

Chapter 6

1. There are 15 plums and 9 apples in a fruit bowl. Find the ratio of apples to plums.

- A. 3:5 B. 3:8 C. 5:3 D. 8:3

9:15
3:5

2. The scale drawing of a porch is 8 inches wide by 12 inches long. If the actual porch is 12 feet wide, find the length of the porch.

- A. 8 ft B. 10 ft C. 16 ft D. 18 ft

$\frac{8}{12} = \frac{12}{x}$

3. Solve $\frac{5}{6} = \frac{4}{x}$.

- A. 4.6 B. 4.8 C. 5 D. 7

$5x = 24$

$144 = 8x$

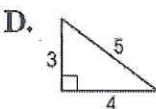
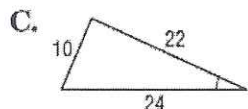
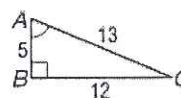
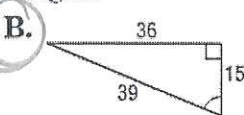
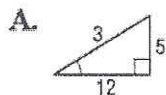
4. A quality control technician checked a sample of 30 bulbs. Two of the bulbs were defective. If the sample was representative, find the number of bulbs expected to be defective in a case of 450.

- A. 24 B. 30 C. 36 D. 45

$\frac{2}{30} = \frac{x}{450}$

$900 = 30x$

5. Find the triangle similar to $\triangle ABC$ at the right.

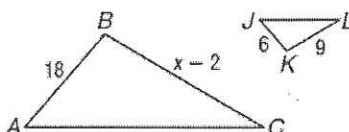


$\frac{18}{6} = \frac{x-2}{9}$

$102 = 6x - 12$

6. Find x if $\triangle ABC \sim \triangle JKL$.

- A. 10 B. 14
C. 25 D. 29

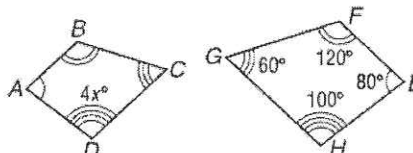


7. Quadrilateral $ABCD \sim$ quadrilateral $PQRS$. If $AB = 10$, $BC = 6$, $PS = 12$, and $QR = 4$, find the scale factor of $ABCD$ to $PQRS$.

- A. $\frac{1}{2}$ B. $\frac{3}{2}$ C. $\frac{5}{3}$ D. $\frac{5}{6}$

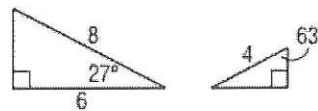
8. If quadrilateral $ABCD \sim$ quadrilateral $EFGH$, find x .

- A. 15 B. 20
C. 25 D. 30



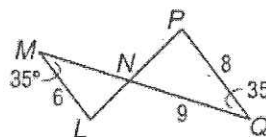
9. Which theorem or postulate can be used to prove that these two triangles are similar?

- A. AA B. SAS C. SSA D. SSS



10. Find MN .

- A. $5\frac{1}{3}$ B. $6\frac{3}{4}$ C. 7 D. 12



$\frac{8}{6} = \frac{9}{x}$

$8x = 54$

11. A 5-foot tall student cast a 4-foot shadow. If the tree next to her cast a 44-foot shadow, what is the height of the tree?

A. $35\frac{1}{5}$ ft

B. 45 ft

C. $51\frac{1}{2}$ ft

D. 55 ft

$$\frac{5}{4} = \frac{x}{44}$$

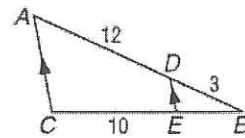
12. In $\triangle ABC$, $\overline{DE} \parallel \overline{AC}$. If $AD = 12$, $BD = 3$, and $CE = 10$, find BE .

A. 1

B. $1\frac{1}{2}$

C. 2

D. $2\frac{1}{2}$



$$\frac{12}{10} = \frac{3}{x}$$

$$30 = 12x$$

$$\frac{18}{3x} = \frac{12}{16}$$

$$288 = 360x$$

$$\frac{x}{24} = \frac{10}{16}$$

$$160x = 240$$

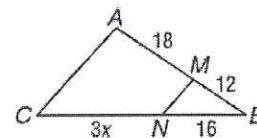
13. Find x so that $\overline{AC} \parallel \overline{MN}$ in $\triangle ABC$.

