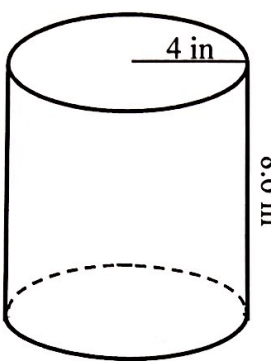
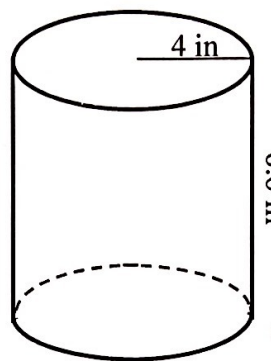
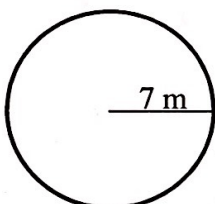
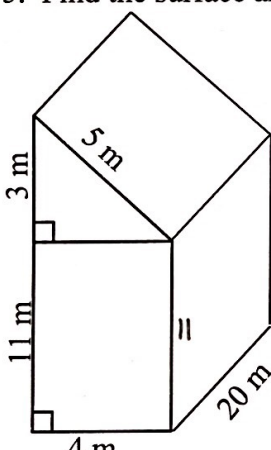
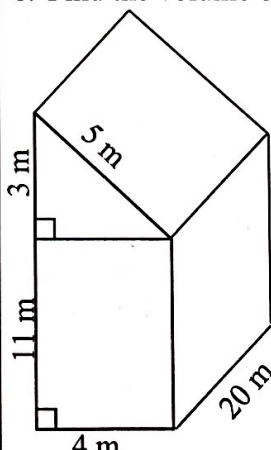


<p>1. Find the surface area of the cylinder.</p>  <p> $SA = 2B + LA$ $LA = 2\pi r h$ $= 2\pi(4)(8.6)$ $LA = 68.8\pi$ $B = \pi r^2$ $B = \pi(4)^2 = 16\pi$ $2B = 32\pi$ $SA = 32\pi + 68.8\pi = 100.8\pi \text{ in}^2$ $\approx 316.7 \text{ in}^2$ </p>	<p>2. Find the volume of the cylinder.</p>  <p> $V = B \cdot h$ $= \pi r^2 h$ $= \pi(4)^2(8.6)$ $V = \pi(16)(8.6)$ $V = 137.6\pi \text{ in}^3$ $\approx 432.3 \text{ in}^3$ </p>
<p>3. Find the area of the circle.</p>  <p> $A = \pi r^2$ $= \pi(7)^2$ $A = 49\pi \text{ m}^2$ $\approx 153.9 \text{ m}^2$ </p>	<p>4. The area of a circle is $225\pi \text{ ft}^2$. What is the radius? $A = \pi r^2$</p> <p> $225\pi = \pi r^2$ $\sqrt{225} = \sqrt{r^2}$ $15 \text{ ft} = r$ </p>
<p>5. Find the surface area of the prism.</p>  <p> $SA = 2B + LA$ $B_{\text{TRAP}} = \frac{1}{2}h(b_1 + b_2)$ $= \frac{1}{2}(4)(11 + 14)$ $= (2)(25) = 50$ $2B = 100$ $LA = P \cdot h$ $P = (14 + 4 + 11 + 5)$ $P = 34$ $LA = (34)(20)$ $LA = 680$ $SA = 100 + 680 = 780 \text{ m}^2$ </p>	<p>6. Find the volume of the prism.</p>  <p> $V = B \cdot h$ $B_{\text{TRAP}} = 50$ (see #5) $V = (50)(20)$ $V = 1,000 \text{ m}^3$ </p>

7. Find the exact length of the segment with endpoints at (5, -6) and (13, -10)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

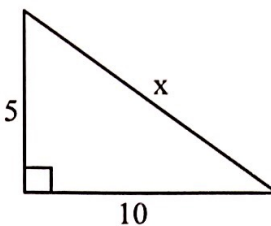
$$d = \sqrt{(13 - 5)^2 + (-10 - (-6))^2}$$

