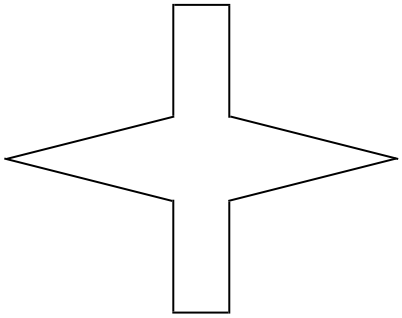
2015 Geometry Final review

Multiple Choice

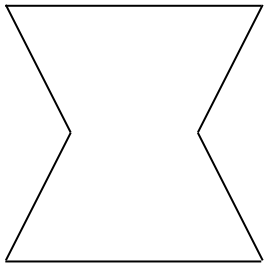
Identify the choice that best completes the statement or answers the question.

1. Tell whether the figure is a polygon. If it is a polygon, name it by the number of its sides.



a. polygon, decagon b. polygon, hexagon
c. polygon, dodecagon d. not a polygon

2. Tell whether the polygon is regular or irregular. Tell whether it is concave or convex.

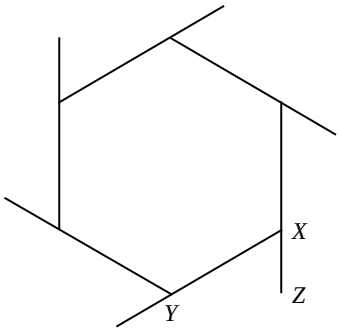


a. regular and concave b. irregular and concave
c. regular and convex d. irregular and convex

3. Find the measure of each interior angle of a regular 45-gon.
a. 176° b. 164° c. 172° d. 188°

4. Find the measure of each exterior angle of a regular decagon.
a. 45° b. 22.5° c. 18° d. 36°

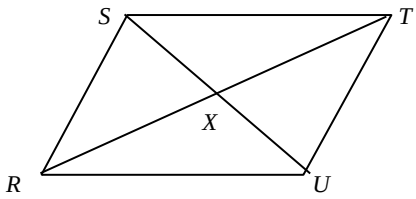
5. The door on a spacecraft is formed with 6 straight panels that overlap to form a regular hexagon. What is the measure of $\angle YXZ$?



a. m$\angle YXZ$ = 60° b. m$\angle YXZ$ = 120° c. m$\angle YXZ$ = 720° d. m$\angle YXZ$ = 45°

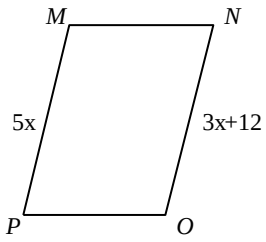
6. Polygon *ABCDEFGHIJKL* is a regular dodecagon (12-sided polygon). Sides $\overline{EF}$ and $\overline{GH}$ are extended so that they meet at point *O* in the exterior of the polygon. Find m$\angle FOG$.
a. m$\angle FOG$ = 100° b. m$\angle FOG$ = 115°
c. m$\angle FOG$ = 120° d. m$\angle FOG$ = 110°

7. The diagram shows the parallelogram-shaped component that attaches a car's rearview mirror to the car. In parallelogram *RSTU*, *UR* = 25, *RX* = 16, and m$\angle STU$ = 42.4°. Find *ST*, *XT*, and m$\angle RST$.



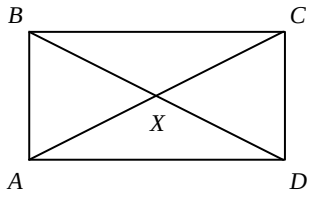
a. *ST* = 16, m$\angle RST$ = 42.4°, *XT* = 25 b. *ST* = 25, m$\angle RST$ = 47.8°, *XT* = 16 c. *ST* = 25, m$\angle RST$ = 137.6°, *XT* = 16 d. *ST* = 5, m$\angle RST$ = 137.6°, *XT* = 4

8. *MNOP* is a parallelogram. Find *MP*.



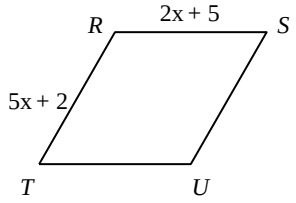
a. $MP = 25$ b. $MP = 30$ c. $MP = 20$ d. $MP = 6$

9. An artist designs a rectangular quilt piece with different types of ribbon that go from the corner to the center of the quilt. The dimensions of the rectangle are $AB = 10$ inches and $AC = 14$ inches. Find BX.



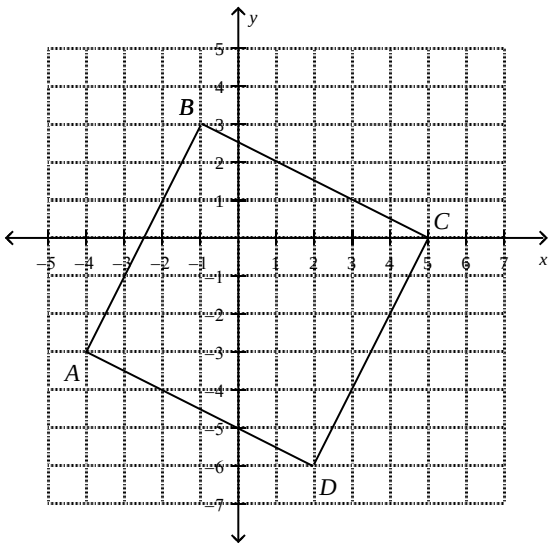
a. BX = 7 inches b. BX = 10 inches c. BX = 5 inches d. BX = 14 inches

10. *TRSU* is a rhombus. Find SU.



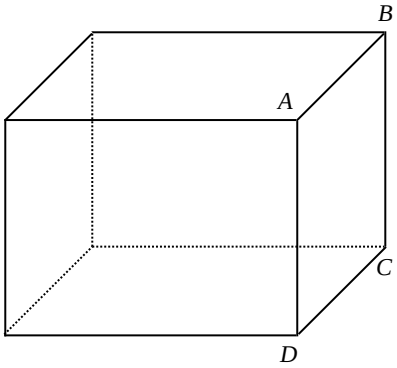
a. SU = 7 b. SU = 1 c. SU = 5 d. SU = 3

11. Show that all four sides of square *ABCD* are congruent and that $\overline{AB} \perp \overline{BC}$.



a. $AB = 3\sqrt{5}$, $BC = 3\sqrt{5}$, $CD = 3\sqrt{5}$, $DA = 3\sqrt{5}$, slope of $\overline{AB} = 2$, slope of $\overline{BC} = -\frac{1}{2}$. Since the product of the slopes is -1, $\overline{AB} \perp \overline{BC}$.
b. $AB = \frac{9}{2}$, $BC = \frac{9}{2}$, $CD = \frac{9}{2}$, $DA = \frac{9}{2}$, slope of $\overline{AB} = 2$, slope of $\overline{BC} = -\frac{1}{2}$. Since the product of the slopes is -1, $\overline{AB} \perp \overline{BC}$. c. $AB = 3\sqrt{5}$, $BC = 3\sqrt{5}$, $CD = 3\sqrt{5}$, $DA = 3\sqrt{5}$, slope of $\overline{AB} = \frac{1}{2}$, slope of $\overline{BC} = -2$. Since the product of the slopes is -1, $\overline{AB} \perp \overline{BC}$. d. $AB = 4$, $BC = 4$, $CD = 4$, $DA = 4$, slope of $\overline{AB} = 2$, slope of $\overline{BC} = \frac{1}{2}$. Since the product of the slopes is 1, $\overline{AB} \perp \overline{BC}$.

