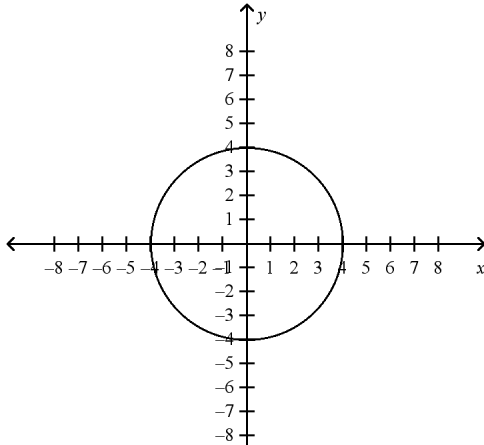# Q3 Benchmark Review

## Multiple Choice
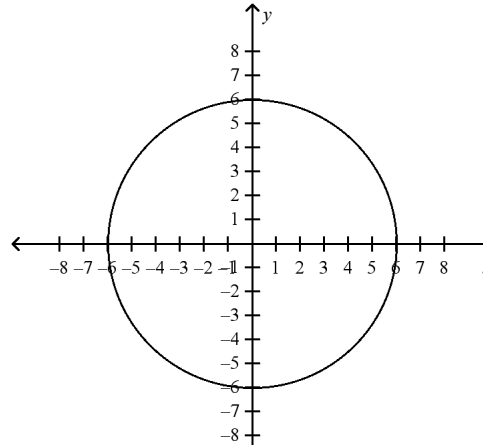*Identify the choice that best completes the statement or answers the question.*

*Graph the equation.*

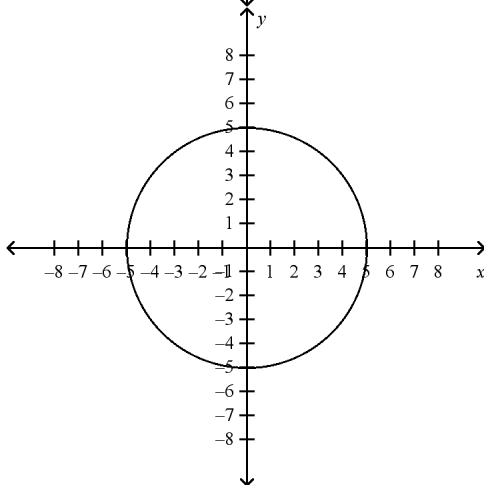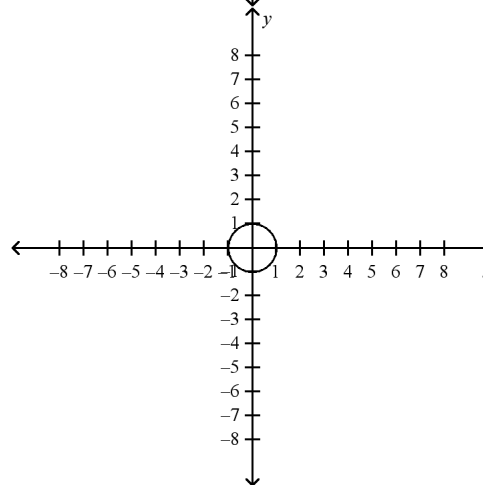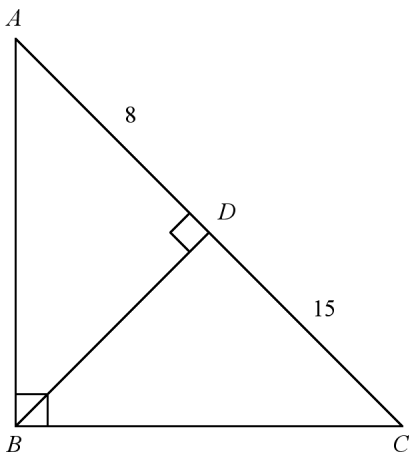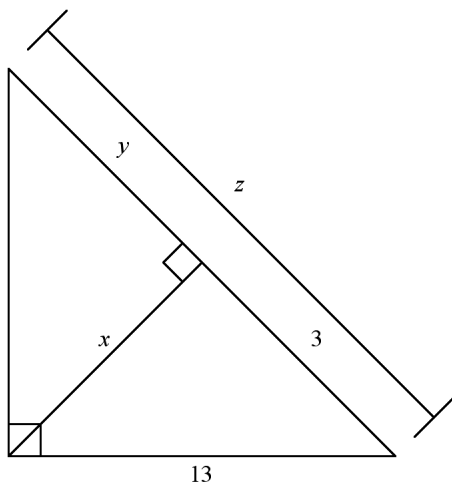____ 1. $x^2 + y^2 = 16$

a.

c.

b.

d.

