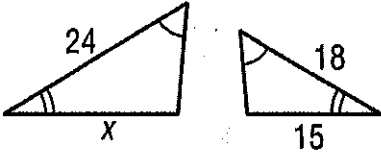
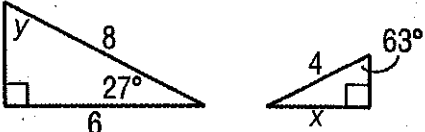
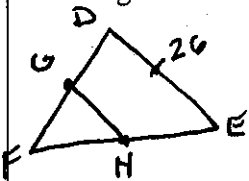
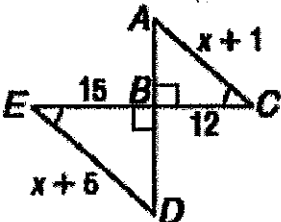
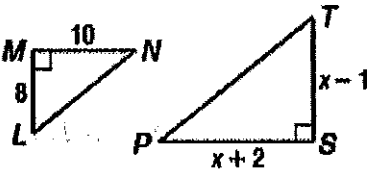
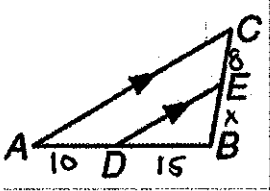
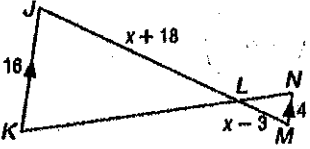
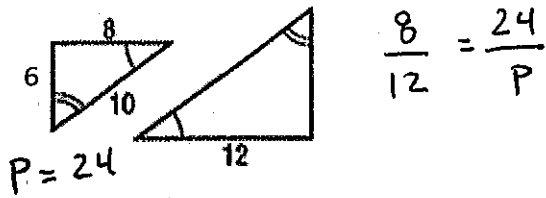


Unit 7 - Similarity

<p>1. The ratio of the measures of the angles of a triangle is 4:5:6. What is the smallest angle's measure?</p> $4x + 5x + 6x = 180$ $x = 12 \quad \text{sm } \angle = 48^\circ$	<p>2. The perimeter of a rectangle is 156 cm. The ratio of the length to the width is 9:4. Find the width of the rectangle.</p> $9x + 4x + 9x + 4x = 156$ <p style="text-align: right;">width = 24 cm</p>
<p>3. Consider the figure at the right.</p> <p>a. Are these two triangles similar? If so justify your answer (SSS~, SAS~, AA~)</p> <p>yes AA~</p> <p>b. Find x.</p> $\frac{24}{18} = \frac{x}{15}$  <p style="text-align: center;">x = 20</p>	<p>4. Consider the figure at the right.</p> <p>a. Are these two triangles similar? If so justify your answer (SSS~, SAS~, AA~)</p> <p>yes AA~</p> <p>b. Find x and y.</p> $\frac{8}{6} = \frac{4}{x}$  <p style="text-align: center;">x = 3 y = 63</p>
<p>5. In $\triangle DEF$, G is the midpoint of DF and H is the midpoint of EF. Suppose $ED = 26$. Draw a figure and find the length of GH.</p>  <p style="text-align: center;">GH = 13 units</p>	<p>6. A car is 7.5 feet long and 4.2 feet wide. A scale model is built with a width of 3 inches. How long is the scale model? Round to the nearest tenth.</p> $\frac{7.5}{4.2} = \frac{x}{3}$ <p style="text-align: right;">x = 5.4 in</p>
<p>7. Solve for x.</p>  $\frac{15}{x+5} = \frac{12}{x+1}$ <p style="text-align: center;">x = 15</p>	<p>8. Solve for x.</p>  $\frac{8}{10} = \frac{x-1}{x+2}$ <p style="text-align: center;">x = 13</p>
<p>9. If $BD = 15$, $AD = 10$, and $CE = 8$, find EB.</p>  $\frac{10}{15} = \frac{8}{x}$ <p style="text-align: center;">x = 12 EB = 12</p>	<p>10. Find x if $\triangle JKL \sim \triangle MNL$</p>  $\frac{x+18}{x-3} = \frac{16}{4}$ <p style="text-align: center;">x = 10</p>

