GEOMETRY DRILL 2

Plane Geometry

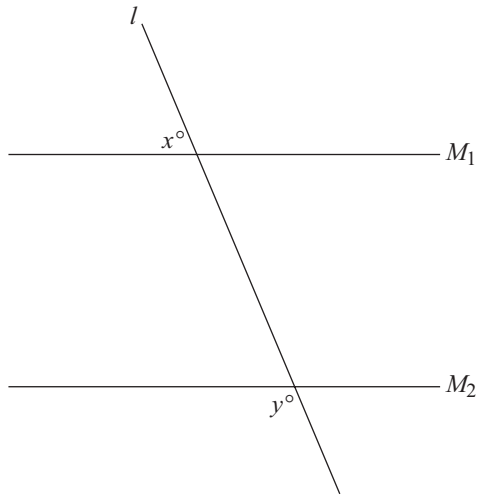
7. What is the perimeter, in meters, of a parallelogram with side lengths of 12 m and 10 m ?

A. 22
B. 44
C. 48
D. 60
E. 120

15. Kayla is mowing her lawn and the lawn of her neighbor. She discovers that the two lawns have the same area. Her lawn is a triangle with a base of 90 feet, and the height of the triangle is 80 feet. If her neighbor's lawn is a square, what is the length, in feet, of a side of the square?

A. $\sqrt{170}$
B. 30
C. 60
D. 170
E. 240

17. In the figure below, parallel lines M_1 and M_2 intersect transversal l. What is the value of $x + y$?



A. 60
B. 90
C. 120
D. 180
E. 360

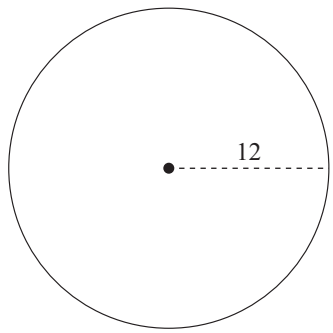
18. Brandie bought a few cans of paint, and each can contains enough paint to cover 300 square meters. She is painting a triangular mural on a wall that is 6 meters tall. She opens 1 can of paint and starts painting. Before Brandie needs to open another can of paint, she can paint a triangle that is the height of the wall and is how many meters long?

F. 6
G. 50
H. 100
J. 294
K. 1,800

27. The ratio of the lengths of corresponding sides of 2 similar isosceles triangles is 3:5. One of the equal sides in the larger isosceles triangle is 30 centimeters long. How many centimeters long is one of the equal sides in the smaller isosceles triangle?

A. 18
B. 38
C. 45
D. 50
E. 90

32. The radius of a circle is 12 inches. What is the area of the circle, in square inches?

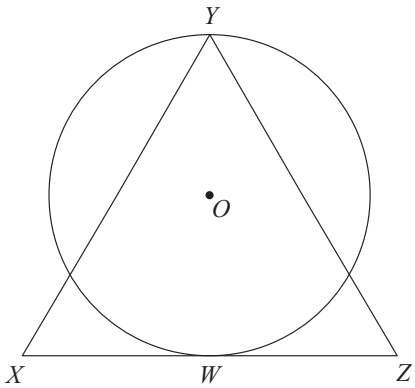


F. 12π
G. 24π
H. 48π
J. 144π
K. 576π

35. The perimeter of an isosceles triangle is 57 centimeters, and one side measures 22 centimeters. If it can be determined, what is one possibility for the lengths, in centimeters, of the other two sides?

A. 13, 22
B. 13, 44
C. 19, 22
D. 22, 35
E. Cannot be determined from the given information

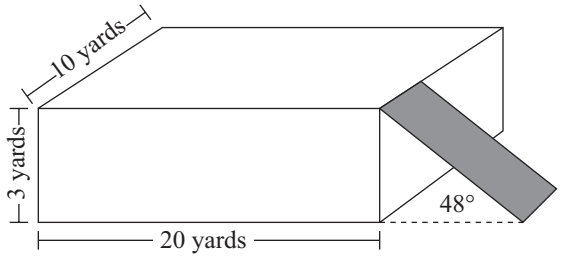
37. Triangle *XYZ* below has an area of 72 square inches. Circle *O* is tangent to the triangle at *W*, and the height of the triangle is equal in length to the base. If the line *WY* is a diameter of circle *O*, what is the area, in square inches, of the circle?



