

Unit 4 Worksheet 2
Multiplying and Dividing Rational Expressions

Name: _____
Date: _____ Per: _____

[1-14] Multiply or divide the following and then simplify the result.

1. $\frac{15x}{14y} \cdot \frac{21y^2}{25x^3}$

2. $\frac{18x^2}{y} \div \frac{6x}{y}$

3. $\frac{7x}{2y^3} \cdot \frac{16y}{21x^4}$

4. $\frac{2a^2b}{3bc} \div \frac{9b^2c}{16ad^2}$

5. $\frac{x+2}{x^2-4} \div \frac{x+3}{x-2}$

6. $\frac{4x+8}{x^2-25} \cdot \frac{x-5}{5x+10}$

7. $\frac{x^2-6x-16}{x^2+4x-21} \div \frac{x^2+9x+14}{x^2-8x+15}$

8. $\frac{x^2-8x+12}{x^2-16} \cdot \frac{4x+16}{x^2-4x+4}$

$$9. \frac{\frac{x^2-9x-10}{x^2+x-6}}{\frac{x^2-1}{x^2-4}}$$

$$10. \frac{\frac{x^2+6x}{6x^2+15x}}{\frac{x^2-36}{2x^2+7x+5}}$$

$$11. \frac{2x^2+x-6}{x^2-2x-8} \cdot \frac{2x^2-x-3}{x^2-3x-4}$$

$$12. \frac{9-x^2}{x^2+6x+9} \div \frac{3x-9}{3x+9}$$

$$13. \frac{x^2-x}{2x^2+13x-7} \cdot \frac{2x^2+5x-3}{x^2+2x-3}$$

$$14. \frac{x^2+11x+18}{2x^2-50} \cdot \frac{x^2+6x+5}{2x^2+4x}$$

15. Suppose that $x = \frac{t^2+3t-4}{3t^2-3}$ and $y = \frac{t^2+2t-8}{2t^2-2t-4}$, for $t \neq 1$, $t \neq -1$, $t \neq 2$, and $t \neq -4$. Show that the value of x^2y^{-2} does not depend on the value of t .

16. Determine which of the following numbers is larger without using a calculator, $\frac{15^{16}}{16^{15}}$ or $\frac{20^{24}}{24^{20}}$.

(Hint: We can compare two positive quantities a and b by computing the quotient $\frac{a}{b}$. If $\frac{a}{b} > 1$, then $a > b$.

Likewise, if $0 < \frac{a}{b} < 1$, then $a < b$.)

17. One of two numbers can be represented by the rational expression $\frac{x-2}{x}$, where $x \neq 0$ and $x \neq 2$.

a. Find a representation of the second number if the product of the two numbers is 1.

b. Find a representation of the second number if the product of the two numbers is 0.