## Short Answer

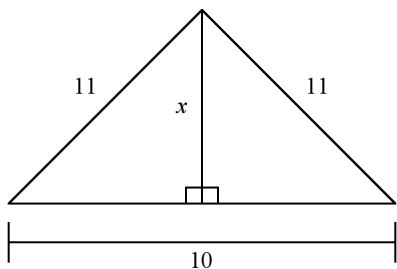2. Find the geometric mean between each pair of numbers.
   28 and 7

3. Find the measure of the $\overline{BD}$.



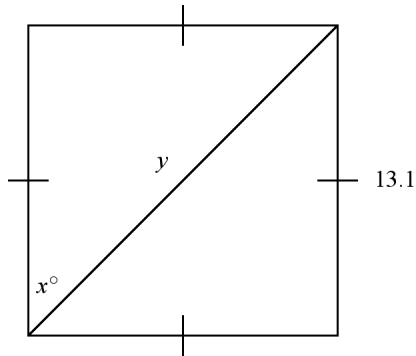4. Find $x$, $y$, and $z$.



5. Find $x$.



*Determine whether $\triangle QRS$ is a right triangle for the given vertices. Explain.*
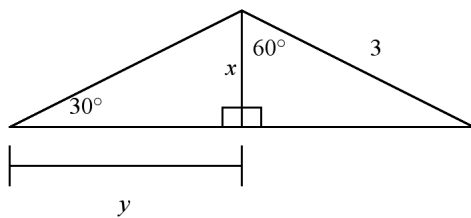
6. $Q(-6, -2)$, $R(2, -5)$, $S(-3, 6)$

7. The length of a diagonal of a square is $24\sqrt{2}$ millimeters. Find the perimeter of the square.
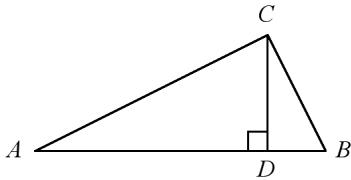
8. Find $x$ and $y$.



9. Find $x$ and $y$.



10. Use the figure to find the trigonometric ratio below. Express the answer as a decimal rounded to the nearest ten-thousandth.

    cos $B$



    $AC = 5/5, CB = 1/5, AD = 11, CD = 2, DB = 1$

11. Lynn is standing at horizontal ground level with the base of the Sears Tower in Chicago. The angle formed by the ground and the line segment from her position to the top of the building is 15.7°. The height of the Sears Tower is 1450 feet. Find her distance from the Sears Tower to the nearest foot.

12. A space shuttle is one kilometer above sea level when it begins to climb at a constant angle of 3° for the next 80 ground kilometers. About how far above sea level is the space shuttle after its climb?

13. A hot air balloon is one mile above sea level when it begins to climb at a constant angle of 4° for the next 50 ground miles. About how far above sea level is the hot air balloon after its climb?

    *A 60-yard long drawbridge has one end at ground level. The other end is initially at an incline of 5°.*

14. How far off the ground is the raised end of the drawbridge in its initial setting?

15. During one stage of the drawbridge's motion, the raised end is 15 yards above the ground. What is the incline of the drawbridge to the nearest hundredth?

16. A traffic helicopter pilot 60 meters above the road spotted two antique cars. The angles of depression are 10.2° and 8.7°. How far apart are the cars?

17. Two cabins are observed by a ranger in a 60-foot tower above a park. The angles of depression are 11.6° and 9.4°. How far apart are the cabins?

18. A tubing run is 150 yards long with a vertical drop of 21.6 yards. Find the angle of depression of the run.

19. Two fire rangers in watch towers that are 10 miles apart spotted a fire at the same time. The first ranger indicated that the position of the fire made an angle of 39° with the line between the towers. The second ranger indicated that it made an angle of 34° with the same line. How far is the second tower from the fire?

20. Two observation stations that are 28 miles apart located a hot air balloon at the same time. The first station indicated that the position of the balloon made an angle of 52° with the line between the stations. The second station indicated that it made an angle of 54° with the same line. How far is the second station from the hot air balloon?

