrite the following.

$$x^{\frac{4}{3}}$$

A. $x\sqrt[3]{x}$

B. $\left(\frac{1}{x^3}\right)^4$

C. $\frac{x^4}{x^3}$

D. $\sqrt[4]{x^3}$

Question 8 .

Simplify the following expression.

$$2^{-\frac{1}{2}} \cdot 2^{\frac{7}{2}}$$

A. 4

B. $\frac{1}{8}$

C. 8

D. 16

Question 9 .

Which of the following is equivalent to $5^{-\frac{1}{4}}$?

A. $-\sqrt[4]{5}$

B. $\frac{1}{\sqrt{5^4}}$

C. $\frac{1}{\sqrt[4]{5}}$

D. $-\sqrt{5^4}$

Question 10 .

$$\frac{\sqrt{16}}{6}$$

Which of the following is equivalent to the expression above?

A. $\left(\frac{36}{16}\right)^{\frac{1}{2}}$

B. $\left(\frac{16}{36}\right)^{\frac{1}{3}}$

C. $\left(\frac{16}{6}\right)^{\frac{1}{2}}$

D. $\left(\frac{16}{36}\right)^{\frac{1}{2}}$

Explanations

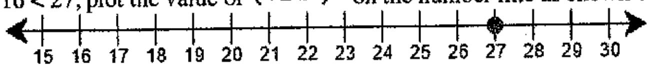
1. The following property of exponents can be used to rewrite radical expressions.

$$(\sqrt[a]{x})^b = x^{\frac{b}{a}}$$

Apply the property above to both expressions as follows.

$(64)^{\frac{2}{3}} = (\sqrt[3]{64})^2$ $= (4)^2$ $= 16$	$(\sqrt[5]{243})^3 = (3)^3$ $= 27$

Since 16 < 27, plot the value of $(\sqrt[5]{243})^3$ on the number line as shown below.



2. Use the following rule of exponents to simplify.

$$\sqrt[n]{a} = a^{\frac{1}{n}}$$

$$3^{\frac{1}{4}} + 6^3 = \sqrt[4]{3} + 216$$

3. Use the following rule of exponents to simplify.

$$\sqrt[n]{a} = a^{\frac{1}{n}}$$

$$8^3 + 3^{\frac{1}{2}} = 512 + \sqrt{3}$$

4. Since $(\sqrt[3]{2})^3 = \sqrt[3]{2}\cdot\sqrt[3]{2}\cdot\sqrt[3]{2} = 2$, it is sufficient to show that $\left(2^{\frac{1}{3}}\right)^3 = 2$ in order to show that $\sqrt[3]{2} = 2^{\frac{1}{3}}$.

Remember the following exponent rule with the nonzero real number a and the integers m and n.

$$a^m \cdot a^n = a^{m+n}$$

Thus, the following is true.

$$\left(2^{\frac{1}{3}}\right)^3 = 2^{\frac{1}{3}}\cdot 2^{\frac{1}{3}}\cdot 2^{\frac{1}{3}} = 2^{\frac{1}{3}+\frac{1}{3}+\frac{1}{3}} = 2^{\frac{3}{3}} = 2^1 = 2$$

5. Use the laws of exponents to simplify the expression.

$$\begin{aligned} 343^{\frac{1}{3}} &= \sqrt[3]{343} \\ &= \sqrt[3]{7\cdot 7\cdot 7} \\ &= 7 \end{aligned}$$

6. Recall the following rule.

$$\sqrt[n]{a} = a^{\frac{1}{n}}$$

For $\sqrt[n]{a}$, $a = 2$ and $n = 3$.

Therefore, $\sqrt[3]{2} = 2^{\frac{1}{3}}$.

7. Use the laws of exponents to rewrite the expression.

$$x^{\frac{4}{3}} = x^{\frac{3}{3}} \cdot x^{\frac{1}{3}}$$

$$= x \cdot x^{\frac{1}{3}}$$

$$= x\sqrt[3]{x}$$

8. When multiplying two terms with the same base, add the exponents.

$$a^m \cdot a^n = a^{(m+n)}$$

$$2^{-\frac{1}{2}} \cdot 2^{\frac{7}{2}} = 2^{\left(-\frac{1}{2} + \frac{7}{2}\right)}$$

$$= 2^3$$

$$= 8$$

9. Apply the following laws of exponents.

$$\sqrt[n]{x^m} = x^{\frac{m}{n}}$$

$$x^{-m} = \frac{1}{x^m}$$

$$5^{-\frac{1}{4}} = \frac{1}{5^{\frac{1}{4}}}$$

$$= \frac{1}{\sqrt[4]{5}}$$

10.