A. 8

B. 10

C. 25

D. 29



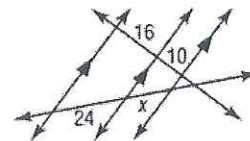
14. Find x .

A. 14

B. 15

C. 16

D. 18



15. If $\triangle FGH \sim \triangle PQR$, $FG = 6$, $PQ = 10$, and the perimeter of $\triangle PQR$ is 35, find the perimeter of $\triangle FGH$.

A. 21

B. 27

C. 31

D. $58\frac{1}{3}$

Chapter 7

16. Find the length of the hypotenuse of a right triangle whose legs measure 6 and 5.

A. 11

B. $\sqrt{11}$

C. $\sqrt{30}$

D. $\sqrt{61}$

$$6^2 + 5^2 = c^2$$

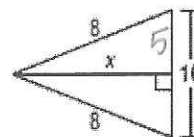
17. Find x .

A. $\sqrt{39}$

B. 6

C. $5\sqrt{3}$

D. 5



$$x^2 + 5^2 = 8^2$$

18. Which of the following could represent sides of a right triangle?

A. $\frac{3}{4}, 1, \frac{5}{4}$

B. $\sqrt{3}, \sqrt{5}, \sqrt{15}$

C. 7, 17, 24

D. 8, 15, 16

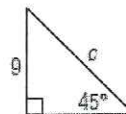
19. Find c .

A. 18

B. $9\sqrt{3}$

C. $9\sqrt{2}$

D. 9



20. Find the perimeter of a square to the nearest tenth if the length of its diagonal is 16 millimeters.

A. 11.3 mm

B. 45.3 mm

C. 90.5 mm

D. 128.0 mm



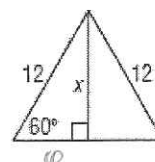
21. Find x .

A. 6

B. $6\sqrt{2}$

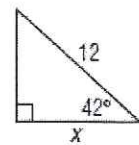
C. $6\sqrt{3}$

D. $12\sqrt{3}$



22. Find x .
 A. 8.0
 C. 10.4

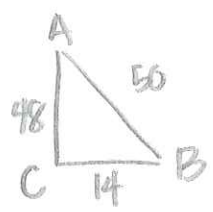
- B. 8.9
 D. 10.8



$\cos 42 = \frac{x}{12}$

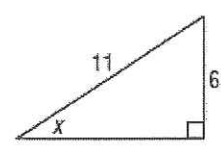
23. In right triangle ABC , $a = 14$, $b = 48$, and $c = 50$. Find $\tan \angle A$.

- A. $\frac{7}{24}$ B. $\frac{7}{25}$ C. $\frac{24}{25}$ D. $\frac{24}{7}$



24. Find x to the nearest tenth of a degree.

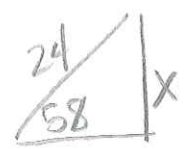
- A. 56.9
 C. 33.1 B. 54.5
 D. 28.6



$\sin x = \frac{6}{11}$

25. If a 24-foot ladder makes a 58° angle with the ground, how many feet up a wall will it reach? Round your answer to the nearest tenth.

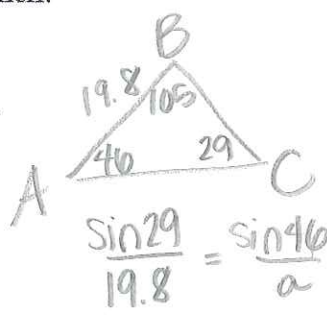
- A. 38.4 ft B. 20.8 ft C. 20.4 ft D. 12.7 ft



$\sin 58 = \frac{x}{24}$

26. In $\triangle ABC$, $m\angle A = 46$, $m\angle B = 105$, and $c = 19.8$. Find a to the nearest tenth.

- A. 29.4 B. 28.5 C. 15.7 D. 14.7



$\frac{\sin 29}{19.8} = \frac{\sin 46}{a}$

27. In $\triangle LMN$, $l = 42$, $m = 61$, and $m\angle N = 108$. Find n to the nearest tenth.

- A. 7068.4 B. 84.1 C. 79.2 D. 24.7

$n^2 = 42^2 + 61^2 - 2(42)(61)\cos 108$

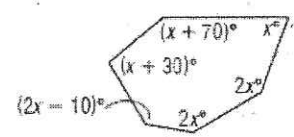
Chapter 8

28. Find the sum of the measures of the interior angles of a convex 50-gon.
 A. 9000 B. 8640 C. 360 D. 172.8

29. Find x .
 A. 16
 C. 50

$180(50-2)$

- B. 34
 D. 70



$x + 70 + x + 2x + 2x + 2x - 10 + x + 30 = 720$
 $9x + 90 = 720$
 $9x = 630$
 $x = 70$