21. In $\triangle ABC$, given the following measures, find the measure of the missing side to the nearest tenth..
   $a = 14.2, c = 13.9, m\angle B = 27.7$

   *Members of the soccer team are trying to map out some new plays before their next game. The goal is 24 feet wide.*

22. Pedro came up with a play that would put him 35 feet from one goal post and 45 feet from the other post. What is his angle to make a shot on goal?

23. Luna created a trash can in the shape of a triangular prism. The sides of the triangle are 1.6 feet, 2.3 feet, and 1.2 feet. Find the measures of the angles of the triangle to the nearest tenth.

   *The radius, diameter, or circumference of a circle is given. Find the missing measures. Round to the nearest hundredth if necessary.*

24. $d = 22.3$ km, $r =$ __?__, $C =$ __?__

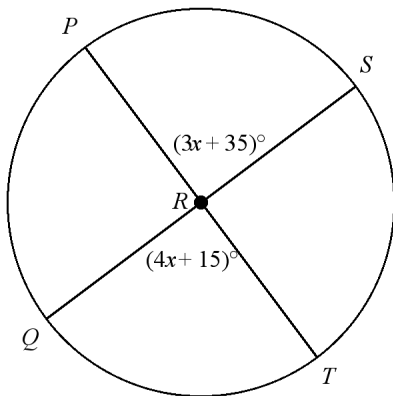25. Find the exact circumference of the circle.



4
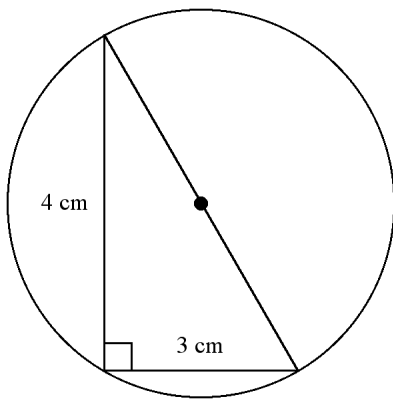
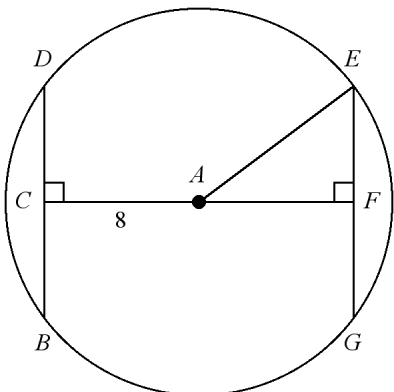*Use the diagram to find the measure of the given angle.*
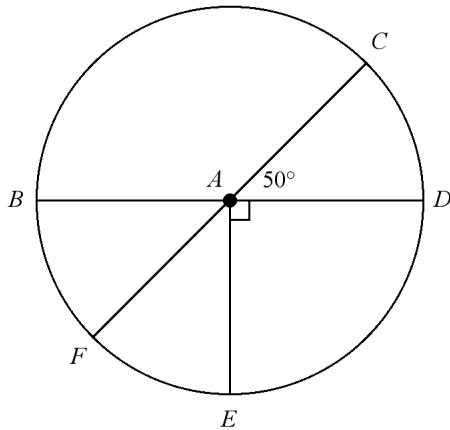


26. $m \angle BAC$

27. $m \angle BAF$

28. $m \angle EAD$

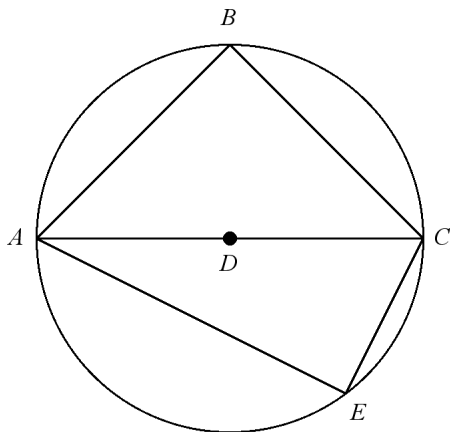*Use the diagram to find the measure of the given angle.*



29. $\angle PRS$

30. $\angle PRQ$

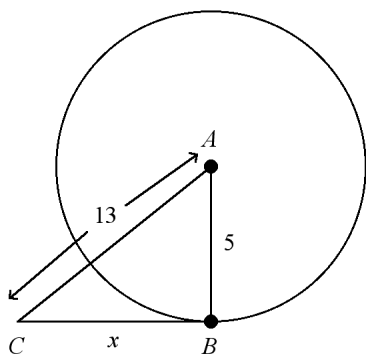31. In $\odot A$, $\overline{AC} \cong \overline{AF}$ and AE = 10.



