

Evaluating Variable Expressions

Evaluate each using the values given.

1) $n^2 - m$; use $m = 7$, and $n = 8$

2) $8(x - y)$; use $x = 5$, and $y = 2$

3) $yx \div 2$; use $x = 7$, and $y = 2$

4) $m - n \div 4$; use $m = 5$, and $n = 8$

5) $x - y + 6$; use $x = 6$, and $y = 1$

6) $z + x^3$; use $x = 1$, and $z = 19$

7) $y + yx$; use $x = 15$, and $y = 8$

8) $q \div 6 + p$; use $p = 10$, and $q = 12$

9) $x + 8 - y$; use $x = 20$, and $y = 17$

10) $15 - (m + p)$; use $m = 3$, and $p = 10$

11) $10 - x + y \div 2$; use $x = 5$, and $y = 2$

12) $p - 2 + qp$; use $p = 7$, and $q = 4$

13) $zy + 4y$; use $y = 5$, and $z = 2$

14) $b(a + b) + a$; use $a = 9$, and $b = 4$

15) $p^2 \div 4 - m$; use $m = 3$, and $p = 4$

16) $x(y \div 3)^2$; use $x = 4$, and $y = 9$

17) $4 + m + n - m$; use $m = 4$, and $n = 9$

18) $qp + q - p$; use $p = 7$, and $q = 3$

19) $mn \div 6 + 10$; use $m = 7$, and $n = 6$

20) $h + j(j - h)$; use $h = 2$, and $j = 6$

21) $(b - 1)^2 + a^2$; use $a = 6$, and $b = 1$

22) $y(x - (9 - 4y))$; use $x = 4$, and $y = 2$

23) $x - (x - (x - y^3))$; use $x = 9$, and $y = 1$

24) $j(h - 9)^3 + 2$; use $h = 9$, and $j = 8$

Evaluating Variable Expressions

Evaluate each using the values given.

1) $n^2 - m$; use $m = 7$, and $n = 8$

57

2) $8(x - y)$; use $x = 5$, and $y = 2$

24

3) $yx \div 2$; use $x = 7$, and $y = 2$

7

4) $m - n \div 4$; use $m = 5$, and $n = 8$

3

5) $x - y + 6$; use $x = 6$, and $y = 1$

11

6) $z + x^3$; use $x = 1$, and $z = 19$

20

7) $y + yx$; use $x = 15$, and $y = 8$

128

8) $q \div 6 + p$; use $p = 10$, and $q = 12$

12

9) $x + 8 - y$; use $x = 20$, and $y = 17$

11

10) $15 - (m + p)$; use $m = 3$, and $p = 10$

2

11) $10 - x + y \div 2$; use $x = 5$, and $y = 2$

6

12) $p - 2 + qp$; use $p = 7$, and $q = 4$

33

13) $zy + 4y$; use $y = 5$, and $z = 2$

30

14) $b(a + b) + a$; use $a = 9$, and $b = 4$

61

15) $p^2 \div 4 - m$; use $m = 3$, and $p = 4$

1

16) $x(y \div 3)^2$; use $x = 4$, and $y = 9$

36

17) $4 + m + n - m$; use $m = 4$, and $n = 9$

13

18) $qp + q - p$; use $p = 7$, and $q = 3$

17

19) $mn \div 6 + 10$; use $m = 7$, and $n = 6$

17

20) $h + j(j - h)$; use $h = 2$, and $j = 6$

26

21) $(b - 1)^2 + a^2$; use $a = 6$, and $b = 1$

36

22) $y(x - (9 - 4y))$; use $x = 4$, and $y = 2$

6

23) $x - (x - (x - y^3))$; use $x = 9$, and $y = 1$

8

24) $j(h - 9)^3 + 2$; use $h = 9$, and $j = 8$

2

One-Step Equations With Integers

Solve each equation.

1) $v - 10 = -9$

2) $v - 10 = -3$

3) $x - 3 = 4$

4) $\frac{x}{5} = 2$

5) $22 = -11k$

6) $-13m = -377$

7) $b - 7 = -1$

8) $-8 = p - 13$

9) $-40 = -5p$

10) $418 = -22a$

11) $\frac{a}{29} = 5$

12) $-2 = \frac{m}{16}$

13) $x - 11 = 16$

14) $-10 = x - 21$

$$15) 20 = \frac{n}{4}$$

$$16) n - 29 = -53$$

$$17) -19 = b - 6$$

$$18) -8 = -16 + n$$

$$19) -9 + x = -26$$

$$20) 29 + n = 13$$

$$21) 21 = \frac{x}{18}$$

$$22) k + 1 = -27$$

$$23) 6 = m - 16$$

$$24) 5 = v + 29$$

$$25) 168 = -84n$$

$$26) 41k = -2747$$

$$27) \frac{x}{15} = 11$$

$$28) -71 = \frac{x}{64}$$

One-Step Equations With Integers

Solve each equation.

