

Name Key

Rational Expression Worksheet #3: Multiplying & Dividing

Multiply or divide these rational expressions.

1. $\frac{2a^2b \cdot b}{b^2c \cdot a}$ $a \neq 0$
 $b \neq 0$
 $c \neq 0$

$$\boxed{\frac{2a}{c}}$$

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

$$\frac{(y-5)(y+3)}{4} \cdot \frac{8}{y+3} = \boxed{2(y-5)}$$

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

$$\frac{x-5}{6} \times \frac{12}{2(x-5)} = \boxed{1}$$

4. $\frac{5n+15}{4n+8} \cdot \frac{2n+4}{3n+9}$ $n \neq -2, -3$

$$\frac{5(n+3)}{24(n+2)} \cdot \frac{2(n+2)}{3(n+3)} = \boxed{\frac{5}{6}}$$

5. $\frac{x^2 - 2x}{6} \div \frac{3x-6}{x}$ $x \neq 2, 0$

$$\frac{x(x-2)}{6} \cdot \frac{x}{3(x-2)} = \boxed{\frac{x^2}{18}}$$

6. $\frac{m^2 - 2m - 8}{8m+24} \div \frac{2m-8}{m^2 + 7m + 12}$ $m \neq -3, 4, -4$

$$\frac{(m-4)(m+2)}{8(m+3)} \times \frac{(m+3)(m+4)}{2(m-4)} = \boxed{\frac{(m+2)(m+4)}{16}}$$

7. $\frac{x+3}{10x+20} \cdot \frac{x+2}{x^2+4x+3}$ $x \neq -2, -3, -1$

$$\frac{x+3}{10(x+2)} \times \frac{(x+2)}{(x+3)(x+1)} = \boxed{\frac{1}{10(x+1)}}$$

8. $\frac{x^2 - x - 12}{x-4} \div \frac{2x+6}{x-5}$ $x \neq 4, -3, 5$

$$\frac{(x-4)(x+3)}{x-4} \times \frac{(x-5)}{2(x+3)} = \boxed{\frac{x-5}{2}}$$

9. $\frac{x^2 - 5x - 6}{5x+15} \div \frac{x^2 - 3x - 4}{7x+21}$ $x \neq -3, 4, -1$

$$\frac{(x-6)(x+1)}{5(x+3)} \times \frac{7(x+3)}{(x-4)(x+1)} = \boxed{\frac{7(x-6)}{5(x-4)}}$$

10. $\frac{324x^3 \cdot 315y^2}{5 \cdot 25y^5 \cdot 8x^2}$ $x \neq 0$
 $y \neq 0$

$$\boxed{\frac{9x}{5y^3}}$$

11. $\frac{6x-18}{4x} \cdot \frac{x}{2x-6}$ $x \neq 0, 3$

$$\frac{3(x-3)}{4x} \cdot \frac{x}{2(x-3)} = \boxed{\frac{3}{4}}$$

12. $\frac{3x+12}{12x} \div \frac{x+4}{48x^3}$ $x \neq 0, -4$

$$\frac{3(x+4)}{12x} \times \frac{48x^3}{x+4} = \boxed{12x^2}$$