

Multiply and Divide Rational Expressions

Date _____ Period _____

Simplify each expression.

1)
$$\frac{k+9}{(k-8)(k-7)} \cdot \frac{(k-7)(k+1)}{k+1}$$

2)
$$\frac{p-2}{4p} \cdot \frac{3(p-10)}{3(p-2)}$$

3)
$$\frac{x+8}{x-3} \div \frac{10(x-1)}{(x-1)(x-3)}$$

4)
$$\frac{8n(n+10)}{10} \cdot \frac{n+7}{8n(n+7)}$$

5)
$$\frac{9(m+7)}{(m+4)(m+7)} \div \frac{9}{8(m+4)}$$

6)
$$\frac{6(r+7)}{2r} \cdot \frac{10}{10(r+7)}$$

7)
$$\frac{8x^2}{x-4} \div \frac{8x^2}{16x^4}$$

8)
$$\frac{n+5}{10} \div \frac{n+6}{3n+18}$$

9)
$$(b+6) \cdot \frac{10b}{2b+12}$$

10)
$$\frac{9v^2+15v}{8} \div \frac{9v^2+15v}{7}$$

11)
$$\frac{x^2-15x+54}{x^2-14x+48} \div \frac{1}{x-8}$$

12)
$$\frac{3x-9}{x-6} \div \frac{x^2-11x+24}{x-6}$$

$$13) \frac{a-4}{a^2-16} \cdot \frac{a^2+5a+4}{a-5}$$

$$14) \frac{k^2-6k-27}{k+1} \cdot \frac{k+1}{4}$$

$$15) \frac{6p}{9p^3-36p^2} \cdot \frac{9p^2}{p+4}$$

$$16) \frac{9}{x^2+5x-36}(x-4)$$

$$17) \frac{6n+24}{14n-4} \div \frac{8n+32}{14n-4}$$

$$18) \frac{3n}{49n^2-25} \cdot \frac{49n^2-25}{9n-9}$$

$$19) \frac{5x-9}{42x^3-48x^2} \div \frac{45x^2-81x}{7x^2+27x-40}$$

$$20) \frac{7r^2+51r-40}{r^2-r-72} \div \frac{49r^2-21r-10}{7r+2}$$

$$21) \frac{4n^3 - 14n^2}{14n^3 - 8n^2} \div \frac{8n - 28}{28 - 49n}$$

$$22) \frac{14b + 10}{7b + 5} \div \frac{3b^2 + 13b - 56}{48 - 18b}$$

$$23) \frac{(x+3)(x+1)}{(x+5)(x+2)} \div \frac{(x+3)}{(x+2)} \cdot \frac{(x+5)}{(x+1)}$$

$$24) (x^3 + 125) \div (x + 5)$$

Answers to Multiply and Divide Rational Expressions (ID: 1)

$$1) \frac{k+9}{k-8}$$

$$5) 8$$

$$9) 5b$$

$$13) \frac{a+1}{a-5}$$

$$17) \frac{3}{4}$$

$$21) -\frac{7}{4}$$

$$2) \frac{p-10}{4p}$$

$$6) \frac{3}{r}$$

$$10) \frac{7}{8}$$

$$14) \frac{(k+3)(k-9)}{4}$$

$$18) \frac{n}{3(n-1)}$$

$$22) -\frac{12}{b+7}$$

$$3) \frac{x+8}{10}$$

$$7) \frac{16x^4}{x-4}$$

$$11) x-9$$

$$15) \frac{6p}{(p-4)(p+4)}$$

$$19) \frac{x+5}{54x^3}$$

$$23) 1$$

$$4) \frac{n+10}{10}$$

$$8) \frac{3(n+5)}{10}$$

$$12) \frac{3}{x-8}$$

$$16) \frac{9}{x+9}$$

$$20) \frac{1}{r-9}$$

$$24) x^2 + 5x + 25$$