Independent Practice

For Exercises	See Example
18–20	1
21–23	2
24–27	3
28–31	4
32–34	5

Multiply. Assume that all expressions are defined.

24. $\frac{x^2y}{4xy} \cdot \frac{x}{6} \cdot \frac{3y^5}{x^4}$

25. $\frac{x-4}{x-3} \cdot \frac{2x-1}{x+4}$

26. $\frac{x^2-2x-8}{9x^2-16} \cdot \frac{3x^2+10x+8}{x^2-16}$

27. $\frac{4x^2-20x+25}{x^2-4x} \cdot \frac{3x-12}{2x-5}$

Divide. Assume that all expressions are defined.

28. $\frac{4x^2+15x+9}{8x^2+10x+3} \div \frac{x^2+4x}{2x+1}$

29. $\frac{x^2-4x-5}{x^2-3x+2} \div \frac{x^2-3x-10}{x^2-4}$

30. $\frac{x+2}{x-4} \div \frac{1}{3x-12}$

31. $\frac{x^2-2x-3}{x^2-x-2} \div \frac{x^2+2x-15}{x^2+x-6}$

Solve. Check your solution.

32. $\frac{3x^2+10x+8}{-x-2} = -2$

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

34. $\frac{x^2+3x-28}{(x+7)(x-4)} = -11$

LINK

Archery

Archery was practiced in ancient times on every inhabited continent except Australia. The painting in the photo above dates from about 1400 B.C.E. and shows archers from ancient Egypt.

35. **Archery** An archery target consists of an inner circle and four concentric rings. The width of each ring is equal to the radius r of the inner circle. Write a rational expression in terms of r that represents the probability that an arrow hitting the target at random will land in the inner circle. Then simplify the expression.

Multiply or divide. Assume that all expressions are defined.

36. $\frac{2x}{3} \cdot \frac{x^3}{6x-8}$

37. $\frac{4x^2-3x}{4x^2-1} \cdot \frac{2x+1}{x}$

38. $\frac{1}{25x^2-49} \div \frac{x}{10x-14}$

39. $2xy \cdot \frac{2x^2}{y} \cdot \frac{y^2}{2x}$

40. $\frac{14x^4}{xy} \cdot \frac{x^3}{6y^3} \div \frac{5x^2}{12y^5}$

41. $(y+4) \div \frac{4x+4+xy+y}{3}$

42. **Critical Thinking** What polynomial completes the equation $\frac{x-5}{x-2} \cdot \frac{\square}{x-5} = x+1$?

43. **Geometry** Use the table to determine the following.

	Square Prism	Cylinder
Area of Base	s^2	πr^2
Volume	s^2h	πr^2h
Surface Area	$2s^2 + 4sh$	$2\pi r^2 + 2\pi rh$

   a. For each figure, find the ratio of the volume to the area of the base.

   b. For each figure, find the ratio of the surface area to the volume.

H.O.T. c. **What if...?** If the radius and the height of a cylinder were doubled, what effect would this have on the ratio of the cylinder's surface area to its volume?

Online Extra Practice

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Real-World Connections

44. For a car moving with initial speed v_0 and acceleration a, the distance d that the car travels in time t is given by $d = v_0t + \frac{1}{2}at^2$.

   a. Write a rational expression in terms of t for the average speed of the car during a period of acceleration. Simplify the expression.

   b. During a race, a driver accelerates for 3 s at a rate of 10 ft/s^2 in order to pass another car. The driver's initial speed was 264 ft/s. What was the driver's average speed during the acceleration?