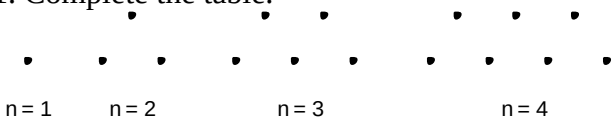
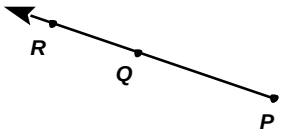
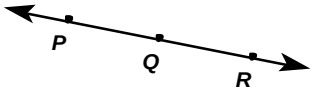
1. Complete the table.

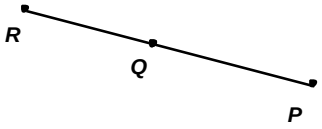


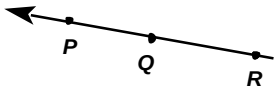
n	1	2	3	4	5	6
nth number	1	3	5	?	?	?

2. $\overrightarrow{PR}$ is represented by which sketch?

[A] 

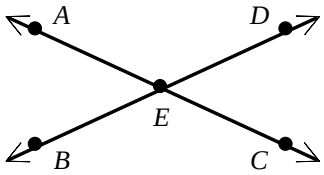
[B] 

[C] 

[D] 

3. Let A be between B and C. Use the Segment Addition Postulate to solve for u.
$BA = 6u + 12$
$AC = 4u + 18$
$BC = 40$

4. In the figure shown, $m\angle AED = 122°$. Which of the following statements is false?



[A] $\angle BEC$ and $\angle CED$ are adjacent angles.

[B] $\angle AEB$ and $\angle DEC$ are vertical angles.

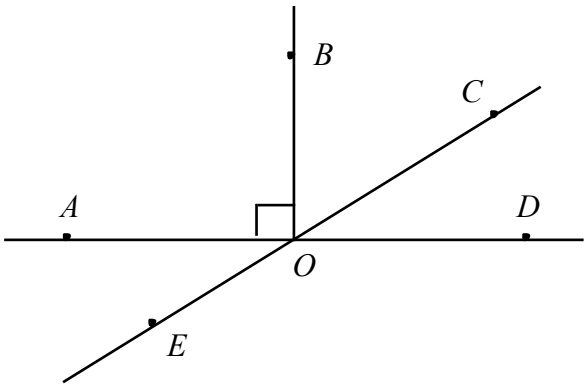
[C] $m\angle BEC = 58°$

[D] $m\angle AEB = 58°$

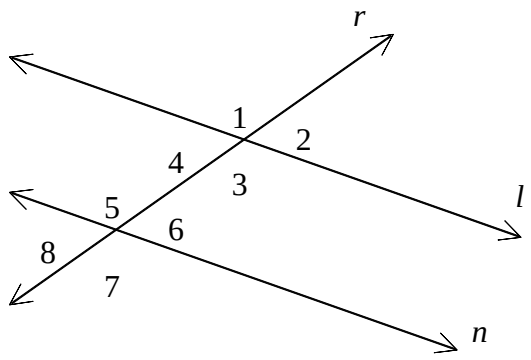
5. The **nonshared** sides of two **adjacent** angles form a pair of opposite rays. The angles are _____.

[A] vertical angles [B] complementary [C] acute [D] a linear pair

6. Name an angle complementary to $\angle COD$.

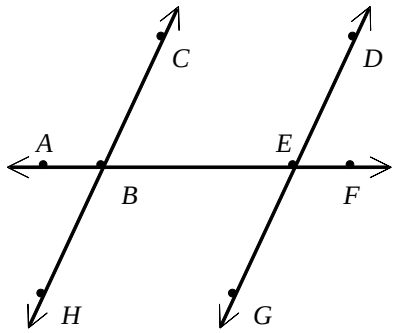


7. In the figure, $l \parallel n$ and r is a transversal. Which of the following is not necessarily true?



[A] $\angle 7 \cong \angle 4$ [B] $\angle 2 \cong \angle 6$ [C] $\angle 8 \cong \angle 2$ [D] $\angle 5 \cong \angle 3$

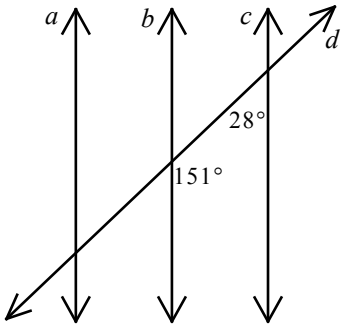
8. In the figure shown, $\overleftrightarrow{HC} \parallel \overleftrightarrow{GD}$ and $m\angle ABC = 113°$. Which of the following statements is false?



[A] $m\angle GEF = 113°$ [B] $m\angle DEF = 67°$

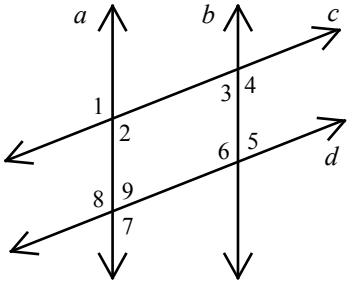
[C] $\angle HBF$ and $\angle AED$ are alternate exterior angles. [D] $\angle ABH$ and $\angle AEG$ are corresponding angles.

9. Which lines, if any, can be proved parallel given the following diagram? For each conclusion, provide the justification.

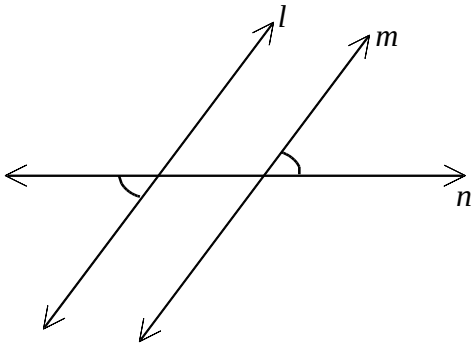


10. Which lines, if any, must be parallel based on the given diagram and information?
Give the justification for each conclusion.

Given: $\angle 2$ is supplementary to $\angle 9$



11. Refer to the figure. Which theorem guarantees l and m are parallel?



[A] Alternate Interior Angles Converse [B] Corresponding Angles Converse

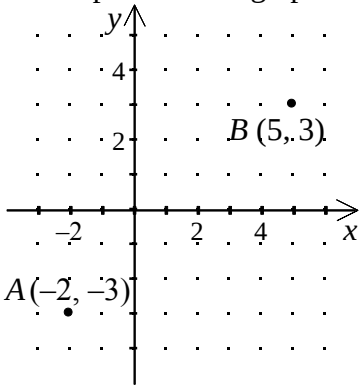
[C] Consecutive Interior Angles Converse [D] Alternate Exterior Angles Converse

12. Find the slope of the line passing through the points $A(5, -1)$ and $B(-8, 3)$.

13. What is the slope of the line that passes through points A and B below?

[A] $\frac{7}{6}$ [B] 0

[C] $\frac{6}{7}$ [D] $-\frac{6}{7}$



14. A line parallel to $y = \frac{2}{3}x - 7$ is _____.

[A] $y = \frac{3}{2}x + 2$ [B] $y = \frac{2}{3}x + 1$ [C] $y = -\frac{3}{2}x + 7$ [D] $y = -\frac{2}{3}x - 7$

15. A line parallel to $y = \frac{1}{2}x + 3$ and passing through (0, 0) has the equation _____.

[A] $y = \frac{1}{2}x$ [B] $y = \frac{1}{2}x + 6$ [C] $y = 2x$ [D] $y = \frac{1}{2}x - 3$

16. Which is the slope of a line perpendicular to the line $2x + 4y = 9$?

[A] $\frac{1}{2}$ [B] $-\frac{1}{2}$ [C] 2 [D] -2

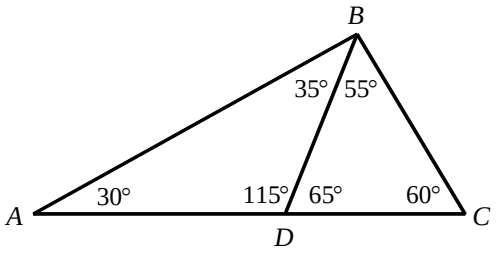
17. The line $y = -\frac{1}{2}x + 3$ is perpendicular to which line?

[A] $y = -2x$ [B] $y = 2x - 3$ [C] $y = -\frac{1}{2}x + 6$ [D] $y = \frac{1}{2}x + 1$

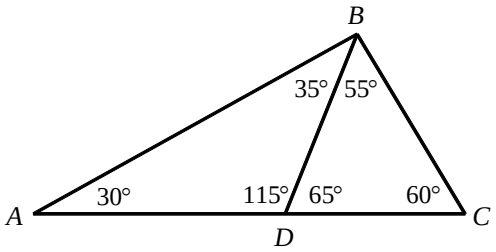
18. A line perpendicular to $y = -4x + 2$ is _____.

[A] $y = 4x + 2$ [B] $y = \frac{1}{4}x + 1$ [C] $y = -\frac{1}{4}x + 1$ [D] $y = -4x - 2$

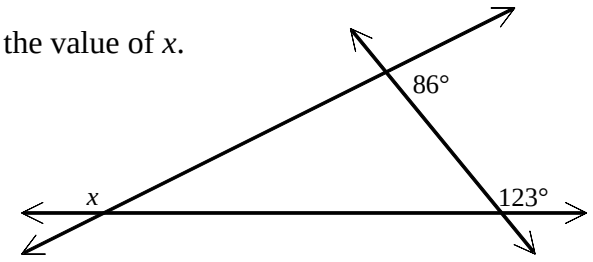
19. Name an acute triangle.



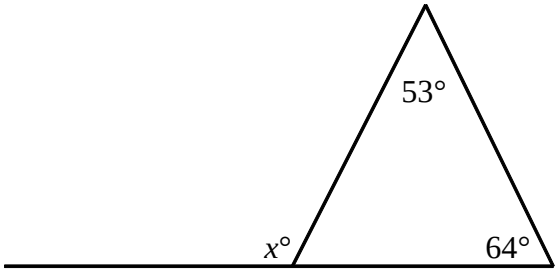
20. Name a right triangle.



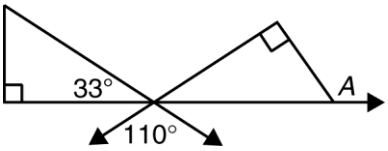
21. Find the value of x.



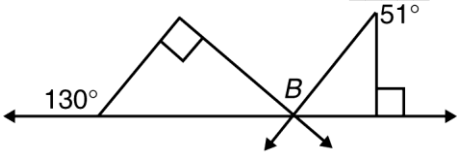
22. Find the value of x.