$$= \sqrt{(8)^2 + (-4)^2}$$

$$= \sqrt{64 + 16} = \sqrt{80}$$

$$= \sqrt{16 \cdot 5} = 4\sqrt{5}$$

8. Find the exact value of x.



$$5^2 + 10^2 = x^2$$

$$25 + 100 = x^2$$

$$125 = x^2$$

$$x = \sqrt{125}$$

$$= \sqrt{25 \cdot 5}$$

$$x = 5\sqrt{5}$$

9. A circle has an area of 144π . What is the diameter's length?

$$A = \pi r^2$$

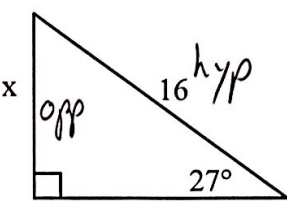
$$144\pi = \pi r^2$$

$$\sqrt{144} = \sqrt{r^2}$$

$$12 = r$$

$$d = 24 \text{ units}$$

10. Solve for x.

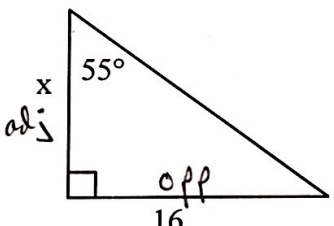


$$\sin 27^\circ = \frac{x}{16}$$

$$16 \sin 27^\circ = x$$

$$x \approx 7.26$$

11. Solve for x.



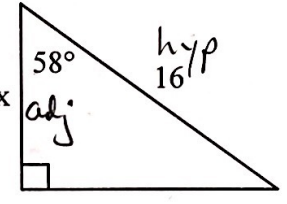
$$\tan 55^\circ = \frac{16}{x}$$

$$x \cdot \tan 55^\circ = 16$$

$$x = \frac{16}{\tan 55^\circ}$$

$$x \approx 11.2$$

12. Solve for x.

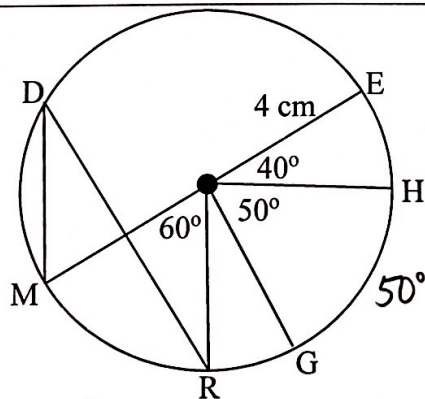


$$\cos 58^\circ = \frac{x}{16}$$

$$16 \cos 58^\circ = x$$

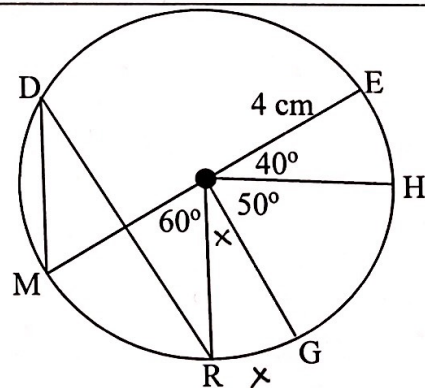
$$x \approx 8.48$$

13. Find $m\widehat{HG}$



$$m\widehat{HG} = 50^\circ$$

14. Find $m\widehat{RG}$



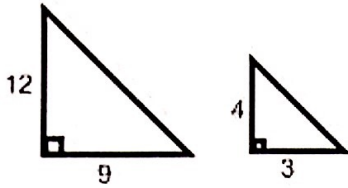
$$40 + 50 + x + 60 = 180$$

$$x + 150 = 180$$

$$x = 30$$

$$30^\circ$$

15&16. Given the two similar triangles, find:



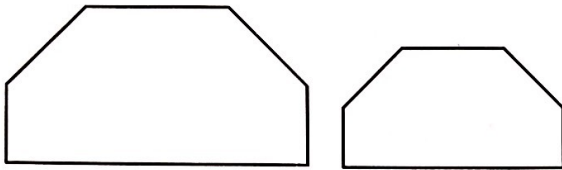
$$\frac{12}{4} = 3$$

Scale Factor: 3

Ratio of Perimeters: 3

Ratio of Areas: $3^2 = 9$

17. The two polygons are similar. Find the ratio of areas.



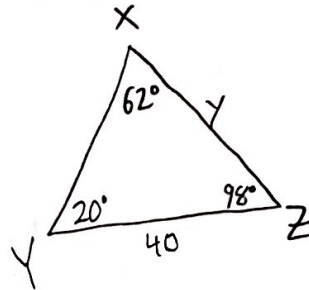
12

8

$$\frac{12}{8} = \frac{3}{2}$$

$$\left(\frac{3}{2}\right)^2 = \boxed{\frac{9}{4}}$$

18. In $\triangle XYZ$, $m\angle X = 62^\circ$, $x = 40$ in, and $m\angle Y = 20^\circ$. Find y to the nearest tenth.

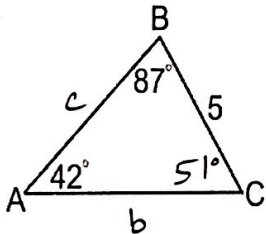


$$\frac{y}{\sin 20^\circ} = \frac{40}{\sin 62^\circ}$$

$$y = \frac{40 \sin 20^\circ}{\sin 62^\circ}$$

$$\boxed{y = 15.5}$$

19. Find the missing sides and perimeter of the triangle



$$\frac{b}{\sin 87^\circ} = \frac{5}{\sin 42^\circ}$$

$$\frac{c}{\sin 51^\circ} = \frac{5}{\sin 42^\circ}$$

$$b = \frac{5 \sin 87^\circ}{\sin 42^\circ}$$

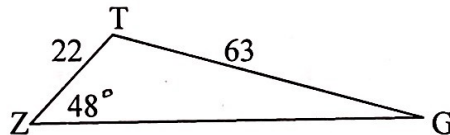
$$c = \frac{5 \sin 51^\circ}{\sin 42^\circ}$$

$$\boxed{b = 7.5}$$

$$\boxed{c = 5.8}$$

$$P = 7.5 + 5.8 + 5 = \boxed{18.3}$$

20. Find $m\angle G$



$$\frac{\sin G}{22} = \frac{\sin 48^\circ}{63}$$

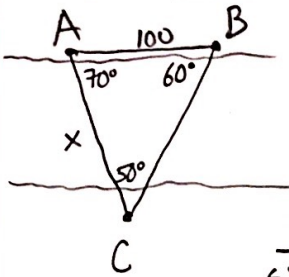
$$\sin G = \frac{22 \sin 48^\circ}{63}$$

$$\sin G = 0.2595$$

$$G = \sin^{-1}(0.2595)$$

$$\boxed{G = 15.0^\circ}$$

21. Points A & B are on one side of a river, 100' apart, with C on the opposite side. The angles A and B measure 70° and 60° respectively. What is the distance from point A to point C , to nearest foot?

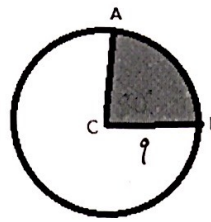


$$\frac{x}{\sin 60^\circ} = \frac{100}{\sin 50^\circ}$$

$$x = \frac{100 \sin 60^\circ}{\sin 50^\circ}$$

$$x = 113 \text{ ft}$$

22. Find the length of arc AB and the shaded sector area if $m\angle C = 80^\circ$ and $CB = 9$ cm.



$$\text{arc: } \frac{\text{angle}}{360} \cdot 2\pi r$$

$$\text{Sector: } \frac{\text{angle}}{360} \cdot \pi r^2$$

$$\text{arc: } \frac{80}{360} \cdot 2\pi(9)$$

$$\text{Sector: } \frac{80}{360} \cdot \pi(9)^2$$

$$4\pi \text{ cm}$$

$$\approx 12.6 \text{ cm}$$

$$18\pi \text{ cm}^2$$

$$\approx 56.5 \text{ cm}^2$$

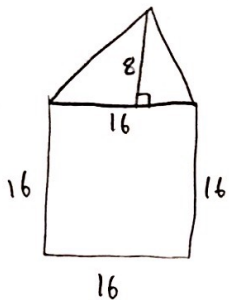
23. A square and an isosceles triangle are combined to form a figure that looks like a house (the base of the triangle is the top of the square.) The height of the triangle is one half the triangle's base. Each edge of the square is 16 cm. What is the area of the combined figures?

$$A_{\square} = 16^2 = 256$$

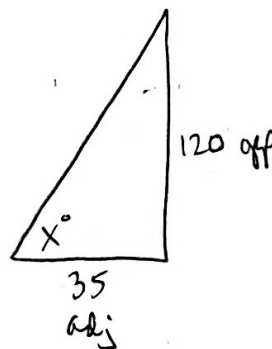
$$A_{\triangle} = \frac{1}{2}(16)(8) = 64$$

$$\text{Total: } 256 + 64$$

$$320 \text{ cm}^2$$



24. You are standing 35 feet from the base of a wall. The wall is 120 feet tall. Find the angle of elevation from the point where you are standing to the top of the wall.