1) $v - 10 = -9$

{1}

2) $v - 10 = -3$

{7}

3) $x - 3 = 4$

{7}

4) $\frac{x}{5} = 2$

{10}

5) $22 = -11k$

{-2}

6) $-13m = -377$

{29}

7) $b - 7 = -1$

{6}

8) $-8 = p - 13$

{5}

9) $-40 = -5p$

{8}

10) $418 = -22a$

{-19}

11) $\frac{a}{29} = 5$

{145}

12) $-2 = \frac{m}{16}$

{-32}

13) $x - 11 = 16$

{27}

14) $-10 = x - 21$

{11}

$$15) 20 = \frac{n}{4}$$

{80}

$$16) n - 29 = -53$$

{-24}

$$17) -19 = b - 6$$

{-13}

$$18) -8 = -16 + n$$

{8}

$$19) -9 + x = -26$$

{-17}

$$20) 29 + n = 13$$

{-16}

$$21) 21 = \frac{x}{18}$$

{378}

$$22) k + 1 = -27$$

{-28}

$$23) 6 = m - 16$$

{22}

$$24) 5 = v + 29$$

{-24}

$$25) 168 = -84n$$

{-2}

$$26) 41k = -2747$$

{-67}

$$27) \frac{x}{15} = 11$$

{165}

$$28) -71 = \frac{x}{64}$$

{-4544}

Two-Step Equations With Integers

Solve each equation.

1) $\frac{r}{10} + 4 = 5$

2) $\frac{n}{2} + 5 = 3$

3) $3p - 2 = -29$

4) $1 - r = -5$

5) $\frac{k-10}{2} = -7$

6) $\frac{n-5}{2} = 5$

7) $-9 + \frac{n}{4} = -7$

8) $\frac{9+m}{3} = 2$

9) $\frac{-5+x}{22} = -1$

10) $4n - 9 = -9$

11) $\frac{x+9}{2} = 3$

12) $\frac{-12+x}{11} = -3$

13) $\frac{-4+x}{2} = 6$

14) $-5 + \frac{n}{3} = 0$

$$15) \frac{p}{4} + 8 = 7$$

$$16) 9 + \frac{n}{4} = 15$$

$$17) 6 + \frac{x}{2} = 4$$

$$18) \frac{b+11}{3} = -2$$

$$19) \frac{a-10}{3} = -4$$

$$20) -12r + 4 = 100$$

$$21) \frac{m}{16} - 9 = -8$$

$$22) -7 + 4r = -15$$

$$23) \frac{m-13}{2} = -8$$

$$24) -5x + 13 = -17$$

$$25) \frac{k+10}{-2} = 5$$

$$26) \frac{p+8}{-2} = 10$$

$$27) -14r - 19 = 303$$

$$28) \frac{x}{-4} - 5 = -8$$

Two-Step Equations With Integers

Solve each equation.

1) $\frac{r}{10} + 4 = 5$

{10}

2) $\frac{n}{2} + 5 = 3$

{-4}

3) $3p - 2 = -29$

{-9}

4) $1 - r = -5$

{6}

5) $\frac{k-10}{2} = -7$

{-4}

6) $\frac{n-5}{2} = 5$

{15}

7) $-9 + \frac{n}{4} = -7$

{8}

8) $\frac{9+m}{3} = 2$

{-3}

9) $\frac{-5+x}{22} = -1$

{-17}

10) $4n - 9 = -9$

{0}

11) $\frac{x+9}{2} = 3$

{-3}

12) $\frac{-12+x}{11} = -3$

{-21}

13) $\frac{-4+x}{2} = 6$

{16}

14) $-5 + \frac{n}{3} = 0$

{15}

$$15) \frac{p}{4} + 8 = 7$$

$$\{-4\}$$

$$16) 9 + \frac{n}{4} = 15$$

$$\{24\}$$

$$17) 6 + \frac{x}{2} = 4$$

$$\{-4\}$$

$$18) \frac{b+11}{3} = -2$$

$$\{-17\}$$

$$19) \frac{a-10}{3} = -4$$

$$\{-2\}$$

$$20) -12r + 4 = 100$$

$$\{-8\}$$

$$21) \frac{m}{16} - 9 = -8$$

$$\{16\}$$

$$22) -7 + 4r = -15$$

$$\{-2\}$$

$$23) \frac{m-13}{2} = -8$$

$$\{-3\}$$

$$24) -5x + 13 = -17$$

$$\{6\}$$

$$25) \frac{k+10}{-2} = 5$$

$$\{-20\}$$

$$26) \frac{p+8}{-2} = 10$$

$$\{-28\}$$

$$27) -14r - 19 = 303$$

$$\{-23\}$$

$$28) \frac{x}{-4} - 5 = -8$$

$$\{12\}$$

Exponents and Multiplication

Simplify. Your answer should contain only positive exponents.

