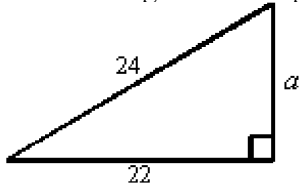
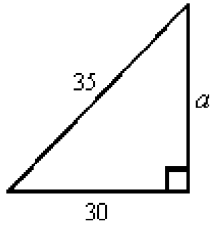


Geometry Second Semester Final Exam Review

1. Find the length of the leg of this right triangle. Give an approximation to 3 decimal places.



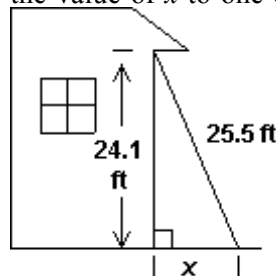
2. Find the length of the leg of this right triangle. Give an approximation to 3 decimal places.



- a. 8.062 b. 17.748 c. 46.098 d. 18.028

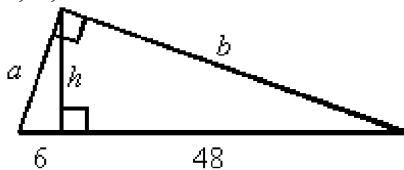
3. How long is a string reaching from the top of a 12-ft pole to a point on the ground that is 6 ft from the bottom of the pole? Give an exact answer and an approximation to 3 decimal places.

4. A 25.5 foot ladder rests against the side of a house at a point 24.1 feet above the ground. The foot of the ladder is x feet from the house. Find the value of x to one decimal place.

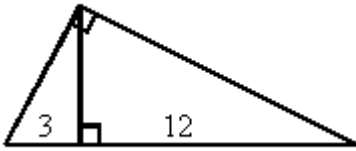


- a. 1.9
b. 7.0
c. 8.3
d. 10.1

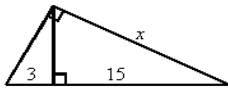
5. Find a , b , and h .



6. Find the length of the altitude drawn to the hypotenuse.

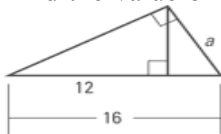


7. Find the value of x .

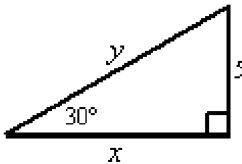


- a. $3\sqrt{2}$
- b. $3\sqrt{6}$
- c. $3\sqrt{5}$
- d. $3\sqrt{30}$

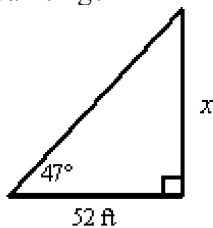
8. Find the value of the variable in the diagram.



9. Find the value of x and y .

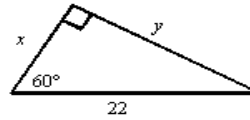


14. A photographer shines a camera light at a particular painting forming an angle of 47° with the camera platform. If the light is 52 feet from the wall where the painting hangs, how high above the platform is the painting?

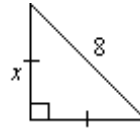


- a. 0.93 ft
- b. 55.76 ft
- c. 1.07 ft
- d. 48.49 ft

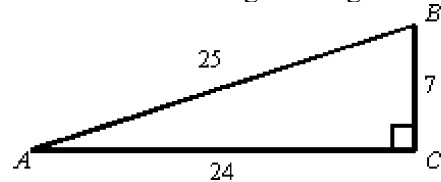
10. Find the value of x and y .



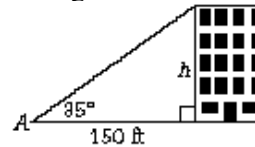
11. Find the value of x .



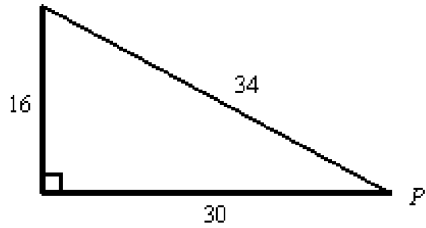
12. Find $\tan A$ for the right triangle below:



13. Explain how a tangent ratio can be used to find the height of the building in the figure below. Find the height of the building when $\angle A = 35^\circ$.