11. Find the perimeter of the larger triangle.

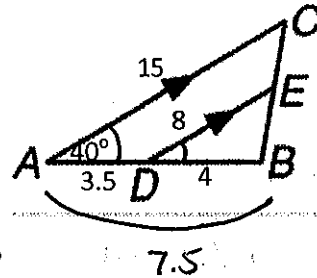


$P = 24$

$$\frac{8}{12} = \frac{24}{P}$$

$P = 36$ units

12. Prove that $\triangle DBE \sim \triangle ABC$ if $\angle EDB = 7x - 9$. = 40

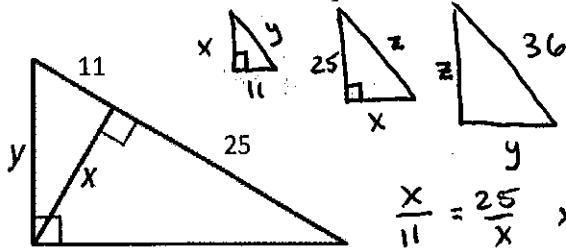


$$\frac{15}{8} = \frac{7.5}{4}$$

$1.875 = 1.875$

$x = 7$

13. Find the values of x , y , and z . Round your answers to 2 decimal places.

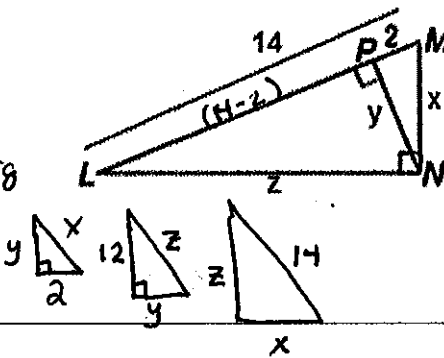


$$\frac{x}{11} = \frac{25}{x} \quad x = 16.58$$

$$\frac{11}{y} = \frac{y}{36} \quad y = 19.90$$

$$\frac{z}{36} = \frac{25}{z} \quad z = 30$$

14. Find the values of x , y , and z . Round your answers to 2 decimal places.



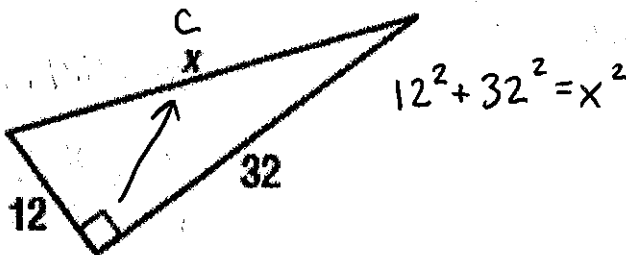
$$\frac{x}{14} = \frac{2}{x} \quad x = 5.29$$

$$\frac{y}{2} = \frac{12}{y} \quad y = 4.90$$

$$\frac{z}{14} = \frac{12}{z} \quad z = 12.96$$

Unit 8 - Trigonometry

15. Find the missing side of the triangle. Round

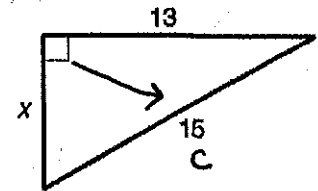


$$12^2 + 32^2 = x^2$$

$x = 34.18$

16. Find the value of x to 2 decimal places.

$$x^2 + 13^2 = 15^2$$

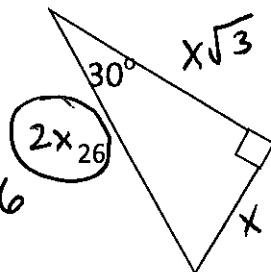


$x = 7.48$

17. Find the exact values of the missing side lengths.

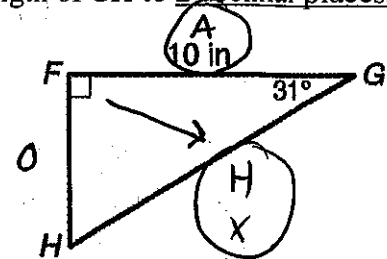
$$2x = 26$$

Sides: $13, 13\sqrt{3}, 26$



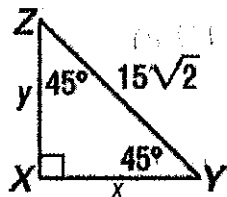
18. Find the length of GH to 2 decimal places.

$$\cos 31 = \frac{10}{x}$$



$x = 11.67$ in

19. Find the missing sides of the triangle.



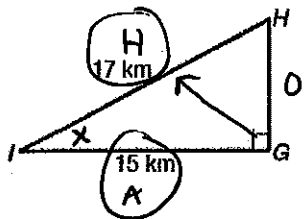
$x = 15, y = 15$

20. Do 90, 106, 56 form a Pythagorean triple? Why or why not?

$56^2 + 90^2 = 106^2 ?$

yes - numbers work in $a^2 + b^2 = c^2$
- numbers are whole numbers

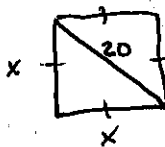
21. Find the measure of angle I to 2 decimal places.



$\cos x = \frac{15}{17}$

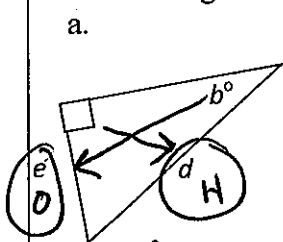
$x = 28.07^\circ$

22. Calculate the perimeter of a square if the diagonal is 20 inches. Round your answer to the nearest tenth.

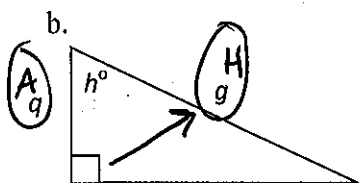


$x = 10\sqrt{2} \quad P = 56.6 \text{ in.}$

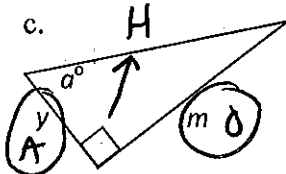
23. For each triangle below, determine whether the 3 parts of the triangle labeled are related by sine, cosine, or tangent.