$$(ab)^n = a^n \cdot b^n$$

$$\sqrt[n]{b} = b^{\frac{1}{n}} \text{ with } n \neq 0$$

$$\frac{\sqrt{16}}{6} = \frac{(16)^{\frac{1}{2}}}{(36)^{\frac{1}{2}}}$$

$$= \left(\frac{16}{36}\right)^{\frac{1}{2}}$$

Factoring Methods for $ax^2 + bx + c$

ANY METHOD: Before factoring, factor out the GCF
ANY METHOD: After factoring, check by multiplying to verify original polynomial

Guess and Check

1. Factor out GCF.
2. Draw parentheses.
3. Find factors of a; find factors of c.
4. Try different pairings of factors until a pair works.

Factor $10x^2 + 21x + 8$

Factors of 10: $1 \cdot 10$ and $2 \cdot 5$; Factors of 8: $1 \cdot 8$, $2 \cdot 4$

$(1x + 1)(10x + 8)$ No
$(1x + 8)(10x + 1)$ No
$(1x + 2)(10x + 4)$ No
$(1x + 4)(10x + 2)$ No
$(5x + 8)(2x + 1)$ Yes

Grouping

1. Factor out GCF.
2. Multiply ac.
3. Find two factors of ac that add or subtract to b.
4. Split bx term into sum of those two numbers.
5. Group first two terms and last two terms (reverse distribute).
6. Factor the common polynomial.

Factor $10x^2 + 21x + 8$

$10 \cdot 8 = 80$. Factors of 80 that add to 21: 16 and 5
$10x^2 + 16x + 5x + 8$
$2x(5x + 8) + (5x + 8)$
$(5x + 8)(2x + 1)$

Box Method

1. Factor out GCF.
2. Draw a 2x2 box.
3. Put first term (ax^2) in top left, last term (c) in bottom right
4. Multiply ac; find factors of ac that add to middle term b. Put these terms in top right and bottom left boxes.
5. Factor the GCF from each row and column.
6. These values make up the factors!

Factor $10x^2 + 21x + 8$

$10 \cdot 8 = 80$. Factors of 80 that add to 21: 16 & 5

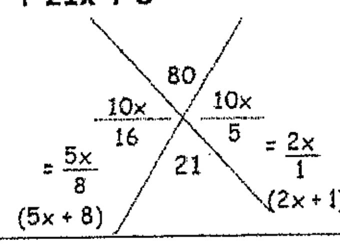
	$5x$	8
$2x$	$10x^2$	$16x$
1	$5x$	8

Factors: $(5x + 8)(2x + 1)$

Diamond Method

1. Factor out GCF.
2. Draw a big X. Multiply ac and put in top of x; put b in bottom of x.
3. Find two factors of ac that add to b.
4. Put those factors on the left and right of the "X," but make as denominators of fractions.
5. Make leading coefficient multiplied by variable as the numerator of the fraction.
6. Reduce fractions if possible. These are your factors!

Factor $10x^2 + 21x + 8$



Slide and Divide

1. Factor out GCF.
2. Multiply ac and rewrite the trinomial with a leading coefficient of 1 and the third term as the product of ac ("slide").
3. Factor using strategies when leading coefficient is 1 (type III factoring).
4. Divide each numerical term by the original leading coefficient, and reduce to simplest form ("divide").
5. Multiply the terms in each set of parentheses by the LCD of the two terms.

Factor $10x^2 + 21x + 8$

ac = 80; rewrite: $x^2 + 21x + 80$

Factor: $(x + 16)(x + 5)$

Divide by 10: $(x + \frac{16}{10})(x + \frac{5}{10})$

Reduce: $(x + \frac{8}{5})(x + \frac{1}{2})$

Multiply by LCD: $(5x + 8)(2x + 1)$

NAME ______________________ DATE ________

Factoring $x^2 + bx + c$

EXAMPLE 2

Factor $x^2 - 7x + 12$.

SOLUTION

You want $x^2 - 7x + 12 = (x + m)(x + n)$ where $mn = 12$ and $m + n = -7$.

Factors of 12	1, 12	2, 6	3, 4	−1, −12	−2, −6	−3, −4
Sum of factors $(m + n)$	13	8	7	−13	−8	−7

The table shows that the values of m and n you want are $m = -3$ and $n = -4$.
So, $x^2 - 7x + 12 = (x - 3)(x - 4)$.

Factor.