12. The side of a wooden chest is a quadrilateral with $\overline{AB} \parallel \overline{CD}$, and $\overline{BC} \parallel \overline{DA}$. If $m\angle A = 90°$, what is the most accurate description of *ABCD*?

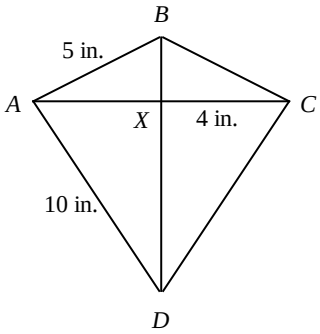


a. Both pairs of opposite sides are parallel so *ABCD* is a parallelogram. Since one angle measures 90°, it is a right angle and a parallelogram with one right angle is a rectangle. b. Both pairs of opposite sides are parallel so *ABCD* is a parallelogram. Since one angle measures 90°, it is a right angle and a parallelogram with one right angle is a square. c. Both pairs of opposite sides are parallel so *ABCD* is a rhombus. Since one angle measures 90°, it is a right angle and a rhombus with one right angle is a square. d. Both pairs of opposite sides are parallel so *ABCD* is a parallelogram. One angle measuring 90° does not provide enough information to change its description.

13. Use the diagonals to determine whether a parallelogram with vertices $A(-1,-2)$, $B(-2,0)$, $C(0,1)$, and $D(1,-1)$ is a rectangle, rhombus, or square. Give all the names that apply.
a. rectangle, rhombus, square b. rectangle, rhombus c. rectangle d. square

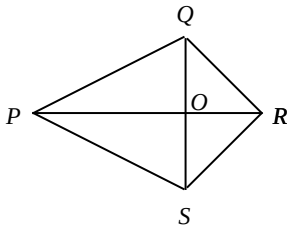
14. Which of the following is the best name for figure *MNOP* with vertices $M(-3,5)$, $N(0,9)$, $O(4,6)$, and $P(1,2)$?
a. parallelogram b. rectangle c. rhombus d. square

15. A pillow is the shape of a kite. Heath wants to create a design connecting opposite corners from point *B* to point *D*, and from point *A* to point *C*. Find the amount of cording needing. One package of cording contains 5 inches of cord. How many packages does Heath need?



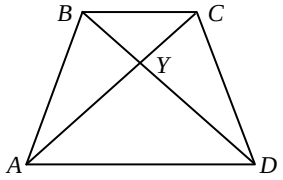
a. about 16.2 in., 4 packages b. about 15.8 in., 4 packages c. about 20.2 in., 5 packages d. about 13.9 in., 3 packages

16. In kite *PQRS*, $m\angle QPO = 50°$ and $m\angle QRO = 70°$. Find $m\angle PSR$.



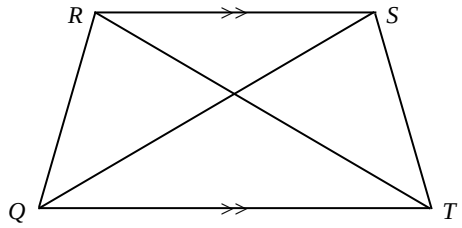
a. $m\angle PSR = 60°$ b. $m\angle PSR = 120°$
c. $m\angle PSR = 100°$ d. $m\angle PSR = 90°$

17. Given isosceles trapezoid *ABCD* with $\overline{AB} \cong \overline{CD}$, $BY = 10.3$, and $AC = 17.2$. Find *YD*.



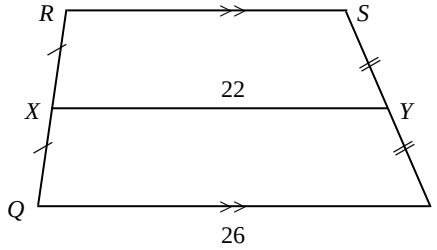
a. *YD* = 6.9 b. *YD* = 17.2 c. *YD* = 10.3
d. *YD* = 8.6

18. $QS = 3x + 4$ and $RT = 8x - 10$. Find the value of *x* so that *QRST* is isosceles.



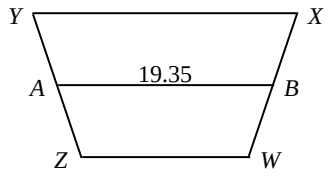
a. $x = 2.8$ b. $x = 0.8$ c. $x = 2$ d. $x = 2.4$

19. Find *RS*.



a. $RS = 18$ b. $RS = 24$ c. $RS = 20$ d. $RS = 16$

20. The perimeter of isosceles trapezoid $WXYZ$ is 55.9. $\overline{AB}$ is the midsegment of $WXYZ$. If $XY = 3(ZY)$, find ZW, WX, XY, and ZY.



a. $ZW = 6.45$; $WX = 18.275$; $XY = 12.9$; $ZY = 18.275$ b. $ZW = 12.9$, $WX = 8.6$, $XY = 25.8$, and $ZY = 8.6$ c. $ZW = 9.316$; $WX = 9.316$; $XY = 27.948$; $ZY = 9.316$ d. $ZW = 7.986$; $WX = 15.972$; $XY = 23.958$; $ZY = 7.986$

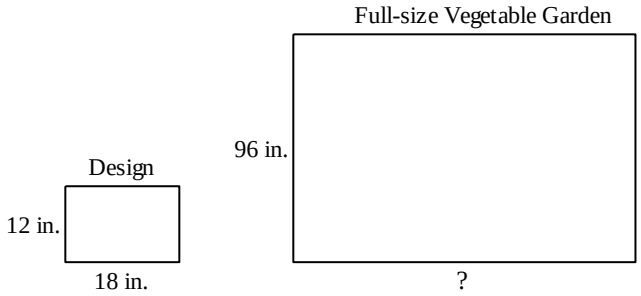
21. Given that two points on line m are $P(7, 11)$ and $Q(12, 9)$, write a ratio expressing the slope of m.
a. $-\frac{2}{5}$ b. $\frac{20}{19}$ c. $-\frac{5}{2}$ d. $\frac{19}{20}$

22. The ratio of the side lengths of a quadrilateral is 3:2:6:7, and its perimeter is 126 meters. What is the length of the shortest side?
a. 14 meters b. 49 meters c. 63 meters d. 7 meters

23. Solve the proportion $\frac{6}{7} = \frac{21}{10w}$.
a. $w = \frac{2}{7}$ b. $w = \frac{9}{5}$ c. $w = \frac{20}{49}$ d. $w = \frac{49}{20}$

24. Given that $10m = 14n$, find the ratio of m to n in simplest form.
a. $\frac{5}{7}$ b. $\frac{10}{14}$ c. $\frac{7}{5}$ d. $\frac{14}{10}$

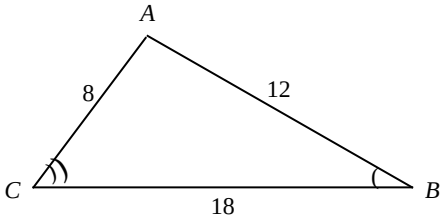
25. Coby designs a rectangular vegetable garden. What will be the length of the full-size vegetable garden?