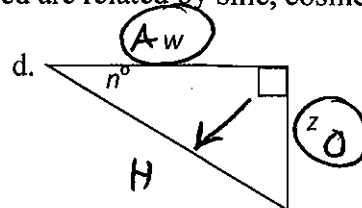
sin



cos



tan



tan

24. Determine the ratio (fraction) for each trigonometric function based on the figure below.

$\sin 32 = \frac{g}{t}$

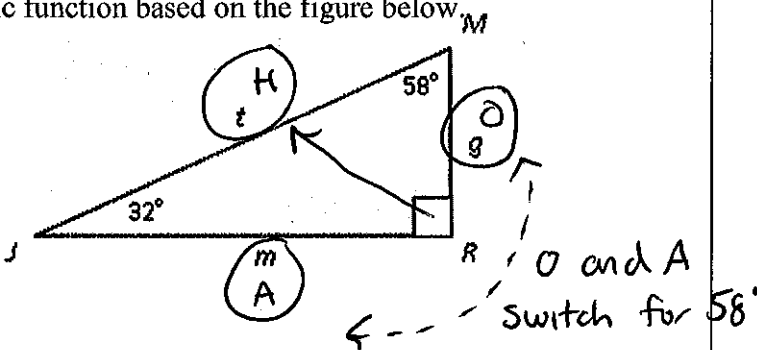
$\sin 58 = \frac{m}{t}$

$\cos 32 = \frac{m}{t}$

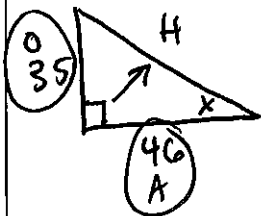
$\cos 58 = \frac{g}{t}$

$\tan 32 = \frac{g}{m}$

$\tan 58 = \frac{m}{g}$



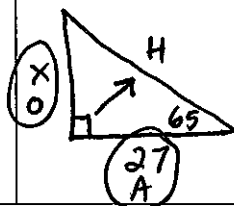
25. Suppose the sun casts a shadow off a 35-foot building. What is the angle of elevation to the sun if the shadow is 46-feet long? Include a labeled sketch. Round



$\tan x = \frac{35}{46}$

$x = 37^\circ$

26. A person standing at the top of a lighthouse sees a boat 27 feet from the base of a lighthouse. If the angle of depression from the top of the lighthouse to the boat is 65° , how tall is the lighthouse? Round to 2 decimal places.



$\tan 65 = \frac{x}{27}$

$x = 57.90 \text{ ft}$

Unit 9 Circles

27. A circle has a radius of 12 inches. Find the circumference of the circle to the nearest hundredth.

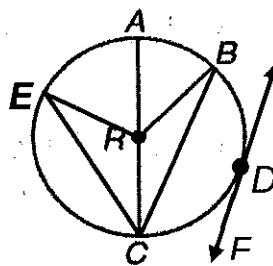
r $C = 2\pi r$ $C = 75.40 \text{ in}$

28. A circle has a diameter of 14 inches. Find the circumference of the circle to the nearest hundredth.

d $C = \pi d$ $C = 43.98 \text{ in}$

29. Using circle R, name the parts of the circle.

Radius: \overline{RB} * Diameter: \overline{AC}
 Chord: \overline{CB} Tangent line: \overleftrightarrow{DF}
 \overline{EC}
 \overline{AC}



* Other radii - \overline{RA} , \overline{RE} , \overline{RC}

For the next five questions use circle A, where $m\angle UAT = 52^\circ$ and PR and TQ are diameters.

30. Find $m\angle UAP$

38°

31. Find $m\angle QAU$

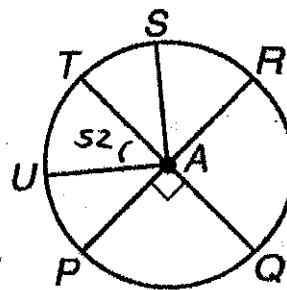
128°

32. Find $m\widehat{UT}$

52°

33. Find $m\widehat{RQ}$

218°



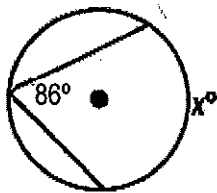
34. If $PR = 24$ inches, find the length of RQ . Round to the nearest tenth.