4. $x^2 - 12x + 35$

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

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

In Example 3, the same method is used as in Example 2, but notice that both b and c are negative.

EXAMPLE 3

Factor $x^2 - 3x - 18$.

SOLUTION

You want $x^2 - 3x - 18 = (x + m)(x + n)$ where $mn = -18$ and $m + n = -3$.

Factors of **−18**	−1, 18	1, −18	−2, 9	2, −9	−3, 6	3, −6
Sum of factors $(m + n)$	17	−17	7	−7	3	−3

The table shows that the values of m and n you want are $m = 3$ and $n = -6$.
So, $x^2 - 3x - 18 = (x + 3)(x - 6)$.

Factor.

7. $x^2 - 6x - 7$

8. $x^2 - 5x - 24$

9. $x^2 - 3x - 54$

In Example 4, b is positive and c is negative.

EXAMPLE 4

Factor $x^2 + x - 20$.

SOLUTION

You want $x^2 + x - 20 = (x + m)(x + n)$ where $mn = -20$ and $m + n = 1$.

(continued)

NAME ______________________ DATE __________

Factoring $x^2 + bx + c$

Factors of -20	$-1, 20$	$1, -20$	$-2, 10$	$2, -10$	$-4, 5$	$4, -5$
Sum of factors $(m + n)$	19	-19	8	-8	1	-1

The table shows that the values of m and n you want are $m = -4$ and $n = 5$.
So, $x^2 + x - 20 = (x - 4)(x + 5)$.

Factor.

10. $x^2 + 4x - 12$ **11.** $x^2 + 4x - 45$ **12.** $x^2 + x - 56$

Mixed Review

State the inverse.

13. Add -16. **14.** Subtract 35. **15.** Divide by $\frac{2}{3}$.

Solve the inequality.

16. $x + 9 < 16$ **17.** $-6x \geq 36$ **18.** $\frac{x}{7} > -5$

19. ***Find the Numbers*** The sum of two numbers is 34. The second number is two more than the first. Find the two numbers.

LESSON 5.2

NAME ______________________________ DATE __________

Practice

For use with Lesson 5.2: Factoring $x^2 + bx + c$

Match the trinomial with the correct factorization.

1. $x^2 + x - 12$
2. $x^2 + 7x + 12$
3. $x^2 - 7x + 12$
4. $x^2 - x - 12$

A. $(x + 4)(x + 3)$
B. $(x - 4)(x - 3)$
C. $(x + 4)(x - 3)$
D. $(x - 4)(x + 3)$

Choose the correct factorization. If neither is correct, find the correct factorization.

5. $x^2 + 14x + 48$
   A. $(x + 6)(x + 8)$
   B. $(x + 4)(x + 12)$

6. $x^2 - 3x - 10$
   A. $(x - 2)(x + 5)$
   B. $(x - 5)(x + 2)$

7. $x^2 + 8x - 33$
   A. $(x + 3)(x - 11)$
   B. $(x - 3)(x - 11)$

Factor the trinomial.

8. $x^2 + 8x - 9$
9. $x^2 - 10x + 21$
10. $x^2 + 5x - 24$
11. $x^2 + 13x + 36$
12. $x^2 - 3x - 18$
13. $x^2 + 14x + 40$
14. $x^2 - x - 56$
15. $x^2 - 7x - 30$
16. $x^2 + 12x + 32$
17. $x^2 + 3x - 54$
18. $x^2 - 2x - 15$
19. $x^2 - 20x + 100$
20. $x^2 + 2x - 63$
21. $x^2 - 10x - 24$
22. $x^2 + 16x + 39$
23. $x^2 + 6x - 55$
24. $x^2 - 9x - 70$
25. $x^2 - 22x + 40$

LESSON 5.3

NAME ______________________________ DATE __________

Factoring $ax^2 + bx + c$

GOAL **Factor quadratic expressions of the form $ax^2 + bx + c$.**

Understanding the Main Ideas

In this lesson, you will learn how to factor quadratic polynomials whose leading coefficient is not 1. To do this, find the factors of a(m and n) and the factors of c(p and q) so that the sum of the outer and inner products (mq and pn) is b.

$$c = pq$$

$$ax^2 + bx + c = (mx + p)(nx + q) \qquad b = mq + pn$$

$$a = mn$$

$$20 = 5 \cdot 4$$

Example: $6x^2 + 22x + 20 = (3x + 5)(2x + 4) \qquad 22 = (3 \cdot 4) + (5 \cdot 2)$

$$6 = 3 \cdot 2$$

Once you determine the factors of a and c, it is necessary to test them to see which produces the correct factorization. In Example 1, there is only one pair of factors for a and c.