A. 6π
B. 12π
C. 24π
D. 36π
E. 144π

Use the following information to answer questions 38–40.

Shown below is a rectangular pool with a ramp leading up to one side. A water pump fills the pool at an average rate of 70 cubic yards per hour as it fills the pool. The pool is a rectangular box of length of 20 yards, width of 10 yards, and height of 3 yards. Also shown below is a ramp that leads to the top of the pool. The ramp is attached to the top of the pool and has an angle of elevation of 48°.



38. Which of the following is closest to the length of the ramp, to the nearest 0.1 yards?

(Note: $\sin 48° \approx 0.74$; $\cos 48° \approx 0.67$; $\tan 48° \approx 1.11$)

F. 2.7
G. 3.3
H. 3.0
J. 4.1
K. 4.5

39. The water pump starts to fill a completely empty pool and continues until the pool is completely filled. To the nearest 0.1 hours, for how many hours does the pump fill the pool with water?

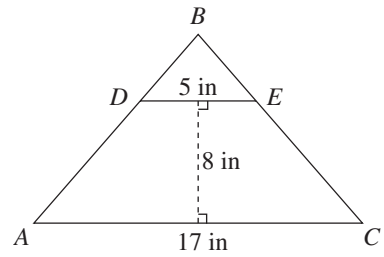
A. 8.5
B. 8.6
C. 14.3
D. 103.0
E. 114.3

40. Rosie wants to build a pool that is geometrically similar to the pool shown in the figure. The new pool will have a height of $4\frac{1}{2}$ yards. What will be the length, in yards, of the longest side of the new pool?

F. 10
G. $13\frac{1}{3}$
H. 15
J. $21\frac{1}{2}$
K. 30

---

41. Triangle *ABC* shown below is isosceles, and line segment *DE* is parallel to *AC*. What is the perimeter, in inches, of the quadrilateral *ADEC* ?



A. 20
B. 22
C. 30
D. 38
E. 42

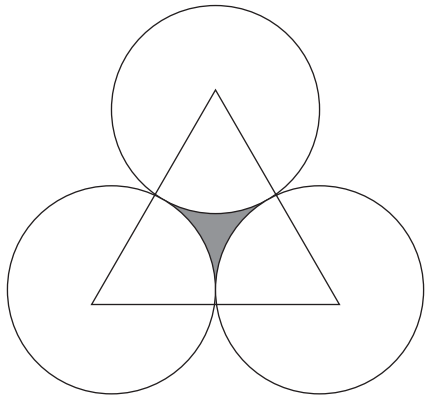
42. A rectangular box is 20 inches high, 14 inches long, and 8 inches wide. What is the surface area, in square inches, of the rectangular box?

F. 552
G. 672
H. 1,104
J. 1,680
K. 2,240

43. Jackie decides to draw shapes using chalk on the sidewalk. The first shape Jackie decides to draw is a rectangle. Her rectangle has a perimeter of 32 inches, and the length of the rectangle is three times its width. What is the area, in square inches, of the rectangle?

A. 32
B. 36
C. 48
D. 64
E. 144

50. In the figure below, a table in the shape of an equilateral triangle is placed on top of 3 circular stands. The length of each side of the table is 20 inches. The stands are congruent, and each stand is tangent to the other 2 stands. Each vertex of the table lies on the center of a circle. The region that is interior to the table and exterior to all 3 stands is shaded. What is the area, to the nearest square inch, of the shaded region?



F. 16
G. 52
H. 121
J. 157
K. 173

60. In a regular octagon, all 8 interior angles are congruent. What is the measure of each interior angle of a regular octagon?