Find $m\overline{EG}$.
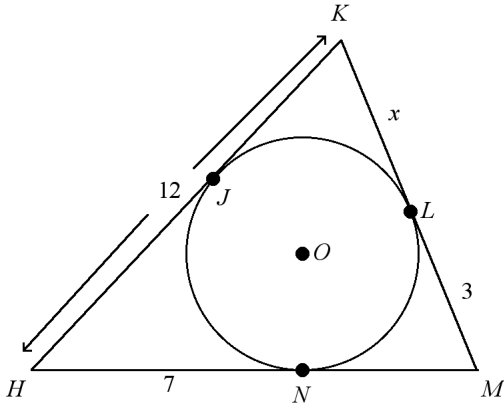
32. In $\odot D$, $\overline{AB} \cong \overline{CB}$ and $m$ arc $CE = 50$. Find $m\angle BCE$.



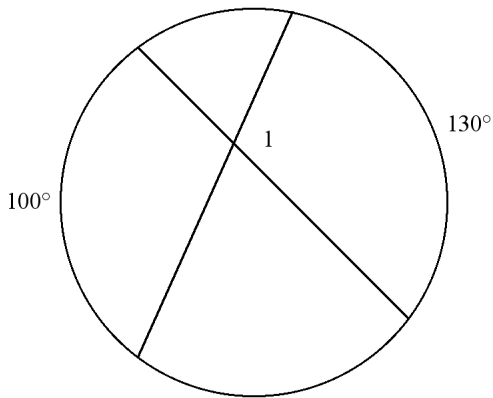33. Find $x$. Assume that segments that appear tangent are tangent.

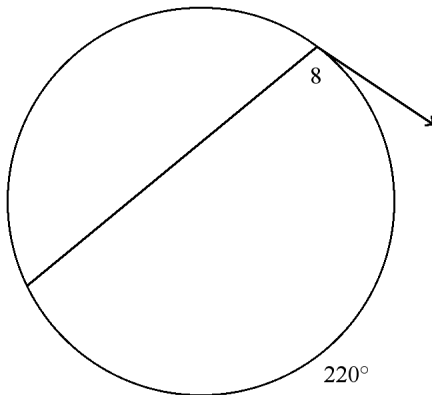34. Find $x$. Assume that segments that appear tangent are tangent.



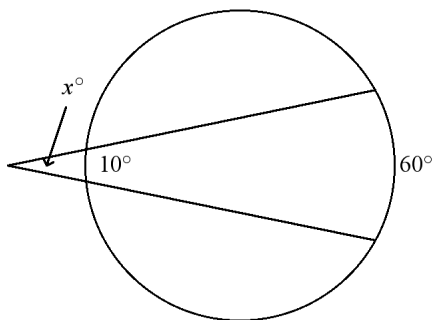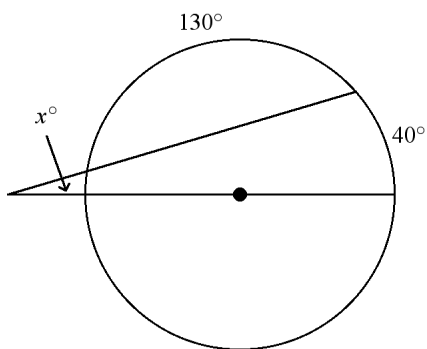*Find the measure of the numbered angle.*

35.



36.