1) $4^2 \cdot 4^2$

2) $4 \cdot 4^2$

3) $3^2 \cdot 3^2$

4) $2 \cdot 2^2 \cdot 2^2$

5) $2n^4 \cdot 5n^4$

6) $6r \cdot 5r^2$

7) $2n^4 \cdot 6n^4$

8) $6k^2 \cdot k$

9) $5b^2 \cdot 8b$

10) $4x^2 \cdot 3x$

11) $6x \cdot 2x^2$

12) $6x \cdot 6x^3$

$$13) 7v^3 \cdot 10u^3v^5 \cdot 8uv^3$$

$$14) 9xy^2 \cdot 9x^5y^2$$

$$15) 6m^3n^3 \cdot 8m^2n^3$$

$$16) 6x^2 \cdot 6x^3y^4$$

$$17) 7u^2v^5 \cdot 9uv^3$$

$$18) uv \cdot 4uv^5$$

$$19) 10xy^3 \cdot 8x^5y^3$$

$$20) 3u^4v^5 \cdot 7u^2v^3$$

$$21) (2x^2)^2$$

$$22) (p^4)^4$$

$$23) (k^3)^4$$

$$24) (7k)^2$$

$$25) (x^2)^3$$

$$26) (2b^2)^4$$

Exponents and Multiplication

Simplify. Your answer should contain only positive exponents.

$$1) \frac{4^2 \cdot 4^2}{4^4}$$

$$2) \frac{4 \cdot 4^2}{4^3}$$

$$3) \frac{3^2 \cdot 3^2}{3^4}$$

$$4) \frac{2 \cdot 2^2 \cdot 2^2}{2^5}$$

$$5) \frac{2n^4 \cdot 5n^4}{10n^8}$$

$$6) \frac{6r \cdot 5r^2}{30r^3}$$

$$7) \frac{2n^4 \cdot 6n^4}{12n^8}$$

$$8) \frac{6k^2 \cdot k}{6k^3}$$

$$9) \frac{5b^2 \cdot 8b}{40b^3}$$

$$10) \frac{4x^2 \cdot 3x}{12x^3}$$

$$11) \frac{6x \cdot 2x^2}{12x^3}$$

$$12) \frac{6x \cdot 6x^3}{36x^4}$$

$$13) 7v^3 \cdot 10u^3v^5 \cdot 8uv^3 \\ 560v^{11}u^4$$

$$14) 9xy^2 \cdot 9x^5y^2 \\ 81x^6y^4$$

$$15) 6m^3n^3 \cdot 8m^2n^3 \\ 48m^5n^6$$

$$16) 6x^2 \cdot 6x^3y^4 \\ 36x^5y^4$$

$$17) 7u^2v^5 \cdot 9uv^3 \\ 63u^3v^8$$

$$18) uv \cdot 4uv^5 \\ 4u^2v^6$$

$$19) 10xy^3 \cdot 8x^5y^3 \\ 80x^6y^6$$

$$20) 3u^4v^5 \cdot 7u^2v^3 \\ 21u^6v^8$$

$$21) (2x^2)^2 \\ 4x^4$$

$$22) (p^4)^4 \\ p^{16}$$

$$23) (k^3)^4 \\ k^{12}$$

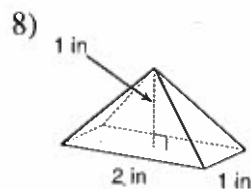
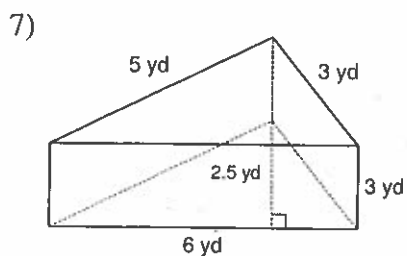
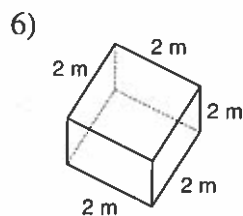
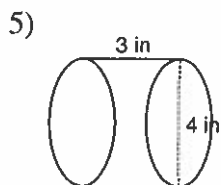
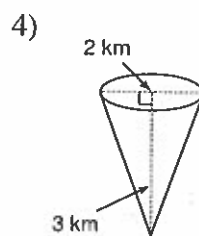
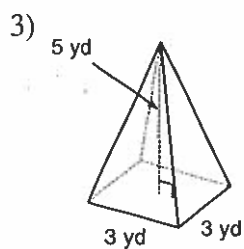
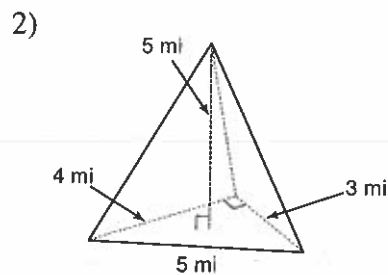
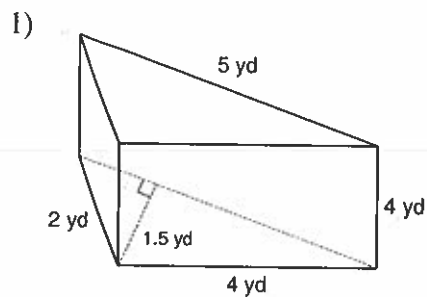
$$24) (7k)^2 \\ 49k^2$$