F. 45°
G. 90°
H. 108°
J. 135°
K. 180°

Coordinate Geometry

12. What is the slope–intercept form of $-3x - y + 7 = 0$?

F. $y = -3x - 7$
G. $y = -3x + 7$
H. $y = 3x - 7$
J. $y = 3x + 7$
K. $y = 7x + 3$

21. What is the slope–intercept form of $6x + 2y - 4 = 12$?

A. $y = 3x + 8$
B. $y = 3x - 8$
C. $y = -3x + 8$
D. $y = -3x - 8$
E. $y = -8x + 3$

22. What is the slope of any line perpendicular to the line $2x + 5y = -10$?

F. $-\frac{5}{2}$
G. $-\frac{2}{5}$
H. $\frac{2}{5}$
J. $\frac{1}{2}$
K. $\frac{5}{2}$

23. A line in the standard (*x*,*y*) coordinate plane has equation $-5x + 3y = -9$. What is the slope of this line?

A. –3
B. $-\frac{5}{3}$
C. $\frac{3}{5}$
D. $\frac{5}{3}$
E. 3

31. What is the *y*-coordinate of the point in the standard (*x*,*y*) coordinate plane at which the lines $y = 4x + 7$ and $y = 6x - 3$ intersect?

A. 5
B. 6
C. 7
D. 10
E. 27

36. What is the slope of the line that passes through both of the points (3,7) and (9,11) in the standard (*x*,*y*) coordinate plane?

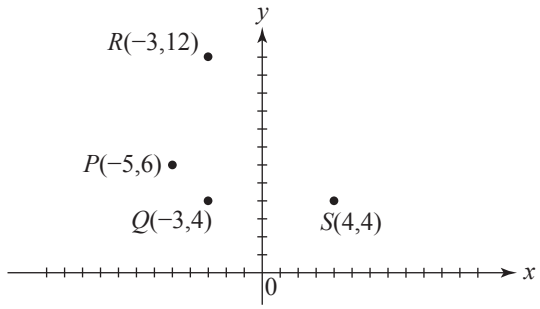
F. $-\frac{3}{2}$
G. $-\frac{2}{3}$
H. $\frac{2}{3}$
J. $\frac{3}{2}$
K. 10

41. Which of the following equations, when graphed in the standard (*x*,*y*) coordinate plane, would cross the *x*-axis at $x = -3$ and $x = 5$?

A. $y = -3(x - 3)(x + 5)$
B. $y = -3(x + 3)(x - 5)$
C. $y = 3(x + 3)(x + 5)$
D. $y = 5(x - 3)(x - 5)$
E. $y = 5(x - 3)(x + 5)$

Use the following information to answer questions 44–45.

The points $P(-5,6)$, $Q(-3,4)$, $R(-3,12)$, and $S(4,4)$ are shown in the standard (x,y) coordinate plane below.