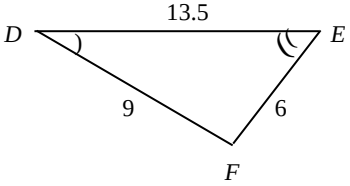


a. 144 in. b. 64 in. c. 2.25 in. d. 164 in.

26. One equilateral triangle has sides 9 ft long. Another equilateral triangle has sides 13 ft long. Find the ratio of the areas of the triangles.
a. $\frac{81}{169}$ b. $\frac{729}{2197}$ c. $\frac{9}{13}$ d. $\frac{88}{169}$

27. Identify the pairs of congruent angles and corresponding sides.





a. $\angle B \cong \angle D$, $\angle C \cong \angle E$, $\angle A \cong \angle F$,

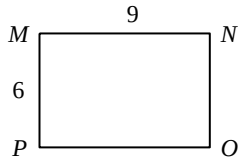
$\frac{EF}{AC} = \frac{DF}{AB} = \frac{DE}{BC} = \frac{3}{4}$

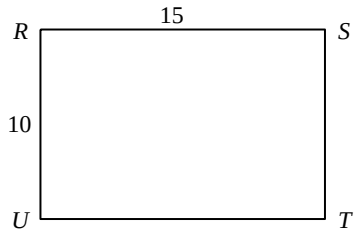
b. $\angle B \cong \angle D$, $\angle C \cong \angle E$, $\angle A \cong \angle F$,
$\frac{AC}{EF} = \frac{AB}{DF} = \frac{BC}{DE} = \frac{3}{4}$

c. $\angle B \cong \angle D$, $\angle C \cong \angle E$, $\angle A \cong \angle F$,
$\frac{EF}{AB} = \frac{DF}{AC} = \frac{DE}{BC} = \frac{1}{2}$

d. $\angle B \cong \angle D$, $\angle C \cong \angle E$, $\angle A \cong \angle F$,
$\frac{AC}{EF} = \frac{DF}{AB} = \frac{DE}{BC} = \frac{4}{3}$

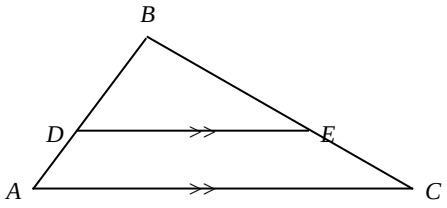
28. Determine whether the rectangles are similar. If so, write the similarity ratio and a similarity statement.





a. The similarity ratio is $\frac{3}{5}$ and rectangle *MNOP* ~ rectangle *RSTU*. b. Rectangles *MNOP* and *RSTU* are not similar. c. The similarity ratio is $\frac{2}{5}$ and rectangle *MNOP* ~ rectangle *RSTU*. d. The similarity ratio is $\frac{2}{3}$ and rectangle *MNOP* ~ rectangle *RSTU*.

29. Explain why the triangles are similar and write a similarity statement.



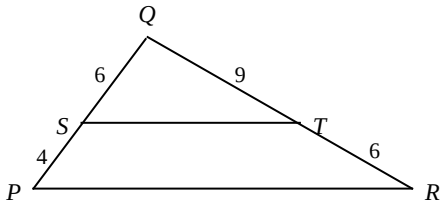
a. $\angle A \cong \angle BDE$ and $\angle C \cong \angle BED$ by the Corresponding Angles Postulate.
$\Delta ABC \sim \Delta DBE$ by AA Similarity.

b. $\angle A \cong \angle BDE$ and $\angle C \cong \angle BED$ by the Alternate Interior Angles Theorem.
$\Delta ABC \sim \Delta DBE$ by AA Similarity.

c. $\angle A \cong \angle BED$ and $\angle C \cong \angle BDE$ by the Alternate Interior Angles Theorem.
$\Delta ABC \sim \Delta EBD$ by AA Similarity.

d. $\angle A \cong \angle BDE$ and $\angle C \cong \angle BED$ by the Corresponding Angles Postulate.
$\Delta ABC \sim \Delta EBD$ by AA Similarity.

30. Verify that $\Delta PQR \sim \Delta SQT$.



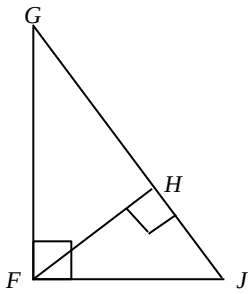
a. $\angle Q \cong \angle Q$ by the Reflexive Property of Congruence.
$\frac{QS}{QP} = \frac{QT}{QR} = \frac{3}{5}$
$\Delta PQR \sim \Delta SQT$ by SAS Similarity.

b. $\angle P \cong \angle QST$ and $\angle R \cong \angle QTS$ by the Corresponding Angles Postulate.
$\Delta PQR \sim \Delta SQT$ by AA Similarity.

c. $\angle P \cong \angle QTS$ and $\angle R \cong \angle QST$ by the Alternate Interior Angles Theorem.
$\Delta PQR \sim \Delta SQT$ by AA Similarity.

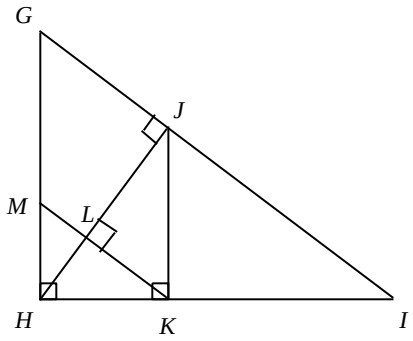
d. $\angle Q \cong \angle Q$ by the Reflexive Property of Congruence.
$\frac{PS}{QP} = \frac{QT}{QR} = \frac{2}{5}$
$\Delta PQR \sim \Delta SQT$ by SAS Similarity.