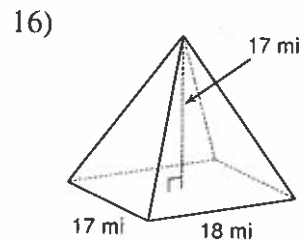
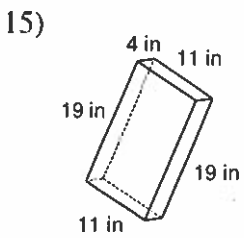
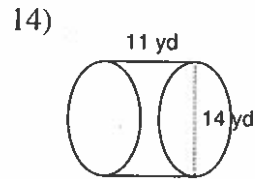
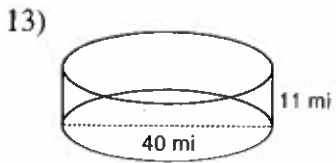
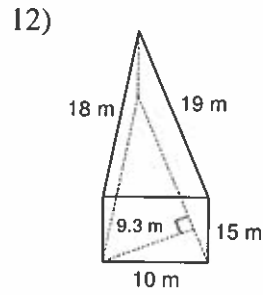
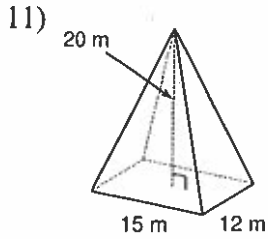
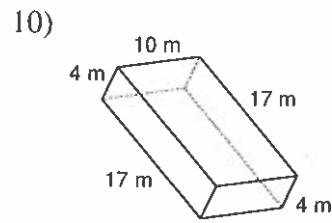
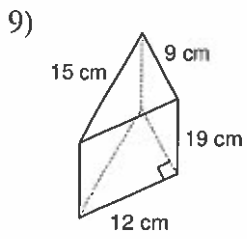
$$25) (x^2)^3 \\ x^6$$

$$26) (2b^2)^4 \\ 16b^8$$

Volumes of Solids

Find the volume of each figure. Round to the nearest tenth.





17) A cylinder with a radius of 3 cm and a height of 7 cm.

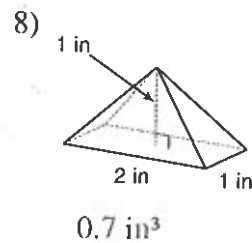
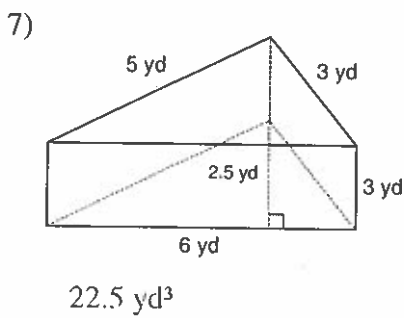
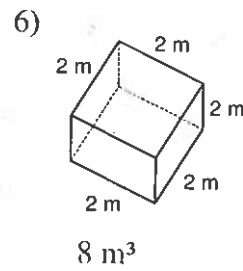
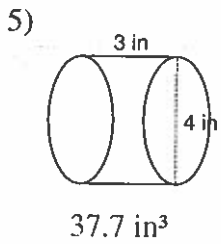
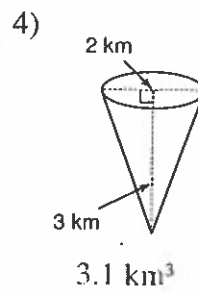
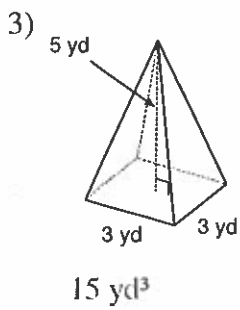
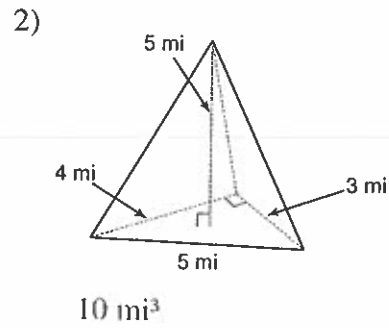
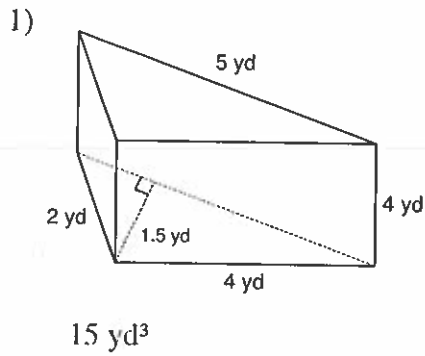
18) A cone with diameter 20 cm and a height of 20 cm.