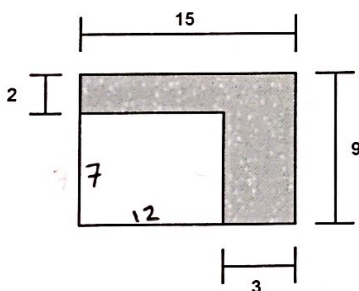


$$\tan x = \frac{120}{35}$$

$$x = \tan^{-1}\left(\frac{120}{35}\right)$$

$$x = 73.7^\circ$$

25. Find the area of the shaded region.



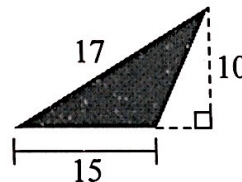
$$A_{\text{Big}} = (9)(15) = 135$$

$$A_{\text{small}} = (7)(12) = 84$$

$$\begin{array}{r} 135 \\ - 84 \\ \hline \end{array}$$

$$51 \text{ units}^2$$

26. What is the shaded area of the figure?

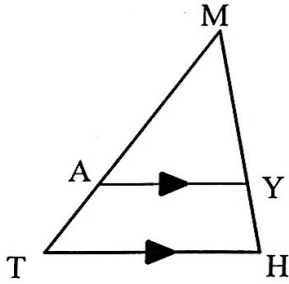


$$A = \frac{1}{2}bh$$

$$= \frac{1}{2}(15)(10)$$

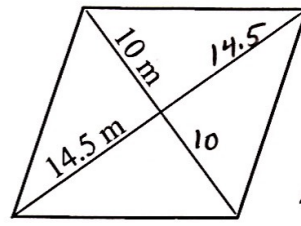
$$A = 75 \text{ units}^2$$

27. Write a similarity statement for the figure.



$$\triangle MAY \sim \triangle MTH$$

28. Find the area of the rhombus.



$$A = \frac{d_1 d_2}{2}$$

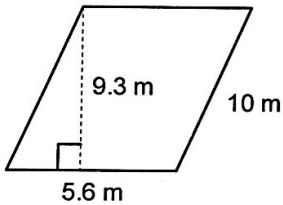
$$A = \frac{(20)(29)}{2}$$

$$d_1 = 20$$

$$d_2 = 29$$

$$A = 290 \text{ m}^2$$

29. Find the area of the parallelogram.

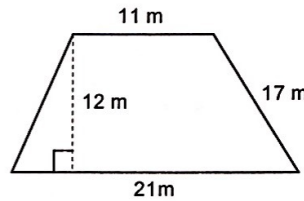


$$A = bh$$

$$= (5.6)(9.3)$$

$$A = 52.08 \text{ m}^2$$

30. What is the area of the trapezoid?

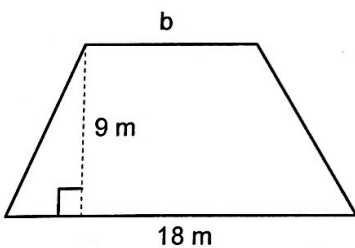


$$A_{\text{trap}} = \frac{1}{2} h (b_1 + b_2)$$

$$= \frac{1}{2} (12)(11 + 21)$$

$$= 6(32) = 192 \text{ m}^2$$

31. Find the missing side length if the area of the trapezoid is 126 square meters.



$$A = \frac{1}{2} h (b_1 + b_2)$$

$$126 = \frac{1}{2} (9)(b + 18)$$

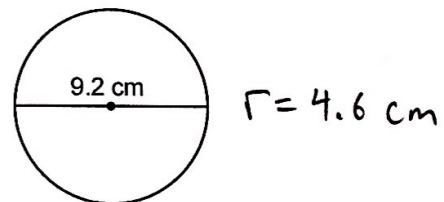
$$126 = 4.5(b + 18)$$

$$28 = b + 18$$

$$10 = b$$

$$b = 10 \text{ m}$$

32. Find the area of the figure.



$$A = \pi r^2$$

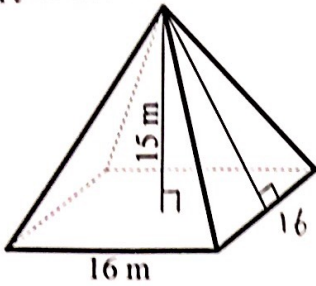
$$A = \pi (4.6)^2$$

$$A = \pi (21.16)$$

$$A = 21.16 \pi \text{ cm}^2$$

$$\approx 66.5 \text{ cm}^2$$

33. Find the following for the rectangular (square) pyramid: Volume



$$V = \frac{B \cdot h}{3}$$

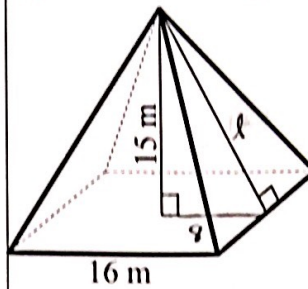
$$V = \frac{(256)(15)}{3}$$

$$V = 1280 \text{ m}^3$$

$$B = (16)(16)$$

$$B = 256$$

34. Find the following for the rectangular (square) pyramid: slant height, surface area.



$$SA = LA + B$$

$$SA = 544 + 256$$