31. Write a similarity statement comparing the three triangles in the diagram.



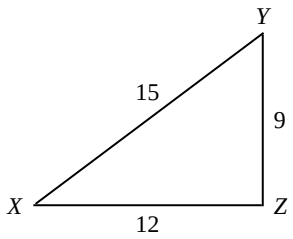
a. $\triangle GFJ \sim \triangle GHF \sim \triangle JHF$
b. $\triangle GFJ \sim \triangle GFH \sim JFH$
c. $\triangle GFJ \sim \triangle FHG \sim \triangle FJH$
d. $\triangle GFJ \sim \triangle GHF \sim \triangle FHJ$

32. Find *GI* and *GH* to the nearest hundredth. *LK* is 3.20 cm and *LJ* is 3.67 cm.



a. *GI* = 13.04 cm; *GH* = 8.57 cm b. *GI* = 20.96 cm; *GH* = 19.44 cm c. *GI* = 24.35 cm; *GH* = 16.00 cm d. *GI* = 18.18 cm; *GH* = 9.40 cm

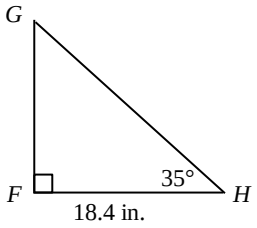
33. Write the trigonometric ratio for cos *X* as a fraction and as a decimal rounded to the nearest hundredth.



a. $\cos X = \frac{12}{9} \approx 1.33$ b. $\cos X = \frac{9}{15} = 0.60$
c. $\cos X = \frac{12}{15} = 0.80$ d. $\cos X = \frac{9}{12} = 0.75$

34. Use your calculator to find the trigonometric ratios sin 79°, cos 47°, and tan 77°. Round to the nearest hundredth.
a. sin 79° = –0.99, cos 47° = –0.44, tan 77° = –32.27 b. sin 79° = –0.44, cos 47° = –0.99, tan 77° = –32.27 c. sin 79°= 0.68, cos 47° = 0.98, tan 77° = 4.33 d. sin 79° = 0.98, cos 47° = 0.68, tan 77° = 4.33

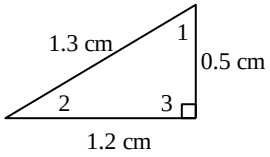
35. Find *GH*. Round to the nearest hundredth.



a. *GH* = 32.08 in. b. *GH* = 15.07 in. c. *GH* = 22.46 in. d. *GH* = 26.28 in.

36. Jessie is building a ramp for loading motorcycles onto a trailer. The trailer is 2.8 feet off of the ground. To avoid making it too difficult to push a motorcycle up the ramp, Jessie decides to make the angle between the ramp and the ground 15°. To the nearest hundredth of a foot, find the length of the ramp.
a. 10.82 feet b. 2.90 feet c. 0.72 feet d. 10.45 feet

37. Use the trigonometric ratio $\sin A = 0.38$ to determine which angle of the triangle is $\angle A$.

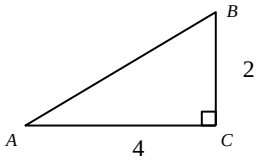


a. $\angle 2$ b. $\angle 1$ c. $\angle 3$ d. No solution.

38. Use your calculator to find the angle measures $\sin^{-1}(0.7)$, $\cos^{-1}(0.3)$, and $\tan^{-1}(38.4)$ to the nearest tenth of a degree.

a. $\sin^{-1}(0.7) = 44.4°$, $\cos^{-1}(0.3) = 72.5°$, $\tan^{-1}(38.4) = 88.5°$ b. $\sin^{-1}(0.7) = 0.8°$, $\cos^{-1}(0.3) = 1.3°$, $\tan^{-1}(38.4) = 1.5°$ c. $\sin^{-1}(0.7) = 1.3°$, $\cos^{-1}(0.3) = 0.8°$, $\tan^{-1}(38.4) = 1.5°$ d. $\sin^{-1}(0.7) = 72.5°$, $\cos^{-1}(0.3) = 44.4°$, $\tan^{-1}(38.4) = 88.5°$

39. Find $\sin\angle A$ to the nearest hundredth.

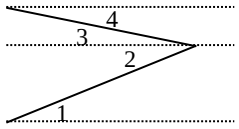


a. $\sin\angle A = 0.45$ b. $\sin\angle A = 0.50$ c. $\sin\angle A = 2.24$ d. $\sin\angle A = 0.89$

40. The coordinates of the vertices of $\triangle RPQ$ are $R(2,-1)$, $P(2,2)$, and $Q(-2,-1)$. Find m$\angle P$.
a. m$\angle P = 53°$ b. m$\angle P = 37°$ c. m$\angle P = 93°$ d. m$\angle P = 42°$

41. Some mountains in the Alps are very steep and have a grade of 42.7%. To the nearest degree, what angle do these mountains make with a horizontal line?
a. 23° b. 67° c. 47° d. 32°

42. Classify each angle in the diagram as an angle of elevation or an angle of depression.



a. Angles of elevation: $\angle 1$, $\angle 3$
Angles of depression: $\angle 2$, $\angle 4$
b. Angles of elevation: $\angle 2$, $\angle 4$
Angles of depression: $\angle 1$, $\angle 3$
c. Angles of elevation: $\angle 1$, $\angle 4$
Angles of depression: $\angle 2$, $\angle 3$
d. Angles of elevation: $\angle 2$, $\angle 3$
Angles of depression: $\angle 1$, $\angle 4$

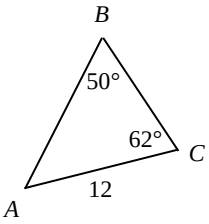
43. The largest Egyptian pyramid is 146.5 m high. When Rowena stands far away from the pyramid, her line of sight to the top of the pyramid forms an angle of elevation of 20° with the ground. What is the horizontal distance between the center of the pyramid and Rowena? Round to the nearest meter.
a. 402 m b. 427 m c. 156 m d. 65 m

44. An eagle 300 feet in the air spots its prey on the ground. The angle of depression to its prey is 15°. What is the horizontal distance between the eagle and its prey? Round to the nearest foot.
a. 1,120 ft b. 1,159 ft c. 310 ft d. 723 ft

45. A pilot flying at an altitude of 1.8 km sights the runway directly in front of her. The angle of depression to the beginning of the runway is 31°. The angle of depression to the end of the runway is 23°. What is the length of the runway? Round to the nearest tenth of a kilometer.
a. 1.2 km b. 0.9 km c. 1.3 km d. 1.0 km

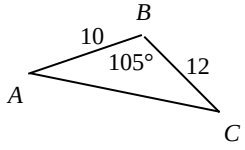
46. Use a calculator to find the trigonometric ratios $\sin 123°$, $\cos 95°$, and $\tan 125°$. Round to the nearest hundredth.
a. $\sin 123° = -0.09$, $\cos 95° = 0.84$, $\tan 125° = -1.43$ b. $\sin 123° = -0.46$, $\cos 95° = 0.73$, $\tan 125° = -0.78$ c. $\sin 123° = 0.84$, $\cos 95° = -0.09$, $\tan 125° = -1.43$ d. $\sin 123° = 0.84$, $\cos 95° = 0.996194698092$, $\tan 125° = -1.43$

47. Find *AB*. Round to the nearest tenth.



a. $AB = 13.8$ b. $AB = 10.4$ c. $AB = 33.8$ d. $AB = 14.5$

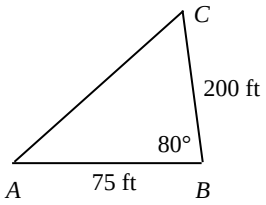
48. Find *AC*. Round to the nearest tenth.



a. $AC = 17.5$ b. $AC = 306.1$ c. $AC = 16.6$

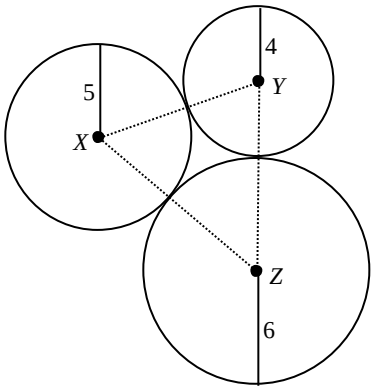
d. $AC = 10.3$

49. A dam needs a supporting beam. The dam leans at an $80°$ angle and is 200 ft tall. If the base of the supporting beam is placed 75 feet from the base of the dam and the beam extends to the top of the dam, how long must the beam be?