19) A cone with diameter 14 yd and a height of 14 yd.

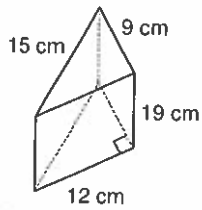
20) A rectangular prism measuring 10 m and 7 m along the base and 12 m tall.

Volumes of Solids

Find the volume of each figure. Round to the nearest tenth.

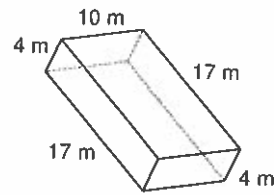


9)



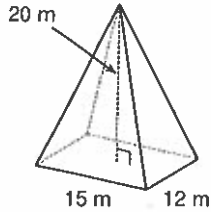
$$1026 \text{ cm}^3$$

10)



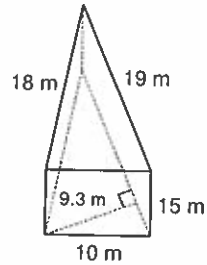
$$680 \text{ m}^3$$

11)



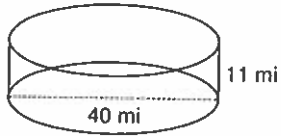
$$1200 \text{ m}^3$$

12)



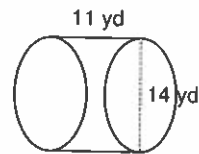
$$1325.3 \text{ m}^3$$

13)



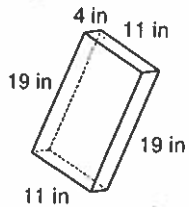
$$13823 \text{ mi}^3$$

14)



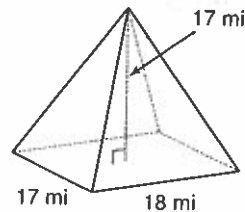
$$1693.3 \text{ yd}^3$$

15)



$$836 \text{ in}^3$$

16)



$$1734 \text{ mi}^3$$

17) A cylinder with a radius of 3 cm and a height of 7 cm.

$$197.9 \text{ cm}^3$$

18) A cone with diameter 20 cm and a height of 20 cm.

$$2094.4 \text{ cm}^3$$

19) A cone with diameter 14 yd and a height of 14 yd.

$$718.4 \text{ yd}^3$$

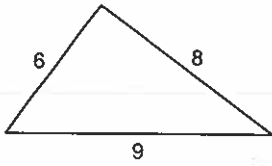
20) A rectangular prism measuring 10 m and 7 m along the base and 12 m tall.

$$840 \text{ m}^3$$

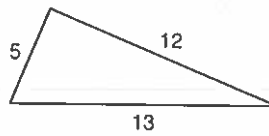
The Pythagorean Theorem

Do the following lengths form a right triangle?

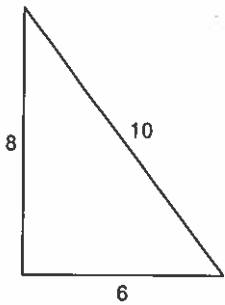
1)



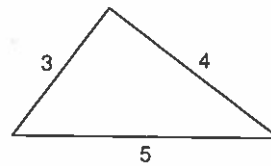
2)



3)



4)

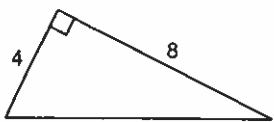


5) $a = 6.4$, $b = 12$, $c = 12.2$

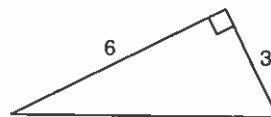
6) $a = 2.1$, $b = 7.2$, $c = 7.5$

Find each missing length to the nearest tenth.

