

Unit 4 Worksheet 1
Equivalent Rational Expressions

Name: _____

Date: _____ **Per:** _____

[1-17] Find an equivalent rational expression in lowest terms, and identify the value(s) of the variable that must be excluded.

1. $\frac{16n}{20n}$

2. $\frac{x^3y}{y^4x}$

3. $\frac{30a^5b^3c^4}{24a^2b^3c^9}$

4. $\frac{db+dc}{db}$

5. $\frac{x^2-9}{x^2-2x-3}$

6. $\frac{3n^2-5n-2}{2n-4}$

7. $\frac{f(x)-2}{[f(x)]^2-4}$ if $f(x) = 3x$

8. $\left(\frac{g}{f}\right)(n)$ if $f(n) = 4n$ and $g(n) = 2n - 8n^2$

9. $\frac{4a^2-12a}{a^2-6a+9}$

10. $\frac{y-4}{4-y}$

11. $\frac{4x-2y}{3y-6x}$

12. $\left(\frac{f}{g}\right)(a)$ if $f(a) = a^2 - 49$ and $g(a) = 7 + a$

13. $\frac{f(x)}{[g(x)]^3}$ if $f(x) = 9 - x^2$ and $g(x) = x - 3$

14. $\frac{x^2-5x+6}{8-2x-x^2}$

15. $\frac{a-4}{2a^2-8a-3a+12}$

16. $\frac{y^2-3y+5y-15}{y^3-27}$

17. $\frac{8x^3-125}{4x^2-25}$

18. Write a rational expression with denominator $6b$ that is equivalent to

a) $\frac{a}{b}$

b) one-half of $\frac{a}{b}$

c) $\frac{1}{3}$

19. Remember that algebra is just another way to perform arithmetic, but with variables replacing numbers.

a) Simplify the following rational expression: $\frac{(x^2y)^2(xy)^3z^2}{(xy^2)^2yz}$.

b) Simplify the following rational expression without using a calculator: $\frac{12^2 \cdot 6^3 \cdot 5^2}{18^2 \cdot 15}$.

c) How are the calculations in parts (a) and (b) similar? How are they different? Which expression was easier to simplify?