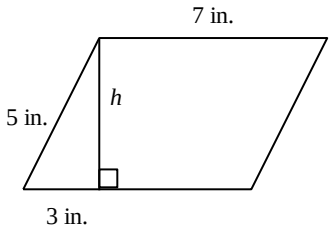
a. 201.0 ft b. 40,415.6 ft c. 170.8 ft d. 221.2 ft

50. Three circular disks are placed next to each other as shown. The disks have radii of 4 cm, 5 cm, and 6 cm. The centers of the disks form $\triangle YXZ$. Find $m\angle YXZ$ to the nearest degree.



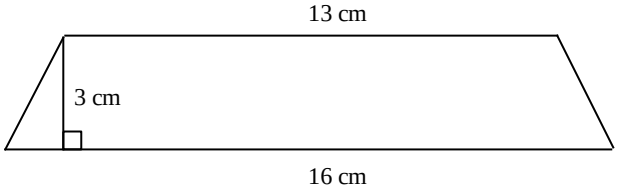
a. $m\angle YXZ = 65°$ b. $m\angle YXZ = 90°$ c. $m\angle YXZ = 59°$ d. $m\angle YXZ = 51°$

51. Find the area of the parallelogram.



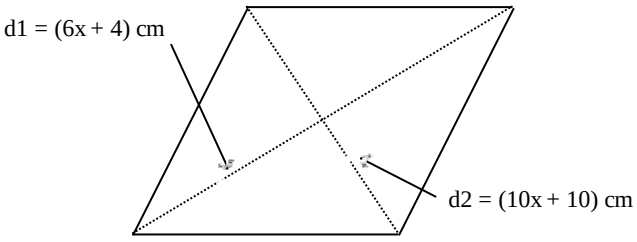
a. 35 in^2 b. 14 in^2 c. 21 in^2 d. 28 in^2

52. Find the area of a trapezoid, in which $b_1 = 13$ cm, $b_2 = 16$ cm, and $h = 3$ cm.



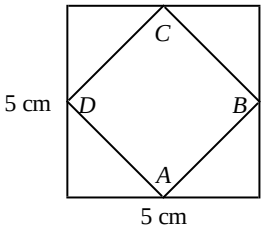
a. 4.5 cm^2 b. 32 cm^2 c. 43.5 cm^2 d. 87 cm^2

53. Find the area of the rhombus.



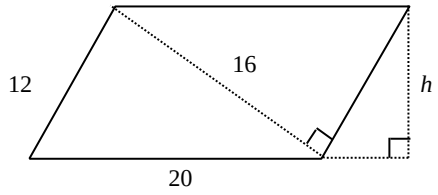
a. $(30x^2 + 50x + 20)$ cm^2 b. $(200x^3)$ cm^2 c. $(30x^2 + 100x + 40)$ cm^2 d. $(60x^2 + 100x + 40)$ cm^2

54. The vertices of square *ABCD* are the midpoints of the sides of a larger square. Find the perimeter and the area of square *ABCD*. Round to the nearest hundredth.



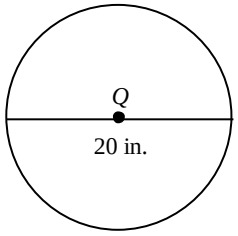
a. perimeter = 3.54 cm; area = 12.5 cm^2 b. perimeter = 3.54 cm; area = 25 cm^2 c. perimeter = 14.14 cm; area = 12.5 cm^2 d. perimeter = 14.14; area = 25 cm^2

55. Find *h* in the parallelogram.



a. 4.8 units b. 96 units c. 9.6 units d. 15 units

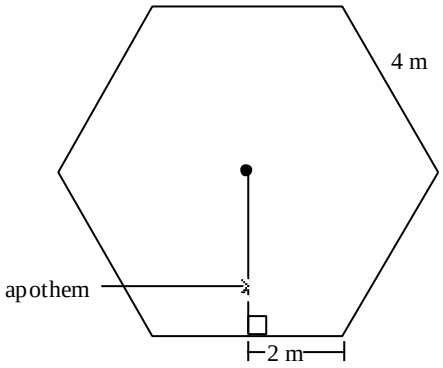
56. Find the area of $\odot Q$ in terms of π.



a. 400π cm^2 b. 100 cm^2 c. 200π cm^2 d. 100π cm^2

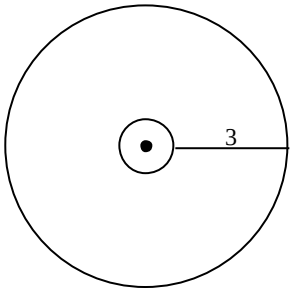
57. A store sells circular rugs in three different sizes. The rugs come in diameters of 8 ft, 12 ft, and 16 ft. Find the areas of the three different sizes of rugs. Use 3.14 for π and round answers to the nearest tenth.
a. 201.0 ft^2; 452.2 ft^2; 803.8 ft^2 b. 113.0 ft^2; 201.0 ft^2; 452.4 ft^2 c. 50.2 ft^2; 113.0 ft^2; 201.0 ft^2
d. 50.2 ft^2; 201.0 ft^2; 452.2 ft^2

58. Find the area of a regular hexagon with side length 4 m. Round to the nearest tenth.



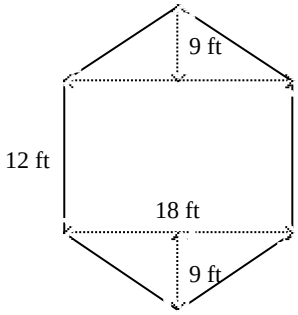
a. 83.1 m^2 b. 24 m^2 c. 41.6 m^2 d. 20.8 m^2

59. Two circles have the same center. The radius of the larger circle is 3 units longer than the radius of the smaller circle. Find the difference in the circumferences of the two circles. Round to the nearest hundredth.