EXAMPLE 1

Factor $2x^2 + 5x + 3$.

SOLUTION

Test the possible factors of a(1 and 2) and c(1 and 3).

Try $a = 1 \cdot 2$ and $c = 3 \cdot 1$.

$(1x + 3)(2x + 1) = 2x^2 + 7x + 3$ Not correct

Now try $a = 1 \cdot 2$ and $c = 1 \cdot 3$.

$(1x + 1)(2x + 3) = 2x^2 + 5x + 3$ Correct

The correct factorization of $2x^2 + 5x + 3$ is $(x + 1)(2x + 3)$.

Factor the expression.

1. $3x^2 + 2x - 1$ **2.** $2x^2 + 11x + 5$ **3.** $5x^2 + 8x + 3$

For more complicated expressions like that in Example 2 and Example 3 where there are several pairs of factors for a and c, it is convenient to set up a table when testing the factors.

(continued)

NAME ______________________________ DATE __________

Factoring $ax^2 + bx + c$

EXAMPLE 2

Factor $2x^2 - 3x - 5$.

SOLUTION

Factors of a and c	Product	Correct?
$a = 1 \cdot 2$ and $c = (-1)(5)$	$(x - 1)(2x + 5) = 2x^2 + 3x - 5$	No
$a = 1 \cdot 2$ and $c = (5)(-1)$	$(x + 5)(2x - 1) = 2x^2 + 9x - 5$	No
$a = 1 \cdot 2$ and $c = (1)(-5)$	$(x + 1)(2x - 5) = 2x^2 - 3x - 5$	Yes
$a = 1 \cdot 2$ and $c = (-5)(1)$	$(x - 5)(2x + 1) = 2x^2 - 9x - 5$	No

The correct factorization of $2x^2 - 3x - 5$ is $(x + 1)(2x - 5)$.

Factor the expression.

4. $3x^2 - 4x - 7$ **5.** $5x^2 - 14x - 3$ **6.** $7x^2 + 13x - 2$

EXAMPLE 3

Factor $8x^2 - 26x + 15$.

SOLUTION

Both factors of c must be negative, because b is negative and c is positive. Test the possible factors of a and c.

Factors of a and c	Product	Correct?
$a = 1 \cdot 8$ and $c = (-15)(-1)$	$(x - 15)(8x - 1) = 8x^2 - 121x + 15$	No
$a = 1 \cdot 8$ and $c = (-1)(-15)$	$(x - 1)(8x - 15) = 8x^2 - 23x + 15$	No
$a = 1 \cdot 8$ and $c = (-3)(-5)$	$(x - 3)(8x - 5) = 8x^2 - 29x + 15$	No
$a = 1 \cdot 8$ and $c = (-5)(-3)$	$(x - 5)(8x - 3) = 8x^2 - 43x + 15$	No
$a = 2 \cdot 4$ and $c = (-15)(-1)$	$(2x - 15)(4x - 1) = 8x^2 - 62x + 15$	No
$a = 2 \cdot 4$ and $c = (-1)(-15)$	$(2x - 1)(4x - 15) = 8x^2 - 34x + 15$	No
$a = 2 \cdot 4$ and $c = (-3)(-5)$	$(2x - 3)(4x - 5) = 8x^2 - 22x + 15$	No
$a = 2 \cdot 4$ and $c = (-5)(-3)$	$(2x - 5)(4x - 3) = 8x^2 - 26x + 15$	Yes

The correct factorization of $8x^2 - 26x + 15$ is $(4x - 3)(2x - 5)$.

Factor the expression.

7. $4x^2 - 12x + 9$ **8.** $8x^2 - 26x + 21$ **9.** $9x^2 + 18x - 16$

If a, b, and c have a common factor, factor out the common factor before testing the possible factors of a and c, as shown in Example 4.

(continued)

LESSON 5.3

NAME ______________________ DATE __________

Practice

For use with Lesson 5.3: Factoring $ax^2 + bx + c$

Topic 5

Match the trinomial with the correct factorization.

1. $3x^2 + 14x + 8$	**A.** $(3x - 2)(x + 4)$
2. $3x^2 - 23x - 8$	**B.** $(3x + 1)(x - 8)$
3. $3x^2 + 23x - 8$	**C.** $(3x + 2)(x + 4)$
4. $3x^2 + 10x - 8$	**D.** $(3x - 1)(x + 8)$

Choose the correct factorization. If neither is correct, find the correct factorization.