$$SA = 800 \text{ m}^2$$

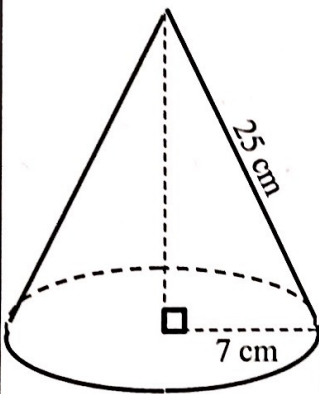
$$B = (16)(16) = 256$$

$$LA = \frac{Pl}{2} = \frac{(64)(17)}{2} = 544$$

$$8^2 + 15^2 = l^2$$

$$17 = l$$

35. Find the surface area of the figure.



$$SA = LA + B$$

$$= \pi r l + \pi r^2$$

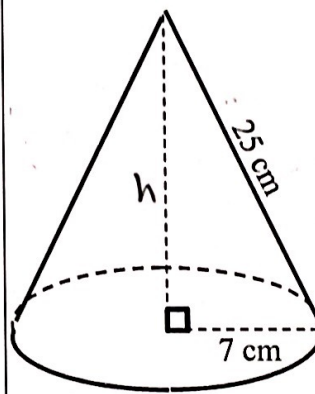
$$= \pi(7)(25) + \pi(7)^2$$

$$= \pi(175) + \pi(49)$$

$$SA = 224\pi \text{ cm}^2$$

$$\approx 703.7 \text{ cm}^2$$

36. Find the volume of the figure.



$$V = \frac{B \cdot h}{3} = \frac{\pi r^2 h}{3}$$

$$V = \frac{\pi(7)^2(24)}{3}$$

$$= \frac{\pi(49)(24)}{3}$$

$$V = 392\pi \text{ cm}^3$$

$$\approx 1231.1 \text{ cm}^3$$

$$7^2 + h^2 = 25^2$$

$$49 + h^2 = 625$$

$$h^2 = 576$$

$$h = 24$$

37. A sphere has a radius of 3 inches. What is the surface area and volume of the sphere?

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

$$= 4\pi(3)^2$$

$$= 4\pi(9)$$

$$SA = 36\pi \text{ in}^2$$

$$\approx 113.1 \text{ in}^2$$

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

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

$$= \frac{4\pi(27)}{3}$$

$$V = 36\pi \text{ in}^3$$

$$\approx 113.1 \text{ in}^3$$

38. A circle has a circumference of 60π feet. Find the radius and the area of the circle. Round answers to the nearest tenth.

$$C = 2\pi r$$

$$60\pi = 2\pi r$$

$$60 = 2r$$

$$30 = r$$

$$r = 30 \text{ ft}$$

$$A = \pi r^2$$

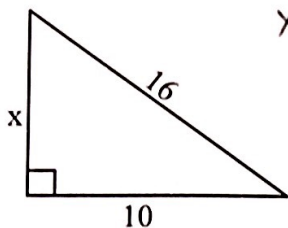
$$A = \pi(30)^2$$

$$A = \pi(900)$$

$$A = 900\pi \text{ ft}^2$$

$$A \approx 2827.4 \text{ ft}^2$$

39. Find the exact value of x .



$$x^2 + 10^2 = 16^2$$

$$x^2 + 100 = 256$$

$$x^2 = 156$$

$$x = \sqrt{156}$$

$$x = \sqrt{4 \cdot 39}$$

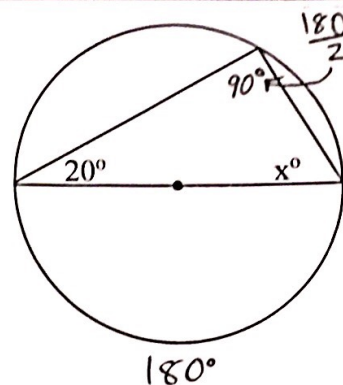
$$x = 2\sqrt{39}$$

40. Find x

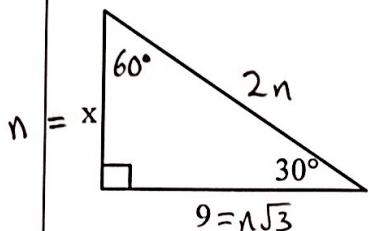
$$90 + 20 + x = 180$$

$$110 + x = 180$$

$$x = 70$$



41. Find the exact value of x .



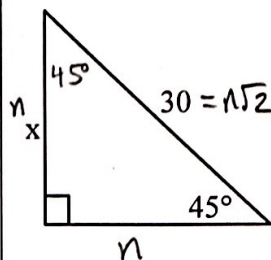
$$n\sqrt{3} = 9$$

$$n = \frac{9}{\sqrt{3}}$$

$$n = \frac{9 \cdot \sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{3} = 3\sqrt{3}$$