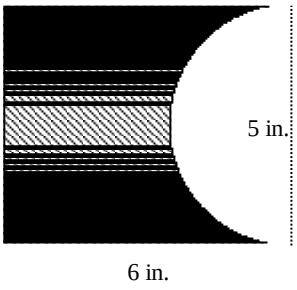
a. 6.00 units b. 18.84 units c. 9.42 units
d. 28.26 units

60. Find the area of the composite figure.



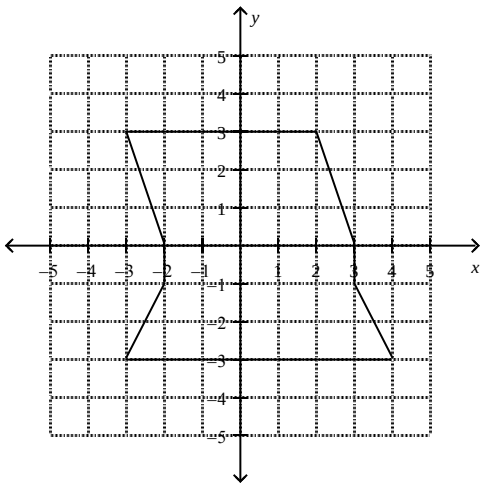
a. 216 ft^2 b. 297 ft^2 c. 378 ft^2 d. 540 ft^2

61. Find the shaded area. Round to the nearest tenth.



a. 20.2 in^2 b. 10.4 in^2 c. 25.5 in^2 d. 13.3 in^2

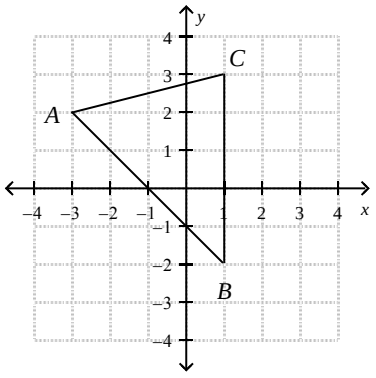
62. A home owner wants to make a new deck for his backyard. Redwood costs $5 per square foot. The units on the graph are in feet. How much will it cost to create the deck shown?



a. $160 b. $38 c. $200 d. $190

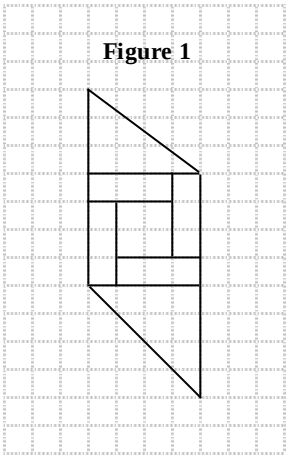
63. Find the area and perimeter of the polygon with vertices $A(-3, 0)$, $B(3, 4)$, $C(5, 1)$, and $D(-1, -3)$.
a. area = 26 $units^2$; perimeter = $4\sqrt{13}$ units
b. area = 13 $units^2$; perimeter = $4\sqrt{13}$ units
c. area = 13 $units^2$; perimeter = $6\sqrt{13}$ units
d. area = 26 $units^2$; perimeter = $6\sqrt{13}$ units

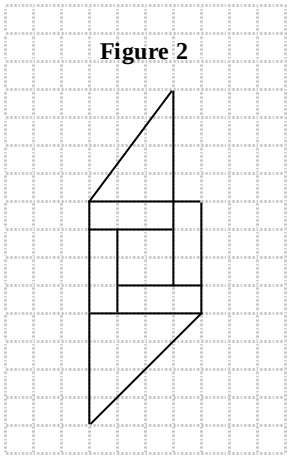
64. Find the area of the triangle with vertices $A(-3, 2)$, $B(1, -2)$, and $C(1, 3)$.



a. 10 $units^2$ b. 20 $units^2$ c. 8 $units^2$
d. 12 $units^2$

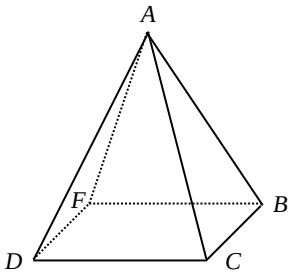
65. In the puzzle, the two figures are made up of the same pieces, but the figures appear to have different areas. Compare their areas and explain why they are or are not the same.





a. The areas are not equal. The sides of one of the triangles changed, thereby changing its area.
b. The areas are equal. One triangle has side lengths of three and four, which, when rotated, creates the appearance of a larger area. c. The areas are equal. One rectangle has side lengths of three and one, which, when rotated, creates the appearance of a larger area. d. The areas are not equal. The sides of one of the rectangles changed, thereby changing its area.

66. Classify the figure. Name the vertices, edges, and base.



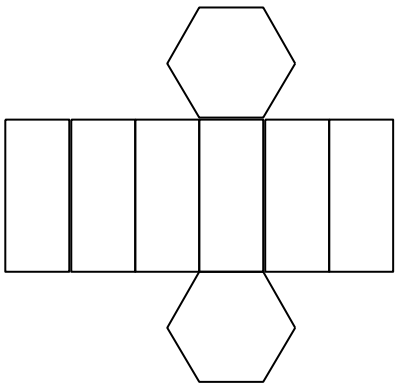
a. triangular pyramid
vertices: *A*, *B*, *C*, *D*, *F*
edges: $\overline{AB}$, $\overline{AC}$, $\overline{AD}$, $\overline{BC}$
base: triangle *ABC*

b. triangular pyramid
vertices: *A*, *B*, *C*, *D*, *F*
edges: $\overline{AB}$, $\overline{AC}$, $\overline{AD}$, $\overline{AF}$, $\overline{FB}$, $\overline{BC}$, $\overline{CD}$, $\overline{DF}$
base: rectangle *DCBF*

c. rectangular pyramid
vertices: *A*, *B*, *C*, *D*, *F*
edges: $\overline{AB}$, $\overline{AC}$, $\overline{AD}$, $\overline{BC}$
base: rectangle *DCBF*

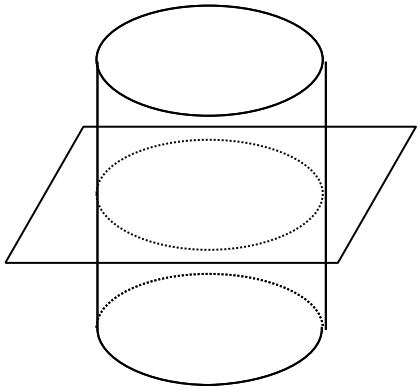
d. rectangular pyramid
vertices: *A*, *B*, *C*, *D*, *F*
edges: $\overline{AB}$, $\overline{AC}$, $\overline{AD}$, $\overline{AF}$, $\overline{FB}$, $\overline{BC}$, $\overline{CD}$, $\overline{DF}$
base: rectangle *DCBF*

67. Describe the three-dimensional figure that can be made from the given net.



a. hexagonal prism b. hexagonal pyramid
c. cylinder d. pentagonal pyramid

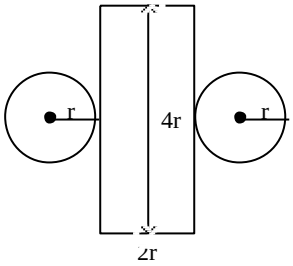
68. Describe the cross section.