15. Find $\sin P$, $\cos P$, $\tan P$.

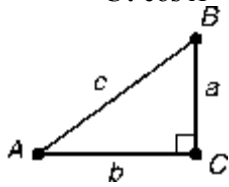


16. Write the trigonometric ratio.

A. $\sin A$

B. $\tan B$

C. $\cos A$



17. To find the height of a tower, a surveyor positions a transit that is 2 meters tall at a spot 40 meters from the base of the tower. She measures the angle of elevation to the top of the tower to be 46° . What is the height of the tower, to the nearest meter?

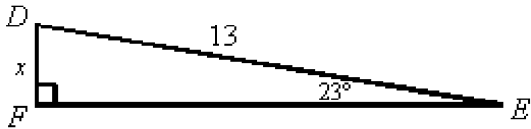
18. A slide 4.4 m long makes an angle of 33° with the ground. How high is the top of the slide above the ground?

- a. 2.53 m
- b. 2.4 m
- c. 3.69 m
- d. 2.86 m

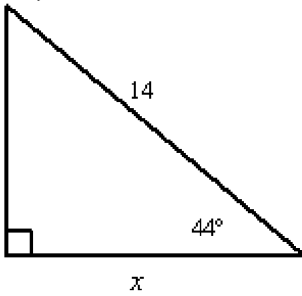
19. Liola drives 19 km up a hill that is at a grade of 15° . What horizontal distance, to the nearest tenth of kilometer, has she covered?

- a. 5.1 km
- b. 4.9 km
- c. 14.2 km
- d. 18.4 km

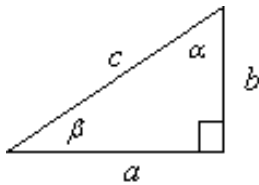
20. Find the value of x , to the nearest whole number. (not drawn to scale)



21. Find x , to the nearest hundredth.



22. Solve the right triangle: $\alpha = 20^\circ$ and $a = 20$;
Find β , b , and c .



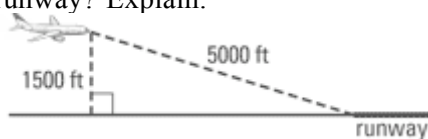
23. Find the missing angle and side measures of $\triangle ABC$, given that $m\angle A = 20^\circ$, $m\angle C = 90^\circ$, and $CB = 20$.

- $m\angle B = 110^\circ$, $c = 58.5$, $b = 55.4$
- $m\angle B = 70^\circ$, $c = 59$, $b = 54.9$
- $m\angle B = 70^\circ$, $c = 58.5$, $b = 54.9$
- $m\angle B = 110^\circ$, $c = 58.5$, $b = 54.9$

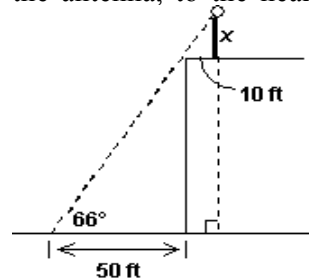
24. Two legs of a right triangle have lengths 15 and 8. The measure of the smaller acute angle is _____.

- $\approx 32.2^\circ$
- $\approx 17^\circ$
- $\approx 61.9^\circ$
- $\approx 28.1^\circ$

25. An airplane is flying at an elevation of 1500 feet. What is the airplane's angle of elevation from the runway when it is 5000 feet from the runway? Explain.



26. An antenna is atop the roof of a 100-foot building, 10 feet from the edge, as shown in the figure below. From a point 50 feet from the base of the building, the angle from ground level to the top of the antenna is 66° . Find x , the height of the antenna, to the nearest foot.



27. The translation vector is $\vec{u} = \langle -7, 4 \rangle$. If the image of A is $A'(6, -4)$, find the coordinates of point A .

28. The translation vector is $\vec{u} = \langle 7, -3 \rangle$. The image of point A is $A'(5, -7)$. Find the coordinates of A .

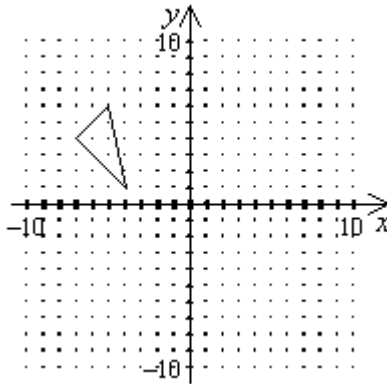
29. The point $A(-7, 3)$ is translated onto A' by the vector $\vec{u} = \langle 5, -4 \rangle$. The coordinates of A' are _____.

