

Example 4:

Simplify.

$$\text{This is like: } \frac{3}{5} \cdot \frac{12 \cancel{3}^1}{20 \cancel{3}^1} = \frac{36}{180} = \frac{1}{5}$$

$$\text{a. } \frac{(y-5) \cdot 2y^2}{(3y^2-3y)(y^2-6y+5)} = \frac{2 \cdot \cancel{y} \cdot y \cdot (y-5)}{3 \cdot \cancel{y} \cdot (y-1) \cdot \cancel{(y-5)} \cdot (y-1)} = \boxed{\frac{2y}{3(y-1)^2}}$$

$$\text{b. } \frac{(2x+1)(2x-3)}{(2x^2-x-3)(x+1)} = \frac{(2x+1) \cdot (2x-3)}{(2x-3) \cdot (x+1)} = \boxed{\frac{2x+1}{x+1}}$$

Example 5:

Simplify.

$$\text{This is like: } \frac{12}{5} \div \frac{3}{10} = \frac{12}{5} \cdot \frac{10}{3} = \frac{120}{15} = 8$$

$$\text{a. } \frac{(n-2)(n-2)}{2n(n+5)} = \frac{(n-2)}{2n} \cdot \frac{(n+5)}{(n-2)} = \frac{(n-2) \cdot (n+5)}{2 \cdot n \cdot (n-2)} = \boxed{\frac{n+5}{2n}}$$

$$\begin{aligned} \text{b. } \frac{(5x^2-20x)}{(x+5)} \div \frac{(x-4)}{1} &= \frac{(5x^2-20x)}{(x+5)} \cdot \frac{1}{(x-4)} \\ &= \frac{5x \cdot (x-4)}{(x+5) \cdot (x-4)} = \boxed{\frac{5x}{x+5}} \end{aligned}$$

Multiplying Rational Expressions

Name:

Date:

Simplify the expression.

1. $\frac{4x}{3} \cdot \frac{2}{x} = \boxed{\frac{8}{3}}$
2. $\frac{13x}{18} \cdot \frac{10^2}{4 \cdot 12x} = \frac{2}{4} = \boxed{\frac{1}{2}}$
3. $\frac{4x^2}{17} \cdot \frac{14^2}{5x} = \boxed{\frac{8x}{5}}$
4. $\frac{3x}{2x} \cdot \frac{34x}{5} = \boxed{\frac{6}{5}}$
5. $\frac{7x^2}{18} \cdot \frac{18^3}{2 \cdot 4x} = \boxed{\frac{3x}{2}}$
6. $\frac{1x^2}{12x} \cdot \frac{9 \cdot 8x^2}{38x} = \frac{9x^2}{3} = \boxed{3x^2}$
7. $\frac{x+4}{3} \cdot \frac{8 \cdot 3}{2(x+4)} = \boxed{11}$
8. $\frac{x-3}{x+3} \cdot \frac{x+3}{x^2-9} = \boxed{\frac{1}{x+3}}$
9. $\frac{x+2}{3x+6} \cdot \frac{6}{x} = \boxed{\frac{2}{x}}$
10. $\frac{(x-5) \cdot 25}{1 \cdot 12} \cdot \frac{36 \cdot 3}{x+5} = \boxed{3(x-5)}$
11. $\frac{x+4}{x^2+5x+4} \cdot \frac{(3x+4)}{(3x+4)} = \boxed{3}$
12. $\frac{x+4}{4} \cdot \frac{x-2}{(x-2)(x+2)} = \boxed{\frac{x+4}{4(x+2)}}$

Simplify the expression.

1. $\frac{8x}{6} \cdot \frac{6}{x} = \boxed{8}$
2. $\frac{7x}{5} \cdot \frac{10}{x^2} = \boxed{\frac{14}{x}}$
3. $\frac{12x^3}{25} \cdot \frac{40}{9x^2} = \boxed{\frac{32x}{15}}$
4. $\frac{14x^5}{3x^2} \cdot \frac{9x^3}{28x^8} = \boxed{\frac{3}{2x^2}}$
5. $\frac{6-18x}{4x^2} \cdot \frac{x^3}{2-6x} = \boxed{\frac{3x}{4}}$
6. $\frac{6}{x^2-9x+20} \cdot (5x-25) = \boxed{\frac{30}{x-4}}$
7. $\frac{4x}{x+1} \cdot \frac{x^2-6x-7}{x^3+7x^2} = \boxed{\frac{4(x-7)}{x(x+7)}}$
8. $\frac{x}{2x^2-7x+3} \cdot (7x-21) = \boxed{\frac{7x}{2x-1}}$
9. $\frac{2x-6}{x^2-25} \cdot \frac{x^2+6x+5}{x^2-9} = \boxed{\frac{2(x+1)}{(x-5)(x+3)}}$
10. $\frac{x^2-16}{12} \cdot \frac{48}{x+4} = \boxed{4(x-4)}$
11. $\frac{x+3}{x^2+5x+6} \cdot (5x+10) = \boxed{5}$
12. $\frac{x+5}{7} \cdot \frac{x+7}{x^2-25} = \boxed{\frac{x+7}{7(x-5)}}$

Simplify the expression.

1. $\frac{6x}{5} \cdot \frac{1}{x}$
2. $\frac{8x^2}{3} \cdot \frac{9}{16x}$
3. $\frac{3x^2}{2x} \cdot \frac{12x^2}{6x}$
4. $\frac{5-4x}{4} \cdot \frac{48}{10-8x}$
5. $\frac{4x}{x^2-9} \cdot \frac{x-3}{8x^2+12x}$
6. $\frac{8}{2+3x} \cdot (8+12x)$
7. $\frac{3x}{x^2-2x-24} \cdot \frac{x-6}{6x^2+9x}$
8. $\frac{3x}{2x^2-9x+10} \cdot (2x-5)$
9. $\frac{x^2-3x}{x^2-5x+6} \cdot \frac{(x-2)^2}{2x}$
10. $\frac{16x}{25x^2-5} \cdot \frac{25x^2+30x+9}{8x}$
11. $\frac{1}{x^2+5x-24} \cdot \frac{x^2+6x-16}{3x}$
12. $\frac{x^2+x-6}{x^2-x-2} \cdot \frac{x^2+5x+4}{x^2+2x-3}$