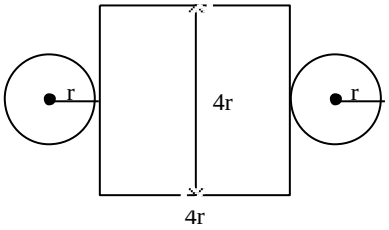
a. The cross section is a circle. b. The cross section is a cylinder. c. The cross section is a plane. d. The cross section is a parallelogram.

69. Draw a pattern that can be used to create a cylinder with diameter equal to half the height.

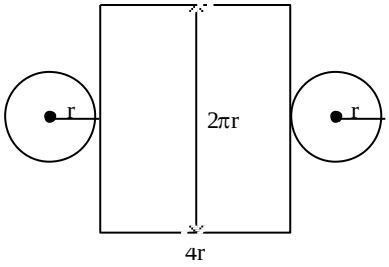
a.



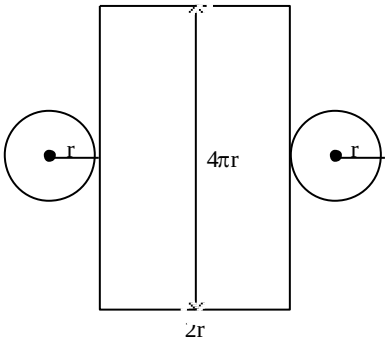
b.



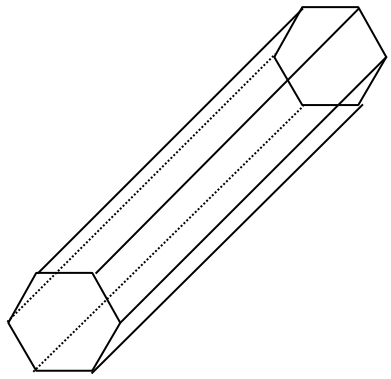
c.



d.



70. Find the number of vertices, edges, and faces of the given polyhedron.



a. vertices: 6
edges: 18
faces: 12

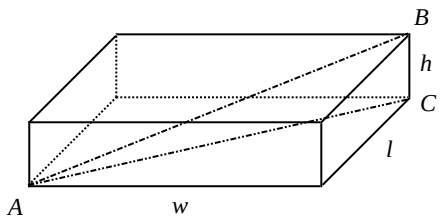
b. vertices: 6
edges: 12
faces: 18

c. vertices: 12
edges: 18
faces: 8

d. vertices: 18
edges: 6
faces: 12

71. Find the height of a rectangular prism with a 3 in. by 4 in. base and a 7 in. diagonal. Round to the nearest tenth.
a. 24.0 in. b. 74.0 in. c. 4.9 in. d. 8.6 in.

72. A rectangular prism has length *l*, width *w*, and height *h*. Find the length of the diagonal from *A* to *B* in terms of *l*, *w*, and *h*.



a. $lw + lh + wh$

b. $l^2 + w^2 + h^2$

c. $\frac{l}{2} + \frac{w}{2} + \frac{h}{2}$

d. $\sqrt{l^2 + w^2 + h^2}$

73. Find the lateral area and surface area of a regular triangular right prism with base edge 7 cm and height 11 cm. Round to the nearest tenth.

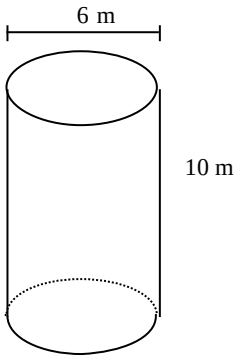
a. lateral area: $= 231 \text{ cm}^2$;
surface area: 21 cm^2

b. lateral area: 231 cm^2;
surface area: 273.4 cm^2

c. lateral area: 21 cm^2;
surface area: $= 231 \text{ cm}^2$

d. lateral area: 273.4 cm^2;
surface area: 231 cm^2

74. Find the lateral area and surface area of the right cylinder. Give your answer in terms of π.



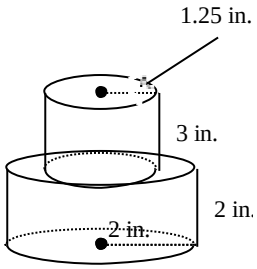
a. lateral area: $30\pi \text{ m}^2$;
surface area: $132\pi \text{ m}^2$

b. lateral area: $78\pi \text{ m}^2$;
surface area: $= 60\pi \text{ m}^2$

c. lateral area: $30\pi \text{ m}^2$;
surface area: $69\pi \text{ m}^2$

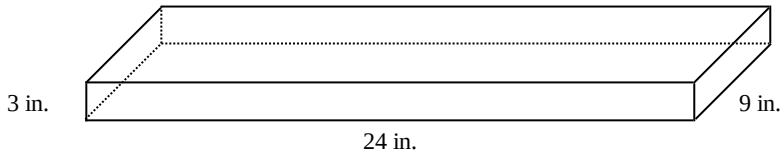
d. lateral area: $= 60\pi \text{ m}^2$;
surface area: $78\pi \text{ m}^2$

75. Find the surface area of the composite figure. Use 3.14 for π. Round to the nearest hundredth.



a. 73.79 in^2 b. 48.69 in^2 c. 89.54 in^2
d. 61.26 in^2

76. The length, width, and height of the right rectangular prism are tripled. Describe the effect on the surface area.



a. The surface area is multiplied by 3. b. The surface area is multiplied by 9. c. The surface area is multiplied by 27. d. The surface area is multiplied by 81.

77. If two pieces of ice have the same volume, the one with the greater surface area will melt faster because more of its surface area is exposed to the air, which is warmer than the ice. Four pieces of ice $(P_1, P_2, P_3, \text{and } P_4)$ have the same volume. Each piece of ice is shaped like a rectangular prism. Which piece of ice melts the fastest?

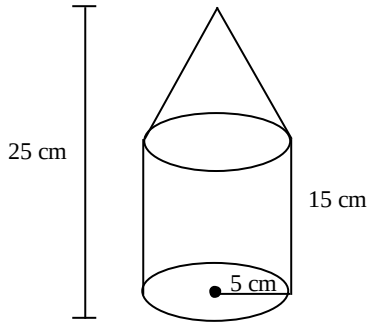
Piece	Length	Width	Height
P_1	32 ft	3 ft	3 ft
P_2	18 ft	4 ft	4 ft
P_3	16 ft	6 ft	3 ft
P_4	18 ft	8 ft	2 ft

a. P_1 b. P_2 c. P_3 d. P_4

78. Find the lateral area and surface area of a regular square pyramid with base edge length 6 m and slant height 8 m.
   a. lateral area: $132\ \text{m}^2$; surface area: $96\ \text{m}^2$
   b. lateral area: $96\ \text{m}^2$; surface area: $132\ \text{m}^2$
   c. lateral area: $132\ \text{m}^2$; surface area: $48\ \text{m}^2$
   d. lateral area: $48\ \text{m}^2$; surface area: $132\ \text{m}^2$