d $L = \frac{\theta}{360} \pi d$ length = 18.8 in

35. Find the center and radius of the circle given by the equation: $(x - 5)^2 + (y + 3)^2 = 81$.

a. Center: $(5, -3)$ Radius: 9

36. Find x .

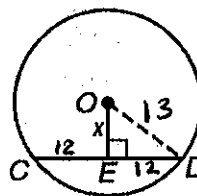


$x = 172^\circ$

37. In circle O, $OD = 13$ and $CD = 24$. Find x .

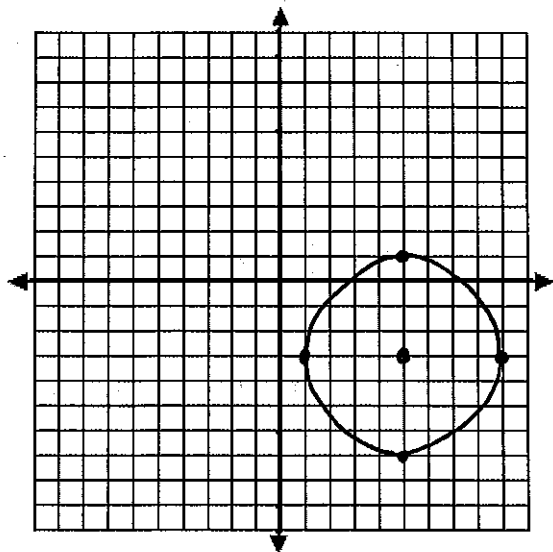
$x^2 + 12^2 = 13^2$

$x = 5$

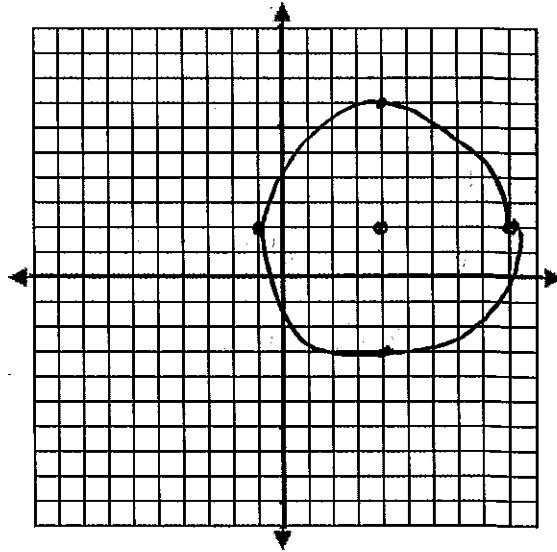


38. Graph the circles with the given equations:

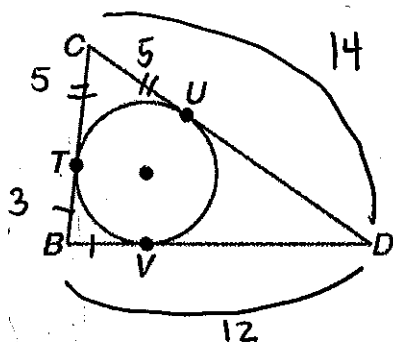
$$(x-5)^2 + (y+3)^2 = 16$$



$$(x-4)^2 + (y-2)^2 = 25$$



39. Find the perimeter of $\triangle CBD$ if $CU = 5$, $CD = 14$ and $BD = 12$.



$$P = 12 + 14 + 8$$

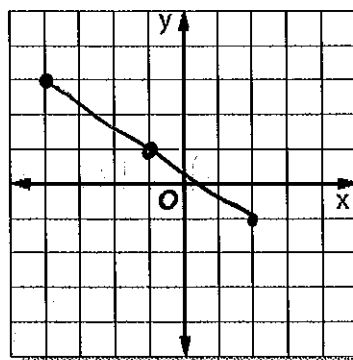
$$P = 34 \text{ units}$$

40. Write the equation of the circle whose diameter has endpoints at $(-4, 3)$ and $(2, -1)$. Use the grid at the right to help visualize the problem. **Show any calculations:**

$$\text{center} = \left(\frac{-4+2}{2}, \frac{3+(-1)}{2} \right) \rightarrow (-1, 1)$$

$$r = \sqrt{(-1-(-4))^2 + (1-3)^2} = \sqrt{13}$$

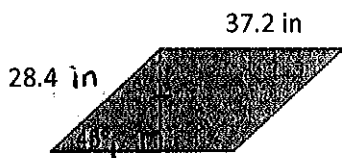
$$\text{Equation: } (x+1)^2 + (y-1)^2 = 13$$



Unit 10 Area

Find the area of each figure. Round all answers to the nearest hundredth.

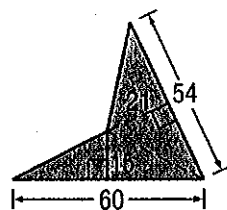
41.



$$A = 37.2 (14.2\sqrt{2})$$

$$A = 747.04 \text{ in}^2$$

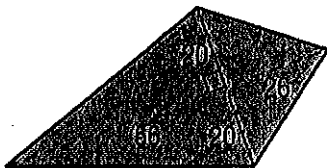
42.



$$\frac{1}{2} 60 \cdot 15 + \frac{1}{2} \cdot 54 \cdot 21$$

$$A = 1017 \text{ units}^2$$

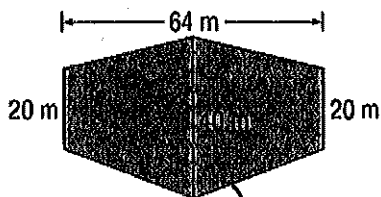
43.



$$A = \frac{1}{2} \cdot 40 \cdot 82$$

$$A = 1640 \text{ units}^2$$

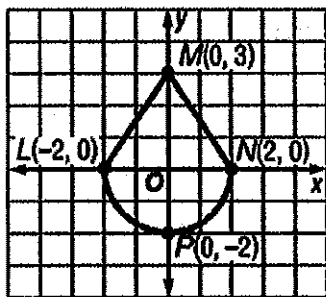
44.



$$\left(\frac{1}{2} \cdot 32 (20+40) \right) 2$$

$$A = 1920 \text{ m}^2$$

45.

