

## Multiplying Rational Expressions

Simplify each expression.

$$1) \frac{59n}{99} \cdot \frac{80}{33n}$$

$$\frac{4720}{3267}$$

$$2) \frac{53}{43} \cdot \frac{46n^2}{31}$$

$$\frac{2438n^2}{1333}$$

$$3) \frac{93}{21n} \cdot \frac{34n}{51n}$$

$$\frac{62}{21n}$$

$$4) \frac{79n}{25} \cdot \frac{85}{27n^2}$$

$$\frac{1343}{135n}$$

$$5) \frac{96}{38n} \cdot \frac{25}{45}$$

$$\frac{80}{57n}$$

$$6) \frac{84}{3} \cdot \frac{48x}{95}$$

$$\frac{1344x}{95}$$

$$7) \frac{6(r+2)}{20} \cdot \frac{4r}{6(r+2)}$$

$$\frac{r}{5}$$

$$8) \frac{7n^2(n+4)}{(n-3)(n+4)} \cdot \frac{n-3}{(n+8)(n+6)}$$

$$\frac{7n^2}{(n+8)(n+6)}$$

$$9) \frac{2(p+6)}{4} \cdot \frac{p-3}{2(p-3)}$$

$$\frac{p+6}{4}$$

$$10) \frac{9(r+4)}{r+4} \cdot \frac{9r}{9(r-5)}$$

$$\frac{9r}{r-5}$$

$$11) \frac{8(m+1)}{7m} \cdot \frac{9}{8(m+1)}$$

$$\frac{9}{7m}$$

$$12) \frac{(p+6)(p-4)}{p-4} \cdot \frac{1}{(p-4)(p-2)}$$

$$\frac{p+6}{(p-4)(p-2)}$$

$$13) \frac{1}{v+10} \cdot \frac{10v+30}{v+3}$$

$$\frac{10}{v+10}$$

$$14) \frac{7n}{24n^3 - 64n^2} \cdot \frac{9n-24}{7n}$$

$$\frac{3}{8n^2}$$

$$15) \frac{x+7}{7x+35} \cdot \frac{x^2-3x-40}{x-8}$$

$$\frac{x+7}{7}$$

$$17) \frac{3b^2+18b}{b+6} \cdot \frac{1}{b+8}$$

$$\frac{3b}{b+8}$$

$$19) \frac{21x^2-21x}{18x^2-18x} \cdot \frac{6x}{6x^2}$$

$$\frac{7}{6x}$$

$$21) \frac{v-7}{v+6} \cdot \frac{10v+60}{v-7}$$

$$10$$

$$23) \frac{x^2-10x+25}{10x-100} \cdot \frac{x-10}{45-9x}$$

$$\frac{(x-5)}{90}$$

$$25) \frac{8v-56}{8v+48} \cdot \frac{v^2+9v+18}{8v^2+24v}$$

$$\frac{v-7}{8v}$$

$$27) \frac{m+1}{3m-15} \cdot \frac{8m-80}{m^2-9m-10}$$

$$\frac{8}{3(m-5)}$$

$$16) \frac{20a^2-100a}{a-1} \cdot \frac{1}{16a^3-80a^2}$$

$$\frac{5}{4a(a-1)}$$

$$18) \frac{p+7}{p-10} \cdot \frac{p+2}{7p+14}$$

$$\frac{p+7}{7(p-10)}$$

$$20) \frac{1}{p-9} \cdot \frac{p^2+6p-27}{p+9}$$

$$\frac{p-3}{p-9}$$

$$22) \frac{5r+50}{r+10} \cdot \frac{r-2}{5}$$

$$r-2$$

$$24) \frac{45x^2}{x-9} \cdot \frac{x^2-5x-36}{3x^3+12x^2}$$

$$15$$

$$26) \frac{9r^3-54r^2}{9r^2+45r} \cdot \frac{9r^2+9r}{9r^3-54r^2}$$

$$\frac{r+1}{r+5}$$

$$28) \frac{6n+6}{n+9} \cdot \frac{n^2+6n-27}{6n+6}$$

$$n-3$$

## Dividing Rational Expressions

Simplify each expression.

1)  $\frac{10n}{9} \div \frac{13n^2}{16}$

$$\frac{160}{117n}$$

2)  $\frac{16n}{17} \div \frac{8n}{6}$

$$\frac{12}{17}$$

3)  $\frac{2}{7} \div \frac{18}{8x^2}$

$$\frac{8x^2}{63}$$

4)  $\frac{12}{7} \div \frac{4}{11r}$

$$\frac{33r}{7}$$

5)  $\frac{7}{18} \div \frac{6}{9a}$

$$\frac{7a}{12}$$

6)  $\frac{5}{20} \div \frac{5x}{3}$

$$\frac{3}{20x}$$

7)  $\frac{4n}{n-6} \div \frac{4n}{8n-48}$

$$8$$

8)  $\frac{3}{28b} \div \frac{3}{b+1}$

$$\frac{b+1}{28b}$$

9)  $\frac{7a^2}{7a^3 + 56a^2} \div \frac{2}{a^2 + 7a - 8}$

$$\frac{a-1}{2}$$

10)  $\frac{6}{28x+4} \div \frac{6}{35x+5}$

$$\frac{5}{4}$$

$$11) \frac{x^2 + 10x + 16}{x^2 + 6x + 8} \div \frac{1}{x + 4}$$

$$x + 8$$

$$12) \frac{49x + 21}{6x} \div \frac{42x + 18}{6}$$

$$\frac{7}{6x}$$

$$13) \frac{7}{8r - 40} \div \frac{1}{8r - 40}$$

$$7$$

$$14) \frac{1}{2a} \div \frac{8a}{2a^2 + 16a}$$

$$\frac{a + 8}{8a}$$

$$15) \frac{8}{4n^2 - 16n} \div \frac{1}{n - 4}$$

$$\frac{2}{n}$$

$$16) \frac{a - 4}{a^2 - 2a - 8} \div \frac{1}{a - 5}$$

$$\frac{a - 5}{a + 2}$$

$$17) \frac{b^2 - 2b - 15}{8b + 20} \div \frac{2}{4b + 10}$$

$$\frac{(b + 3)(b - 5)}{4}$$

$$18) \frac{10b^2 + 42b + 36}{6b^2 - 2b - 60} \div \frac{40b + 48}{3b^2 - 13b + 10}$$

$$\frac{b - 1}{8}$$

$$19) \frac{16x - 56}{8} \div \frac{8x - 28}{4}$$

$$1$$

$$20) \frac{10x^2 - 28x + 16}{2x - 4} \div \frac{25x^2 - 25x + 4}{5x^2 - 41x + 8}$$

$$x - 8$$

$$21) \frac{6p + 27}{18p^2 + 36p} \div \frac{16p + 72}{2p + 4}$$

$$\frac{1}{24p}$$

$$22) \frac{3x^2 - 25x - 18}{27x + 18} \div \frac{5x - 3}{5x^2 - 33x + 18}$$

$$\frac{(x - 9)(x - 6)}{9}$$