23. Find the measure of exterior angle A.

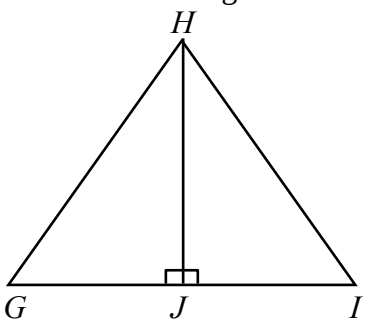


24. The measure of $\angle B$ is _____.



[A] 89° [B] 79° [C] 99° [D] 101°

25. Refer to the figure below. Which of the following statements is true?

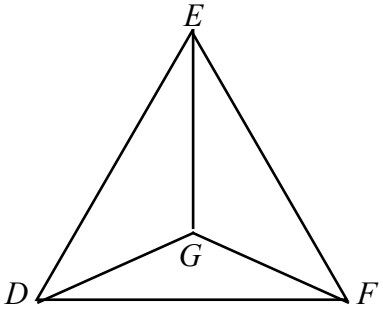


$\overline{GJ} \cong \overline{JI}$

[A] There are no congruent triangles. [B] $\Delta GIJ \cong \Delta JHG$ by SSS

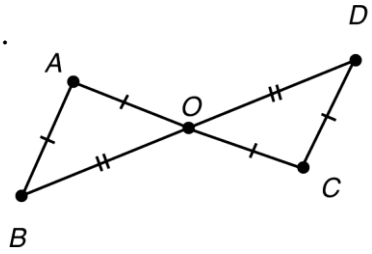
[C] $\Delta GHJ \cong \Delta IHJ$ by SAS [D] $\Delta GJH \cong \Delta IJH$ by SSS

26. Refer to the figure below. Give a congruence statement for two triangles in the figure.

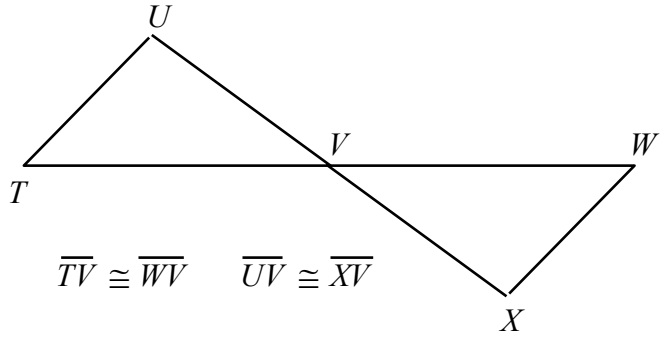


ΔDEF is equilateral. $\overline{DG} \cong \overline{FG}$

27. State the postulate or theorem that can be used to conclude that $\Delta OCD \cong \Delta OAB$.



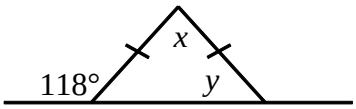
28. Refer to the figure shown. Which of the following statements is true?



[A] $\Delta TUV \cong \Delta WXV$ by SAS [B] $\Delta TUV \cong \Delta VWX$ by SAS

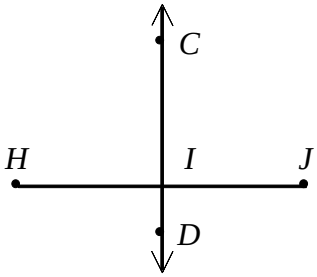
[C] $\Delta TUV \cong \Delta XWV$ by ASA [D] $\Delta TUV \cong \Delta WXV$ by ASA

29. Find the values of x and y.

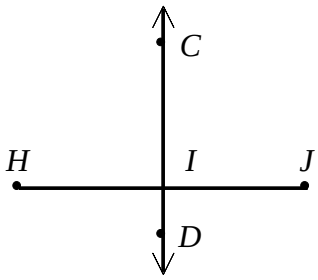


[A] $x = 62°;\ y = 42°$ [B] $x = 62°;\ y = 118°$ [C] $x = 56°;\ y = 118°$ [D] $x = 56°;\ y = 62°$

30. Given: $\overleftrightarrow{CD}$ is the perpendicular bisector of $\overline{HJ}$. Name three things that you can conclude.



31. Given: $\overleftrightarrow{CD}$ is the perpendicular bisector of $\overline{HJ}$. Which statement is true?



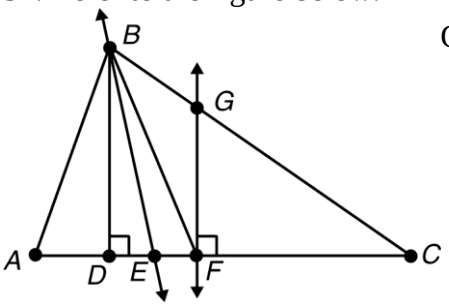
[A] $\angle HCJ$ is a right angle.

[B] D is the midpoint of $\overline{HJ}$

[C] $\angle CIJ$, $\angle JID$, $\angle DIH$, $\angle HIC$ are all right angles.

[D] $DJ = CJ$

32. Refer to the figure below.

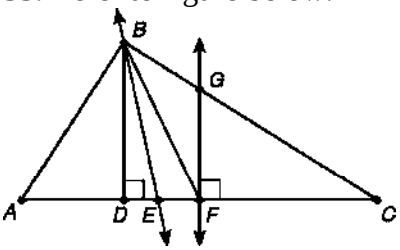


Given: $\overline{AF} \cong \overline{FC}$, $\angle ABE \cong \angle EBC$

A median of ΔABC is ____.

[A] $\overleftrightarrow{GF}$ [B] $\overleftrightarrow{BE}$ [C] $\overline{BD}$ [D] $\overline{BF}$

33. Refer to figure below.



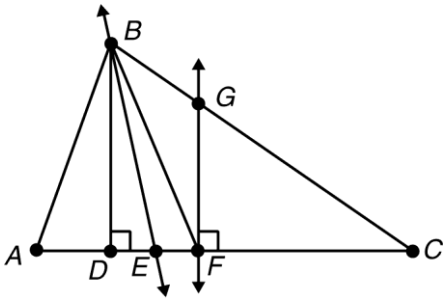
Given: $\overline{AF} \cong \overline{FC}$, $\angle ABE \cong \angle EBC$

An altitude of ΔABC is ____.

[A] $\overline{BD}$ [B] $\overleftrightarrow{GF}$ [C] $\overline{BF}$ [D] $\overleftrightarrow{BE}$

34. The circumcenter of a triangle is equidistant from the three ____ of the triangle.

35. Refer to the figure below.Given: $\overline{AF} \cong \overline{FC}$, $\angle ABE \cong \angle EBC$Which line is a perpendicular bisector in ΔABC?



36. The perpendicular bisectors of a triangle all pass through what point?

37. The angle bisectors of a triangle are concurrent at a point called the _____.

38. The medians of a triangle are concurrent. Their common point is the ____.

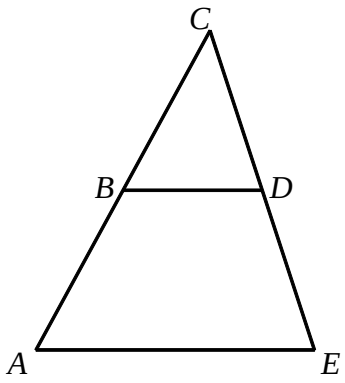
[A] orthocenter [B] circumcenter [C] incenter [D] centroid

39. The altitudes of a triangle are concurrent. What is the name of their common point?

40. In a triangle, a segment connecting the midpoints of two sides of the triangle is called a _____.

[A] vertex [B] centroid [C] midsegment [D] shortcut

41. Solve for x given $BD = \frac{7}{2}x + 2$ and $AE = 3x + 8$. Assume B is the midpoint of $\overline{AC}$ and D is the midpoint of $\overline{CE}$.



[A] -1 [B] 1 [C] $\frac{7}{4}$ [D] $-\frac{4}{7}$

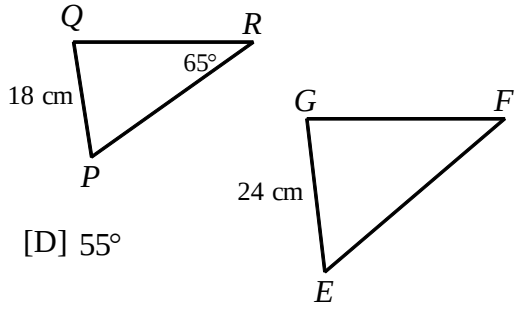
42. Two sides of a triangle have lengths 8 and 11. What are the possible lengths of the third side x?

43. Which side lengths allow you to construct a triangle?

[A] 2, 3, and 8 [B] 6, 8, and 10 [C] 4, 1, and 9 [D] 7, 2, and 2

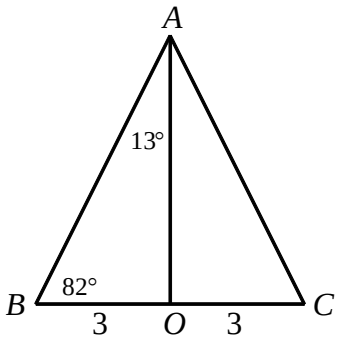
44. Two sides of a triangle have lengths 14 and 18. The length of the third side must be greater than _____ and less than ____.

45. In ΔPQR and ΔEGF, $\overline{PR} \cong \overline{EF}$, $\overline{QR} \cong \overline{GF}$, $PQ = 18$ cm, $EG = 24$ cm, and $m\angle R = 65°$. Which angle measure is reasonable for $\angle F$?



[A] 60° [B] 65° [C] 70° [D] 55°

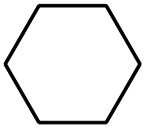
46. Find the appropriate symbol to place in the blank. (not drawn to scale)
AB __ *AC*

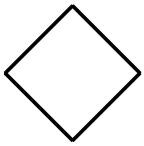


47. Which figure below is NOT a polygon?

[A] 

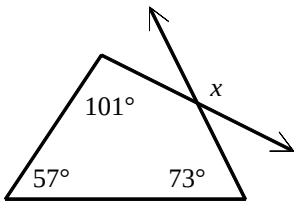
[B] 

[C] 

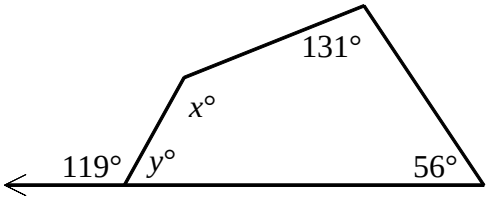
[D] 

48. Find the measure of the missing angle.

49. Find the value of *x*.



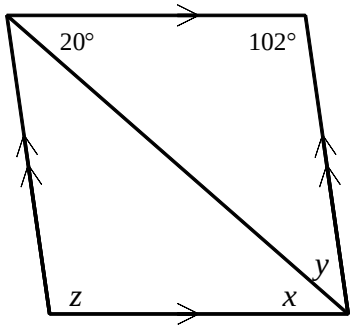
50. Find *x* and *y*.