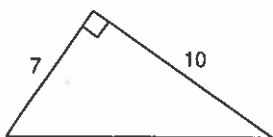
7)



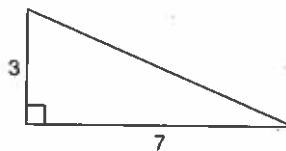
8)



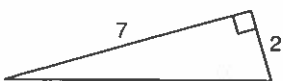
9)



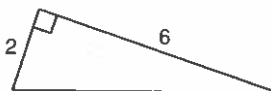
10)



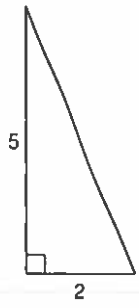
11)



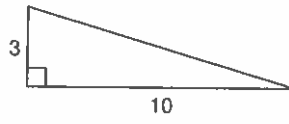
12)



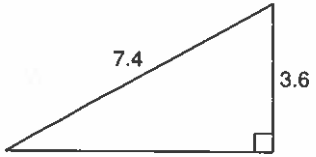
13)



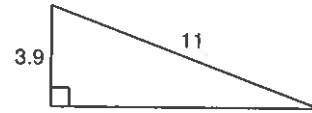
14)



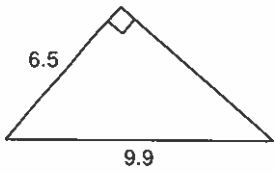
15)



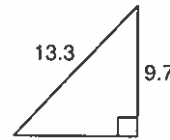
16)



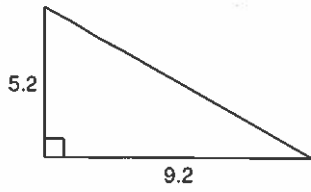
17)



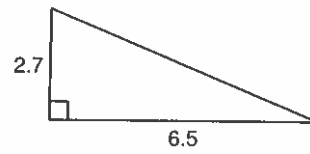
18)



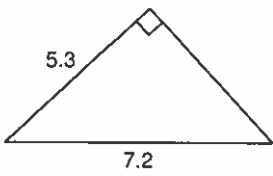
19)



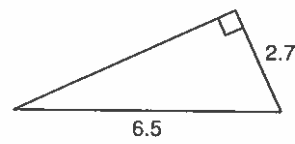
20)



21)



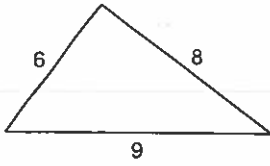
22)



The Pythagorean Theorem

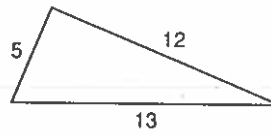
Do the following lengths form a right triangle?

1)



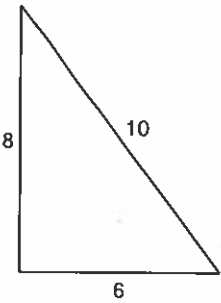
No

2)



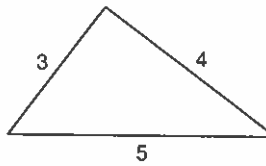
Yes

3)



Yes

4)



Yes

5) $a = 6.4$, $b = 12$, $c = 12.2$

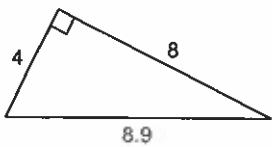
No

6) $a = 2.1$, $b = 7.2$, $c = 7.5$

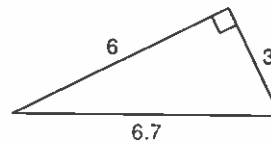
Yes

Find each missing length to the nearest tenth.

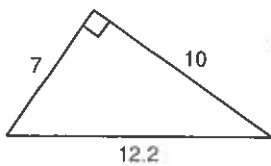
7)



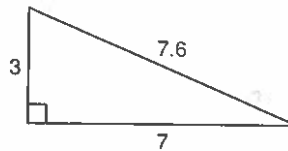
8)



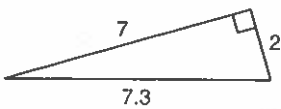
9)



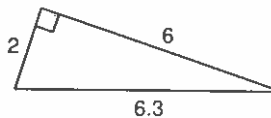
10)



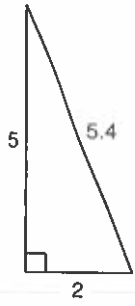
11)



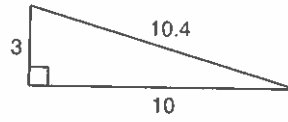
12)



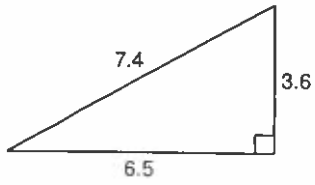
13)



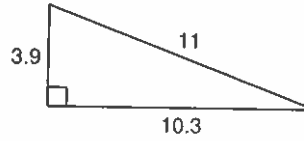
14)



