

**10-6 Practice****The Distance and Midpoint Formulas**

Find the distance between the points with the given coordinates.

1.  $(4, 7), (1, 3)$

2.  $(0, 9), (-7, -2)$

3.  $(6, 2), \left(4, \frac{1}{2}\right)$

4.  $(-1, 7), \left(\frac{1}{3}, 6\right)$

5.  $(\sqrt{3}, 3), (2\sqrt{3}, 5)$

6.  $(2\sqrt{2}, -1), (3\sqrt{2}, 3)$

Find the possible values of  $a$  if the points with the given coordinates are the indicated distance apart.

7.  $(4, -1), (a, 5); d = 10$

8.  $(2, -5), (a, 7); d = 15$

9.  $(6, -7), (a, -4); d = \sqrt{18}$

10.  $(-4, 1), (a, 8); d = \sqrt{50}$

11.  $(8, -5), (a, 4); d = \sqrt{85}$

12.  $(-9, 7), (a, 5); d = \sqrt{29}$

Find the coordinates of the midpoint of the segment with the given endpoints.

13.  $(4, -6), (3, -9)$

14.  $(-3, -8), (-7, 2)$

15.  $(0, -4), (3, 2)$

16.  $(-13, -9), (-1, -5)$

17.  $\left(2, -\frac{1}{2}\right), \left(1, \frac{1}{2}\right)$

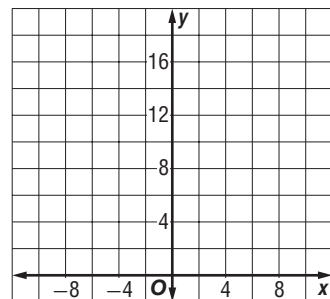
18.  $\left(\frac{2}{3}, -1\right), \left(2, \frac{1}{3}\right)$

- 19. BASEBALL** Three players are warming up for a baseball game. Player B stands 9 feet to the right and 18 feet in front of Player A. Player C stands 8 feet to the left and 13 feet in front of Player A.

a. Draw a model of the situation on the coordinate grid. Assume that Player A is located at  $(0, 0)$ .

b. To the nearest tenth, what is the distance between Players A and B and between Players A and C?

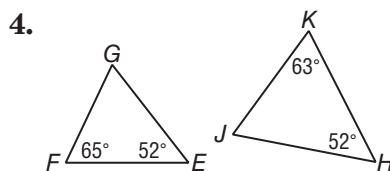
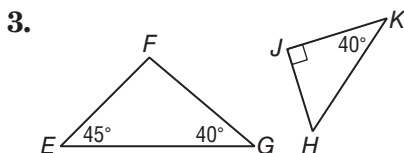
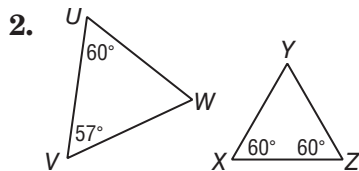
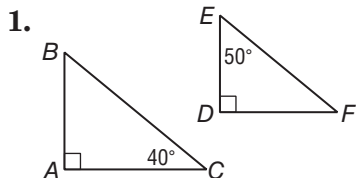
c. What is the distance between Players B and C?



- 20. MAPS** Maria and Jackson live in adjacent neighborhoods. If they superimpose a coordinate grid on the map of their neighborhoods, Maria lives at  $(-9, 1)$  and Jackson lives at  $(5, -4)$ .

**10-7 Skills Practice****Similar Triangles**

Determine whether each pair of triangles is similar. Justify your answer.



Find the missing measures for the pair of similar triangles if  $\triangle PQR \sim \triangle STU$ .