- $(-2, -1)$
- $(-12, 7)$
- $(2, -7)$
- $(5, -4)$

30. The points in a coordinate plane are reflected in the y -axis. In general, every point (x, y) is mapped onto what point?

31. The points in a coordinate plane are reflected in the line $y = x$. In general, every point (x, y) is mapped onto what point?

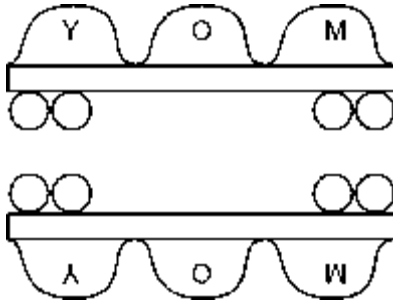
32. Suppose the triangle in the figure below is reflected over the y -axis. Draw the line of reflection and the image triangle.



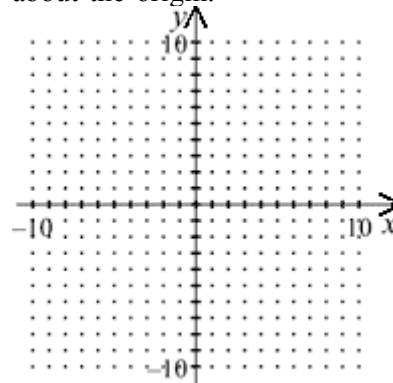
33. Name the transformation.



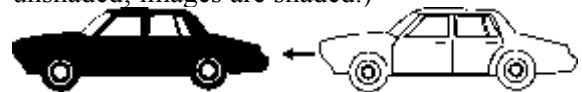
34. Name the transformation.



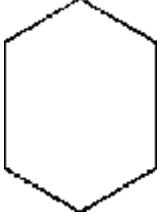
35. Graph the figure with vertices $(4, -4)$, $(2, -2)$, $(-1, -5)$, and $(1, -7)$. Rotate the figure 180° about the origin.



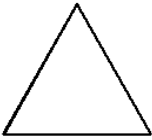
36. Name the transformation. (Preimages are unshaded; images are shaded.)



37. The hexagon shown below is equiangular. How many lines of symmetry does it have?



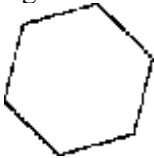
- a. 2
 b. 1
 c. 3
 d. 6
38. For the figure below, draw all the lines of symmetry. If there are none, write "none."



39. Which of the following letters (if drawn as simply as possible) has at least one line of symmetry?

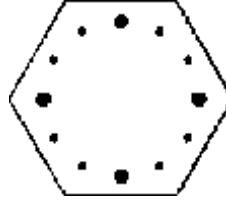
Q, S, T, Z

- a. **S**
 b. **T**
 c. **Q**
 d. **Z**
40. How many lines of symmetry does a regular hexagon have? Sketch the symmetry lines on the figure below.

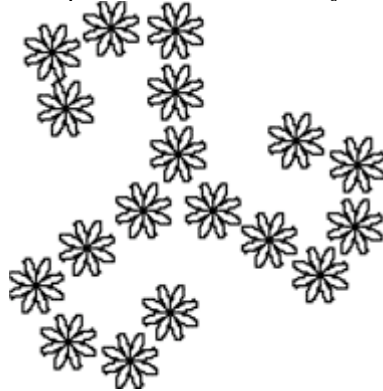


41. How many lines of symmetry does an isosceles right triangle have? Draw a diagram to illustrate.

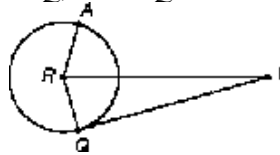
42. Does the clock face below have any rotational symmetry? If so, list any angles of rotation, 180° or less, that can map it onto itself.



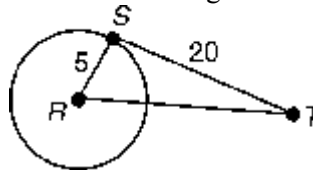
43. Tell whether the figure has rotational symmetry. If so, give each angle and direction of rotation that produces rotational symmetry.



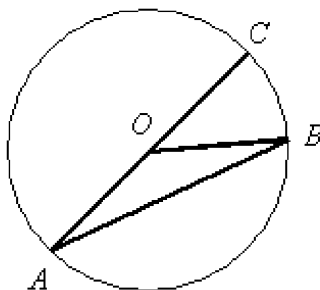
44. Given $RP = 22$, $RA = 6$, and \overline{PQ} is tangent to $\odot R$ at Q , find PQ .