$$x = 3\sqrt{3}$$

42. Find the exact value of x .



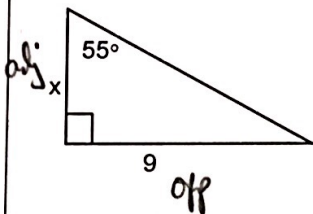
$$n\sqrt{2} = 30$$

$$n = \frac{30}{\sqrt{2}}$$

$$n = \frac{30 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{30\sqrt{2}}{2} = 15\sqrt{2}$$

$$x = 15\sqrt{2}$$

43. Find the value of x . Round your answer to the nearest tenth.



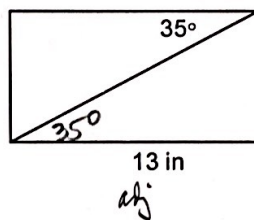
$$\tan 55^\circ = \frac{9}{x}$$

$$x \tan 55^\circ = 9$$

$$x = \frac{9}{\tan 55^\circ}$$

$$x \approx 6.3$$

44. Find x and then find the approximate area of the rectangle. Round your answer to the nearest tenth.



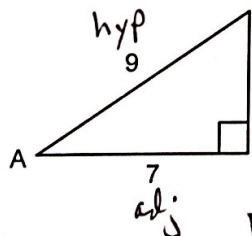
$$\tan 35^\circ = \frac{x}{13}$$

$$13 \tan 35^\circ = x$$

$$9.1 = x$$

$$A = bh = (13)(9.1) = 118.3 \text{ in}^2$$

45. Use trig ratios to approximate the measure of $\angle A$.

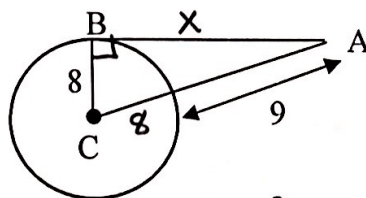


$$\cos A = \frac{7}{9}$$

$$A = \cos^{-1}\left(\frac{7}{9}\right)$$

$$m\angle A \approx 38.9^\circ$$

46. \overline{AB} is tangent to circle C at point B . Find AB .



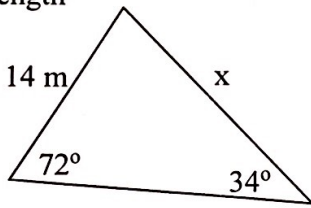
$$8^2 + x^2 = 17^2$$

$$64 + x^2 = 289$$

$$x^2 = 225$$

$$x = 15$$

47. Using the Law of Sines, find the missing side length

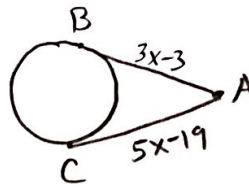


$$\frac{x}{\sin 72} = \frac{14}{\sin 34}$$

$$x = \frac{14 \sin 72}{\sin 34}$$

$$x = 23,8 \text{ m}$$

48. \overline{AC} and \overline{AB} are both tangent to a circle. If $AC = 5x - 19$ and $AB = 3x - 3$, find AB .



$$5x - 19 = 3x - 3$$

$$2x - 19 = -3$$

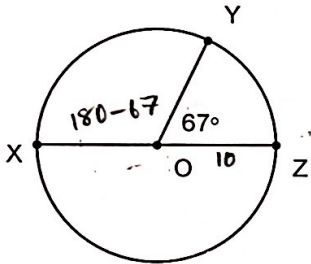
$$2x = 16$$

$$x = 8$$

$$AB = 3(8) - 3 = 24 - 3$$

$$AB = 21$$

49. What is $m\widehat{XY}$? What is the $m\widehat{XYZ}$? If $OZ = 10\text{cm}$, find the length of \widehat{YZ} , rounded to the nearest tenth of a centimeter.