5.  $r = 4, s = 6, t = 3, u = 2$

6.  $t = 8, p = 21, q = 14, r = 7$

7.  $p = 15, q = 10, r = 5, s = 6$

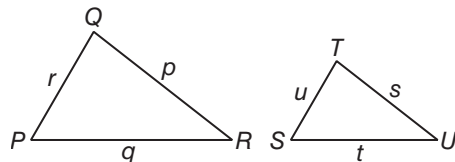
8.  $p = 48, s = 16, t = 8, u = 4$

9.  $q = 6, s = 2, t = \frac{3}{2}, u = \frac{1}{2}$

10.  $p = 3, q = 2, r = 1, u = \frac{1}{3}$

11.  $p = 14, q = 7, u = 2.5, t = 5$

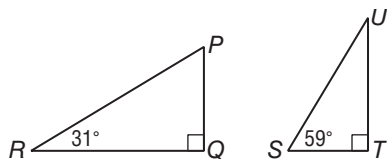
12.  $r = 6, s = 3, t = \frac{21}{8}, u = \frac{9}{4}$



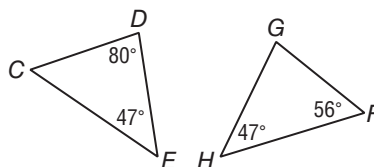
**10-7 Practice****Similar Triangles**

Determine whether each pair of triangles is similar. Justify your answer.

1.



2.



Find the missing measures for the pair of similar triangles if  $\triangle ABC \sim \triangle DEF$ .

3.  $c = 4, d = 12, e = 16, f = 8$

4.  $e = 20, a = 24, b = 30, c = 15$

5.  $a = 10, b = 12, c = 6, d = 4$

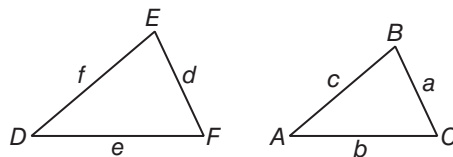
6.  $a = 4, d = 6, e = 4, f = 3$

7.  $b = 15, d = 16, e = 20, f = 10$

8.  $a = 16, b = 22, c = 12, f = 8$

9.  $a = \frac{5}{2}, b = 3, f = \frac{11}{2}, e = 7$

10.  $c = 4, d = 6, e = 5.625, f = 12$



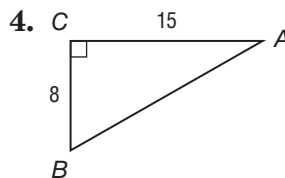
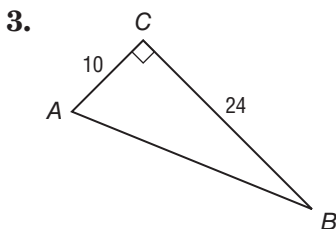
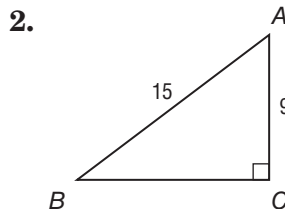
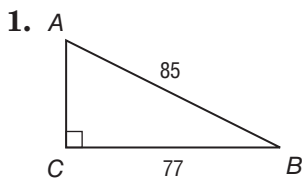
**11. SHADOWS** Suppose you are standing near a building and you want to know its height. The building casts a 66-foot shadow. You cast a 3-foot shadow. If you are 5 feet 6 inches tall, how tall is the building?

**12. MODELS** Truss bridges use triangles in their support beams. Molly made a model of a truss bridge in the scale of 1 inch = 8 feet. If the height of the triangles on the model is 4.5 inches, what is the height of the triangles on the actual bridge?

# 10-8 Skills Practice

## Trigonometric Ratios

Find the values of the three trigonometric ratios for angle  $A$ .



Use a calculator to find the value of each trigonometric ratio to the nearest ten-thousandth.

5.  $\sin 18^\circ$

6.  $\cos 68^\circ$

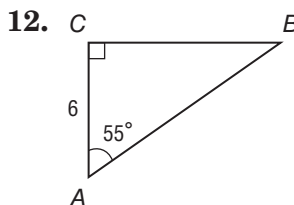
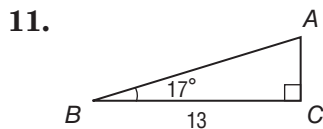
7.  $\tan 27^\circ$

8.  $\cos 60^\circ$

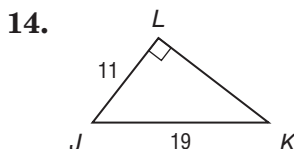
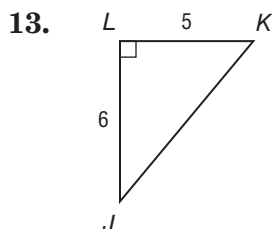
9.  $\tan 75^\circ$

10.  $\sin 9^\circ$

Solve each right triangle. Round each side length to the nearest tenth.



