

## Answers for 5.1

For use with pages 333–335

### 5.1 Skill Practice

1. **a.** Product of powers property  
**b.** Negative exponent property  
**c.** Power of a product property
2. No; 25.2 is not between 1 and 10.
3. 243; product of powers property
4.  $\frac{1}{4096}$ ; power of a power property, negative exponent property
5.  $-3125$ ; product of powers property
6. 256; power of a power property
7.  $\frac{1}{125}$ ; quotient of powers property
8.  $\frac{81}{625}$ ; power of a quotient property
9.  $\frac{343}{8}$ ; power of a quotient property, negative exponent property
10. 81; product of powers property
11. 729; quotient of powers property
12.  $\frac{3}{2}$ ; power of a quotient property, product of powers property, negative exponent property
13.  $\frac{1}{36}$ ; product of powers property
14. 1024; power of a power property, power of a quotient property, negative exponent property
15.  $6.3 \times 10^9$
16.  $8.04 \times 10^{-10}$
17.  $5.607 \times 10^{-6}$
18.  $6.768 \times 10^{18}$
19.  $9.261 \times 10^{-12}$
20.  $2.56 \times 10^{14}$     21.  $1.5 \times 10^3$
22.  $2 \times 10^4$     23.  $2.25 \times 10^{-2}$
24.  $\frac{1}{w^8}$ ; quotient of powers property, negative exponent property
25.  $1024y^{15}$ ; power of a product property, power of a power property
26.  $\frac{1}{p^3q^2}$ ; power of a product property, negative exponent property, power of a power property
27.  $\frac{w^9}{x^3}$ ; product of powers property, negative exponent property
28.  $\frac{s^6}{125t^{12}}$ ; power of a product property, power of a power property, negative exponent property

## Answers for 5.1 *continued*

For use with pages 333–335

**29.**  $\frac{1}{27a^9b^{15}}$ ; power of a product

property, power of a  
power property, negative  
exponent property

**30.**  $\frac{y^3}{x^3}$ ; negative exponent property,  
product of powers property

**31.**  $\frac{c^2d^2}{3}$ ; quotient of powers property

**32.**  $\frac{s^{10}}{6}$ ; quotient of powers property

**33.**  $\frac{2}{3a^2b^2}$ ; quotient of powers

property, negative  
exponent property

**34.**  $2y^4z^4$ ; quotient of powers  
property

**35.**  $\frac{x^6}{3y^3}$ ; product of powers property,  
quotient of powers property,  
negative exponent property

**36.** B

**37.** The exponents should be  
subtracted, not divided;  $x^8$ .

**38.** The exponents should be added,  
not multiplied;  $x^8$ .

**39.** The base should not  
change;  $(-3)^6$ .

**40.**  $\frac{x^2\sqrt{3}}{36}$     **41.**  $\frac{\pi x^3}{2}$     **42.**  $\frac{10x^3}{3}$

**43.**  $x^{11}y^5z^{-3}$

**44.**  $4x^{-1}y^3$

**45.**  $a^{-4}b^9$

**46.** *Sample answer:*  $(x^6y^4)(x^6y^{12})$ ,  
 $(x^{10}y^{10})(x^2y^6)$ ,  $(x^8y^7)(x^4y^9)$

**47.**  $\frac{1}{a^m} = \frac{a^0}{a^m} = a^{0-m} = a^{-m}$

**48.**  $\frac{a^m}{a^n} = a^m \cdot \left(\frac{1}{a^n}\right) = a^m \cdot a^{-n}$   
 $= a^{m-n}$

### 5.1 Problem Solving

**49.** Pacific:  $6.2868 \times 10^{17} \text{ m}^3$   
Atlantic:  $3.01824 \times 10^{17} \text{ m}^3$   
Indian:  $2.71656 \times 10^{17} \text{ m}^3$   
Arctic:  $1.7061 \times 10^{16} \text{ m}^3$