51. Consecutive angles in a parallelogram are always _____.

[A] vertical angles [B] complementary angles [C] supplementary angles [D] congruent angles

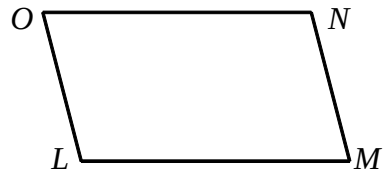
52. Find the value of the variables in the parallelogram.



[A] $x = 10°,\ y = 51°,\ z = 160°$ [B] $x = 58°,\ y = 20°, z = 102°$

[C] $x = 51°,\ y = 10°,\ z = 160°$ [D] $x = 20°,\ y = 58°,\ z = 102°$

53. If $ON = 8x - 6,\ LM = 5x + 3,\ NM = x + 5,$ and $OL = 5y - 7,$ find the values of x and y given that $LMNO$ is a parallelogram.



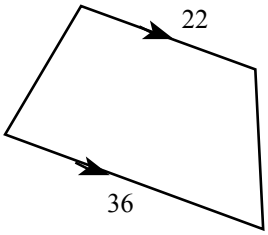
[A] $x = 1;\ y = \frac{1}{3}$ [B] $x = 3;\ y = \frac{1}{3}$ [C] $x = 3;\ y = 3$ [D] $x = 1;\ y = \frac{11}{5}$

54. Choose the statement that is NOT always true.
For an isosceles trapezoid _____.

[A] the diagonals are perpendicular [B] the legs are congruent

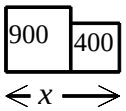
[C] the diagonals are congruent [D] the base angles are congruent

55. For the trapezoid shown below, the measure of the midsegment is _____.

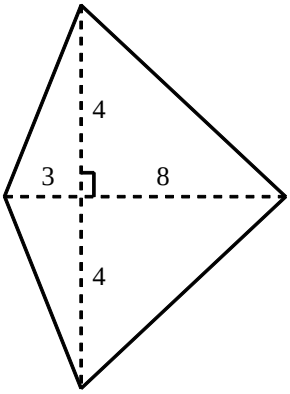


[A] 29 [B] 25 [C] 58 [D] 30

56. The figure below is made up of two squares with the areas shown. What is the length of x?

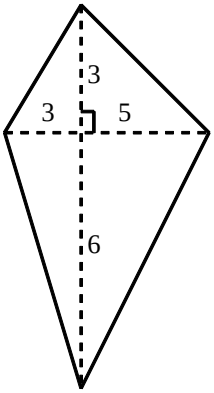


57. Find the area of the quadrilateral. (not drawn to scale)

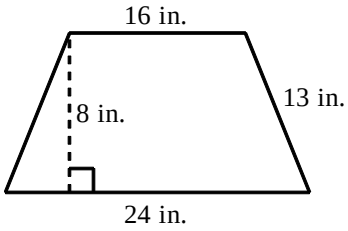


[A] 44 [B] 46 [C] 12 [D] 88

58. Find the area of the quadrilateral. (not drawn to scale)



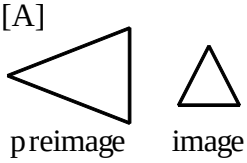
59. Find the area:

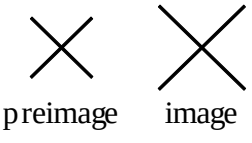


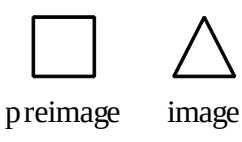
60. In rhombus $ABCD$, $AB = 20$ and $AC = 32$. Find the area of the rhombus to the nearest tenth.

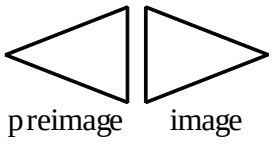
[A] 379.3 [B] 384.0 [C] 506.0 [D] 499.6

61. Which of the following transformations represents an isometry?

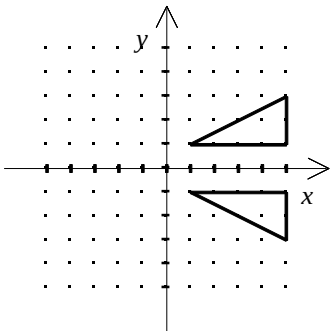
[A] 

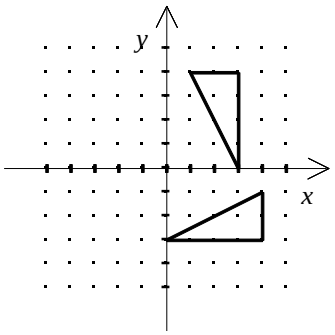
[B] 

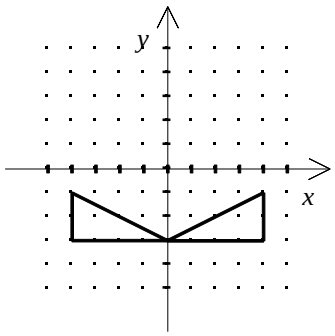
[C] 

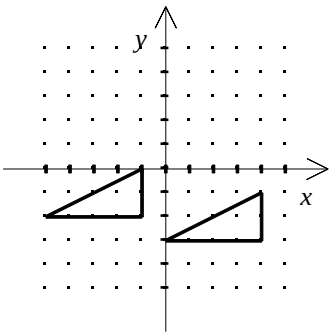
[D] 

62. Which of the following shows a triangle and its reflection image in the x-axis?

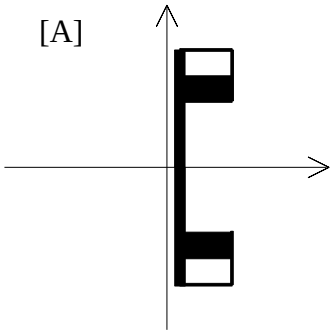
[A] 

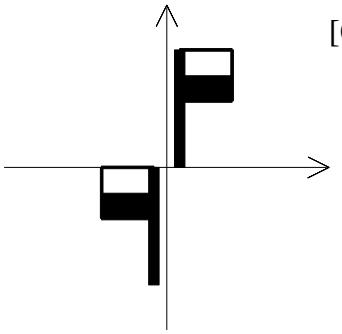
[B] 

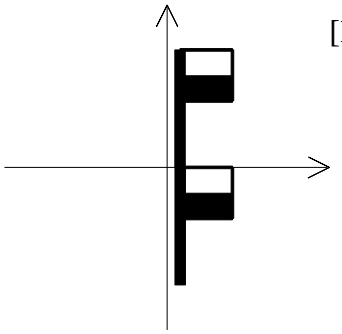
[C] 

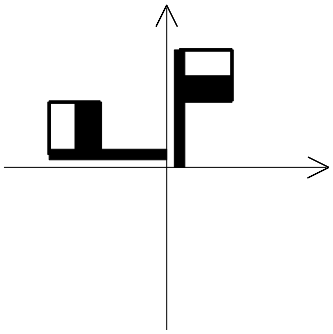
[D] 

63. Which picture shows a reflection of the flag?

[A] 

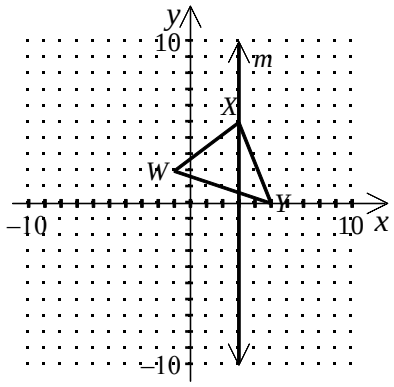
[B] 

[C] 

[D] 

64. Graph the triangle whose vertices have the coordinates given below. Then draw its reflection in the *x*-axis.
(–7, 2), (–1, 2), (–6, 8)

65. What are the coordinates of the vertices when the figure is reflected in line *m*?



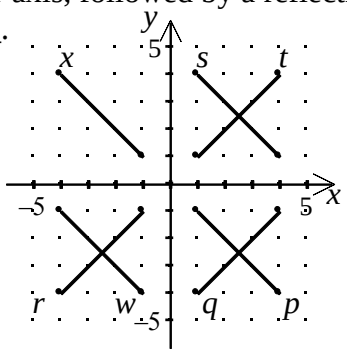
[A] $W'(1, -2)$, $X'(-3, -5)$, $Y'(-5, 0)$ [B] $W'(2, 7)$, $X'(5, 3)$, $Y'(0, 1)$

[C] $W'(7, 2)$, $X'(3, 5)$, $Y'(1, 0)$ [D] $W'(1, 2)$, $X'(3, -5)$, $Y'(-5, 0)$

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

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

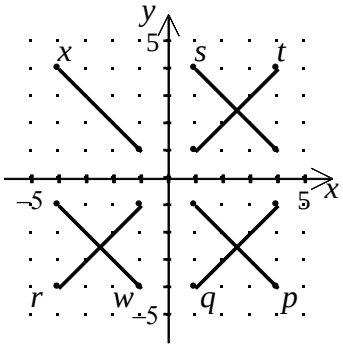
68. Use the figure below.Segment *x* is reflected in the *x*-axis, followed by a reflection in the *y*-axis, followed by another reflection in the *x*-axis. Its final image is _____.



[A] segment *p* [B] segment *s*

[C] segment *x* [D] segment *t*

69. Use the figure below.If segment *x* is reflected in the line $y = x$, its image is _____.



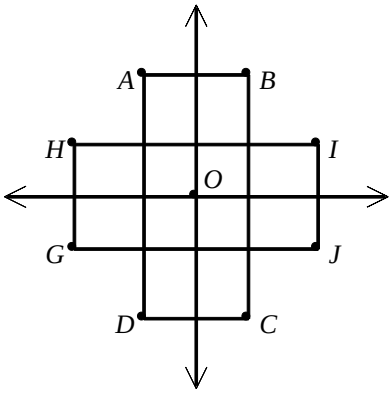
[A] segment *q* [B] segment *s*

[C] segment *r* [D] segment *p*

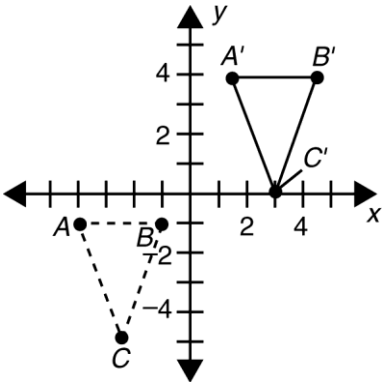
70. Which of the following letters (if drawn as simply as possible) has at least one line of symmetry?
Q, **F**, **E**, **Z**

[A] **E** [B] **Q** [C] **Z** [D] **F**

71. Rectangle *GHIJ* is rotated $90°$ clockwise about point *O*. Find the image of $\overline{GJ}$.



72. The motion rule for this transformation of ΔABC onto $\Delta A'B'C'$ is _____ .



[A] $(x, y) \rightarrow (x - 6, y - 5)$ [B] $(x, y) \rightarrow (x - 5, y - 6)$

[C] $(x, y) \rightarrow (x + 6, y + 5)$ [D] $(x, y) \rightarrow (x + 5, y + 6)$

73. 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*.