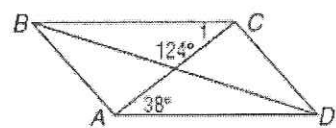
30. Find the sum of the measures of the exterior angles of a convex 65-gon.
 A. 5.54 B. 90 C. 180 D. 360

31. Which of the following is a property of all parallelograms?
 A. Each pair of opposite angles is congruent.

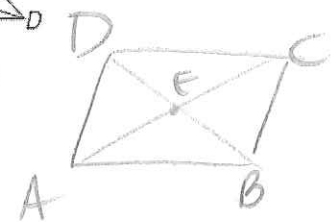
- B. Only one pair of opposite sides is congruent.
 C. Each pair of opposite angles is supplementary.
 D. There are four right angles.

32. Find $m\angle 1$ in parallelogram $ABCD$.
 A. 19
 C. 52

- B. 38
 D. 56



33. $ABCD$ is a parallelogram with diagonals intersecting at E . If $AE = 4x - 8$ and $EC = 36$, find x .
 A. 7 B. 11 C. 15.5 D. 38

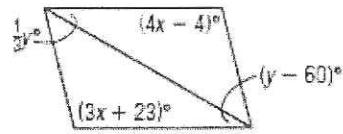


$4x - 8 = 36$

$4x = 44$

34. Find x and y so that this quadrilateral is a parallelogram.

- A. $x = 27, y = 90$ B. $x = 27, y = 40$
 C. $x = 13, y = 90$ D. $x = 13, y = 40$



$$3x + 23 = 4x - 4$$

$$27 = x$$

$$\frac{1}{3}y = y - 60$$

$$60 = \frac{2}{3}y$$

$$90 = y$$

35. $ABCD$ is a rectangle. If $AB = 7x - 6$ and $CD = 5x + 30$, find x .

- A. $5\frac{1}{2}$ B. 12 C. 13 D. 18

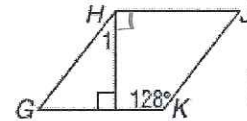


$$7x - 6 = 5x + 30$$

$$2x = 36$$

36. Find $m\angle 1$ in rhombus $GHJK$.

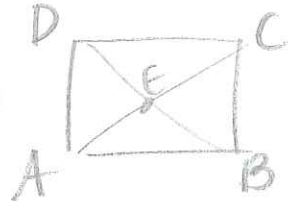
- A. 90 B. 64
 C. 52 D. 38



$$128 - 90$$

37. The diagonals of square $ABCD$ intersect at E . If $AE = 3x - 4$ and $BD = 10x - 48$, find AC .

- A. 90 B. 52 C. 26 D. 10



$$2(3x - 4) = 10x - 48$$

$$6x - 8 = 10x - 48$$

$$-10 = 4x$$

$$10 = x$$

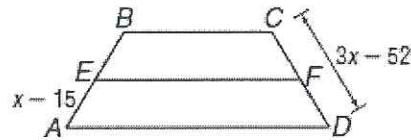
38. The length of one base of a trapezoid is 19 meters and the length of the median is 23 meters. Find the length of the other base.

- A. 15 m B. 21 m C. 27 m D. 42 m

$$23 = \frac{1}{2}(19 + x)$$

39. \overline{EF} is the median of isosceles trapezoid $ABCD$. Find x .

