

**ERROR ANALYSIS** Describe and correct the error in simplifying the rational expression.

18. 
$$\frac{x^2 + 16x - 80}{x^2 - 16} = \frac{16x - 80}{-16} = -x + 5$$

19. 
$$\frac{x^2 + 16x + 48}{x^2 + 8x + 16} = \frac{x^2 + 2x + 3}{x^2 + x + 1}$$

20. **TEXAS TAKS REASONING** Which rational expression is in simplified form?

(A)  $\frac{x^2 - x - 6}{x^2 + 3x + 2}$

(B)  $\frac{x^2 + 6x + 8}{x^2 + 2x - 3}$

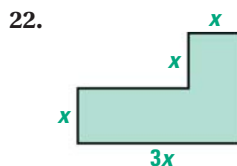
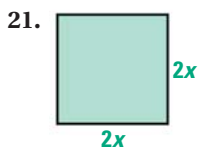
(C)  $\frac{x^2 - 6x + 9}{x^2 - 2x - 3}$

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

**EXAMPLE 2**

on p. 574  
for Exs. 21–23

**GEOMETRY** A farmer wants to fence in the field shown. Write a simplified rational expression for the ratio of the field's perimeter to its area.



23. **TEXAS TAKS REASONING** Which of the fields in Exercises 21 and 22 has the lower fencing cost per unit of area? *Explain.*

**EXAMPLES 3, 4, and 5**

on pp. 575–576  
for Exs. 24–33

**MULTIPLYING** Multiply the expressions. Simplify the result.

24.  $\frac{5x^3y}{x^2y^2} \cdot \frac{y^3}{15x^2}$

25.  $\frac{48x^5y^3}{y^4} \cdot \frac{x^2y}{6x^3y^2}$

26.  $\frac{x(x-3)}{x-2} \cdot \frac{(x+3)(x-2)}{x}$

27.  $\frac{4(x+5)}{x^2} \cdot \frac{x(x+1)}{2(x+5)}$

28.  $\frac{3x-12}{x+5} \cdot \frac{x+6}{2x-8}$

29.  $\frac{x+5}{4x-16} \cdot \frac{2x^2-32}{x^2-25}$

30.  $\frac{x^2+3x-4}{x^2+4x+4} \cdot \frac{2x^2+4x}{x^2-4x+3}$

31.  $\frac{x^2-3x-10}{x^2-2x-15} \cdot (x^2+10x+21)$

32.  $\frac{x^2+5x-36}{x^2-49} \cdot (x^2-11x+28)$

33.  $\frac{4x^2+20x}{x^3+4x^2} \cdot (x^2+8x+16)$

**EXAMPLES 6 and 7**

on pp. 576–577  
for Exs. 34–43

**DIVIDING** Divide the expressions. Simplify the result.

34.  $\frac{5x^2y^3}{x^7} \div \frac{30xy^4}{y^3}$

35.  $\frac{8x^2y^2z}{xz^3} \div \frac{10xy}{x^4z}$

36.  $\frac{(x+3)(x-2)}{x(x+1)} \div \frac{x+3}{x}$

37.  $\frac{8x^2}{x+4} \div \frac{x}{2(x-4)}$

38.  $\frac{x^2-6x-27}{2x^2+2x} \div \frac{x^2-14x+45}{x^2}$

39.  $\frac{x^2-4x-5}{x+5} \div (x^2+6x+5)$

40.  $\frac{3x^2+13x+4}{x^2-4} \div \frac{4x+16}{x+2}$

41.  $\frac{x^2-x-2}{x^2+4x-5} \div \frac{x-2}{5x+25}$

42.  $\frac{x^2-8x+15}{x^2+4x} \div (x^2-x-20)$

43.  $\frac{x^2+12x+32}{6x+42} \div \frac{x^2+4x}{x^2-49}$