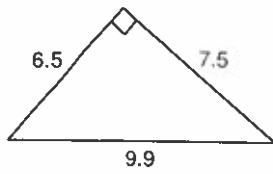
15)



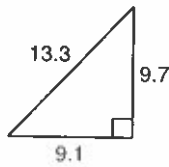
16)



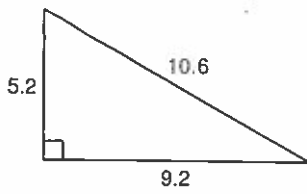
17)



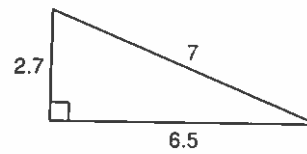
18)



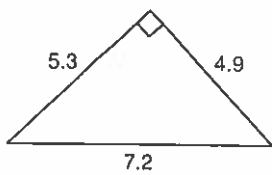
19)



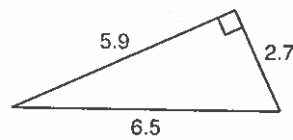
20)



21)



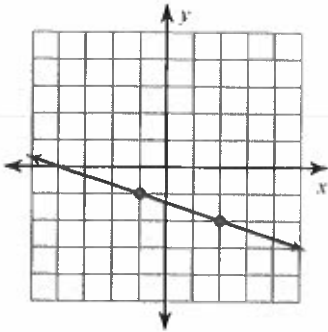
22)



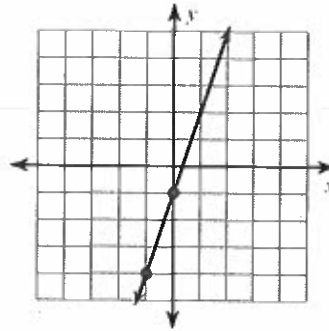
Slope

Find the slope of each line.

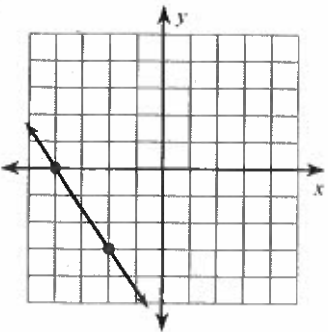
1)



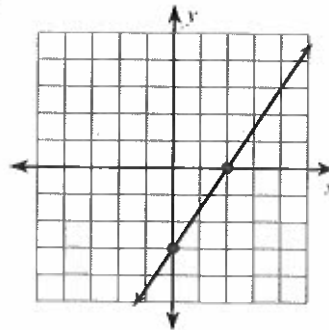
2)



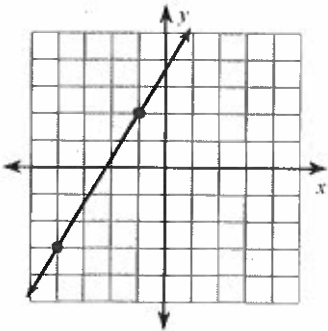
3)



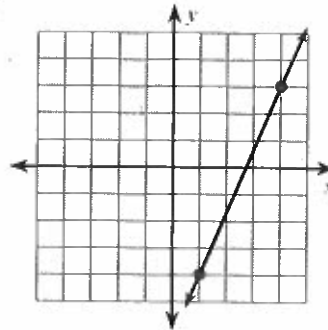
4)



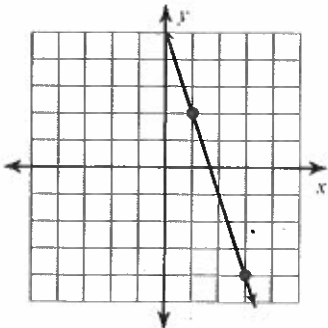
5)



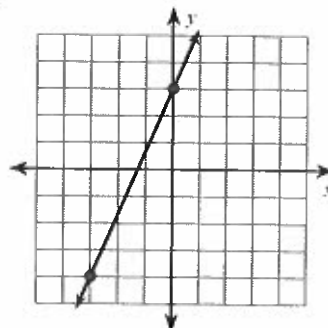
6)



7)



8)



Find the slope of the line through each pair of points.

9) $(8, 10), (-7, 14)$

10) $(-3, 1), (-17, 2)$

11) $(-20, -4), (-12, -10)$

12) $(-12, -5), (0, -8)$

13) $(-19, -6), (15, 16)$

14) $(-6, 9), (7, -9)$

15) $(-18, -20), (-18, -15)$

16) $(12, -18), (11, 12)$

Find the slope of each line.