*Find x. Assume that any segment that appears to be tangent is tangent.*

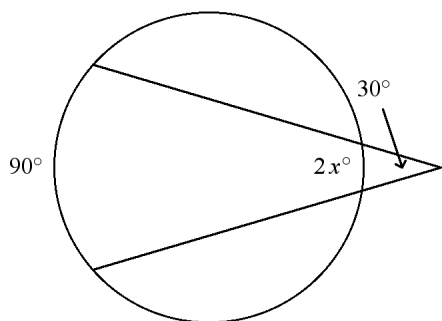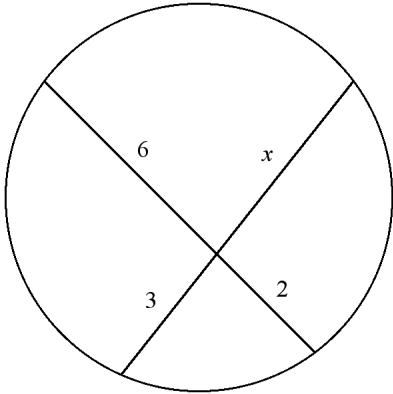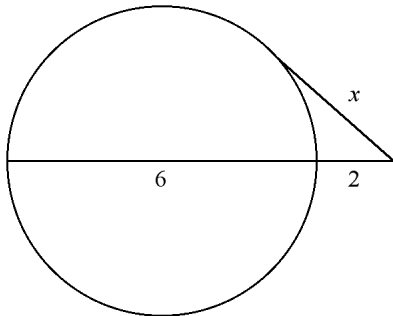37.



38.



39.

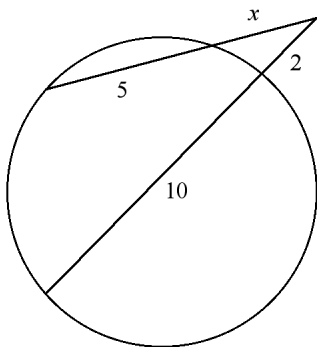*Find x. Round to the nearest tenth if necessary.*

40.



*Find x. Round to the nearest tenth if necessary. Assume that segments that appear to be tangent are tangent.*
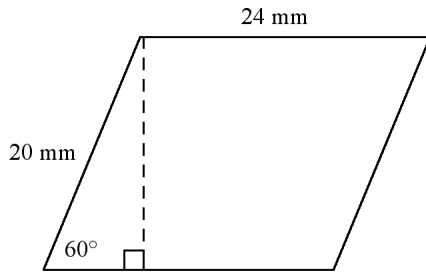
41.



42.

43. Write an equation for a circle with center at $(-6, 10)$ and diameter 6.

44. Find the perimeter and area of the parallelogram. Round to the nearest tenth if necessary.
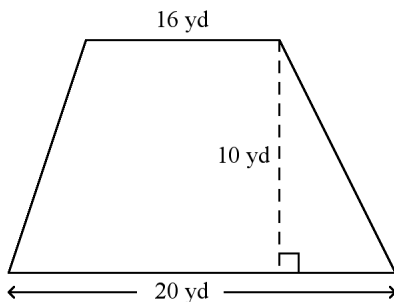
24 mm

20 mm

60°

45. Given the coordinates of the vertices of a quadrilateral, determine whether it is a *square*, a *rectangle*, or a *parallelogram*. Then find the perimeter of the quadrilateral.
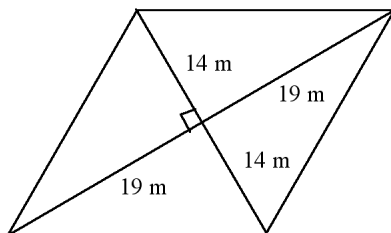$A(-3, -2), B(2, -2), C(4, 2), D(-1, 2)$

46. Find the area of the figure. Round to the nearest tenth if necessary.

4.8 in.

7.2 in.

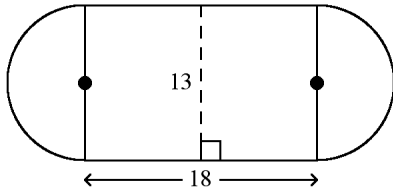47. Find the area of the figure. Round to the nearest tenth if necessary.

