

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Multiplying Rational Expressions

Multiply. Write each answer in fully reduced form and keep the original denominator restrictions.

1. $\frac{15}{4} \times \frac{5}{12}$

2. $\frac{9x^6}{4x^6} \times \frac{x^6}{36}$

3. $\frac{9q+99}{q^2-2q-35} \times \frac{q-7}{9q+99}$

4. $\frac{(r-10)(r-9)}{r-9} \times \frac{11}{(r-12)(r-9)}$

5. $\frac{3n(n+3)}{(n+1)(n+3)} \times \frac{n+1}{(n-4)(n-5)}$

6. $\frac{4x^5}{3x^5} \times \frac{8}{8}$

7. $\frac{12(s-4)(s+2)}{(s+11)(s+2)} \times \frac{s+11}{(s-4)(s+1)}$

8. $\frac{-10}{8} \times \frac{4}{45y^6}$

9. $\frac{p^2+3p+2}{p+2} \times \frac{p+1}{7}$

10. $\frac{y^2-y-6}{y-3} \times \frac{y+2}{4}$

Multiplying Rational Expressions

Answer Key

Multiply. Write each answer in fully reduced form and keep the original denominator restrictions.

$$\begin{aligned} 1. \quad & \frac{15}{4} \times \frac{5}{12} \\ &= \frac{25}{16} \end{aligned}$$

$$\begin{aligned} 2. \quad & \frac{9x^6}{4x^6} \times \frac{x^6}{36} \\ &= \frac{x^6}{16} \\ \text{Restrictions: } & 4x^6 \neq 0 \end{aligned}$$

$$\begin{aligned} 3. \quad & \frac{9q+99}{q^2-2q-35} \times \frac{q-7}{9q+99} \\ &= \frac{1}{q+5} \\ \text{Restrictions: } & q^2-2q-35 \neq 0 \\ & 9q+99 \neq 0 \end{aligned}$$

$$\begin{aligned} 4. \quad & \frac{(r-10)(r-9)}{r-9} \times \frac{11}{(r-12)(r-9)} \\ &= \frac{11r-110}{r^2-21r+108} \\ \text{Restrictions: } & r-9 \neq 0 \\ & r^2-21r+108 \neq 0 \end{aligned}$$

$$\begin{aligned} 5. \quad & \frac{3n(n+3)}{(n+1)(n+3)} \times \frac{n+1}{(n-4)(n-5)} \\ &= \frac{3n}{n^2-9n+20} \\ \text{Restrictions: } & n^2+4n+3 \neq 0 \\ & n^2-9n+20 \neq 0 \end{aligned}$$

$$\begin{aligned} 6. \quad & \frac{4x^5}{3x^5} \times \frac{8}{8} \\ &= \frac{4}{3} \\ \text{Restrictions: } & 3x^5 \neq 0 \end{aligned}$$

$$\begin{aligned} 7. \quad & \frac{12(s-4)(s+2)}{(s+11)(s+2)} \times \frac{s+11}{(s-4)(s+1)} \\ &= \frac{12}{s+1} \\ \text{Restrictions: } & s^2+13s+22 \neq 0 \\ & s^2-3s-4 \neq 0 \end{aligned}$$

$$\begin{aligned} 8. \quad & \frac{-10}{8} \times \frac{4}{45y^6} \\ &= \frac{-1}{9y^6} \\ \text{Restrictions: } & 45y^6 \neq 0 \end{aligned}$$

$$\begin{aligned} 9. \quad & \frac{p^2+3p+2}{p+2} \times \frac{p+1}{7} \\ &= \frac{p^2+2p+1}{7} \\ \text{Restrictions: } & p+2 \neq 0 \end{aligned}$$

$$\begin{aligned} 10. \quad & \frac{y^2-y-6}{y-3} \times \frac{y+2}{4} \\ &= \frac{y^2+4y+4}{4} \\ \text{Restrictions: } & y-3 \neq 0 \end{aligned}$$