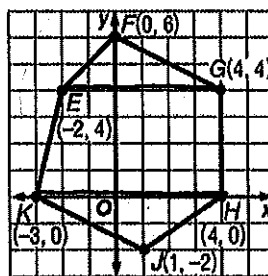


$$\frac{1}{2} \cdot 4 \cdot 3$$

$$\frac{1}{2} \pi 2^2$$

$$A = 12.28 \text{ units}^2$$

46.



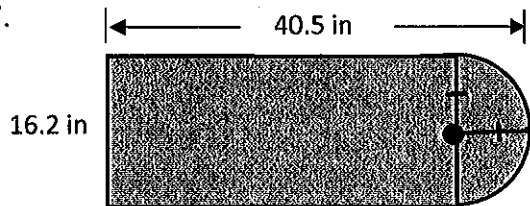
$$\frac{1}{2} \cdot 6 \cdot 2$$

$$\frac{1}{2} \cdot 4 (6+7)$$

$$\frac{1}{2} \cdot 7 \cdot 2$$

$$A = 39 \text{ units}^2$$

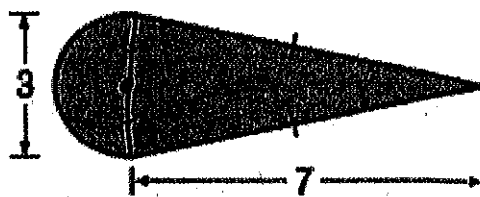
47.



$$16.2 (32.4) + \frac{1}{2} \pi 8.1^2$$

$$A = 627.94 \text{ in}^2$$

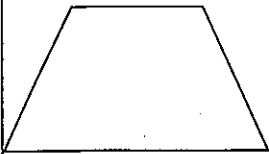
48.



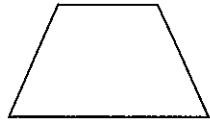
$$\frac{1}{2} \pi (1.5)^2 + \frac{1}{2} (3)(7)$$

$$A = 14.03 \text{ units}^2$$

49. The two figures below are similar.



14



9

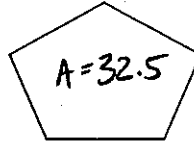
a) What is the ratio of their perimeters?

$$\frac{14}{9}$$

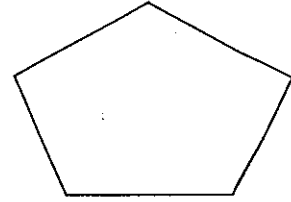
b) What is the ratio of their areas?

$$\frac{196}{81}$$

50. The area of the smaller pentagon is 32.5 cm^2 . What is the best approximation for the area of the larger pentagon? Round to the nearest hundredth. (Assume the two pentagons are similar).



4

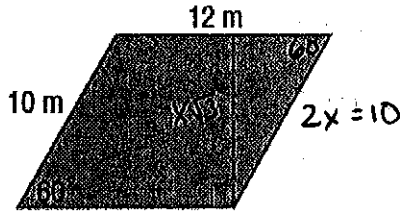


10

$$\frac{4^2}{10^2} = \frac{32.5}{A}$$

$$A = 203.13 \text{ cm}^2$$

51. Find the exact area of the parallelogram.



$$A = 12(5\sqrt{3})$$

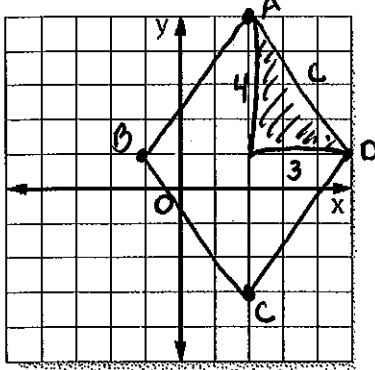
$$A = 60\sqrt{3} \text{ m}^2$$

52. A rhombus has an area of 133 cm^2 , and the length of one diagonal is 14 cm. Find the length of the other diagonal.

$$133 = \frac{1}{2}(14)d$$

$$d = 19 \text{ cm}$$

53. Find the perimeter of the rhombus with the coordinates of $A(2, 5)$, $B(-1, 1)$, $C(2, -3)$, and $D(5, 1)$.

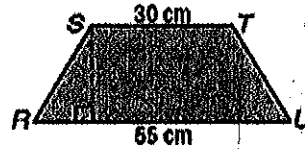


$$3^2 + 4^2 = c^2$$

$$c = 5$$

$$P = 20 \text{ units}$$

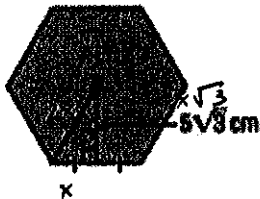
54. Trapezoid RSTU has an area of 935 cm^2 . Find the height.



$$935 = \frac{1}{2}h(30 + 65)$$

$$h = 22 \text{ cm}$$

55. Find the area of the figure. Round to the nearest tenth.



$$A = \frac{1}{2}(60)(5\sqrt{3})$$

$$A = 259.81 \text{ cm}^2$$

56. Find the area of the figure. Round to the nearest tenth.



$$A = \frac{1}{2} \cdot 50 \cdot (6.88)$$

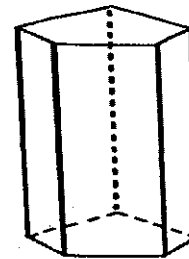
$$\tan 36 = \frac{5}{a}$$

$$A = 172 \text{ in}^2$$

57. Name the figure at the right. Then count the number of faces, edges, and vertices.

a. Name: pentagonal prism

b. # of Faces: 7 c. # of Edges: 15 d. # of Vertices: 10



For the next four problems, write the name of the polygon that matches the specified information.