16 yd

10 yd

20 yd
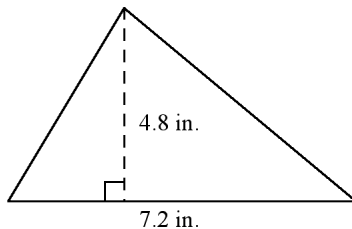
48. Find the area of the figure. Round to the nearest tenth if necessary.
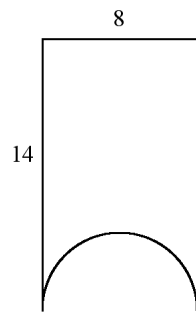
14 m

19 m

14 m

19 m

49. Find the area of a circle having a circumference of $34\pi$. Round to the nearest tenth. Use 3.14 for pi.

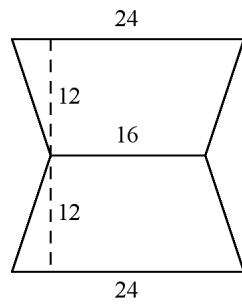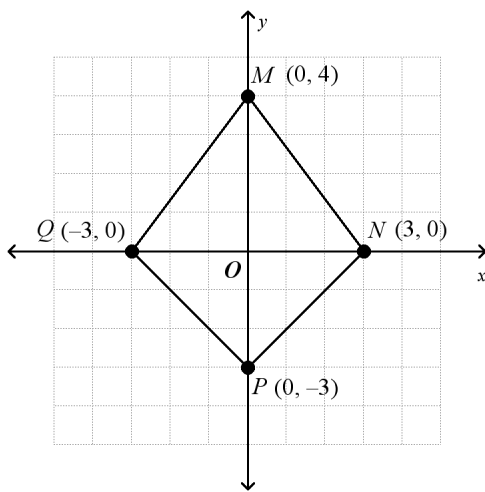*Find the area of the figure. Round to the nearest tenth if necessary.*

50.

13

18

51.

8

14

52.

24

12

16

12

24

53.

*y*

*M* (0, 4)

*Q* (–3, 0)          *N* (3, 0)

*O*                  *x*

*P* (0, –3)
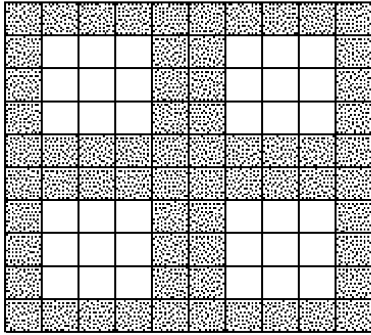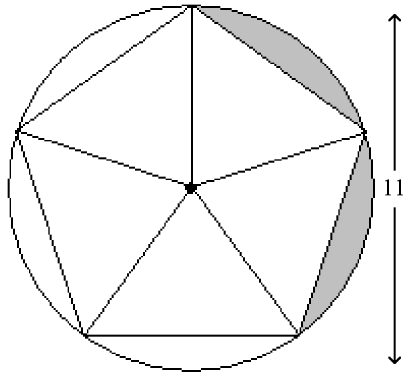
54. Find the probability that a point chosen at random lies in the shaded region.



*Find the area of the shaded region. Round answers to the nearest tenth. Assume all inscribed polygons are regular.*

55.

# Q3 Benchmark Review
## Answer Section

**MULTIPLE CHOICE**

1. A

**SHORT ANSWER**

2. 14
3. 2/30
4. $x \cup 12.6$, $y \cup 53.3$, $z \cup 56.3$
5. 4/6
6. yes; $QR = 1/73$, $QS = 1/73$, $RS = 1/146$; $QR^2 + QS^2 = RS^2$
7. 96 millimeters
8. $x = 45°$, $y = 13.1\sqrt{2}$
9. $x = 1.5$, $y = 1.5\sqrt{3}$
10. 0.4472
11. 5159 ft
12. 5.2 km
13. 4.5 mi
14. 5.23 yd
15. 14.48°
16. 58.6 m
17. 70.1 ft
18. 8.3°
19. 6.6 mi
20. 23.0 mi
21. $b = 6.7$
22. 31.9
23. 109.6, 41.0, 29.4
24. $r = 11.15$ km, $C = 70.06$ km
25. $5\pi$ cm
26. 130
27. 50
28. 90
29. 95°
30. 85°
31. 12
32. 110
33. 12
34. 5

35. 115
36. 110
37. 25
38. 15
39. 15
40. 4
41. 4
42. 3
43. $(x+6)^2 + (y-10)^2 = 9$
44. 88 mm; 415.7 mm$^2$
45. parallelogram; $(10 + 4\sqrt{5})$ units
46. 17.3 in$^2$
47. 180 yd$^2$
48. 532 m$^2$
49. 907.5 units$^2$
50. 366.7 units$^2$
51. 86.9 units$^2$
52. 480 units$^2$
53. 21 units$^2$
54. 0.64
55. 9.2 units$^2$