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

[A] (5, –4) [B] (2, –7) [C] (–2, –1) [D] (–12, 7)

75. A class is attended by 21 boys and 15 girls. Write the ratio of girls to students in the class as a fraction in lowest terms.

76. Monika sold 170 adult tickets and 70 student tickets to a school play. Write the ratio of student tickets to adult tickets in lowest terms.

77. Rewrite the fraction so that the numerator and denominator have the same units. Then simplify. $\dfrac{3 \text{ yards}}{48 \text{ inches}}$

78. According to a recent survey, 20 out of every 25 students do not walk to school. Which of the following represents the ratio of walkers to total students?

[A] $\frac{4}{5}$ [B] 5 [C] $\frac{1}{4}$ [D] $\frac{1}{5}$

79. Solve: $\frac{15}{34} = \frac{x}{7}$

80. If $\frac{3}{x-4} = \frac{7}{x}$, then _____.

[A] $x = 4$ [B] $x = 3$ [C] $x = 7$ [D] $x = \frac{7}{3}$

81. Solve the proportion $\frac{3}{2x} = \frac{7}{5}$.

82. If $\frac{P}{Q} = \frac{R}{S}$, which of the following is NOT true?

[A] $\frac{R}{S} = \frac{P}{Q}$ [B] $PR = SQ$ [C] $\frac{Q}{P} = \frac{S}{R}$ [D] $PS = RQ$

83. If $\frac{a}{b} = \frac{c}{d}$, then _____.

[A] $\frac{a+b}{b} = \frac{c+b}{d}$ [B] $ac = bd$

[C] $\frac{a}{b} = \frac{a+c}{b+d}$ [D] $\frac{a+b}{b} = \frac{c+d}{d}$

84. If two polygons are SIMILAR, then the corresponding sides must be _____.

[A] congruent [B] similar [C] proportional [D] parallel

85. If two polygons are SIMILAR, then the corresponding angles must be _____.

[A] congruent [B] supplementary [C] complementary [D] linear pairs

86. ΔMNO and ΔEFG are similar with $m\angle M = m\angle E$ and $m\angle N = m\angle F$. If MN, NO, and MO are 4 inches, 6 inches, and 7 inches respectively, and EF is 5.4 inches, find FG. (Answer to the nearest tenth.)

87. ΔABC and ΔXYZ are similar with $\angle A = \angle X$, and $\angle B = \angle Y$. If AB, BC, and AC are 5 inches, 12 inches, and 13 inches, respectively, and XY is 9 inches, find XZ. (Answer to the nearest tenth.)

[A] 23.4 in. [B] 21.6 in. [C] 6.7 in. [D] 7.2 in.

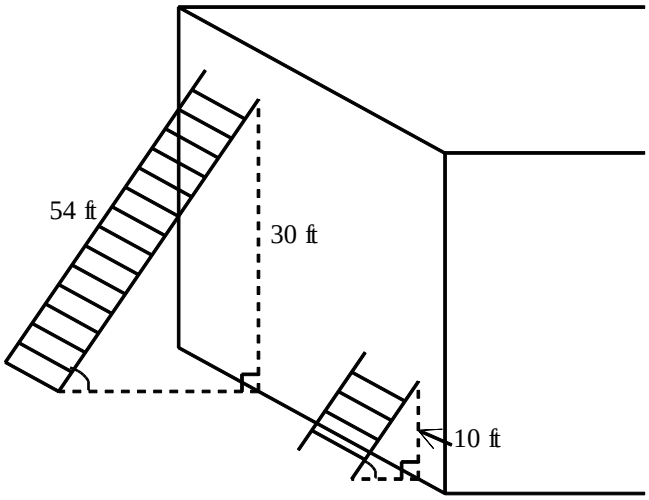
88. If $\Delta ABC \sim \Delta DEF$ and $\Delta DEF \sim \Delta GHI$, then _____.

[A] $\Delta ABC \cong \Delta GHI$ [B] $\Delta ABC \sim \Delta GHI$ [C] $AB = GH$ [D] $\angle BCA \cong \angle GHI$

89. One standard photograph size is a 4 in. $\times$ 5 in. rectangle. Which of these other standard rectangular sizes is similar to it?

[A] 8 in. $\times$ 10 in. [B] 11 in. $\times$ 14 in. [C] 5 in. $\times$ 7 in. [D] $2\frac{1}{2}$ in. $\times$ $3\frac{1}{2}$ in.

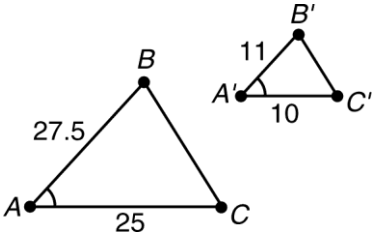
90. Two ladders are leaning against a wall at the same angle as shown.



How long is the shorter ladder?

[A] 36 ft [B] 18 ft [C] 8 ft [D] 22 ft

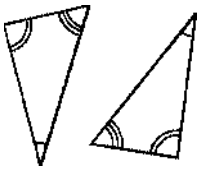
91. Shown below is an illustration of the _____.



[A] SAS Similarity Theorem [B] AA Similarity Postulate

[C] SAS Congruence Theorem [D] SSS Similarity Theorem

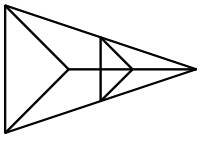
92. The postulate or theorem that can be used to prove that the two triangles are similar is _____.

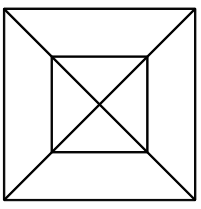


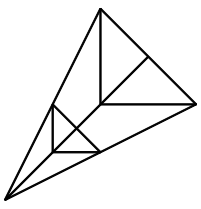
[A] AA Similarity Postulate [B] ASA Congruence Theorem

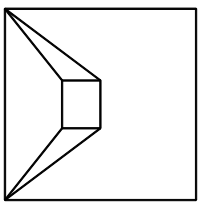
[C] SAS Similarity Theorem [D] SSS Similarity Theorem

93. Which image does not show a dilation?

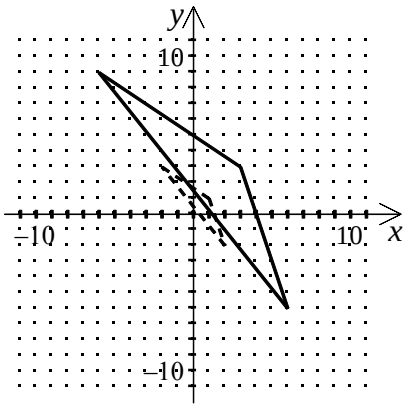
[A] 

[B] 

[C] 

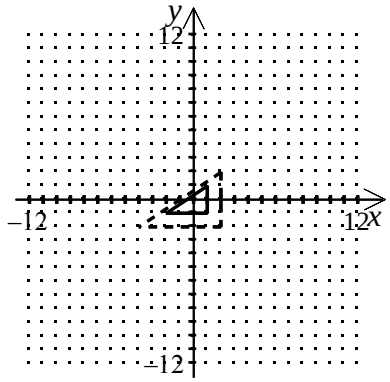
[D] 

94. The dashed triangle is the image of the solid triangle for a dilation with center at the origin. What is the scale factor?



[A] 2 [B] $\frac{1}{2}$ [C] 3 [D] $\frac{1}{3}$

95. The dashed triangle is the image of the solid triangle formed by a dilation centered at the origin. What is the scale factor?



[A] 2 [B] 4 [C] $\frac{1}{3}$ [D] 3

96. The geometric mean of 5 and 15 is _____.

[A] $5\sqrt{3}$ [B] 10 [C] $\frac{15}{5} = 3$ [D] 75

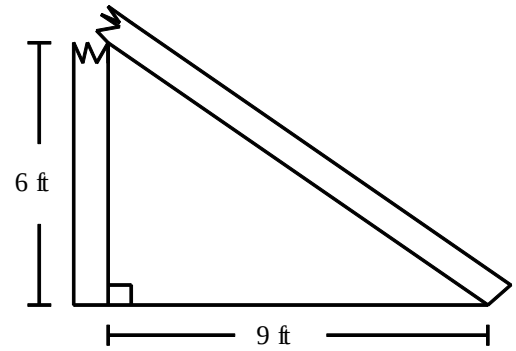
97. Find the geometric mean of 6 and 24.

98. How long is a string reaching from the top of a 20-ft pole to a point 10 ft from the bottom of the pole? Give an exact answer and an approximation to 3 decimal places.

99. A radio station is going to construct a 6-foot tower for a new antenna. The tower will be supported by three cables, each attached to the top of the tower and to points on the roof of the building that are 8 feet from the base of the tower. Find the total length of the three cables.

[A] 50 ft [B] 30 ft [C] 10 ft [D] 40 ft

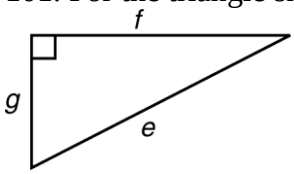
100. A telephone pole breaks and falls as shown.



To the nearest foot, what was the original height of the pole?

[A] 16 ft [B] 17 ft [C] 18 ft [D] 19 ft

101. For the triangle shown below, the Pythagorean Theorem states that _____.

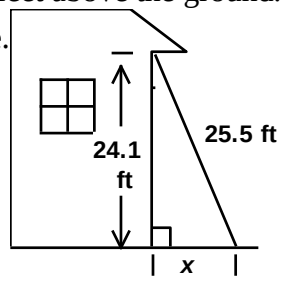


[A] $e^2 + f^2 = g^2$ [B] $e = f + g$ [C] $f^2 - g^2 = e^2$ [D] $e^2 = f^2 + g^2$

102. Which of the following sets are Pythagorean triples?

A. $\sqrt{3}$, $\sqrt{4}$, $\sqrt{5}$ B. 12, 16, 20 C. $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ D. 3^2, 4^2, 5^2

103. 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.

