

NAME _____

DATE _____

Module Test **A**

Module 15

Fill in the blanks.

- In order to simplify a rational expression with more than one term in the numerator and/or denominator, the expression must first be _____.
- To add or subtract rational terms, a _____ is needed.
- The domain of a rational term are all real numbers except the _____ of the expression.
- A complex fraction is actually the _____ of two fractions.
- When fractions are divided, the operation is changed to multiplication with the _____ of the divisor.

Choose the correct response to each of the following:

- Simplify: $\frac{x+3}{3+x}$.
 a. $\frac{x+1}{1+x}$ b. 1 c. -1 d. $\frac{x+3}{3+x}$
- Simplify: $\frac{5-2q}{2q-5}$.
 a. $\frac{1-q}{q-1}$ b. 1 c. -1 d. $\frac{5-2q}{2q-5}$
- Find all restricted values for: $\frac{7y}{y^3-9y}$.
 a. 0 b. 3 c. -3 d. a, b, and c
- Find all restricted values for: $\frac{x^2-2x}{3}$.
 a. 0 b. 2 c. both a and b d. no restricted values
- Find the least common denominator for: $\frac{5}{6x}$ and $\frac{1}{4x^2}$.
 a. $12x^2$ b. $6x$ c. $4x^2$ d. $2x$

11. Find the least common denominator for: $\frac{6+x}{x^2+5x+6}$ and $\frac{x}{x+3}$.

- a. $x^3 + 8x^2 + 21x + 18$ c. $x + 3$
 b. $x + 2$ d. $x^2 + 5x + 6$

12. Find the least common denominator for: $\frac{2}{x}$ and $\frac{4}{x+5}$.

- a. x b. $x + 5$ c. $x(x + 5)$ d. 4

Are the following statements true or false?

13. $\frac{x+3}{x+6}$ reduces to $\frac{x+1}{x+2}$.

14. $\frac{x-4}{x}$ has no restricted values.

15. $\frac{5}{3x+6}$ has the restricted value -2 .

16. $\frac{x+7}{3x}$ has the restricted value -3 .

17. $\frac{4(x-1)}{8(x-1)}$ reduces to $\frac{1}{2}$.

18. A least common denominator is needed to find the product of two fractions.

19. To subtract two fractions, the expression must be changed to addition with the reciprocal of the second fraction.

20. Simplify the rational expressions.

- a. $\frac{9x^3y^6z^2}{15x^7yz^2}$ _____
 b. $\frac{6a+30}{8a+40}$ _____
 c. $\frac{n^2-25}{n^2+3n-10}$ _____
 d. $\frac{k^2+2k+1}{2k^2-k-3}$ _____

21. Multiply or divide the rational expressions. Simplify, if necessary.

- a. $\frac{10x^6}{2y^2} \cdot \frac{3y^2}{5x}$ _____
 b. $\frac{x^2+7x}{x^2-2x} \div \frac{x^2+9x+14}{x^2-4}$ _____
 c. $\frac{x+4}{5x^2+30x+45} \cdot \frac{5x^2+15x}{x^2+4x}$ _____
 d. $\frac{\frac{6x^2}{x+2}}{4xy^3}$ _____
 $xy-3y$

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22. Add or subtract the rational expressions. Simplify, if necessary.

- a. $\frac{5x + 1}{2x + 6} - \frac{x - 11}{2x + 6}$ _____
- b. $\frac{3}{x + 5} + \frac{2}{x - 5}$ _____
- c. $\frac{x - 8}{x^2 + x - 12} + \frac{5}{x - 3}$ _____
- d. $\frac{3}{x} - \frac{x + 2}{x - 6}$ _____
- e. $\frac{5}{2s^2} - \frac{1}{6s}$ _____

Answer the questions with complete sentences.

23. List the steps taken when adding or subtracting rational terms with like denominators.

24. Explain how to multiply rational expressions.