- A. 22 B. 18.5
 C. 42.5 D. 82



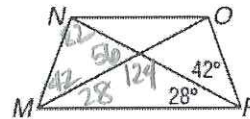
$$x - 15 = \frac{1}{2}(3x - 52)$$

$$2x - 30 = 3x - 52$$

$$22 = x$$

40. Find $m\angle MNP$ in isosceles trapezoid $MNOP$.

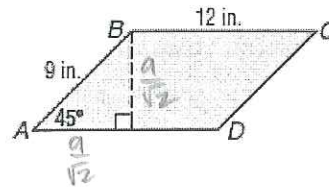
- A. 42 B. 70
 C. 82 D. 98



Chapter 11

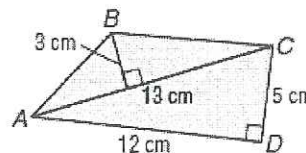
41. Find the area of parallelogram $ABCD$ to the nearest tenth.

- A. 54 in^2 B. 76.4 in^2
 C. 95.2 in^2 D. 152.7 in^2



42. Find the area of quadrilateral $ABCD$.

- A. 49.5 cm^2 B. 52 cm^2
 C. 60 cm^2 D. 97.5 cm^2

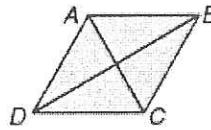


$$\frac{1}{2}(3)(13) + \frac{1}{2}(12)(5)$$

43. Rhombus $ABCD$ has an area of 126 square units. If $DB = 18$ units, find AC .

A. 18 units
C. 7 units

B. 14 units
D. 3.5 units

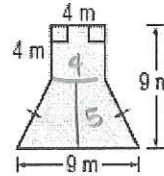


$$126 = \frac{1}{2}(18)(x)$$

44. Find the area of the figure to the nearest tenth.

A. 81 m^2
C. 58.5 m^2

B. 65 m^2
D. 48.5 m^2

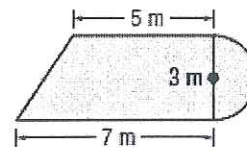


$$4(4) + \frac{1}{2}(9+4)(9)$$

45. Find the area of the figure to the nearest tenth.

A. 46.3 m^2
C. 25.1 m^2

B. 28.1 m^2
D. 21.5 m^2



$$\frac{1}{2}(3)(5+7) + \frac{1}{2}\pi(1.5)^2$$

46. Find the area of the shaded region to the nearest tenth.

A. 59.1 cm^2
C. 25.7 cm^2

B. 57.5 cm^2
D. 19.6 cm^2



$$P = 360$$

$$\pi(6)^2 - \frac{1}{2}(360)(3\sqrt{3})$$

47. Find the area of a nonagon with a perimeter of 126 inches. Round to the nearest tenth.

A. 1289.4 in^2
C. 466.2 in^2

B. 1211.6 in^2
D. 157.5 in^2



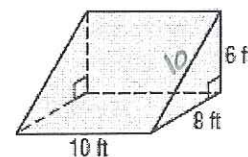
$$\tan 20 = \frac{7}{x}$$

Chapter 12

48. Find the surface area of the solid.

A. 188 ft^2
C. 288 ft^2

B. 240 ft^2
D. 480 ft^2



$$(6+8+10)(10) + 2\left(\frac{1}{2}(8)(6)\right)$$

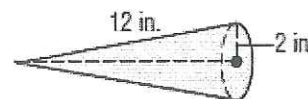
For 49 & 50 use the figure to the right.

49. Find the lateral area.

A. 44.0 in^2 **B. 75.4 in^2**

C. 88.0 in^2

D. 100.5 in^2



$$\pi r l$$

$$\pi(2)(12)$$

50. Find the surface area.

A. 44.0 in^2 **B. 75.4 in^2**

C. 88.0 in^2

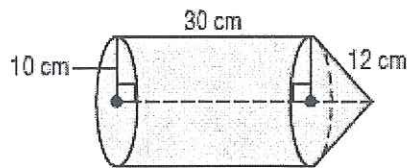
D. 100.5 in^2

$$+ \pi(2)^2$$

For 51 & 52 use a right cylinder with radius 3 inches and a height of 17 inches.