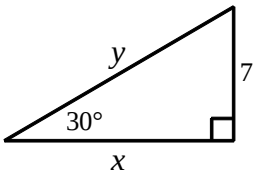


[A] 1.9 [B] 7.0 [C] 8.3 [D] 10.1

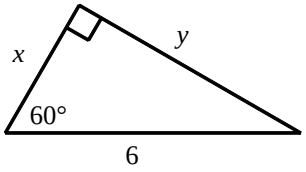
104. For each set of numbers, determine whether the numbers represent the lengths of the sides of an acute triangle, a right triangle, an obtuse triangle, or no triangle.

A. 6, 9, 12 B. 3.2, 4.2, 5.2 C. $\sqrt{38}$, $\sqrt{25}$, $\sqrt{13}$ D. 3, 4, 7

105. Find the value of x and y.



106. Find the value of x and y.



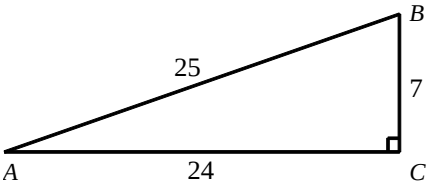
107. What is the length of an altitude of an equilateral triangle with side lengths $8\sqrt{3}$?

108. The altitude of an equilateral triangle is 6. What is the length of each side?

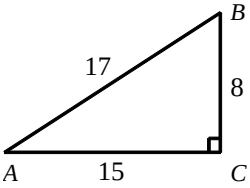
109. An equilateral triangle has side lengths of 10. The length of its altitude is _____.

[A] 5 [B] $5\sqrt{3}$ [C] $10\sqrt{5}$ [D] $5\sqrt{10}$

110. Write sin A.

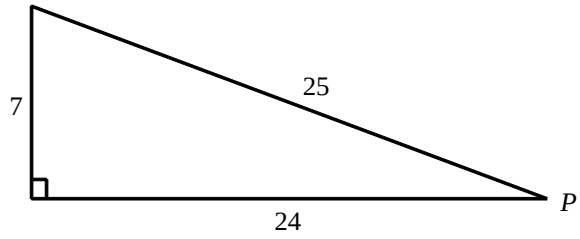


111. Write cos A.

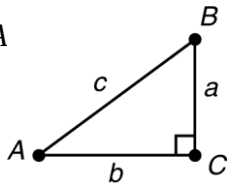


[A] $\frac{8}{15}$ [B] $\frac{15}{8}$ [C] $\frac{15}{17}$ [D] $\frac{8}{17}$

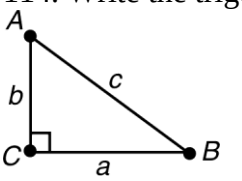
112. Find sin P, cos P, tan P.



113. Write the trigonometric ratio.A. sin AB. tan BC. cos A



114. Write the trigonometric ratios.



A. cos *B*B. tan *A*C. sin *B*

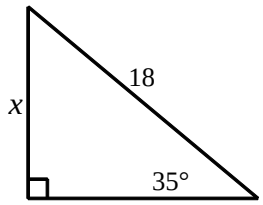
115. Use a calculator to find cos 17°, cos 37°, cos 57°, and cos 77°. As the angle increases, what happens to the cosine of the angle? Explain.

116. Use your calculator to determine cos 23°.

[A] $\approx$ 0.921 [B] $\approx$ 1.07 [C] $\approx$ 0.424 [D] $\approx$ 0.390

117. A slide 5.3 m long makes an angle of 30° with the ground. How high is the top of the slide above the ground?

118. What is *x* to the nearest hundredth? (not drawn to scale)



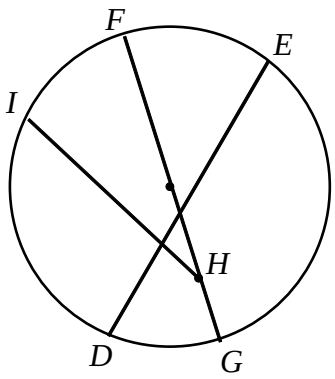
[A] $x = 10.32$ [B] $x = 25.71$ [C] $x = 12.6$ [D] $x = 14.74$

119. Find the missing angle and side measures of ΔABC, given that $\angle A = 55^\circ$, $\angle C = 90^\circ$, and $CB = 16$.

[A] $\angle B = 35^\circ$, $c = 19.5$, $b = 11.2$ [B] $\angle B = 145^\circ$, $c = 19.5$, $b = 11.7$

[C] $\angle B = 145^\circ$, $c = 19.5$, $b = 11.2$ [D] $\angle B = 35^\circ$, $c = 19$, $b = 11.2$

120. Identify two chords.



[A] $\overline{FG}$ and $\overline{HI}$ [B] $\overline{DF}$ and $\overline{EG}$ [C] $\overline{DE}$ and $\overline{HI}$ [D] $\overline{DE}$ and $\overline{FG}$

121. A circle is the set of all points in a plane that _____.

[A] have a center [B] are equidistant from a given point

[C] have a diameter [D] lie within a given radius

122. A segment with endpoints on a circle is a _____.

[A] chord [B] tangent [C] radius [D] secant

123. The center of a circle lies on _____.

[A] a tangent line [B] the circle [C] every diameter [D] every chord

124. If a circle has a diameter of 12, then it has _____.

[A] a radius of 24 [B] a radius of 6 [C] a radius of 4 [D] a diameter of 6

125. Two coplanar circles are concentric if _____.

[A] they have the same center [B] they have exactly one point of intersection

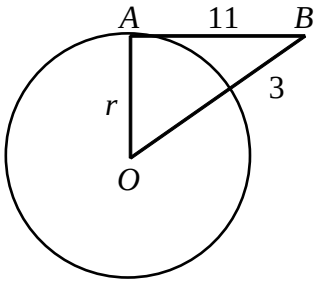
[C] they have congruent radii [D] they have no points of intersection

126. A line which intersects a circle at exactly one point is called_____.

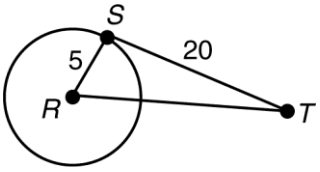
[A] a chord [B] a tangent of the circle

[C] a secant of the circle [D] the point of tangency

127. $\overline{AB}$ is tangent to $\odot O$ at A (not drawn to scale). Find the length of the radius r, to the nearest tenth.



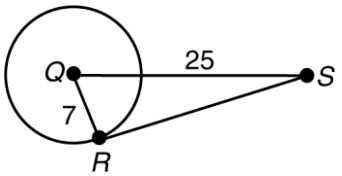
128. Given: $\overline{ST}$ is tangent to $\odot R$ at S
Find RT.



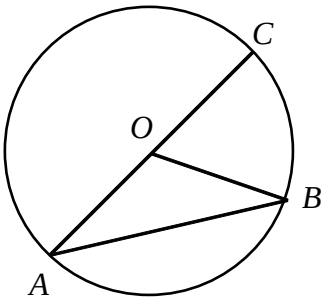
129. Use the figure. $\overline{SR}$ is tangent to $\odot Q$ at R. SR = _____.

[A] 24 [B] $\sqrt{764}$

[C] $\sqrt{674}$ [D] $\sqrt{567}$

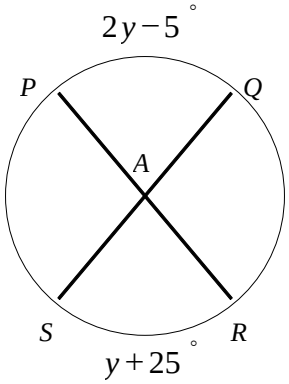


130. Given: In $\odot O$, $m\overset{\frown}{BAC} = 296°$. Find $m\angle AOB$.

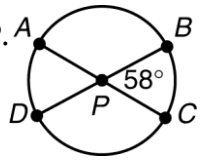


[A] 110° [B] 55° [C] 58° [D] 116°

131. Find $m\overset{\frown}{PQ}$ in $\odot A$. Drawing is not to scale.

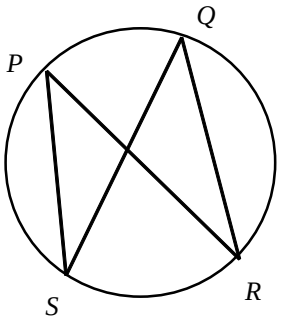


132. Find the measure of $\overset{\frown}{DBC}$ in $\odot P$.

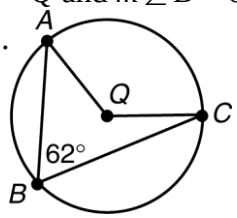


133. Find $m\angle PSQ$ if $m\angle PSQ = 2y - 10$ and $m\angle PRQ = y + 25$.

[A] 35° [B] 30° [C] 60° [D] 40°

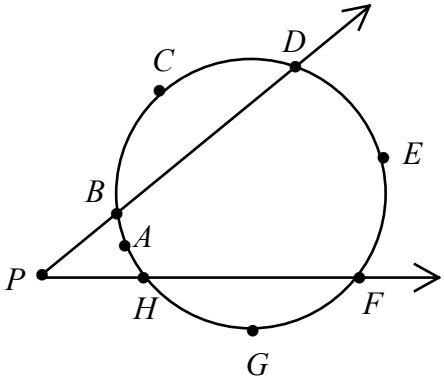


134. Given: $\odot Q$ and $m\angle B = 62°$
Find $m\overset{\frown}{AC}$.

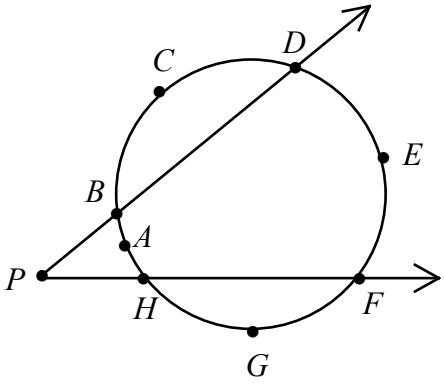


[A] 124° [B] 236° [C] 62° [D] 248°

135. In the figure shown (not drawn to scale), $m\overset{\frown}{BCD} = 106°$, $m\overset{\frown}{DEF} = 96°$, $m\overset{\frown}{FGH} = 138°$, and $m\overset{\frown}{HAB} = 20°$. Find $m\angle FPD$.

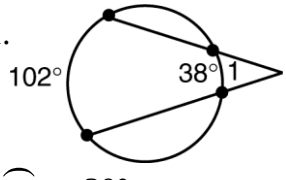


136. In the figure shown (not drawn to scale), $m\overset{\frown}{BCD} = 112°$, $m\overset{\frown}{DEF} = 98°$, $m\overset{\frown}{FGH} = 130°$, and $m\overset{\frown}{HAB} = 20°$. Find $m\angle FPD$.