58. a pyramid with six faces pentagonal pyramid

59. a prism with ten faces octagonal prism

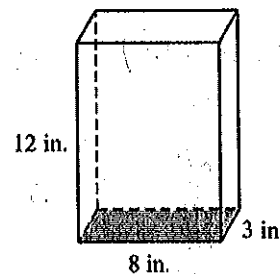
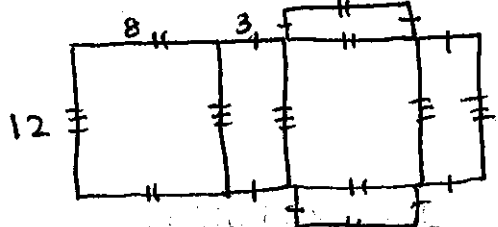
60. a solid with one base and a total of six faces pentagonal pyramid

61. a solid with two bases and a total of five faces triangular prism

62. Refer to the figure at the right.

Name the solid: rectangular prism

Draw and label a net for the solid.



Compute the surface area of the figure. Show all calculations.

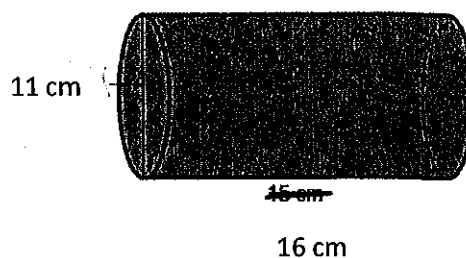
$$\left. \begin{array}{l} 12 \times 8 \\ 12 \times 3 \\ 8 \times 3 \end{array} \right) \times 2 \quad A = 312 \text{ in}^2$$

63. Compute the surface area of the figure at the right.

Round to 2 decimal places if necessary. Show all calculations.

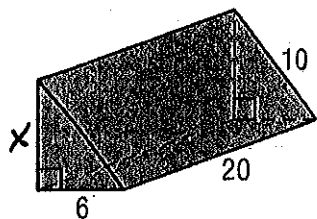
$$\bigcirc = \pi(5.5)^2$$

$$\square = 16 \times 11\pi$$



Surface area = 742.99 cm²

64. Find the surface area of the figure below. Show all calculations.



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

$$\triangle = \frac{1}{2}(6)(8)$$

$$\text{rectangle} = 6(20)$$

$$8(20)$$

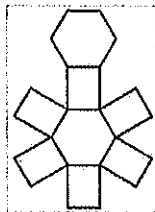
$$10(20)$$

$$A = 528 \text{ units}^2$$

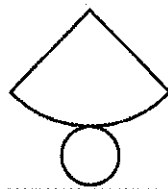
65. Name the solid based on the net that is given.



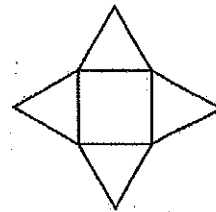
cylinder



hexagonal prism



cone



square pyramid

66. A sphere has a radius of 19 centimeters. Find the sphere's volume. Round to 2 decimal places if necessary. Show all calculations.

$$V = \frac{4}{3} \pi 19^3$$

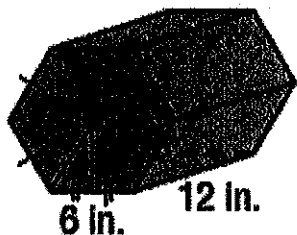
$$V = 28,730.91 \text{ cm}^3$$

67. A hemisphere sphere has a diameter of 18 centimeters. Find the hemisphere's volume. Round to 2 decimal places if necessary. Show all calculations.

$$V = \frac{2}{3} \pi 9^3$$

$$V = 1526.81 \text{ cm}^3$$

68. Calculate the volume of the hexagonal prism below.

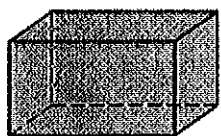


$$V = 93.53(12)$$

$$B = \frac{1}{2}(36)(3\sqrt{3})$$

Volume
~~Surface area~~ = 1126.36 in³

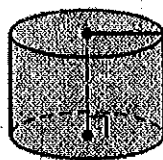
69. A rectangular prism has a length of 10 feet, a width of 7 feet, and a height of 2 feet. Find the volume.



$$V = 10 \times 7 \times 2$$

$$V = 140 \text{ ft}^3$$

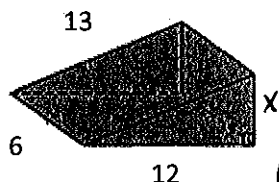
70. A cylinder has a diameter of 8 inches and height of 5 inches. Find the volume to the nearest tenth.