45. Given \overline{ST} is tangent to $\odot R$ at S , find RT .

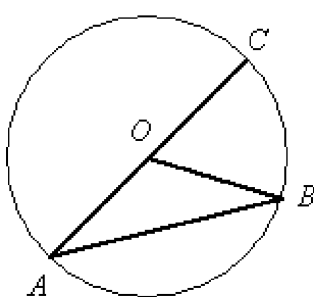


46. Given: In $\odot O$, $m\widehat{BAC} = 320^\circ$. Find $m\angle A$.



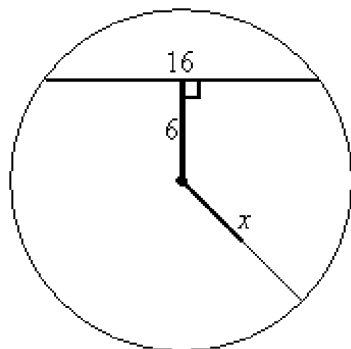
- a. 26°
- b. 13°
- c. 20°
- d. 10°

47. Given: In $\odot O$, $m\widehat{BAC} = 298^\circ$. Find $m\angle B$.



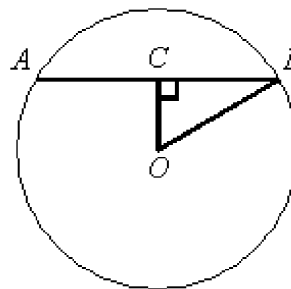
- a. 37°
- b. 31°
- c. 15.5°
- d. 18.5°

48. Find the value of x .

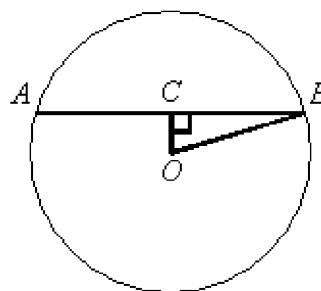


- a. 10.0
- b. 14.8
- c. 11.3
- d. 17.1

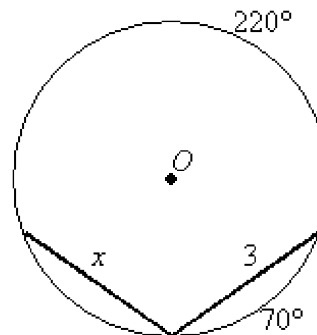
49. Given circle O with radius 34 and $OC = 16$. Find the length of \overline{AB} .



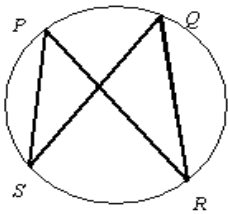
50. Given circle O with radius 25 and $OC = 7$. Find the length of \overline{AB} .



51. Find the value of x to the nearest tenth.

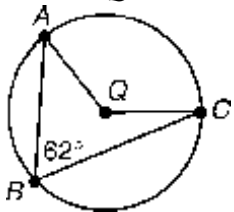


52. Find $m\angle PSQ$ if $m\angle PSQ = 3y - 5$ and $m\angle PRQ = 2y + 15$.



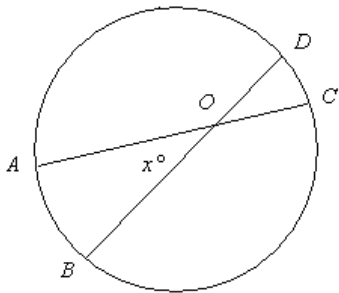
- a. 27.5°
- b. 20°
- c. 55°
- d. 35°

53. Given $\odot Q$ and $m\angle B = 62^\circ$, find $m\widehat{AC}$.



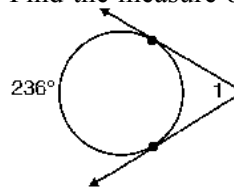
- a. 62°
- b. 124°
- c. 236°
- d. 248°

54. Find the value of x if $m\widehat{AB} = 20^\circ$ and $m\widehat{CD} = 62^\circ$.

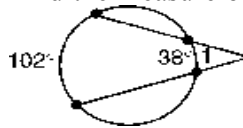


- a. 41°
- b. 21°
- c. 43°
- d. 20.5°

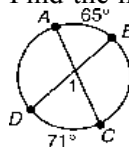
55. Find the measure of $\angle 1$.