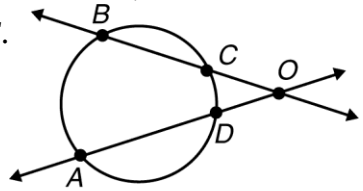


[A] 20° [B] 39° [C] 16° [D] 92°

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



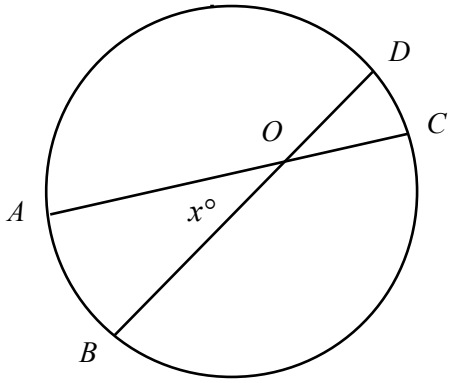
138. Given: $m\overset{\frown}{AB} = 82°$, $m\overset{\frown}{CD} = 30°$
Find $m\angle DOC$.



Not drawn to scale

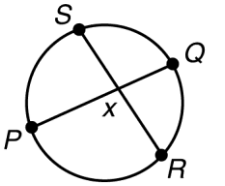
[A] 52° [B] 56° [C] 112° [D] 26°

139. Find the value of x if $m\overset{\frown}{AB} = 29°$ and $m\overset{\frown}{CD} = 35°$ (not drawn to scale).



140. Given: $m\overset{\frown}{SQ} = 106°$, $m\overset{\frown}{PR} = 120°$

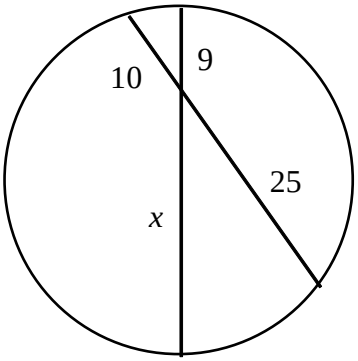
Find $m\angle x$.



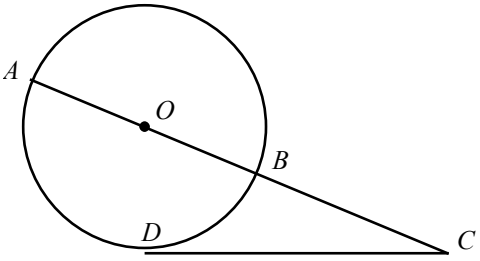
Not drawn to scale

[A] 67° [B] 113° [C] 134° [D] 226°

141. Find the value of x.



142. Find the diameter of the circle. $BC = 13,$ and $DC = 17.$ Round your answer to the nearest tenth.



[A] 9.2 [B] 7.1 [C] 11.9 [D] 35.2

143. Find the equation of the circle of radius 4 with its center at the origin.

[A] $x^2 + y^2 = 16$ [B] $\frac{x^2}{8} + \frac{x^2}{8} = 1$ [C] $x^2 + y^2 = 8$ [D] $x^2 + y^2 = 4$

144. Find the equation of the circle with center (–3, –1) and radius of 3.

[A] $(x-3)^2 + (y-1)^2 = 3$ [B] $(x+3)^2 + (y-1)^2 = 9$

[C] $(x-3)^2 - (y-1)^2 = 3$ [D] $(x+3)^2 + (y+1)^2 = 9$

145. A standard equation of a circle with center (–4, 3) and radius 7 is _____.

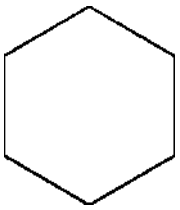
[A] $(x-4)^2 + (y+3)^2 = 49$ [B] $(x-4)^2 + (y+3)^2 = 7$

[C] $(x + 4) + (y - 3) = 7$ [D] $(x+4)^2 + (y-3)^2 = 49$

146. The sum of the measures of the interior angles of a convex quadrilateral is _____.

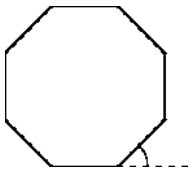
[A] $360°$ [B] $270°$ [C] $540°$ [D] $180°$

147. The measure of each interior angle of a regular hexagon is _____.



[A] $15°$ [B] $30°$ [C] $60°$ [D] $120°$

148. The measure of each exterior angle of a regular octagon is _____.



[A] $45°$ [B] $135°$ [C] $22.5°$ [D] $67.5°$

149. Find the area of an equilateral triangle with side 12.

150. Find the area of an equilateral triangle with side 14.

[A] $21\sqrt{3}$ [B] $49\sqrt{3}$ [C] 42 [D] 98

151. Find the circumference of a circle with radius 9 cm. Use $\pi \approx 3.14$.

152. If a circle has a radius of 8 inches, what is the circumference rounded to the nearest whole number? Use $\pi \approx 3.14$.

[A] 50 in. [B] 201 in. [C] 25 in. [D] 100 in.

153. A circle has a circumference of 44 meters. Find its radius.

[A] 7 m [B] 14.01 m [C] 22 m [D] 11 m

154. An expression for the circumference of a circle with diameter *d* is _____.

[A] $2\pi d$ [B] πd [C] πr [D] $\frac{\pi d^2}{4}$

155. For a circle of radius 9 feet, find the arc length s subtended by a central angle of $12°$.

[A] $s = 108\pi$ feet [B] $s = \frac{9}{5}\pi$ feet [C] $s = \frac{3}{5}\pi$ feet [D] $s = \frac{6}{5}\pi$ feet

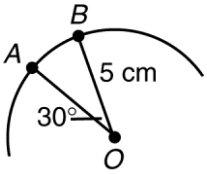
156. For a circle of radius 8 feet, find the arc length of a central angle of $60°$. Leave your answer in terms of π.

157. The circumference of a circle is 84π cm. Find the diameter, the radius, and the length of an arc of $50°$.

158. Find the length of a 40° arc in a circle with a radius of 4.

[A] 8π [B] $\frac{8\pi}{9}$ [C] $\frac{16\pi}{9}$ [D] $\frac{9\pi}{8}$

159. Find the arc length of $\overset{\frown}{AB}$ to two decimal places.

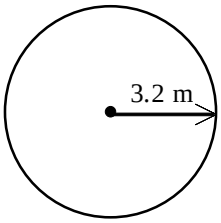


160. The radius of a circular garden is 2.8 m. Find the circumference. Use $\pi \approx 3.14$.

161. A park has a circular swimming pool. The diameter of the pool is 20 m. What is the distance traveled if you swim around the edge of the pool once? Use $\pi \approx 3.14$.

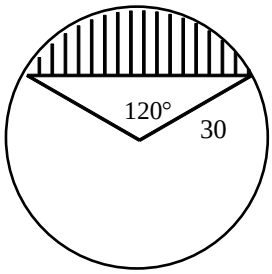
[A] 40 m [B] 62.80 m [C] 125.66 m [D] 188.50 m

162. Find the area:

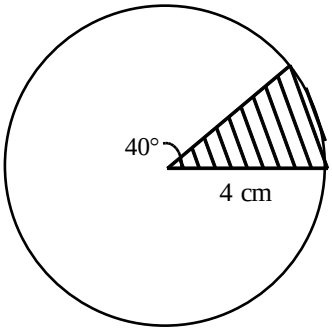


[A] 20.096 m^2 [B] 32.1536 m^2 [C] 8.0384 m^2 [D] 128.614 m^2

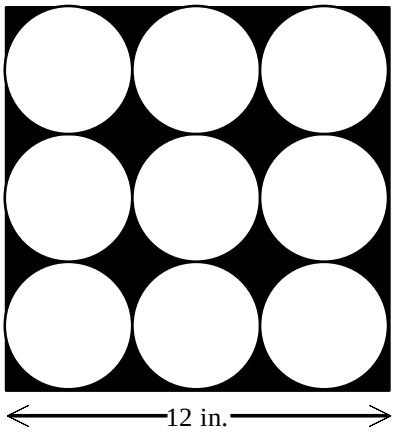
163. Find the area of the shaded region.



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

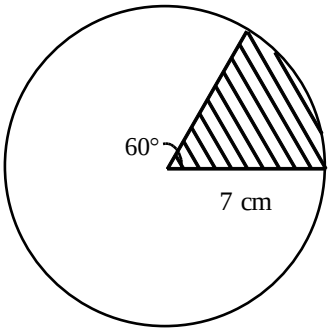


165. In this figure, each circle has a radius of 2 inches. What is the area of the portion outside the circles but inside the square? Express your answer in terms of π.



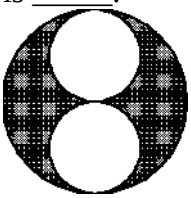
[A] $144 - 4\pi$ [B] $144 - 36\pi$ [C] $24 - 8\pi$ [D] $24 - 12\pi$

166. Find the area of the shaded region.



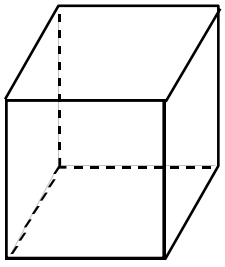
[A] 102.63 cm^2 [B] 25.66 cm^2 [C] 38.48 cm^2 [D] 153.94 cm^2

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

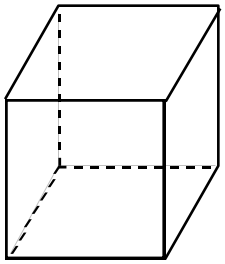


[A] 9π sq. units [B] 18π sq. units [C] 24π sq. units [D] 36π sq. units

168. Find the number of vertices, faces, and edges for the figure.



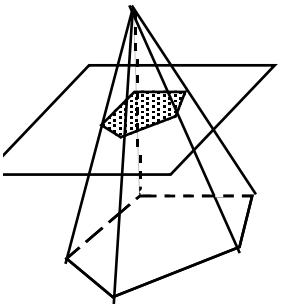
169. Find the number of vertices, faces, and edges for the figure below.



[A] 12 vertices, 6 faces, 6 edges [B] 8 vertices, 6 faces, 12 edges

[C] 6 vertices, 8 faces, 12 edges [D] 9 vertices, 7 faces, 13 edges

170. Describe the cross section.



[A] pentagon [B] hexagon [C] pyramid [D] rectangle

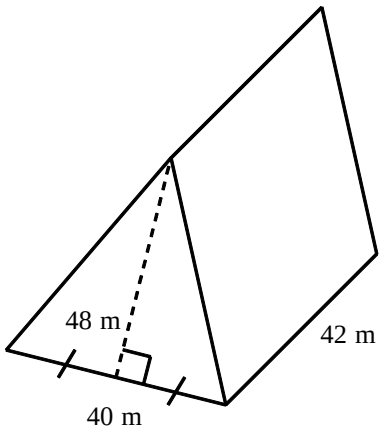
171. A polyhedron has 9 faces and 21 edges. How many vertices does it have? Explain your answer.