$$V = \pi 4^2 (5)$$

$$V = 251.3 \text{ in}^3$$

71. Find the volume to the nearest tenth.



$$V = 30(6)$$

$$B = \frac{1}{2} (12)(5)$$

$$x^2 + 12^2 = 13^2$$

$$V = 180 \text{ units}^3$$

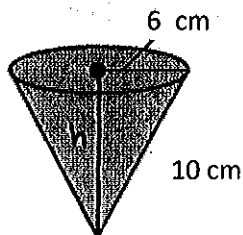
72. A pyramid with a volume of 226 cm^3 has a height of 12 centimeters ~~and a base~~. Find the area of the base.



$$226 = \frac{1}{3} B (12)$$

$$B = 56.5 \text{ cm}^2$$

73. Find the volume to the nearest tenth.



$$V = \frac{1}{3} \pi 6^2 (8)$$

$$6^2 + b^2 = 10^2$$

$$V = 301.6 \text{ cm}^3$$

74. A sphere has a diameter that is 6 inches long. Find the volume to the nearest tenth.

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

$$V = 113.1 \text{ in}^3$$

75. A cone has a radius of 9 cm and a volume of $54\pi \text{ cm}^3$. Find the height of the cone.

$$54\pi = \frac{1}{3} \pi 9^2 h$$

$$h = 2 \text{ cm}$$

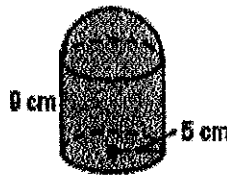
76. A cone has a radius of 5 cm and a volume of $125\pi \text{ cm}^3$. Find the height of the cone.

$$125\pi = \frac{1}{3} \pi 5^2 h$$

$$h = 15 \text{ cm}$$

77. Find the volume to the nearest tenth.

$$\frac{2}{3} \pi 5^3 + \pi 5^2 (9)$$

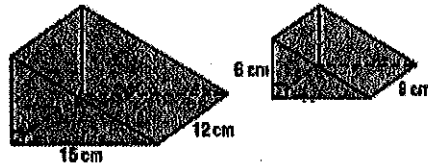


$$V = 968.7 \text{ cm}^3$$

78. Assume the two figures below are similar.

a. Determine the ratio of their volumes.

$$\frac{12^3}{8^3} = \frac{1728}{512}$$



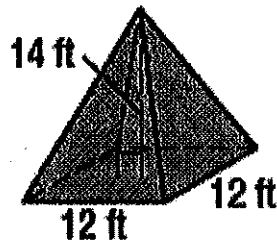
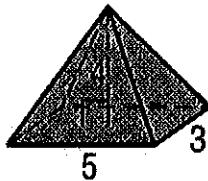
b. If the volume of the larger figure is 810 cm^3 , find the volume of the smaller figure.

$$\frac{1728}{512} = \frac{810}{V}$$

$$V = 240 \text{ cm}^3$$

79. Decide if the two figures are similar. Justify your answer.

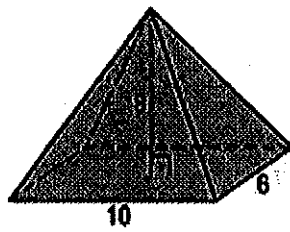
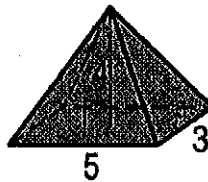
a)



$$\frac{5}{3} \neq \frac{12}{12}$$

no - scale factors are not congruent
- sides are not proportional

b)



$$\frac{5}{3} = \frac{10}{6}$$

yes the sides are proportional

Unit 12 Probability

80. Carl purchased seven new shirts and five new pairs of pants. How many new outfits can he make with these items?

$$\underline{7} \cdot \underline{5} = 35$$

81. A clothing store sells belts in 3 colors, 4 designs, and 6 sizes. How many different belts are available?

$$\underline{3} \underline{4} \underline{6} = 72$$

82. Five children line up to play a game. How many different ways can the children be arranged?

$$\underline{5} \underline{4} \underline{3} \underline{2} \underline{1} = 120$$

83. The letters *a*, *c*, *e*, *g*, *i*, and *k* are used to form 6-letter passwords for a movie theater security system. How many passwords can be formed if the letters can be used more than once in any given password?

$$\underline{6} \underline{6} \underline{6} \underline{6} \underline{6} \underline{6} = 46,656$$

84. How many 4-digit personal identification codes can be formed if each numeral can only be used once?

$$\underline{10} \underline{9} \underline{8} \underline{7} = 5040$$

85. How many ways can 9 bowling balls be arranged on the upper rack of a bowling ball rack?

$$\underline{9} \underline{8} \underline{7} \underline{6} \underline{5} \underline{4} \underline{3} \underline{2} \underline{1} = 362,880$$

86. How many different outfits can be made if you choose 1 item each from 11 skirts, 9 blouses, 3 belts, and 7 pairs of shoes?

$$\underline{11} \underline{9} \underline{3} \underline{7} = 2079$$

87. How many different ways can the letters of the word PENTAGON be arranged if the first letter must be "g"?

$$\underline{1} \underline{7} \underline{6} \underline{5} \underline{4} \underline{3} \underline{2} \underline{1} = 5040$$