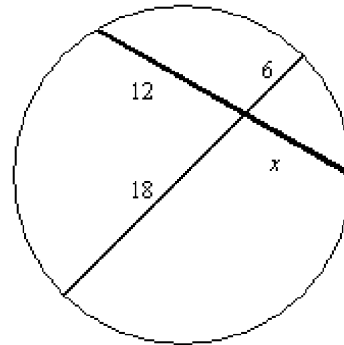
56. Find the measure of $\angle 1$.



57. Find the measure of $\angle 1$.

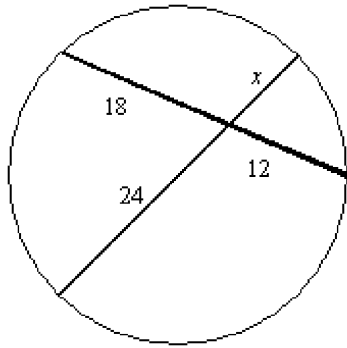


58. Find the value of x .



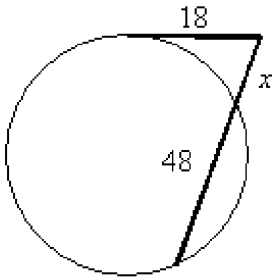
- a. 18
- b. 12
- c. 6
- d. 9

59. Find the value of x .



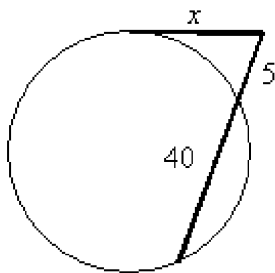
- a. 24
- b. 12
- c. 18
- d. 9

60. Find the value of x .



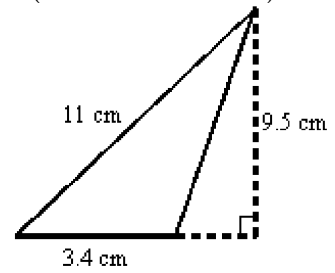
- a. 8
- b. 6
- c. 3
- d. none of these

61. Find the value of x .

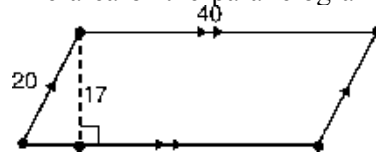


- a. 15
- b. 8
- c. none of these
- d. 35

62. Find the area (not drawn to scale):

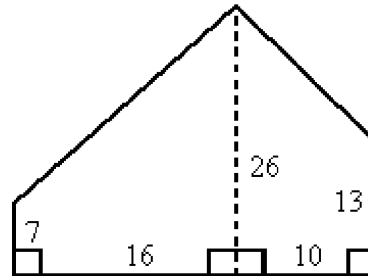


63. The area of the parallelogram is _____.

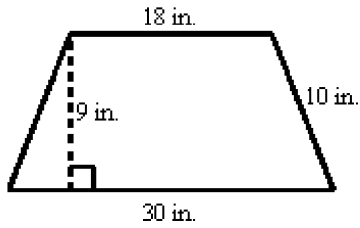


- a. 680 sq. units
- b. 800 sq. units
- c. $40\sqrt{111}$ sq. units
- d. 340 sq. units

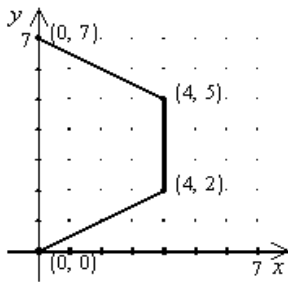
64. Find the area of the region shown by dividing it into two trapezoids.



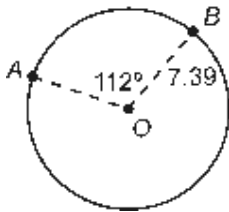
65. Find the area:



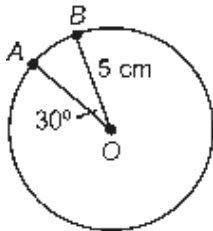
66. Find the area of the quadrilateral.