172. According to Euler's Theorem, the number of faces (F), vertices (V), and edges (E) of a polyhedron is related by the formula _____.

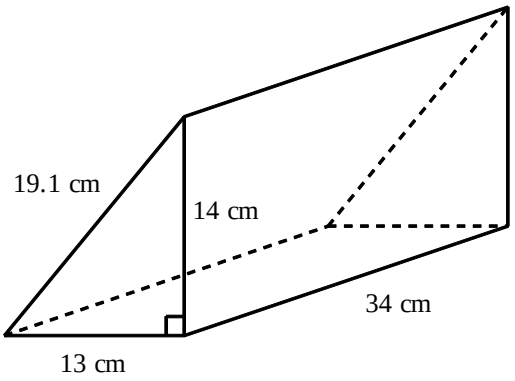
[A] $E + V = F + 2$ [B] $F + E = V + 2$ [C] $F + V = E - 2$ [D] $F + V = E + 2$

173. Use Euler's Theorem to calculate how many faces a polyhedron has if it has 6 edges and 4 vertices.

174. Find the surface area of the right prism.

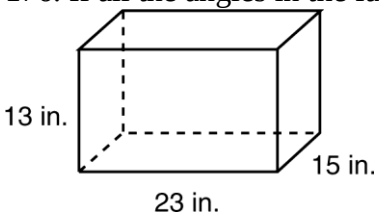


175. Find the surface area of the triangular prism.



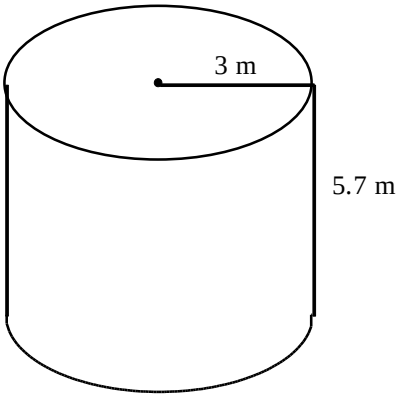
[A] 1749.4 cm^2 [B] 118,190.8 cm^2 [C] 3061.5 cm^2 [D] 874.7 cm^2

176. If all the angles in the faces of the polyhedron below are right angles, then its surface area is _____.



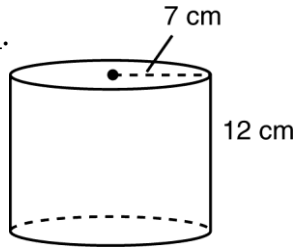
[A] 4485 $in.^2$ [B] 839 $in.^2$ [C] 1794 $in.^2$ [D] 1678 $in.^2$

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



[A] 82 m^2 [B] 26 m^2 [C] 17 m^2 [D] 164 m^2

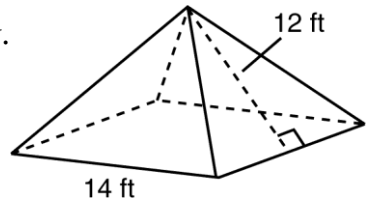
178. The surface area, in square centimeters, of the right cylinder below is _____.



[A] $98\pi + (14\pi)12 = 266\pi$ [B] $14\pi\ (12) = 168\pi$

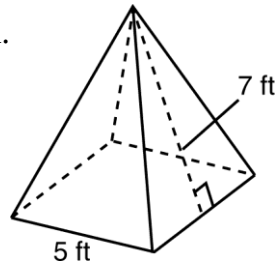
[C] $7^2\pi + 14\pi\ (12) = 217\pi$ [D] $7^2\pi\ (12) = 588\pi$

179. Find the surface area of the lateral faces on the regular pyramid below.

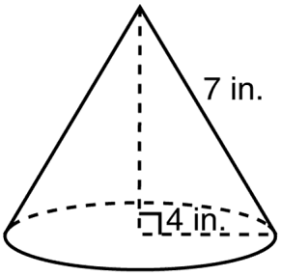


[A] 168 ft^2 [B] 532 ft^2 [C] 84 ft^2 [D] 336 ft^2

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



181. The surface area of the right cone below is _____.



[A] 44π $in.^2$ [B] 36π $in.^2$ [C] $16\sqrt{33}\pi$ $in.^2$ [D] 112π $in.^2$

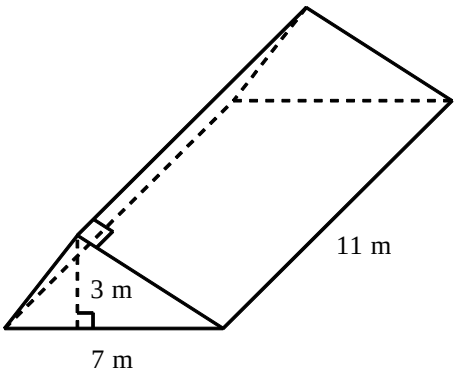
182. An aquarium in a restaurant is a rectangular prism and measures 3.5 feet by 4 feet by 4 feet. What is the volume of the aquarium?

[A] 56 cubic feet [B] 19.5 cubic feet [C] 11.5 cubic feet [D] 48 cubic feet

183. Find the exact volume of a cylinder that has a height of 18 inches and a radius of 5 inches.

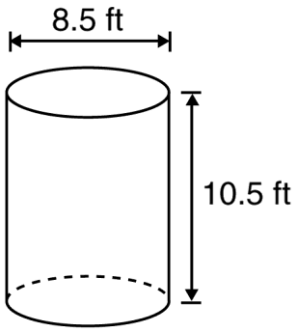
[A] 450π in^3 [B] 230π in^3 [C] 150π in^3 [D] 115π in^3

184. Find the volume of the right triangular prism.

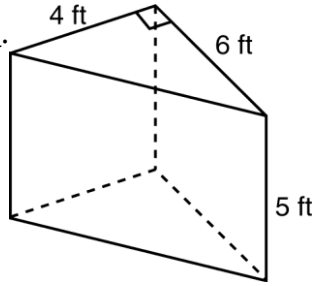


[A] 32 m^3 [B] 231 m^3 [C] 115.5 m^3 [D] 21.5 m^3

185. Find the volume of the cylinder below. (Round the result to one decimal place.)

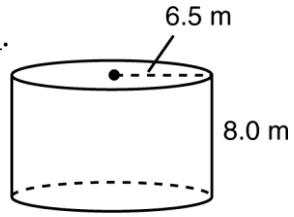


186. The volume of the right prism below is _____.



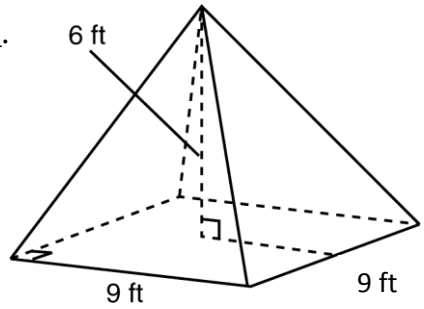
[A] $10\sqrt{13}$ ft^3 [B] $30\sqrt{13}$ ft^3 [C] 120 ft^3 [D] 60 ft^3

187. The volume of the right circular cylinder below is about _____.



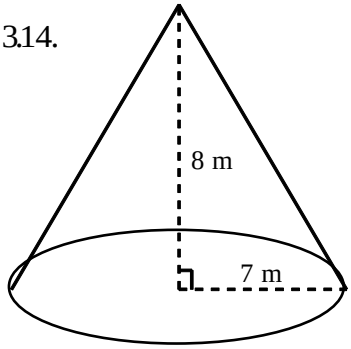
[A] 265.5 m^3 [B] 1061.9 m^3 [C] 326.7 m^3 [D] 1036.9 m^3

188. The volume of the pyramid below is _____.

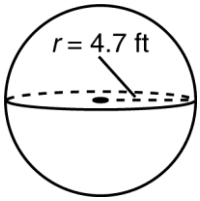


[A] 378 ft^3 [B] 195π ft^3 [C] 486 ft^3 [D] 126π ft^3

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



[A] 410.29 m^3 [B] 130.67 m^3 [C] 1230.88 m^3 [D] 51.29 m^3

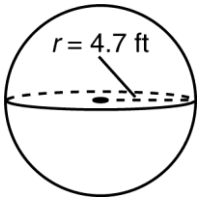
190. 

Use the figure above.The surface area of the sphere is about _____.

[A] 92.5 ft^2 [B] 434.9 ft^2 [C] 69.4 ft^2 [D] 277.6 ft^2

191. Find the volume of a sphere 16 ft in diameter. Use $\pi \approx 3.14$ and round your answer to the nearest tenth.

[A] 267.9 ft^3 [B] 301.4 ft^3 [C] 1205.8 ft^3 [D] 2143.6 ft^3

192. 

Refer to the figure above.The volume of the sphere is about _____.

[A] 277.6 ft^3 [B] 69.4 ft^3 [C] 92.5 ft^3 [D] 434.9 ft^3

Reference: [1.1.1.3]
[1] 7, 9, 11

Reference: [1.2.1.15]
[2] [A]

Reference: [1.3.1.26]
[3] $u = 1$

Reference: [1.6.1.62]
[4] [C]

Reference: [1.6.1.63]
[5] [D]

Reference: [1.6.2.69]
[6] $\angle BOC$

Reference: [3.3.1.18]
[7] [A]

Reference: [3.3.2.20]
[8] [C]

Reference: [3.4.1.21]
[9] No lines can be proven parallel from the given information.