44. What is the slope of $\overleftrightarrow{PR}$?

F. 3

G. $-\frac{2}{9}$

H. –1

J. $-\frac{9}{4}$

K. –4

45. What is the tangent of the smallest angle in right triangle QRS ?

A. $\frac{7}{15}$

B. $\frac{7}{\sqrt{105}}$

C. $\frac{8}{\sqrt{105}}$

D. $\frac{7}{8}$

E. $\frac{8}{7}$

---

59. Which of the following equations describes a line that is parallel to a line with equation $-4x+3y=24$?

A. $-8x+6y=36$

B. $-4x-3y=12$

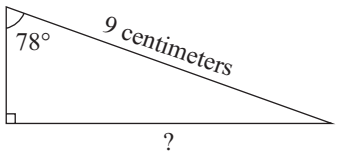
C. $-3x+4y=18$

D. $4x+3y=9$

E. $8x+6y=21$

Trigonometry

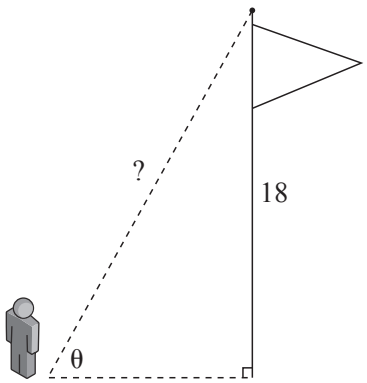
24. The right triangle shown below has a hypotenuse of 9 centimeters. The measure of the angle indicated is 78°. Which of the following is closest to the length, in centimeters, of the side opposite the 78° angle?



(Note: $\sin 12° \approx 0.2079$ $\sin 78° \approx 0.9781$
$\cos 12° \approx 0.9781$ $\cos 78° \approx 0.2079$
$\tan 12° \approx 0.2126$ $\tan 78° \approx 4.7046$)

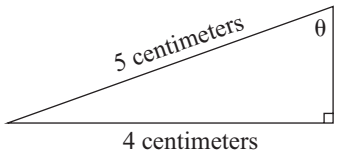
F. 0.978
G. 1.871
H. 8.800
J. 8.803
K. 42.342

28. Mario is standing on the ground and looking at the top of a flagpole. He knows that the flagpole is exactly 18 feet high and that $\sin\theta = \frac{5}{13}$, where θ is the angle indicated in the figure below. About how many feet long is the indicated distance from Mario on the ground to the top of the flagpole?



F. 46.8
G. 43.2
H. 19.5
J. 13.0
K. 6.9

35. A right triangle is given in the figure below. Which of the following expressions gives θ ?



A. $\cos^{-1}\left(\frac{4}{5}\right)$

B. $\tan^{-1}\left(\frac{4}{5}\right)$

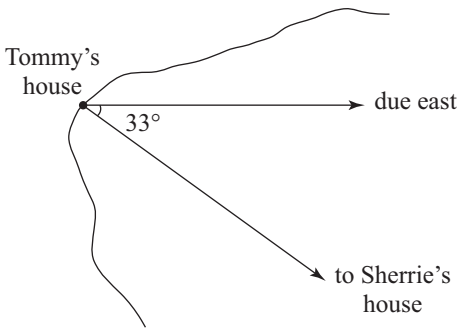
C. $\sin^{-1}\left(\frac{4}{5}\right)$

D. $\tan^{-1}\left(\frac{5}{4}\right)$

E. $\cos^{-1}\left(\frac{5}{4}\right)$

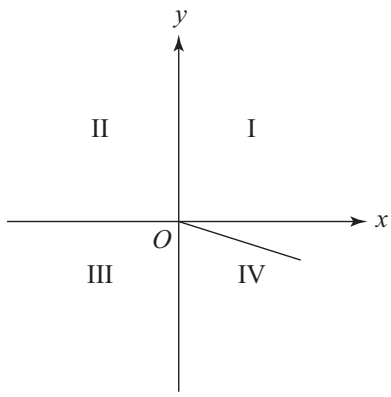
48. Tommy lives on the edge of a lake and wants to travel by boat to his friend Sherrie's house. Tommy travels the 550 yards from his house to Sherrie's house along a straight line in a direction (shown below) that is 33° clockwise from due east. To the nearest yard, Sherrie's house is how many yards due south and how many miles due east from Tommy's house?

(Note: $\sin 33° \approx 0.545$, $\cos 33° \approx 0.839$)



	Due south	Due east
F.	275	476
G.	300	461
H.	325	550
J.	389	389
K.	461	300

52. An angle with measure θ such that $\cos\theta = \frac{24}{25}$ is in standard position with its terminal side extending into Quadrant IV, as shown in the standard (x,y) coordinate plane below. What is the value of $\tan\theta$?



F. $\frac{24}{7}$

G. $\frac{24}{25}$

H. $-\frac{7}{25}$

J. $-\frac{7}{24}$

K. $-\frac{24}{25}$