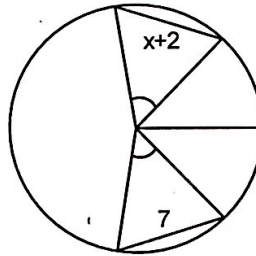
$$m\widehat{XY} = 113^\circ$$

$$\text{arc length} = \frac{\text{angle}}{360} \times 2\pi r$$

$$= \frac{67}{360} \times 2\pi(10)$$

$$\text{arc length} = 11.7 \text{ cm}$$

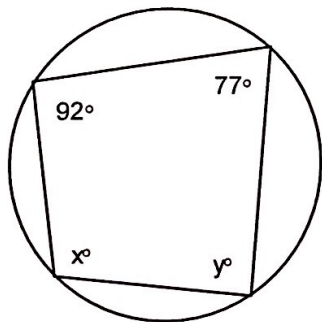
50. Find the value of x .



$$x + 2 = 7$$

$$x = 5$$

51. Find the value of each variable.



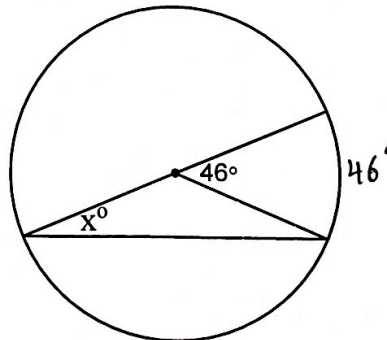
$$77 + x = 180$$

$$x = 103$$

$$y + 92 = 180$$

$$y = 88$$

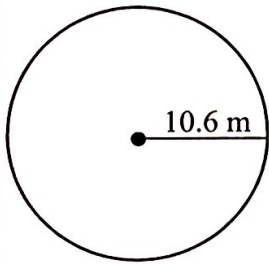
52. Find x .



$$x = \frac{46}{2}$$

$$x = 23$$

53. Find the approximate circumference of the circle.



$$C = 2\pi r$$

$$C = 2\pi(10.6)$$

$$C = 66.6 \text{ m}$$

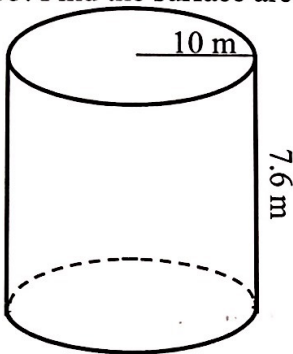
54. The diagonals of a rhombus are 10 cm and 52 cm. What is the area of the rhombus?

$$A_{\text{rhombus}} = \frac{d_1 d_2}{2}$$

$$= \frac{(10)(52)}{2}$$

$$= 260 \text{ cm}^2$$

55. Find the surface area of the cylinder.



$$SA = LA + 2B$$

$$SA = 2\pi r h + 2\pi r^2$$

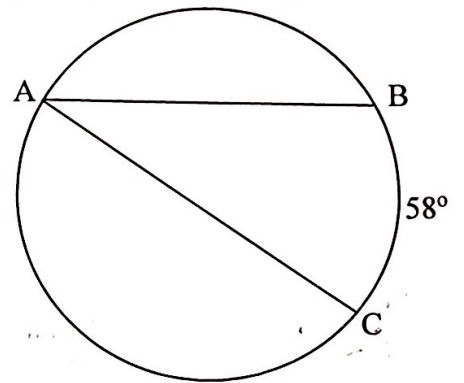
$$= 2\pi(10)(7.6) + 2\pi(10)^2$$

$$= 152\pi + 2\pi(100)$$

$$= 152\pi + 200\pi$$

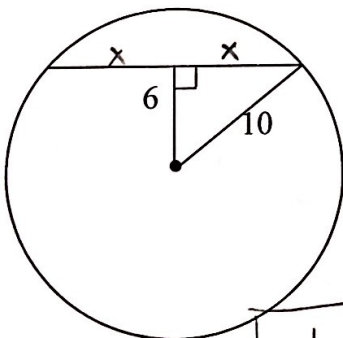
$$SA = 352\pi \text{ m}^2 \approx 1105.8 \text{ m}^2$$