Reference: [3.4.1.22]
[10] $c \| d$, Consecutive Interior Angles Converse

Reference: [3.4.1.25]
[11] [D]

Reference: [3.6.1.32]
[12] $-\frac{4}{13}$

Reference: [3.6.1.37]
[13] [C]

Reference: [3.6.1.43]
[14] [B]

Reference: [3.6.2.48]
[15] [A]

Reference: [3.7.1.52]
[16] [C]

Reference: [3.7.1.54]
[17] [B]

Reference: [3.7.1.55]
[18] [B]

Reference: [4.1.1.3]
[19] ΔBDC

Reference: [4.1.1.3]
[20] ΔABC

Reference: [4.1.2.14]
[21] 151°

Reference: [4.1.2.16]
[22] 117

Reference: [4.1.2.22]
[23] 127°

Reference: [4.1.2.28]
[24] [D]

Reference: [4.3.1.49]
[25] [C]

Reference: [4.3.1.50]
[26] $\Delta DGE \cong \Delta FGE$

Reference: [4.3.1.52]
[27] SSS Congruence Postulate (or SAS)

Reference: [4.3.1.55]
[28] [A]

Reference: [4.6.1.83]
[29] [D]

Reference: [5.1.1.1]
[30] Any three of the following: $\overline{CD} \perp \overline{HJ}$; $\angle CIJ$, $\angle JID$, $\angle DIH$, and $\angle HIC$ are r
I is the midpoint of $\overline{HJ}$;
$\overline{HI} \cong \overline{IJ}$; $CH = CJ$, $DH = DJ$

Reference: [5.1.1.2]
[31] [C]

Reference: [5.3.1.27]
[32] [D]

Reference: [5.3.2.36]
[33] [A]

Reference: [5.2.1.11]
[34] Vertices

Reference: [5.2.1.12]
[35] $\overleftrightarrow{GF}$

Reference: [5.2.1.13]
[36] Circumcenter

Reference: [5.2.2.24]
[37] Incenter

Reference: [5.3.2.33]
[38] [D]

Reference: [5.3.2.37]
[39] Orthocenter

Reference: [5.4.1.38]
[40] [C]

Reference: [5.4.1.41]
[41] [B]

Reference: [5.5.2.58]
[42] $3 < x < 19$

Reference: [5.5.2.57]
[43] [B]

Reference: [5.5.2.61]
[44] 4, 32

Reference: [5.6.2.67]
[45] [C]

Reference: [5.6.2.71]
[46] <

Reference: [6.1.1.2]
[47] [B]

Reference: [6.1.2.20]
[48] 64°

Reference: [6.1.2.21]
[49] 129°

Reference: [6.1.2.22]
[50] $x = 112,\ y = 61$

Reference: [6.2.1.32]
[51] [C]

Reference: [6.2.1.34]
[52] [D]

Reference: [6.2.1.35]
[53] [C]

Reference: [6.5.1.56]
[54] [A]

Reference: [6.5.1.59]
[55] [A]

Reference: [6.7.1.72]
[56] 50

Reference: [6.7.1.91]
[57] [A]

Reference: [6.7.1.92]
[58] 36 sq. units

Reference: [6.7.2.98]
[59] 160 in.^2

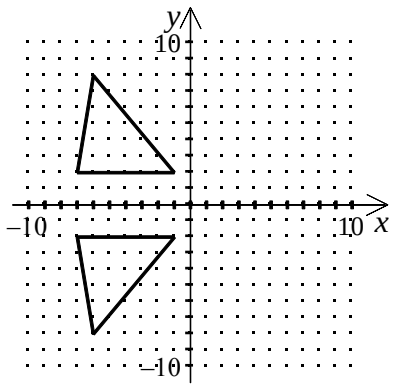
Reference: [6.7.2.100]
[60] [B]

Reference: [7.1.1.1]
[61] [D]

Reference: [7.1.1.2]
[62] [A]

Reference: [7.1.1.8]
[63] [A]

Reference: [7.2.1.13]
[64]



Reference: [7.2.1.14]
[65] [C]

Reference: [7.2.1.16]
[66] $(-x, y)$

Reference: [7.2.1.17]

[67] (y, x)

Reference: [7.2.1.23]
[68] [D]

Reference: [7.2.1.24]
[69] [D]

Reference: [7.2.2.31]
[70] [A]

Reference: [7.3.1.41]
[71] $\overline{AD}$

Reference: [7.4.1.58]
[72] [C]

Reference: [7.4.2.65]
[73] (13, –8)

Reference: [7.4.2.67]
[74] [C]

Reference: [8.1.1.1]
[75] $\frac{5}{12}$

Reference: [8.1.1.3]
[76] 7:17

Reference: [8.1.1.8]
[77] $\frac{108 \text{ in.}}{48 \text{ in.}} = \frac{9}{4}$

Reference: [8.1.1.10]
[78] [D]

Reference: [8.1.2.12]
[79] $3\frac{3}{34}$

Reference: [8.1.2.13]
[80] [C]

Reference: [8.1.2.16]
[81] $x = \frac{15}{14}$

Reference: [8.1.2.20]
[82] [B]

Reference: [8.2.1.31]
[83] [D]

Reference: [8.3.1.42]
[84] [C]

Reference: [8.3.1.41]
[85] [A]

Reference: [8.3.1.45]
[86] 8.1 in.

Reference: [8.3.1.46]
[87] [A]

Reference: [8.3.1.50]
[88] [B]

Reference: [8.3.2.54]
[89] [A]

Reference: [8.4.2.68]
[90] [B]

Reference: [8.5.1.75]
[91] [A]

Reference: [8.5.1.76]
[92] [A]

Reference: [8.7.1.92]
[93] [D]

Reference: [8.7.1.97]
[94] [D]

Reference: [8.7.1.98]
[95] [A]

Reference: [9.1.2.6]
[96] [A]

Reference: [9.1.2.7]
[97] 12

Reference: [9.2.2.11]
[98] $\sqrt{500}$ ft; 22.361 ft

Reference: [9.2.2.14]
[99] [B]

Reference: [9.2.2.15]
[100] [B]

Reference: [9.2.2.19]
[101] [D]

Reference: [9.2.2.24]
[102] B

Reference: [9.2.2.26]
[103] [C]

Reference: [9.3.2.31]
[104] A. obtuse
B. acute
C. right
D. no

Reference: [9.4.1.45]
[105] $x = 7\sqrt{3}$, $y = 14$

Reference: [9.4.1.46]
[106] $x = 3$, $y = 3\sqrt{3}$

Reference: [9.4.1.50]
[107] 12

Reference: [9.4.1.51]
[108] $4\sqrt{3}$

Reference: [9.4.1.53]
[109] [B]

Reference: [9.5.1.60]
[110] $\frac{7}{25}$

Reference: [9.5.1.61]
[111] [C]

Reference: [9.5.1.62]
[112]
$\sin P = \frac{7}{25}$, $\cos P = \frac{24}{25}$, $\tan P = \frac{7}{24}$

Reference: [9.5.1.63]
[113] A. $\frac{a}{c}$ B. $\frac{b}{a}$ C. $\frac{b}{c}$

Reference: [9.5.1.65]
[114] A. $\frac{a}{c}$ B. $\frac{a}{b}$ C. $\frac{b}{c}$

Reference: [9.5.1.69]
[115] ≈ 0.956, ≈ 0.799, ≈ 0.545, ≈ 0.225; decreases, the ratio of the adjacent side to the hypotenuse becomes smaller.

Reference: [9.5.1.70]
[116] [A]

Reference: [9.5.2.74]
[117] 2.65 m

Reference: [9.6.1.79]
[118] [A]

Reference: [9.6.1.84]
[119] [A]

Reference: [10.1.1.2]
[120] [D]

Reference: [10.1.1.6]
[121] [B]

Reference: [10.1.1.7]
[122] [A]

Reference: [10.1.1.8]
[123] [C]

Reference: [10.1.1.9]
[124] [B]

Reference: [10.1.1.10]
[125] [A]

Reference: [10.1.1.16]
[126] [B]

Reference: [10.1.2.19]
[127] 18.7

Reference: [10.1.2.23]
[128] $\sqrt{425} = 5\sqrt{17} \approx 20.6$

Reference: [10.1.2.25]
[129] [A]

Reference: [10.2.1.31]
[130] [D]

Reference: [10.2.1.30]
[131] $55°$

Reference: [10.2.1.34]
[132] $238°$

Reference: [10.3.1.50]
[133] [C]

Reference: [10.3.1.52]
[134] [A]

Reference: [10.4.2.66]
[135] $38°$

Reference: [10.4.2.67]
[136] [B]

Reference: [10.4.2.68]
[137] 32°

Reference: [10.4.2.69]
[138] [D]

Reference: [10.4.2.72]
[139] 32°

Reference: [10.4.2.75]
[140] [B]

Reference: [10.5.1.78]
[141] $27\frac{7}{9}$

Reference: [10.5.2.79]
[142] [A]

Reference: [10.6.1.83]
[143] [A]

Reference: [10.6.1.84]
[144] [D]

Reference: [10.6.1.86]
[145] [D]

Reference: [11.1.1.7]
[146] [A]

Reference: [11.1.1.8]
[147] [D]

Reference: [11.1.1.15]
[148] [A]

Reference: [11.2.1.18]
[149] $36\sqrt{3}$ sq. units

Reference: [11.2.1.19]
[150] [B]

Reference: [11.4.1.39]
[151] 56.52 cm

Reference: [11.4.1.40]
[152] [A]

Reference: [11.4.1.41]
[153] [A]

Reference: [11.4.1.42]
[154] [B]

Reference: [11.4.1.43]
[155] [C]

Reference: [11.4.1.44]
[156] $\frac{8}{3}\pi$ feet

Reference: [11.4.1.45]
[157] 84 cm; 42 cm; 11.67π cm

Reference: [11.4.1.47]
[158] [B]

Reference: [11.4.1.49]
[159] 2.62 cm

Reference: [11.4.2.54]
[160] 17.584 m

Reference: [11.4.2.55]
[161] [B]

Reference: [11.5.1.59]
[162] [B]

Reference: [11.5.1.62]
[163] $300\pi - 225\sqrt{3}$

Reference: [11.5.1.63]
[164] 5.58 cm^2

Reference: [11.5.2.65]
[165] [B]

Reference: [11.5.2.67]
[166] [B]

Reference: [11.5.2.71]
[167] [B]

Reference: [12.1.1.1]
[168] 8 vertices, 6 faces, 12 edges

Reference: [12.1.1.2]
[169] [B]

Reference: [12.1.1.8]
[170] [A]

Reference: [12.1.2.10]
[171] 14, because $F + V = E + 2$ and $9 + 14 = 21 + 2$.

Reference: [12.1.2.11]
[172] [D]

Reference: [12.1.2.12]
[173] 4

Reference: [12.2.1.14]
[174] 7968 m^2

Reference: [12.2.1.15]
[175] [A]

Reference: [12.2.1.17]
[176] [D]

Reference: [12.2.2.21]
[177] [D]

Reference: [12.2.2.22]
[178] [A]

Reference: [12.3.1.25]
[179] [D]

Reference: [12.3.1.27]
[180] 95 ft^2

Reference: [12.3.2.31]
[181] [A]

Reference: [12.4.1.35]
[182] [A]

Reference: [12.4.2.38]
[183] [A]

Reference: [12.4.2.42]
[184] [C]

Reference: [12.4.2.44]
[185]
$189.65625\pi \ \ ft^3 \approx 595.8 \ ft^3$

Reference: [12.4.2.47]
[186] [D]

Reference: [12.4.2.48]
[187] [B]

Reference: [12.5.1.52]
[188] [C]

Reference: [12.5.1.56]
[189] [A]

Reference: [12.6.1.68]
[190] [D]

Reference: [12.6.2.71]
[191] [D]

Reference: [12.6.2.74]
[192] [D]