88. Five cheerleaders will be chosen from a group of 15 students. How many different cheerleading squads can be formed?

$${}_{15}C_5 = 3003$$

89. A standard 6-sided blue die and a standard 6-sided red die are tossed.

a. What is the probability that a 6 will appear on both dice?

$$\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

b. What is the probability that the blue die ~~shows~~^{shows} an even number and the red die shows an odd number?

$$\frac{3}{6} \cdot \frac{3}{6} = \frac{1}{4}$$

90. Suppose you pick a card from a standard deck. Decide the probability of each situation.

a. What is the probability that you will pick a club or an ace?

$$\frac{14}{52}$$

b. What is the probability that you will pick an ace or a red 2?

$$\frac{6}{52}$$

c. What is the probability that you will pick a face card?

$$\frac{12}{52}$$

91. A jar contains 10 purple marbles and 2 red marbles. If two marbles are chosen at random with no replacement, what is the probability that 2 purple marbles are chosen?

$$\frac{10}{12} \cdot \frac{9}{11} = \frac{15}{22}$$

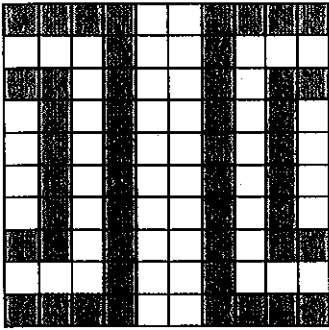
92. A bag contains 6 cherry, 8 strawberry, and 9 grape-flavored candies. What is the probability of selecting a cherry or a grape flavored candy?

$$\frac{6}{23} + \frac{9}{23} = \frac{15}{23}$$

93. A standard 6-sided die is rolled. What is the probability of rolling a 6 or a number greater than 4?

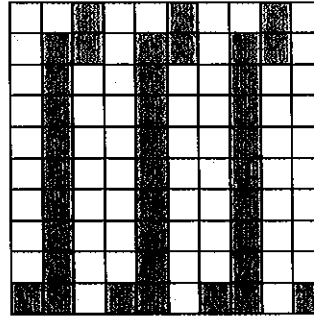
$$\frac{2}{6} = \frac{1}{3}$$

94. Find the probability that a point picked at random will be in the shaded area.



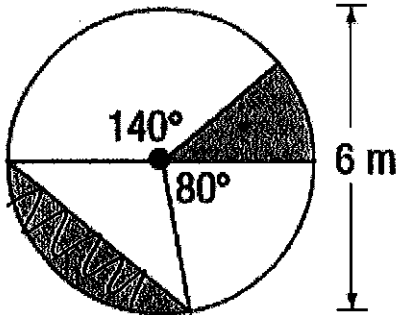
$$\frac{48}{100} = .48$$

95. Find the probability that a point picked at random will be in the shaded area.



$$\frac{37}{100} = .37$$

96. Find the area of the shaded sector and the probability that a point picked at random will be in the shaded area. Round to 2 decimal places.

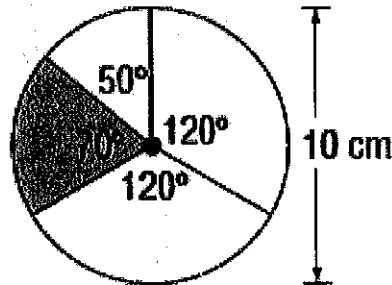


$$\frac{40}{360} \pi 3^2$$

Area: 3.14 m²

Probability: .11

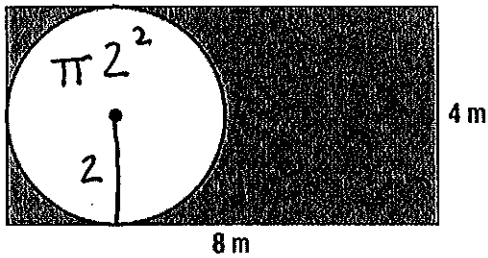
97. Find the area of the shaded sector and the probability that a point picked at random will be in the shaded area. Round to 2 decimal places.



Area: 15.27 cm²

Probability: .19

98. Find the probability that a point picked at random will be in the shaded area. Round to 2 decimal places.

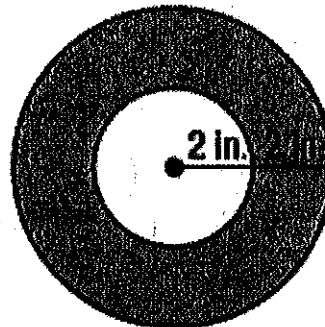


$$A = 4(8)$$

$$\frac{32 - 4\pi}{32}$$

$$= .61$$

99. Find the probability that a point picked at random will be in the shaded area.



$$\frac{4^2 - 2^2}{4^2}$$

$$\frac{16\pi - 4\pi}{16\pi}$$

$$P = .75$$

100. If picked randomly, what is the probability of picking a brown M&M using the table below?

Red	Yellow	Orange	Blue	Green	Brown
0.2	0.2	0.1	0.1	0.1	

$$0.3$$

101. Find the missing values in the two way table.

Age of driver	Number of Accidents in a year			Total
	1	2	3	
17-25	15	23	40	78
26-40	50	44	50	150
Above 40	62	22	11	95
Totals	127	89	107	323