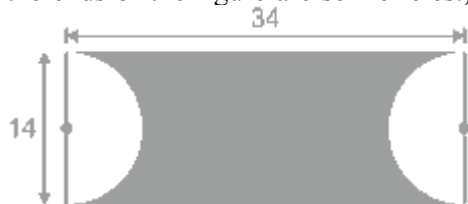
67. Circle O has a radius of 7.39. If $m\angle AOB$ is 112° , then find the length of \widehat{AB} to one decimal place.



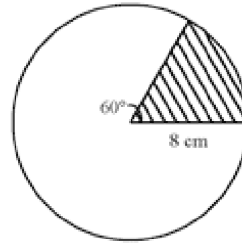
68. Find the arc length of \widehat{AB} to two decimal places.



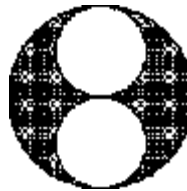
69. Find the area of the shaded region. (Assume that the ends of the figure are semicircles.)



70. Find the area of the shaded region. Use $\pi \approx 3.14$.

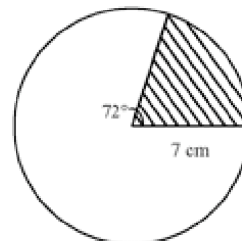


71. Each circle is tangent to the other two. If the diameter of the large circle is 12, the area of the shaded region is _____.



- a. 9π sq. units
- b. 36π sq. units
- c. 18π sq. units
- d. 24π sq. units

72. Find the area of the shaded region.

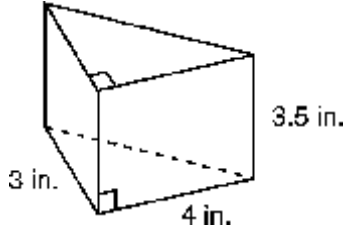


- a. 123.15 cm^2
- b. 38.48 cm^2
- c. 153.94 cm^2
- d. 30.79 cm^2

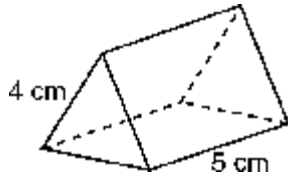
73. Find the area of a regular heptagon with side length 10 cm.

- a. 363.4 cm^2
- b. 346.7 cm^2
- c. 403.3 cm^2
- d. 726.8 cm^2

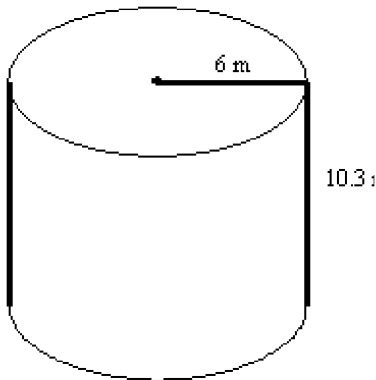
74. Find the surface area of the right prism below.



75. The right prism below has bases which are equilateral triangles of side length 4 cm. Its height is 5 cm. Find its surface area.

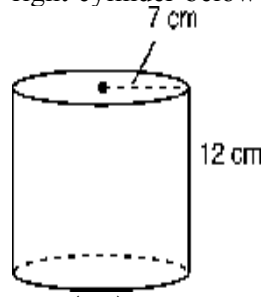


76. Find the surface area of the cylinder to the nearest square unit. Use $\pi \approx 3.14$.



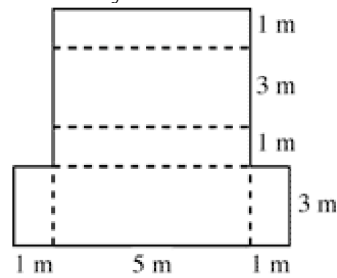
- a. 98 m^2
- b. 307 m^2
- c. 62 m^2
- d. 614 m^2

77. The surface area, in square centimeters, of the right cylinder below is _____.



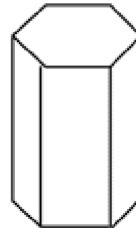
- a. $(7^2)\pi + 14\pi(12) = 217\pi$
- b. $14\pi(12) = 168\pi$
- c. $98\pi + (14\pi)12 = 266\pi$
- d. $(7^2\pi)(12) = 588\pi$

78. Name the three dimensional solid which can be formed by this net.

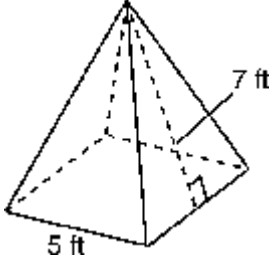


- a. Triangular Prism
- b. Rectangular Prism
- c. Triangular Pyramid
- d. Rectangular Pyramid

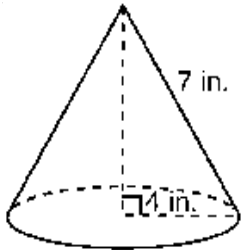
79. Sketch a net for the solid.