51. Find the lateral area.
 A. 320.4 in² B. 348.7 in² C. 377.0 in² D. 537.2 in²
52. Find the surface area. $2\pi(3)(17) + 2\pi(3)^2$
 A. 320.4 in² B. 348.7 in² C. 377.0 in² D. 537.2 in²

53. Find the surface area of this model rocket to the nearest tenth.
 A. 2890.3 cm² B. 2576.1 cm²
 C. 2513.3 cm² D. 2261.9 cm²



$$2\pi(10)(30) + \pi(10)^2 + \pi(10)(12)$$

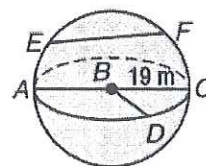
54. The surface area of a sphere is 64π square centimeters. Find the radius.
 A. 16 cm B. 8 cm C. 4 cm D. 2 cm

For 55 & 56 use the figure to the right.

55. Identify a chord.
 A. \overline{EF} B. $\odot B$ C. \overline{BD} D. \overline{AD}

$$4\pi = 4\pi r^2$$

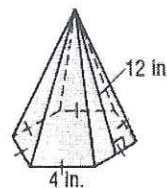
$$16 = r^2$$



56. Find the surface area to the nearest tenth.
 A. 4536.5 m² B. 2268.2 m² C. 477.5 m² D. 238.8 m² $4\pi(19)^2$

For 57 & 58 use the figure to the right.

57. Find the lateral area.
 A. 144 cm² B. $144 + 24\sqrt{3}$ cm²
 C. 196 cm² D. 288 cm²
58. Find the surface area.
 A. 144 cm² B. $144 + 24\sqrt{3}$ cm² C. 196 cm² D. 288 cm²



$$\frac{1}{2}(24)(12) +$$

$$\frac{1}{2}(24)(2\sqrt{3})$$

Chapter 13

$$V = \pi(7)^2(10)$$

59. A cylinder has a radius that is 7 inches long and a height that is 10 inches long. Find the volume to the nearest tenth.

A. 1539.4 in³ B. 490.0 in³ C. 219.9 in³ D. 70.0 in³

60. A right triangular pyramid has a 12-meter height and a base with legs that are 3 meters and 4 meters long. Find the volume.

A. 144 m³ B. 72 m³ C. 48 m³ D. 24 m³

$$V = \frac{1}{3}(3(4))(12)$$

61. The volume of a square pyramid is 100 cubic feet and the height is 10 feet long. Find the length of a side of the base.

A. 15 ft B. $\sqrt{30}$ ft C. 7.5 ft D. $\sqrt{5}$ ft

$$100 = \frac{1}{3}B(10)$$

$$30 = B$$

62. The volume of a cone is 336π cubic feet and the height is 7 feet long. Find the radius.

A. 144 ft B. 36 ft C. 24 ft D. 12 ft

$$336\pi = \frac{1}{3}\pi r^2(7)$$

63. The lateral area of a cube is 324 square centimeters. Find the volume.
 A. 9 cm³ B. 81 cm³ C. 729 cm³ D. 972 cm³
64. A sphere has a 48-centimeter diameter. Find the volume to the nearest tenth.
 A. 463,246.7 cm³ B. 57,905.8 cm³ C. 28,952.9 cm³ D. 7238.2 cm³
65. A sphere has a volume that is 288π cubic inches. Find the radius.
 A. 3 in. B. 6 in. C. 8 in. D. 12 in.

$324/4 = 81$
 each side area

$V = Bh$
 $= 81(9)$

Chapter 10

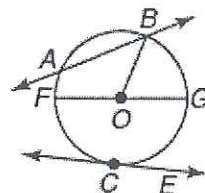
$288\pi = \frac{4}{3}\pi r^3$

$\frac{4}{3}\pi(24)^3$

66. Name a diameter.

A. \overline{FG}
 C. \overline{AB}

B. \overline{AB}
 D. \overline{CE}



67. Name a chord.

A. \overline{FO}

B. \overline{AB}

C. \overline{AB}

D. \overline{CE}

68. Name a secant.

A. \overline{FO}

B. \overline{AB}

C. \overline{AB}

D. \overline{CE}

69. If the diameter of a circle is 10 inches, find the circumference to the nearest hundredth.

A. 15.71 in.

B. 31.42 in.

C. 62.83 in.

D. 314.16 in.

$2\pi(5)$

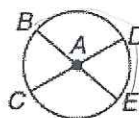
70. If $m\angle BAD = 110$ in $\odot A$, find $m\widehat{DE}$.

