

**A.A.18: Multiplication and Division of Rationals 1: Multiply and divide algebraic fractions and express the product or quotient in simplest form**

- 1 What is the product of  $\frac{x^2 - 1}{x + 1}$  and  $\frac{x + 3}{3x - 3}$  expressed in simplest form?

- 1)  $x$
- 2)  $\frac{x}{3}$
- 3)  $x + 3$
- 4)  $\frac{x + 3}{3}$

- 2 What is the product of  $\frac{4x}{x - 1}$  and  $\frac{x^2 - 1}{3x + 3}$  expressed in simplest form?

- 1)  $\frac{4x}{3}$
- 2)  $\frac{4x^2}{3}$
- 3)  $\frac{4x^2}{3(x + 1)}$
- 4)  $\frac{4(x + 1)}{3}$

- 3 Express the product of  $\frac{x + 2}{2}$  and  $\frac{4x + 20}{x^2 + 6x + 8}$  in simplest form.

- 4 Perform the indicated operation and express in simplest form:  $\frac{x^2 - x}{3} \cdot \frac{6}{x^2 - 1}$

- 5 Perform the indicated operation and express in simplest form:  $\frac{x^2 - 16}{x^2 - x - 20} \cdot \frac{x + 4}{x - 4}$

- 6 Express the product in simplest form:  
 $\left( \frac{a}{a^2 - 25} \right) \left( \frac{a^2 + 2a - 15}{a - 3} \right)$

- 7 Perform the indicated operations and express in simplest form:  $\frac{a + 8}{7a^2} \cdot \frac{3a^2 - 24a}{a^2 - 64}$

- 8 Express the product in simplest form:  
 $\frac{a^2 - 9}{a^2 - 3a} \cdot \frac{a^2 + a}{a + 3}$

- 9 If the length of a rectangular garden is represented by  $\frac{x^2 + 2x}{x^2 + 2x - 15}$  and its width is represented by  $\frac{2x - 6}{2x + 4}$ , which expression represents the area of the garden?

- 1)  $x$
- 2)  $x + 5$
- 3)  $\frac{x^2 + 2x}{2(x + 5)}$
- 4)  $\frac{x}{x + 5}$

**A.A.18: Multiplication and Division of Rationals 1: Multiply and divide algebraic fractions and express the product or quotient in simplest form**

**Answer Section**

1 ANS: 4

$$\frac{x^2 - 1}{x + 1} \cdot \frac{x + 3}{3x - 3} = \frac{(x + 1)(x - 1)}{x + 1} \cdot \frac{x + 3}{3(x - 1)} = \frac{x + 3}{3}$$

REF: 060815ia

2 ANS: 1

$$\frac{4x}{x - 1} \cdot \frac{x^2 - 1}{3x + 3} = \frac{4x}{x - 1} \cdot \frac{(x + 1)(x - 1)}{3(x + 1)} = \frac{4x}{3}$$

REF: 080826ia

3 ANS:

$$\frac{x + 2}{2} \times \frac{4(x + 5)}{(x + 4)(x + 2)} = \frac{2(x + 5)}{x + 4}$$

REF: 081232ia

4 ANS:

$$\frac{2x}{x + 1}$$

REF: 018607siii

5 ANS:

$$\frac{x + 4}{x - 5}$$

REF: 068806siii

6 ANS:

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

REF: 069006siii

7 ANS:

$$\frac{3}{7a}$$

REF: 089707siii

8 ANS:

$$a + 1$$

REF: 089602siii

9 ANS: 4

$$\frac{x(x+2)}{(x+5)(x-3)} \times \frac{2(x-3)}{2(x+2)} = \frac{x}{x+5}$$

REF: 080117b