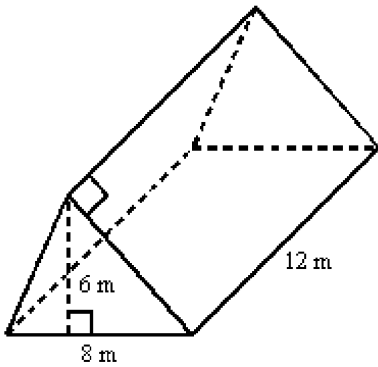
80. The pyramid shown has a square base and a slant height of 7 ft. Find its surface area.



81. The surface area of the right cone shown is

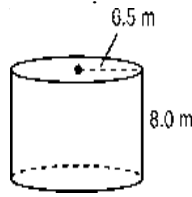


- a. $44\pi \text{ in.}^2$
 b. $112\pi \text{ in.}^2$
 c. $16\sqrt{33}\pi \text{ in.}^2$
 d. $36\pi \text{ in.}^2$
82. Find the volume of the right triangular prism.

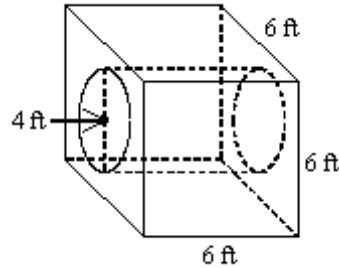


- a. 60 m^3
 b. 288 m^3
 c. 576 m^3
 d. 36 m^3

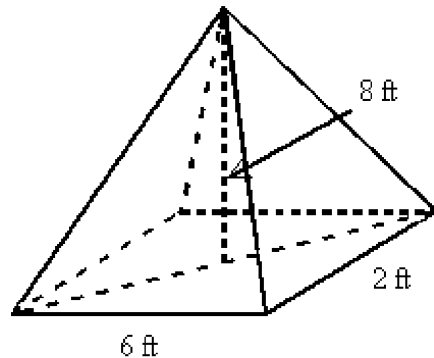
83. The volume of the right circular cylinder is about



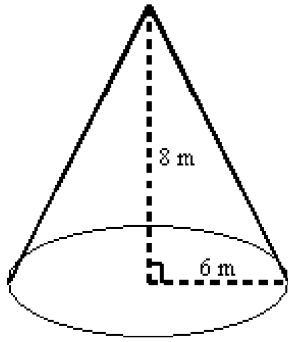
- a. 265.5 m^3
 b. 326.7 m^3
 c. 1036.9 m^3
 d. 1061.9 m^3
84. A concrete block has a cylindrical hole 4 feet in diameter drilled through it to allow a pipe to pass through. How many cubic feet of concrete are left in the block? Use 3.14 as an approximation for π and round your answer to the nearest tenth.



- a. 90.0 cubic feet
 b. 85.4 cubic feet
 c. 140.6 cubic feet
 d. 203.4 cubic feet
85. The pyramid shown has a rectangular base and faces that are isosceles triangles. Find its volume.

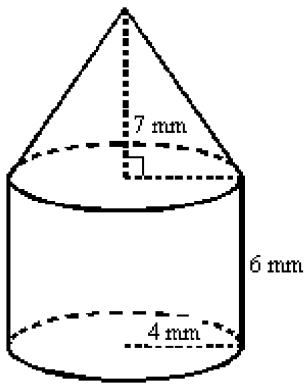


86. Calculate the volume of the cone. Use $\pi \approx 3.14$.



- a. 301.44 m^3
- b. 904.32 m^3
- c. 37.68 m^3
- d. 96 m^3

87. Find the volume of the figure to the nearest tenth.



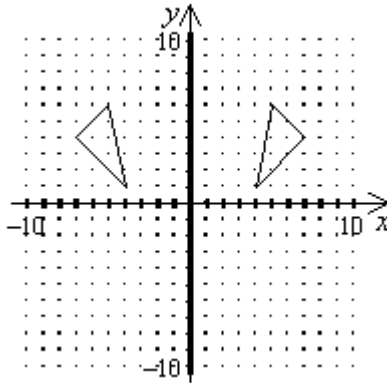
88. What is the volume of a sphere with diameter 9.4 feet?