**50.**  $2.75 \times 10^3 \text{ mi}$

**51.** *Sample answer:* The volume of  
the pearl is  $\frac{27}{8}$  times as large as  
the volume of the bead.

**52. a.**  $4\pi r^3$                       **b.**  $\pi r^2 h$

**c.**  $6r$                                 **d.**  $\frac{2}{3}$

**53. a.** about  $4.4225 \times 10^{-7} \text{ m}^3$

**b.** Check student's work.

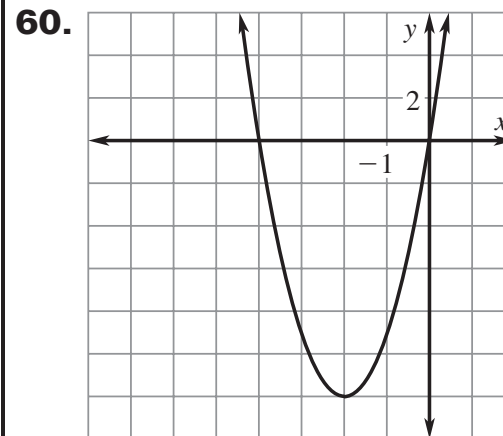
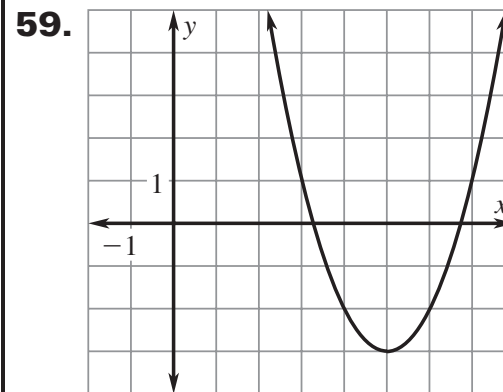
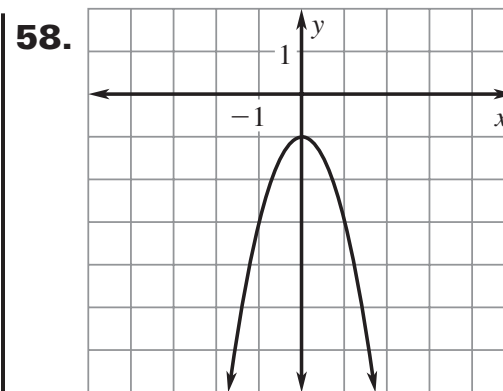
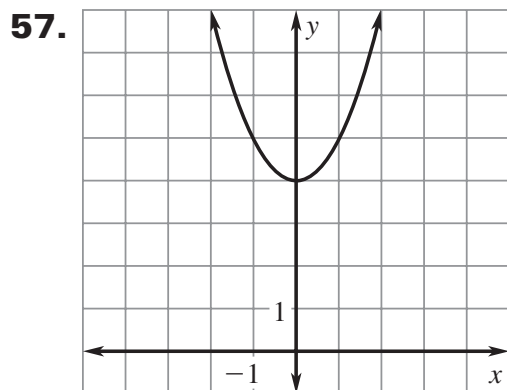
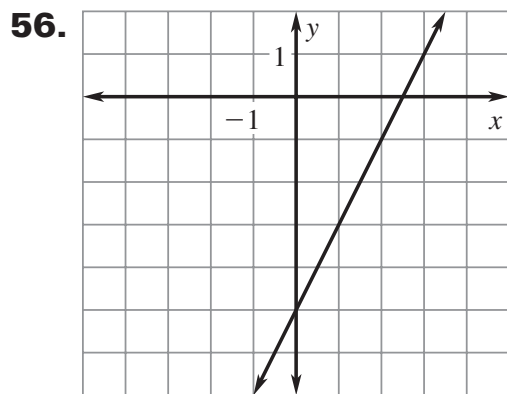
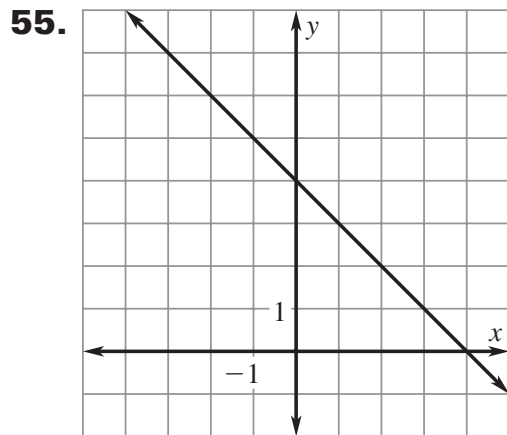
**c.** Check student's work.

**54. a.**  $\frac{125}{1}$                                 **b.**  $\frac{4697}{216}$

# Answers for 5.1 continued

For use with pages 333–335

## 5.1 Mixed Review



61.  $(-5, 7)$       62.  $(-6.5, 1.75)$

63.  $(1\frac{8}{13}, -\frac{2}{13})$       64.  $1 - i$

65.  $14 - 8i$       66.  $-1 + 3i$

67.  $5 + 13i$       68.  $-2 + 23i$

69.  $32 + 44i$