A. 35

B. 55

C. 70

D. 110



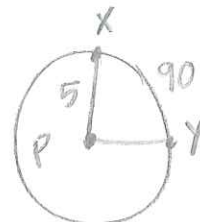
71. Points X and Y lie on $\odot P$ so that $PX = 5$ meters and $m\angle XPY = 90$. Find the length of \widehat{XY} to the nearest hundredth.

A. 3.93 m

B. 7.85 m

C. 15.71 m

D. 19.63 m



72. Chords \overline{XY} and \overline{WV} are equidistant from the center of $\odot O$. If $XY = 2x + 30$ and $WV = 5x - 12$, find x .

A. 58

B. 28

C. 14

D. 6

$\frac{90}{360} = \frac{l}{2\pi(5)}$

73. Find the radius of $\odot O$ if $DE = 12$ inches and \overline{DE} bisects \overline{OF} .

A. $2\sqrt{3}$ in.

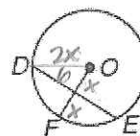
$x^2 + 6^2 = (2x)^2$

B. 6 in.

C. 8 in.

$x^2 + 36 = 4x^2$

D. $4\sqrt{3}$ in.



$2x + 30 = 5x - 12$

$42 = 3x$

74. Find x .

A. 122

$30 = 3x^2$

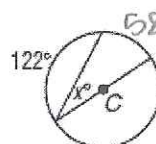
B. 61

C. 58

$12 = x^2$

D. 29

$2(2\sqrt{3} = x)$



75. $EFGH$ is a quadrilateral inscribed in $\odot P$ with $m\angle E = 72$ and $m\angle F = 49$. Find $m\angle H$.

A. 131

B. 108

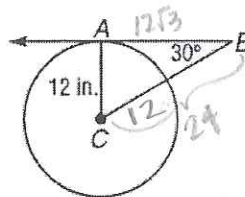
C. 90

D. 57

76. If \overline{AB} is tangent to $\odot C$ at A , find BC .

- A. 6 in.
C. $12\sqrt{3}$ in.

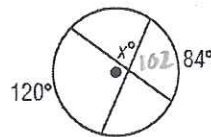
- B. $4\sqrt{3}$ in.
D. 24 in.



77. Find x .

- A. 78
C. 102

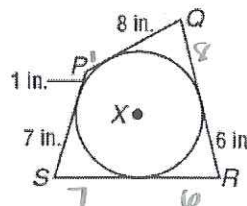
- B. 90
D. 156



78. \overline{PQ} , \overline{QR} , \overline{RS} , and \overline{SP} are tangent to $\odot X$. Find RS .

- A. 9 in.
C. 13 in.

- B. 12 in.
D. cannot tell



$\text{slope } AB = \frac{2}{3}$

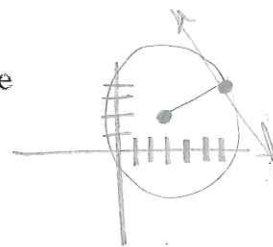
79. $\odot A$ has its center at $A(3, 2)$, and \overline{CB} is tangent to $\odot A$ at $B(6, 4)$. Find the slope of \overline{CB} .

- A. 1

- B. $\frac{1}{2}$

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

- D. $-\frac{1}{2}$

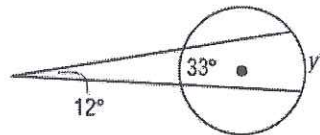


80. Find y .

- A. 66
C. 45

$12 = \frac{1}{2}(y - 33)$
 $24 = y - 33$

- B. 57
D. 21



81. Find the center of the circle whose equation is $(x + 11)^2 + (y - 7)^2 = 121$.

- A. $(-11, 7)$

- B. $(11, -7)$

- C. $(121, 49)$

- D. 11

82. Find the equation of a circle whose center is at $(2, 3)$ and radius is 6.

- A. $(x + 2)^2 + (y + 3)^2 = 6$

- B. $(x - 2)^2 + (y - 3)^2 = 6$

- C. $(x + 2)^2 + (y + 3)^2 = 36$

- D. $(x - 2)^2 + (y - 3)^2 = 36$

83. Find the equation of $\odot P$.

- A. $x^2 + (y - 3)^2 = 4$

- B. $x^2 + (y - 3)^2 = 2$

- C. $(x - 3)^2 + y^2 = 2$

- D. $(x - 3)^2 + y^2 = 4$