56. Find $m\angle A$



$$m\angle A = \frac{58}{2} = 29^\circ$$

57. What is the chord length?



$$6^2 + x^2 = 10^2$$

$$36 + x^2 = 100$$

$$x^2 = 64$$

$$x = 8$$

Chord is 16 units long

58. Find the surface area of a sphere with a radius of 12 inches.

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

$$= 4\pi(12)^2$$

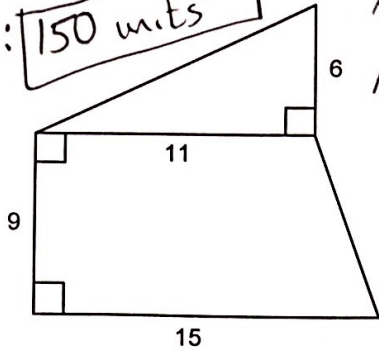
$$= 4\pi(144)$$

$$SA = 576\pi \text{ in}^2$$

$$\approx 1809.6 \text{ in}^2$$

59. Find the area.

Total: 150 units^2

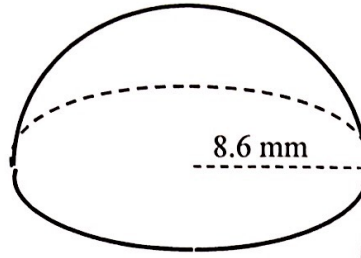


$$A_{\Delta} = \frac{1}{2}(11)(6)$$

$$A_{\Delta} = 33$$

$$A_{\square} = \frac{1}{2}(9)(11+15) = 4.5(26) = 117$$

60. Find the approximate surface area and volume



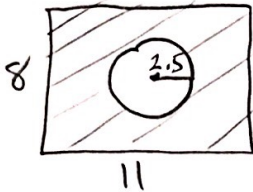
$$SA = 2\pi r^2 + \pi r^2$$

$$SA = 3\pi r^2 = 3\pi(8.6)^2$$

$$SA \approx 697.1 \text{ mm}^2$$

$$V = \frac{2\pi r^3}{3} = \frac{2\pi(8.6)^3}{3} \approx 1332.2 \text{ mm}^3$$

61. A rectangular piece of paper with dimensions of 8 inches by 11 inches has a circle cut out. The diameter of the circle is 5 inches. What area of paper remains?



$$A_{\square} = (8)(11) = 88$$

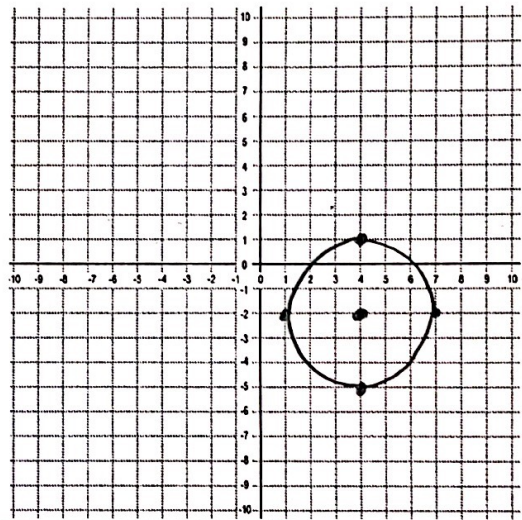
$$A_{\circ} = \pi(2.5)^2 \approx 19.6$$

$$\begin{array}{r} 88 \\ -19.6 \\ \hline \end{array}$$

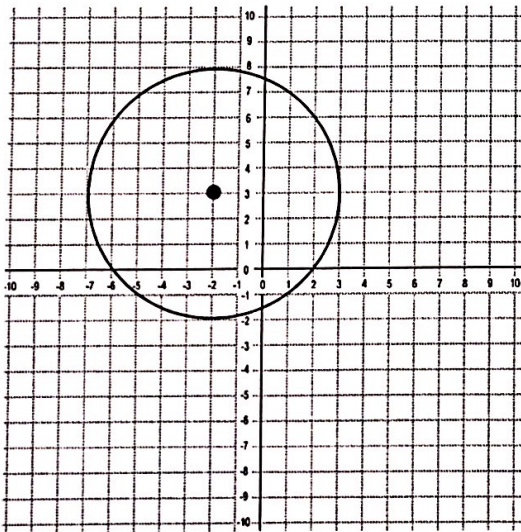
$$68.4 \text{ in}^2$$

62. List the center and radius of a circle whose equation is $(x-4)^2 + (y+2)^2 = 9$, then graph it.

Center: $(4, -2)$ Radius: 3

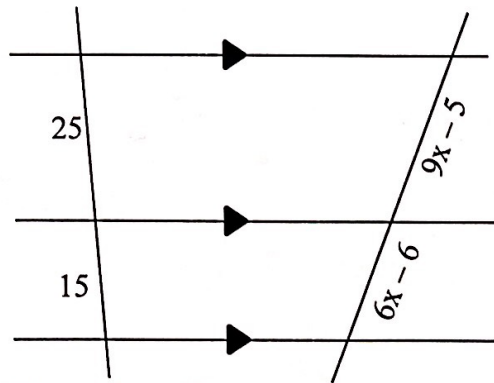


63. Write the equation of the circle graphed below.



Equation: $(x+2)^2 + (y-3)^2 = 25$

64. Solve for x.



$$\frac{25}{15} = \frac{9x-5}{6x-6}$$

$$25(6x-6) = 15(9x-5)$$

$$150x - 150 = 135x - 75$$

$$15x = 75$$

$$x = 5$$