

8-4 Practice

Multiply. State any restrictions on the variables.

$$1. \frac{5a}{5(a+1)} \cdot \frac{10(a+1)}{a} = \frac{5a}{5a+5} \cdot \frac{10a+10}{a} = \boxed{10}$$

$a \neq 0, -1$

$$2. \frac{2x+4}{10x} \cdot \frac{15x^2}{x+2} = \frac{2(x+2)}{10x} \cdot \frac{3 \cdot 5x^2}{x+2} = \frac{3x}{8}$$

$x \neq 0, -2$

$$3. \frac{x^2-5x}{x^2+3x} \cdot \frac{x+3}{x-5} = \frac{x(x-5)}{x(x+3)} \cdot \frac{x+3}{x-5} = \boxed{1}$$

$x \neq 0, -3, 5$

$$4. \frac{x^2-6x}{x^2-36} \cdot \frac{x+6}{x^2} = \frac{x(x-6)}{(x-6)(x+6)} \cdot \frac{x+6}{x^2} = \frac{x}{x^2} = \boxed{\frac{1}{x}}$$

$x \neq 6, -6, 0$

$$5. \frac{3x^2}{x^2-25} \cdot \frac{x^2+6x+5}{x(x+1)} = \frac{3x}{(x-5)(x+5)} \cdot \frac{x(x+1)}{1} = \frac{3x(x+1)}{x-5}$$

$x \neq 5, -5, 0$

$$6. \frac{y^2-2y}{y^2+7y-18} \cdot \frac{y^2-81}{y^2-11y+18} = \frac{y(y-2)}{(y+9)(y-2)} \cdot \frac{(y-9)(y+9)}{(y-9)(y-2)} = \frac{y}{y-2}$$

$y \neq -9, 2, 9$

Divide. State any restrictions on the variables.

$$7. \frac{7x^3}{24y^3} \div \frac{12y^4}{21x} = \frac{7x^3}{24y^3} \cdot \frac{21x}{12y^4} = \frac{x^3}{6y}$$

$y \neq 0, x \neq 0$

$$8. \frac{6x+6}{7} \div \frac{4x+4}{x-2} = \frac{3(x+1)}{7} \cdot \frac{x-2}{4(x+1)} = \frac{3(x-2)}{14}$$

$x \neq 2, -1$

$$9. \frac{y^2-49}{(y-7)^2} \div \frac{5y+35}{y^2-7y} = \frac{(y-7)(y+7)}{(y-7)(y-7)} \cdot \frac{y(y-7)}{5(y+7)} = \frac{y}{5}$$

$y \neq 7, 0, -7$

$$10. \frac{x^2+10x+16}{x^2-6x-16} \div \frac{x+8}{x^2-64} = \frac{(x+8)(x+2)}{(x-8)(x+2)} \cdot \frac{(x-8)(x+8)}{x+8} = \frac{x+8}{x+8}$$

$x \neq 8, -2, -8$

$$11. \frac{y^2-5y+4}{y^2-1} \div \frac{y^2-9}{y^2+5y+4} = \frac{(y-4)(y-1)}{(y+1)(y-1)} \cdot \frac{(y+4)(y+1)}{(y-3)(y+3)} = \frac{(y-4)(y+4)}{(y-3)(y+3)}$$

$y \neq -1, 1, 3, -3, -4$

$$12. \frac{x^2-4}{x^2+6x+9} \div \frac{x^2+4x+4}{x^2-9} = \frac{(x-2)(x+2)}{(x+3)(x+3)} \cdot \frac{(x-3)(x+3)}{(x+2)(x+2)} = \frac{(x-2)(x-3)}{(x+3)(x+2)}$$

$x \neq -3, -2, 3$