Rational Expression Worksheet #1:
Simplifying

Simplify.

1. $\dfrac{18x^6}{27x^4}$

2. $\dfrac{3x^2}{12x}$

3. $\dfrac{10a^3b}{-15ab^3}$

4. $\dfrac{36k^3m}{24k^4mn^5}$

5. $\dfrac{12x^2}{9x^2y}$

6. $\dfrac{42x^2}{-36x^3}$

7. $\dfrac{16a^2b^3c^4}{20a^7b^2c^2}$

8.. $\dfrac{120x^3y}{25xy^5}$

9. $\dfrac{-16x^2y^7}{12x^5y^3z^4}$

Rational Expression Worksheet #2:
Simplifying

Simplify *(remember to factor when necessary).*

1. $\dfrac{2x+6}{4x-12}$

2. $\dfrac{x^2+9x+20}{2x+8}$

3. $\dfrac{6x+24}{x^2+7x+12}$

4. $\dfrac{3x+18}{x^2+6x}$

5. $\dfrac{3x-12}{3x^2-12x}$

6. $\dfrac{x^2-5x+6}{x^2+2x-15}$

7. $\dfrac{4x+4}{x^2+4x+3}$

8. $\dfrac{x^2-x-12}{x^2-2x-8}$

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

Rational Expression Worksheet #9:
Adding/Subtracting

Add or subtract these rational expressions.

1. $\dfrac{9}{15x} + \dfrac{2}{15x}$

2. $\dfrac{5x}{7} - \dfrac{2x}{7}$

3. $\dfrac{4x}{2x+3} + \dfrac{7}{2x+3}$

4. $\dfrac{2}{5x+9} + \dfrac{x}{5x+9}$

5. $\dfrac{5}{8a} - \dfrac{2}{8a}$

6. $\dfrac{7}{x-5} - \dfrac{4}{x-5}$

7. $\dfrac{y}{y^2-9} + \dfrac{5}{y^2-9}$

8. $\dfrac{8}{2x^2} + \dfrac{3}{2x^2}$

9. $\dfrac{2}{x+1} + \dfrac{1}{x+1}$

10. $\dfrac{x-1}{3x+4} + \dfrac{2x+9}{3x+4}$

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

12. $\dfrac{7x+4}{x^2+3x+2} - \dfrac{3x-2}{x^2+3x+2}$

Name_____

Rational Expression Worksheet #10:
Adding/Subtracting

Add or subtract these rational expressions. Show your common denominators and numerators on this sheet or separate paper. **FACTOR** denominators when possible.

1. $\dfrac{5}{8} - \dfrac{3}{8x}$

2. $\dfrac{2}{4x+12} + \dfrac{7}{x+3}$

3. $\dfrac{7}{x+2} - \dfrac{4}{x-5}$

4. $\dfrac{3}{y+5} + \dfrac{y}{y^2+7y+10}$

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

6. $\dfrac{2}{x-3} - \dfrac{1}{x+7}$

Rational Expression Worksheet #6:
Multiplying & Dividing

Multiply or divide the rational expressions. Show work & factor when necessary.

1. $\dfrac{2x+6}{5x+10} \cdot \dfrac{x+2}{x^2+4x+3}$

2. $\dfrac{x^2-x-12}{3x-9} \div \dfrac{x-4}{12}$

3. $\dfrac{x^2-5x+4}{x^2} \div \dfrac{x-1}{x}$

4. $\dfrac{6}{x^2+9x+20} \cdot \dfrac{8x+40}{6x-12}$

5. $\dfrac{5x-15}{4x^2} \cdot \dfrac{x^3}{6x-18}$

6. $\dfrac{7x^2}{12x} \div \dfrac{14x^3}{48y^3}$

7. $\dfrac{x^2+5x-24}{2x+2} \div \dfrac{3x+24}{x^2-8x-9}$

8. $\dfrac{24x^3}{50x} \cdot \dfrac{30}{8x^2}$

9. $\dfrac{4x}{8x+8} \cdot \dfrac{x^2+8x+7}{8x^3}$

10. $\dfrac{6x-12}{x^2-9x+18} \cdot \dfrac{7x-21}{5x-10}$

Rational Expression Worksheet #5:
Multiplying & Dividing

Multiply or divide these rational expressions. Show work and FACTOR!!