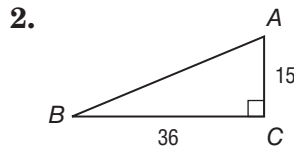
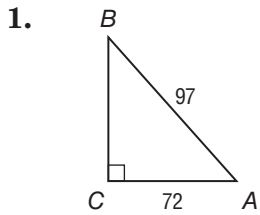
Find  $m\angle J$  for each right triangle to the nearest degree.



# 10-8 Practice

## Trigonometric Ratios

Find the values of the three trigonometric ratios for angle A.



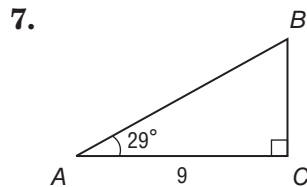
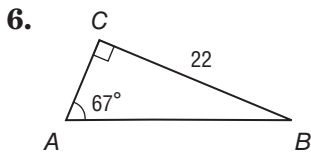
Use a calculator to find the value of each trigonometric ratio to the nearest ten-thousandth.

3.  $\tan 26^\circ$

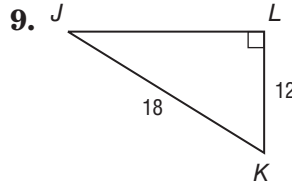
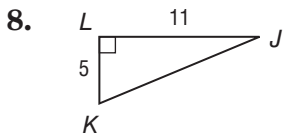
4.  $\sin 53^\circ$

5.  $\cos 81^\circ$

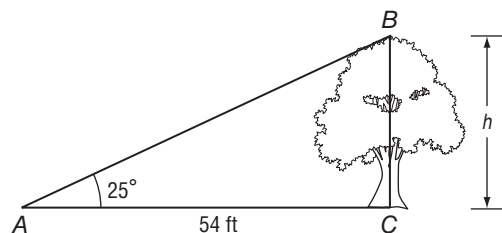
Solve each right triangle. Round each side length to the nearest tenth.



Find  $m\angle J$  for each right triangle to the nearest degree.



10. **SURVEYING** If point A is 54 feet from the tree, and the angle between the ground at point A and the top of the tree is  $25^\circ$ , find the height  $h$  of the tree.



# 11-1 Skills Practice

## Inverse Variation

Determine whether each table or equation represents an *inverse* or a *direct* variation. Explain.

1. 

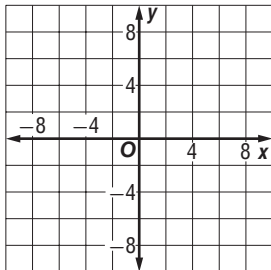
x	y
0.5	8
1	4
2	2
4	1

2.  $xy = \frac{2}{3}$

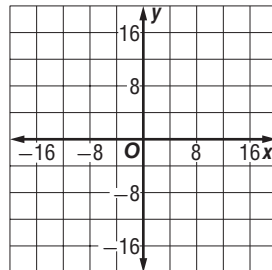
3.  $-2x + y = 0$

Assume that  $y$  varies inversely as  $x$ . Write an inverse variation equation that relates  $x$  and  $y$ . Then graph the equation.

