8-1 Simplifying Rational Expressions

- *simplify rational expressions*
- *A.REI.*

rational expression: a quotient of two polynomials.

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undefined values: values of the variable or variables that make the denominator of the original expression equal to zero.

Simplify.

1. $\frac{12}{45}$

Multiply.

2. $\frac{3}{10} \cdot \frac{5}{9}$

Divide.

3. $\frac{4}{15} \div \frac{2}{9}$

Simplifying Rational Expressions

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Multiplying Rational Expressions

- factor every numerator and denominator.
- cancel the like terms of _____numerator with _____denominator.
- multiply like fractions.

Dividing Rational Expressions

- multiply by the _____
- multiply.

Examples: ***Simplify the following rational expressions. Determine the undefined terms.***

1. $\dfrac{3y(y+7)}{(y+7)(y^2-9)}$

2. $\dfrac{ab^2-5ab}{(5+b)(5-b)}$

Examples: ***Simplify the following rational expressions. Determine the undefined terms.***

3. $\dfrac{x^2+5x+6}{x^2-4}$

4. $\dfrac{a^4b-2a^4}{2a^3-a^3b}$

Examples: ***Simplify the following rational expressions. Determine the excluded values.***

5. $\dfrac{x^2+9x+20}{x^2-16}\cdot\dfrac{2x-8}{x^2-25}$

6. $\dfrac{4a}{5b}\cdot\dfrac{15b}{16a}$

7. $\dfrac{x+2}{x+3}\div\dfrac{x^2+x-12}{x^2-9}$

Complex Fraction: a rational expression with a numerator and/or denominator that is also a rational expression.

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Simplify.

8. $$\frac{\dfrac{x^2}{9x^2-4y^2}}{\dfrac{x^3}{2y-3x}}$$