1. $\dfrac{2a^2b}{b^2c} \cdot \dfrac{b}{a}$

2. $\dfrac{y^2 - 2y - 15}{4} \cdot \dfrac{8}{y+3}$

3. $\dfrac{x-5}{6} \div \dfrac{2x-10}{12}$

4. $\dfrac{5n+15}{4n+8} \cdot \dfrac{2n+4}{3n+9}$

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

6. $\dfrac{m^2 - 2m - 8}{8m+24} \div \dfrac{2m-8}{m^2 + 7m + 12}$

7. $\dfrac{x+3}{10x+20} \cdot \dfrac{x+2}{x^2 + 4x + 3}$

8. $\dfrac{x^2 - x - 12}{x-4} \div \dfrac{2x+6}{x-5}$

9. $\dfrac{x^2 - 5x - 6}{5x+15} \div \dfrac{x^2 - 3x - 4}{7x+21}$

10. $\dfrac{24x^3}{25y^5} \cdot \dfrac{15y^2}{8x^2}$

11. $\dfrac{6x-18}{4x} \cdot \dfrac{x}{2x-6}$

12. $\dfrac{3x+12}{12x} \div \dfrac{x+4}{48x^3}$

Rational Expression Worksheet #7:
Simplify/Multiply/Divide

Simplify *(remember to factor when necessary).*

1. $\dfrac{12x^6}{42x^4}$

2. $\dfrac{x^2 + 8x + 15}{3x + 9}$

Multiply or divide *(remember to factor when necessary).*

3. $\dfrac{x+3}{5x+20} \cdot \dfrac{x^2+3x+2}{x^2+5x+6}$

4. $\dfrac{x^2 - x - 12}{4x + 12} \div \dfrac{x^2 - 6x + 8}{6}$

5. $\dfrac{15x^2}{45x^3} \div \dfrac{5x^6}{9x^4}$

6. $\dfrac{6x+24}{5x-35} \cdot \dfrac{9x-63}{7x+28}$

Name_____

Rational Expression Worksheet #8:
Simplify/Multiply/Divide

Simplify *(remember to factor when necessary).*

1. $\dfrac{18x^6}{27x^4}$

2. $\dfrac{x^2+6x+8}{3x+12}$

3. $\dfrac{x^2-7x+12}{x^2+2x-15}$

Multiply or divide *(remember to factor when necessary).*

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

5. $\dfrac{x^2-x-12}{3x+9}\div\dfrac{x^2+x-20}{x+5}$

6. $\dfrac{15x^2}{45x^3}\div\dfrac{5x^6}{9x^4}$

7. $\dfrac{6}{x^2-9x+20}\cdot\dfrac{5x-25}{3x-6}$

8. $\dfrac{6x-12}{4x^2}\cdot\dfrac{3x^3}{2x-4}$

9. $\dfrac{3x-21}{x^2-3x-28}\cdot\dfrac{5x+20}{2x+8}$

10. $\dfrac{x^2-5x-6}{2x+6}\div\dfrac{x^2-3x-4}{4x+12}$

11. $\dfrac{25xy^3}{35x^4y^2}\cdot\dfrac{14xy}{10x^2y^3}$

12. $\dfrac{4x}{x+1}\cdot\dfrac{x^2-6x-7}{x^2-7x}$

13. $\dfrac{6x-30}{x^2-7x+10}\cdot\dfrac{7x-14}{6x}$

Name_____

Rational Expression Worksheet #14:
Solving Equations

Solve each equation for *x*. SHOW WORK!

1.) $\dfrac{-4x}{x-8} - \dfrac{11}{x-8} = \dfrac{25}{x-8}$

2.) $\dfrac{3}{4} - \dfrac{2x}{4x-24} = \dfrac{8}{x-6}$

3.) $\dfrac{3}{6x} - \dfrac{9}{12} = \dfrac{11}{4x}$

4.) $\dfrac{18}{5x+10} + \dfrac{4}{5} = \dfrac{-6}{x+2}$

5.) $\dfrac{12}{x^2+5x+6} + \dfrac{7}{x+3} = \dfrac{2}{x+2}$

6.) $\dfrac{1}{10} + \dfrac{4x}{5x} = \dfrac{-9}{2x}$

7.) $\dfrac{14}{2x-5} + \dfrac{7x}{2x-5} = \dfrac{63}{2x-5}$

8.) $\dfrac{2}{x-6} + \dfrac{7}{x+2} = \dfrac{4x+2}{x^2-4x-12}$

Rational Expression Worksheet Review #16
Adding/Subtracting/Solving

Add or subtract these rational expressions. Show your common denominators and numerators on this sheet or separate paper. **FACTOR** denominators when possible.

1. $\dfrac{3}{8x} - \dfrac{1}{4}$

2. $\dfrac{2}{6x-30} + \dfrac{7}{x-5}$

3. $\dfrac{7}{12} - \dfrac{4x}{3x}$

4. $\dfrac{3}{y+3} + \dfrac{2y}{y^2+8x+15}$

5. $\dfrac{5x}{x-7} + \dfrac{2x}{4x-28}$

6. $\dfrac{6}{y+8} - \dfrac{3y}{y^2+11x+24}$

Solve each equation for x. SHOW WORK!

7.) $\dfrac{3x}{x+7} - \dfrac{8}{x+7} = \dfrac{-23}{x+7}$

8.) $\dfrac{2}{5(x-8)} + \dfrac{4}{5} = \dfrac{6}{(x-8)}$

Rational Expression Worksheet Review #17:
All operations

Simplify *(remember to factor when necessary).*

1. $\dfrac{120x^3y}{25xy^5}$

2. $\dfrac{x^2+9x+20}{2x+8}$

3. $\dfrac{x^2-x-12}{x^2-2x-8}$

Multiply or divide *(remember to factor when necessary).*

4. $\dfrac{5n+15}{4n+8} \cdot \dfrac{2n+4}{3n+9}$

5. $\dfrac{x^2-x-12}{x-4} \div \dfrac{2x+6}{x-5}$

6. $\dfrac{x+3}{10x+20} \cdot \dfrac{x+2}{x^2+4x+3}$

Add or subtract these rational expressions.

7. $\dfrac{5}{12x} - \dfrac{3}{4}$

8. $\dfrac{4}{7x-35} + \dfrac{5}{x-5}$

Solve each equation for *x*. SHOW WORK!

9. $\dfrac{3x}{x+7} - \dfrac{8}{2(x+7)} = \dfrac{-22}{x+7}$

10. $\dfrac{2}{x-6} + \dfrac{7}{x+2} = \dfrac{4x+2}{x^2-4x-12}$