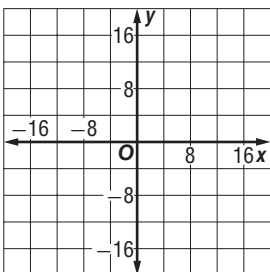
4.  $y = 2$  when  $x = 5$



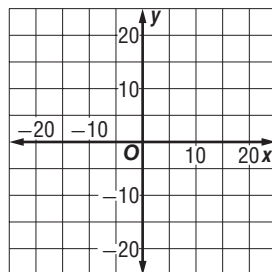
5.  $y = -6$  when  $x = -6$



6.  $y = -4$  when  $x = -12$



7.  $y = 15$  when  $x = 3$



**Solve.** Assume that  $y$  varies inversely as  $x$ .

8. If  $y = 4$  when  $x = 8$ ,  
find  $y$  when  $x = 2$ .

9. If  $y = -7$  when  $x = 3$ ,  
find  $y$  when  $x = -3$ .

10. If  $y = -6$  when  $x = -2$ ,  
find  $y$  when  $x = 4$ .

11. If  $y = -24$  when  $x = -3$ ,  
find  $x$  when  $y = -6$ .

12. If  $y = 15$  when  $x = 1$ ,  
find  $x$  when  $y = -3$ .

13. If  $y = 48$  when  $x = -4$ ,  
find  $y$  when  $x = 6$ .

14. If  $y = -4$  when  $x = \frac{1}{2}$ , find  $x$  when  $y = 2$ .

# 11-1 Practice

## Inverse Variation

Determine whether each table or equation represents an *inverse* or a *direct* variation. Explain.

1.

x	y
0.25	40
0.5	20
2	5
8	1.25

2.

x	y
-2	8
0	0
2	-8
4	-16

3.  $\frac{y}{x} = -3$

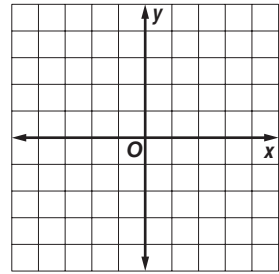
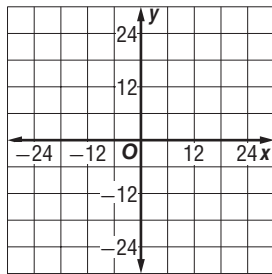
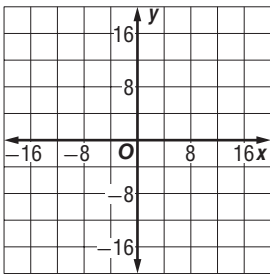
4.  $y = \frac{7}{x}$

Assume that  $y$  varies inversely as  $x$ . Write an inverse variation equation that relates  $x$  and  $y$ . Then graph the equation.

5.  $y = -2$  when  $x = -12$

6.  $y = -6$  when  $x = -5$

7.  $y = 2.5$  when  $x = 2$



Write an inverse variation equation that relates  $x$  and  $y$ . Assume that  $y$  varies inversely as  $x$ . Then solve.

8. If  $y = 124$  when  $x = 12$ , find  $y$  when  $x = -24$ .

9. If  $y = -8.5$  when  $x = 6$ , find  $y$  when  $x = -2.5$ .

10. If  $y = 3.2$  when  $x = -5.5$ , find  $y$  when  $x = 6.4$ .

11. If  $y = 0.6$  when  $x = 7.5$ , find  $y$  when  $x = -1.25$ .

**12. EMPLOYMENT** The manager of a lumber store schedules 6 employees to take inventory in an 8-hour work period. The manager assumes all employees work at the same rate.

a. Suppose 2 employees call in sick. How many hours will 4 employees need to take inventory?

b. If the district supervisor calls in and says she needs the inventory finished in 6 hours, how many employees should the manager assign to take inventory?

**13. TRAVEL** Jesse and Joaquin can drive to their grandparents' home in 3 hours if they average 50 miles per hour. Since the road between the homes is winding and mountainous, their parents prefer they average between 40 and 45 miles per hour. How long will it take to drive to the grandparents' home at the reduced speed?

# 11-2 Skills Practice

## Rational Functions

State the excluded value for each function.

1.  $y = \frac{6}{x}$

2.  $y = \frac{2}{x-2}$

3.  $y = \frac{x}{x+6}$

4.  $y = \frac{x-3}{x+4}$

5.  $y = \frac{3x-5}{x+8}$

6.  $y = \frac{-5}{2x-14}$

7.  $y = \frac{x}{3x+21}$

8.  $y = \frac{x-1}{9x-36}$

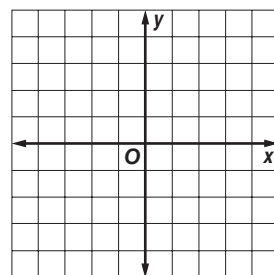
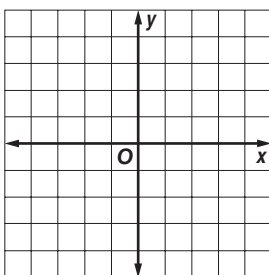
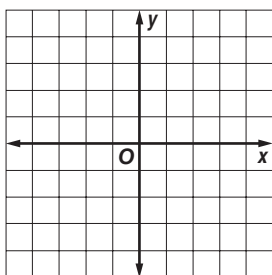
9.  $y = \frac{9}{5x+40}$

Identify the asymptotes of each function. Then graph the function.

