

lesson fifty five - student resource sheet

Lesson Objective: Multiply and divide rational expressions.

Vocabulary Box

rational expression – An expression that can be written as the ratio of two polynomials.

Example: $\frac{3x^2 - 21x}{x^2 - 14x + 49}$.



Guided Practice

Complete the following practice problems with your partner. Your teacher will review the answers. Make sure that you show all important work.

Directions: Simplify each expression.

1. $\frac{42y}{56} \cdot \frac{63y^5}{2y^8}$

2. $\frac{6r+48}{3r+27} \div \frac{2r+16}{4r+36}$

3. $\frac{w^2 - 5w}{w^2 - 25} \cdot \frac{w^2 - 5w}{w^2 - 10w + 25}$



Summary/Closure

A. Vocabulary Words

Directions: Answer each question.

1. Write a product of two rational expressions. Then rewrite it as a single rational expression without performing any multiplication.
2. Write a quotient of two rational expressions. Then rewrite it as a single rational expression without performing any multiplication.

B. Summarize What We Learned Today

Directions: Write two examples of multiplying rational expressions and one example of dividing rational expressions. Then write a few sentences about multiplying and dividing rational expressions. You will use this explanation as a personal reference sheet.

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Lesson Objective: Multiply and divide rational expressions.

Vocabulary Box

rational expression – An expression that can be written as the ratio of two polynomials.

Example: $\frac{3x^2 - 21x}{x^2 - 14x + 49}$.



Independent Practice

Please complete the following practice problems on your own. Your teacher will review the answers. Make sure that you show all of your work.

Directions: Simplify each expression.

1. $\frac{z}{8} \cdot \frac{22}{5z}$

2. $\frac{6y}{9} \div \frac{12y}{8}$

3. $\frac{x-7}{2x+10} \cdot \frac{2x+8}{3x-21}$

4. $\frac{4v+16}{9v} \div \frac{18v+72}{v}$

$$5. \frac{6w^2 + 30w - 24}{w^2 - 1} \cdot \frac{w^2 + 2w + 1}{9w^2 + 45w - 36}$$

$$6. \frac{u^2 - 14u + 49}{u^2 - 49} \div \frac{u^2 + 1u + 49}{u^2 - 49}$$

BONUS 

Directions: Simplify each expression.

$$1. \frac{a^2 - 9}{a^2 + 6a + 9} \cdot \frac{a^2 - 9}{a^2 - 6a + 9} \cdot \frac{a - 15}{5a + 15}$$

$$2. \frac{9b - 18}{5b + 15} \div \left(\frac{2b - 4}{6b + 24} \cdot \frac{10b + 40}{2b + 6} \right)$$

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Problem **Solving**

Directions: In each equation below, R stands for the missing rational expression that makes the equation true. Find R. Show your work. Check your answers.

1. $\frac{2p}{5} \bullet R = \frac{8p}{25}$

2. $\frac{k}{18} \bullet R = \frac{7}{3k}$

3. $R \div \frac{3m+27}{-4} = \frac{3m-12}{4m+36}$

4. $\frac{n^4b^3}{8b^5} \div R = \frac{4n^5b^5}{n^3}$



Directions: Simplify each expression.

1. $\frac{8x^5}{15y^3} \div 20x^2y^2$

2. $\frac{6z}{7z-49} \cdot \frac{12z-84}{14z}$

3. $\frac{a^2-8a+16}{a^2-16a+64} \cdot \frac{a^2-64}{a^2-16}$

lesson fifty seven - student resource sheet

Lesson Objective: Add and subtract rational expressions.

Vocabulary Box

rational expression – An expression that can be written as the ratio of two polynomials.

Example: $\frac{3x^2 - 21x}{x^2 - 14x + 49}$.



Guided Practice

Complete the following practice problems with your partner. Your teacher will review the answers. Make sure that you show all important work.

Directions: Simplify each expression.

1. $\frac{7}{4k^2} + \frac{8}{3k^5}$

2. $\frac{8j-4}{15} + \frac{12j-26}{15}$

3. $\frac{4}{h+6} - \frac{3}{h-2}$

HINTS: Remember to change to an equivalent addition problem. Remember to use the distributive property, as appropriate.



Summary/Closure

A. Vocabulary Words

1. Write a brief explanation of how to add two fractions, including how to find a least common denominator.

2. Write a brief explanation of how to add two rational expressions, including how to find a least common denominator.

B. Summarize What We Learned Today

Directions: Write two examples of adding rational expressions and one example of subtracting rational expressions. Then write a few sentences about adding and subtracting rational expressions. You will use this explanation as a personal reference sheet.