17) $y = -5x - 1$

18) $y = \frac{1}{3}x - 4$

19) $y = -\frac{1}{5}x - 4$

20) $x = 1$

21) $y = \frac{1}{4}x + 1$

22) $y = -\frac{2}{3}x - 1$

23) $y = -x + 2$

24) $y = -x - 1$

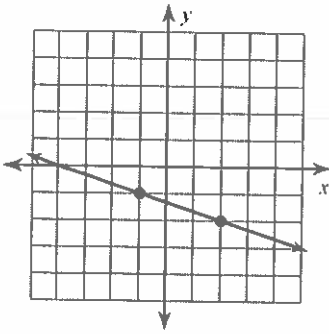
25) $2x + 3y = 9$

26) $5x + 2y = 6$

Slope

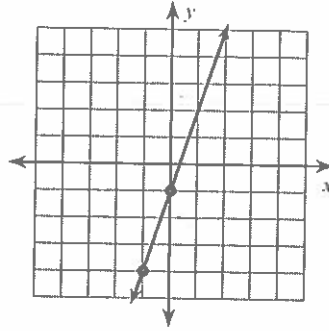
Find the slope of each line.

1)



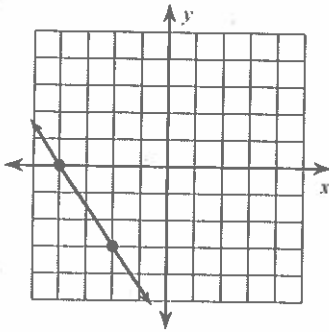
$$-\frac{1}{3}$$

2)



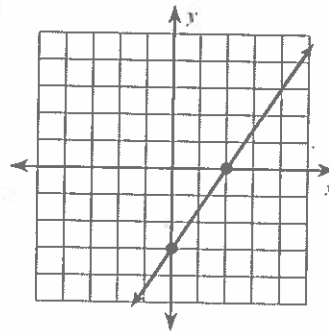
3

3)



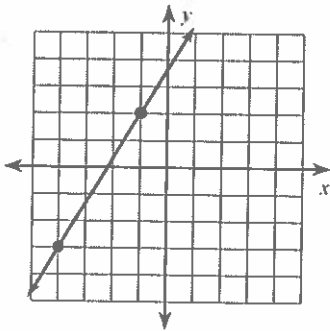
$$-\frac{3}{2}$$

4)



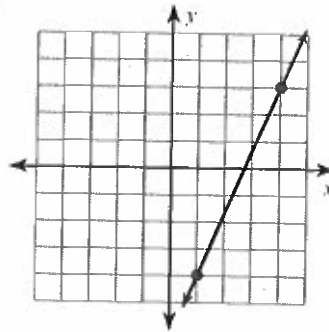
$$\frac{3}{2}$$

5)



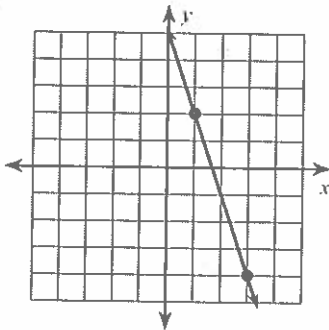
$$\frac{5}{3}$$

6)



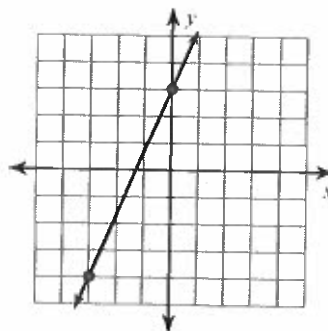
$$\frac{7}{3}$$

7)



$$-3$$

8)



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

Find the slope of the line through each pair of points.

9) $(8, 10), (-7, 14)$

$$-\frac{4}{15}$$

10) $(-3, 1), (-17, 2)$

$$-\frac{1}{14}$$

11) $(-20, -4), (-12, -10)$

$$-\frac{3}{4}$$

12) $(-12, -5), (0, -8)$

$$-\frac{1}{4}$$

13) $(-19, -6), (15, 16)$

$$\frac{11}{17}$$

14) $(-6, 9), (7, -9)$

$$-\frac{18}{13}$$

15) $(-18, -20), (-18, -15)$

Undefined

16) $(12, -18), (11, 12)$

-30

Find the slope of each line.

17) $y = -5x - 1$

-5

18) $y = \frac{1}{3}x - 4$

$\frac{1}{3}$

19) $y = -\frac{1}{5}x - 4$

$-\frac{1}{5}$

20) $x = 1$

Undefined

21) $y = \frac{1}{4}x + 1$

$\frac{1}{4}$

22) $y = -\frac{2}{3}x - 1$

$-\frac{2}{3}$

23) $y = -x + 2$

-1

24) $y = -x - 1$

-1

25) $2x + 3y = 9$

$-\frac{2}{3}$

26) $5x + 2y = 6$

$-\frac{5}{2}$