10.  $y = \frac{1}{x}$

11.  $y = \frac{3}{x}$

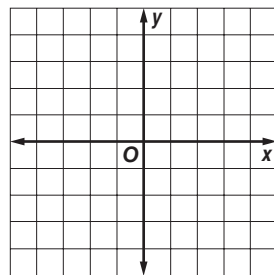
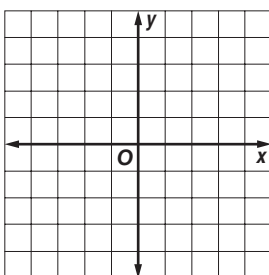
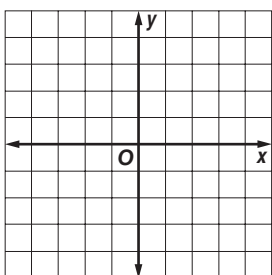
12.  $y = \frac{2}{x+1}$



13.  $y = \frac{3}{x-2}$

14.  $y = \frac{2}{x+1} - 1$

15.  $y = \frac{1}{x-2} + 3$





# 11-2 Practice

## Rational Functions

State the excluded value for each function.

1.  $y = \frac{-1}{x}$

2.  $y = \frac{3}{x+5}$

3.  $y = \frac{2x}{x-5}$

4.  $y = \frac{x-1}{12x+36}$

5.  $y = \frac{x+1}{2x+3}$

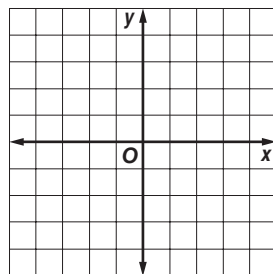
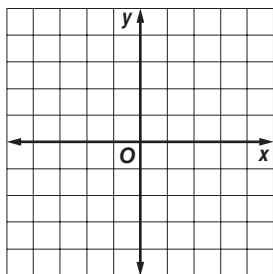
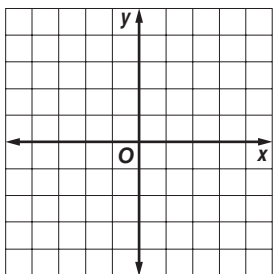
6.  $y = \frac{1}{5x-2}$

Identify the asymptotes of each function. Then graph the function.

7.  $y = \frac{1}{x}$

8.  $y = \frac{3}{x}$

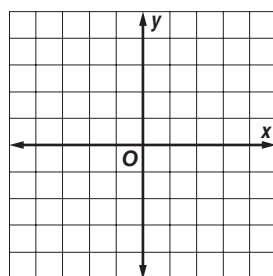
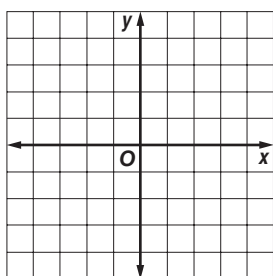
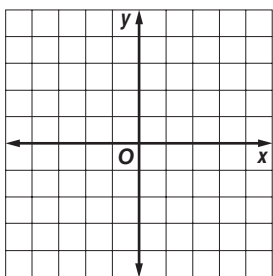
9.  $y = \frac{2}{x-1}$



10.  $y = \frac{2}{x+2}$

11.  $y = \frac{1}{x-3} + 2$

12.  $y = \frac{2}{x+1} - 1$



13. **AIR TRAVEL** Denver, Colorado, is located approximately 1000 miles from Indianapolis, Indiana. The average speed of a plane traveling between the two cities is given by  $y = \frac{1000}{x}$ , where  $x$  is the total flight time. Graph the function.