- a. 434.9 ft^3
- b. 277.6 ft^3
- c. 69.4 ft^3
- d. 92.5 ft^3

Geometry Second Semester Final Exam Review Answer Section

1. 9.592
2. D
3. $\sqrt{180}$ ft; 13.416 ft
4. C
5. $a = 18, b = 36\sqrt{2}, h = 12\sqrt{2}$
6. 6
7. D
8. $a = 8$
9. $x = 5\sqrt{3}, y = 10$
10. $x = 11, y = 11\sqrt{3}$
11. $x = 4\sqrt{2}$
12. $\frac{7}{24}$
13. Using the tangent ratio $\tan A = \frac{\text{leg opposite } \angle A}{\text{leg adjacent to } \angle A}$, $\tan 35^\circ = \frac{h}{150}$. So $h = 150(\tan 35^\circ) \approx 150(0.7)$, or about 105 ft.
14. B
15. $\sin P = \frac{8}{17}, \cos P = \frac{15}{17}, \tan P = \frac{8}{15}$
16. A. $\frac{a}{c}$ B. $\frac{b}{a}$ C. $\frac{b}{c}$
17. 43 m
18. B
19. D
20. 5
21. 10.07
 $\beta = 70^\circ$
22. $b \approx 54.95$
 $c \approx 58.48$
23. C
24. D
25. About 72.5° . $\cos x = \frac{1500}{5000}$ so $x = \cos^{-1}\left(\frac{1500}{5000}\right) \approx 72.5^\circ$
26. $x \approx 35$ ft
27. (13, -8)
28. (-2, -4)
29. A
30. $(-x, y)$

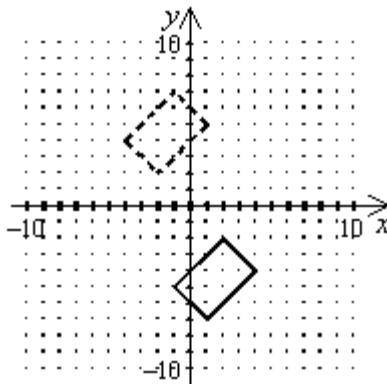
31. (y, x)



32.

33. Reflection

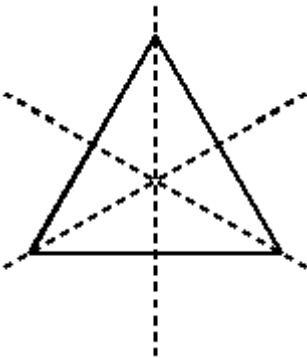
34. Reflection



35.

36. Translation

37. A



38.

39. B

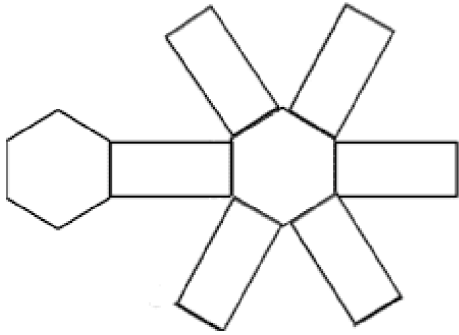
40. 6



41. 1; diagrams should show the line of symmetry from the midpoint of the hypotenuse to the opposite vertex.

42. Yes, 180° .

43. yes; 120° in either direction
44. $\sqrt{448} = 8\sqrt{7} \approx 21.2$
45. $\sqrt{425} = 5\sqrt{17} \approx 20.6$
46. C
47. B
48. A
49. 60
50. 48
51. 3
52. C
53. B
54. A
55. 56°
56. 32°
57. 68°
58. D
59. D
60. B
61. A
62. 16.15 cm^2
63. A
64. 459 sq. units
65. 216 in.^2
66. 20 sq. units
67. 14.4 units
68. 2.62 cm
69. $\approx 322 \text{ sq. units}$
70. 33.49 cm^2
71. C
72. D
73. A
74. 54 in.^2
75. $(60 + 8\sqrt{3}) \text{ cm}^2 \approx 73.9 \text{ cm}^2$
76. D
77. C
78. B



- 79.
- 80. 95 ft^2
- 81. A
- 82. B
- 83. D
- 84. C
- 85. 32 ft^3
- 86. A
- 87. 418.9 mm^3
- 88. A