5. $3x^2 + 7x - 6$

A. $(3x - 1)(x + 6)$

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

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

A. $(3x - 1)(2x - 3)$

B. $(6x - 1)(x + 3)$

7. $4x^2 - 21x + 5$

A. $(4x - 1)(x - 5)$

B. $(2x - 1)(2x - 5)$

Factor the trinomial.

8. $2x^2 + 9x + 7$

9. $3x^2 - 8x - 16$

10. $4x^2 - 16x + 15$

11. $5x^2 + 12x - 9$

12. $4x^2 + 11x + 6$

13. $6x^2 - 23x + 20$

14. $6x^2 - 3x - 3$

15. $8x^2 + 42x - 36$

16. $7x^2 + 33x - 10$

17. $4x^2 - 10x - 14$

18. $4x^2 + 21x + 35$

19. $9x^2 - 12x - 12$

20. $5x^2 + 41x - 36$

21. $6x^2 + 3x - 30$

22. $7x^2 - 59x - 36$

23. $4x^2 + 37x + 40$

24. $10x^2 - 27x + 18$

25. $8x^2 + 26x + 21$

Factoring

Name ______________________

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Factor.

1. $6x^2 - 25x - 9$ $(2x - 9)(3x + 1)$

2. $15x^2 - 38x + 7$

3. $21x^2 + x - 2$

4. $15x^2 + 8x + 1$

5. $25x^2 + 55x + 18$

6. $25x^2 - 30x - 16$

7. $6x^2 - 11x - 10$

8. $10x^2 - 3x - 27$

9. $24x^2 - 2x - 15$

10. $42x^2 + 5x - 25$

11. $21x^2 + 11x - 6$

12. $4x^2 + 20x + 9$

13. $12x^2 + 20x + 7$

14. $35x^2 - 58x - 9$

15. $28x^2 - 37x + 12$

16. $20x^2 - 9x - 18$

17. $25x^2 - 10x - 63$

18. $49x^2 + 21x - 4$

19. $21x^2 + 19x - 12$

20. $25x^2 - 35x + 12$

21. $16x^2 + 32x + 15$

22. $6x^2 + 11x + 3$

23. $10x^2 - 43x + 28$

24. $35x^2 - 6x - 8$

25. $20x^2 - 23x + 6$

26. $14x^2 - 45x - 14$

27. $4x^2 - 4x - 3$

28. $28x^2 + 15x + 2$

29. $12x^2 + x - 63$

30. $49x^2 - 42x - 16$

31. $18x^2 + 15x + 2$

32. $24x^2 + 26x - 63$

33. $30x^2 + 73x + 7$

34. $50x^2 - 45x - 18$

LESSON 5.4

Topic 5

NAME ______________________ DATE ________

Factoring Special Cases

GOAL **Use special product patterns to factor quadratic polynomials.**

Terms to Know	*Example/Illustration*
Prime factor a factor that cannot be factored using integer coefficients	$x^2 + 5x + 6 = \underbrace{(x + 3)(x + 2)}_{\text{Prime factors}}$
Factoring a polynomial completely to write a polynomial as the product of: • monomial factors • prime factors with at least two terms	$2x^2 - 8 = 2(x^2 - 4)$ $= 2(x - 2)(x + 2)$

Understanding the Main Ideas

When factoring quadratic polynomials, it is helpful to be able to recognize special product patterns.

Factoring Special Products

Difference of Two Squares Pattern $a^2 - b^2 = (a + b)(a - b)$	Example: $9x^2 - 4 = (3x + 2)(3x - 2)$
Perfect Square Trinomial Pattern $a^2 + 2ab + b^2 = (a + b)^2$ $a^2 - 2ab + b^2 = (a - b)^2$	Example: $x^2 + 10x + 25 = (x + 5)^2$ $x^2 - 14x + 49 = (x - 7)^2$

EXAMPLE 1

Factor the difference of two squares.

a. $x^2 - 9$ **b.** $4x^2 - 36$ **c.** $48 - 75x^2$

SOLUTION

a. $x^2 - 9 = x^2 - 3^2$ Write as $a^2 - b^2$.
$= (x + 3)(x - 3)$ Factor using pattern.

b. $4x^2 - 36 = (2x)^2 - 6^2$ Write as $a^2 - b^2$.
$= (2x + 6)(2x - 6)$ Factor using pattern.

c. $48 - 75x^2 = 3(16 - 25x^2)$ Factor out common factor.
$= 3[4^2 - (5x)^2]$ Write as $a^2 - b^2$.
$= 3(4 + 5x)(4 - 5x)$ Factor using pattern.

(continued)