79. Find the lateral area and surface area of a right cone with radius 6 in. and height 8 in. Give your answers in terms of π.
   a. lateral area: $60\pi\ \text{in}^2$; surface area: $96\pi\ \text{in}^2$
   b. lateral area: $96\pi\ \text{in}^2$; surface area: $60\pi\ \text{in}^2$
   c. lateral area: $36\pi\ \text{in}^2$; surface area: $96\pi\ \text{in}^2$
   d. lateral area: $60\pi\ \text{in}^2$; surface area: $72\pi\ \text{in}^2$

80. Find the surface area of the composite figure. Round to the nearest square centimeter.



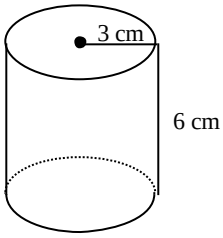
a. 550 cm^2 b. 656 cm^2 c. 725 cm^2 d. 814 cm^2

81. Find the volume of a right rectangular prism with length 12 in., width 10 in., and height 6 in. Round to the nearest tenth, if necessary.
a. 240 in^2 b. 720 in^3 c. 2,400 in^3 d. 360 in^3

82. A fish tank is in the shape of a rectangular prism. The height of the tank is 18 in. The width of the tank is 17 in. The length of the tank is 38 in. Find the amount of water the tank can hold to the nearest gallon. (*Hint*: 1 gallon $\approx$ 0.134 ft^3.)
a. 7 gallons b. 50 gallons c. 130 gallons
d. 7,231 gallons

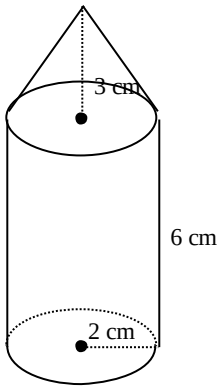
83. Find the volume of a cylinder with a base area of 25π in^2 and height equal to the radius. Give your answer both in terms of π and rounded to the nearest tenth.
a. 156.3π $in^3 \approx 490.9$ in^3 b. $25\pi^2$ $in^3 \approx 246.7$ in^3
c. 625π $in^3 \approx 1,963.5$ in^3
d. 125π $in^3 \approx 392.7$ in^3

84. The radius and height of the cylinder are multiplied by 4. Describe the effect on the volume.



a. The volume is multiplied by 4. b. The volume is multiplied by 8. c. The volume is multiplied by 16. d. The volume is multiplied by 64.

85. Find the volume of the composite figure. Round to the nearest tenth. (*Hint*: Volume of a cone is $V = \frac{1}{3}\pi r^2 h$.)

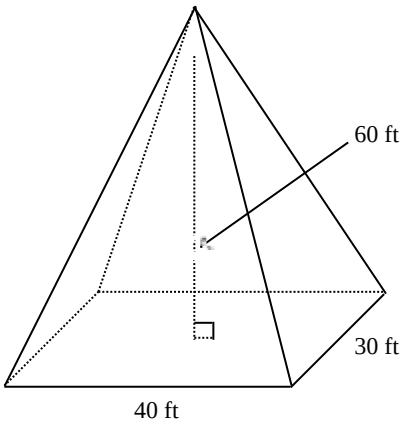


a. 88.0 cm^3 b. 12.6 cm^3 c. 75.4 cm^3 d. 28.0 cm^3

86. Find the volume of a rectangular pyramid with length 11 m, width 7 m, and height 8 m. Round to the nearest tenth, if necessary.
a. 308 m^3 b. 205.3 m^3 c. 616 m^3 d. 68.4 m^3

87. The base area of a model square pyramid is 1,000 sq ft. The height of the pyramid is 100 ft. Find the volume of the pyramid in cubic feet. Round to the nearest cubic foot.
a. 100,000 ft^3 b. 33,333 ft^3 c. 100,000,000 ft^3
d. 1,054 ft^3

88. The length, width, and height of the rectangular pyramid are multiplied by $\frac{1}{3}$. Describe the effect on the volume.



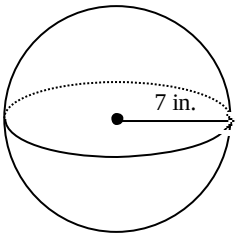
a. The volume is multiplied by $\frac{1}{3}$. b. The volume is multiplied by $\frac{1}{9}$. c. The volume is multiplied by $\frac{1}{27}$. d. The volume is multiplied by $\frac{1}{81}$.

89. Find the diameter of a sphere with volume 972π in^3.
a. 28.6 in. b. 18 in. c. 12.5 in. d. 9 in.

90. Find the volume of a sphere with diameter 30 ft. Give your answer in terms of π.
a. $36,000\pi$ ft^3 b. $4,500\pi$ ft^3 c. 40π ft^3
d. $2,250\pi$ ft^3

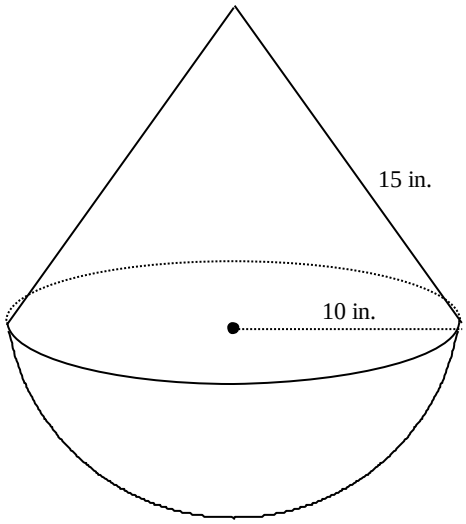
91. A human's eyeball is shaped like a sphere with a diameter of 2.5 cm. A dog's eyeball is shaped like a sphere with a diameter of 1.75 cm. About how many times greater is the volume of a human's eyeball than the volume of a dog's eyeball?
a. about 1.5 times greater b. about 3 times greater
c. about 8 times greater d. about 23 times greater

92. The radius of the sphere is multiplied by $\frac{1}{2}$. Describe the effect on the volume.



a. The volume is divided by 2. b. The volume is divided by 3. c. The volume is divided by 4. d. The volume is divided by 8.

93. Find the surface area and volume of the composite figure. Give your answer in terms of π.



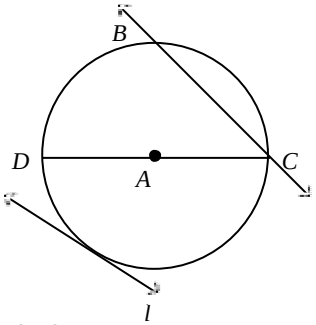
a. surface area: $350\pi in^2$;
volume: $\frac{2150}{3}\pi in^3$

b. surface area: $350\pi in^2$;
volume: $\frac{50\left(\sqrt{5}+40\right)}{3}\pi in^3$

c. surface area: $350\pi in^2$;
volume: $\frac{2150}{3}\pi in^3$

d. surface area: $550\pi in^2$;
volume: $\frac{50\left(\sqrt{5}+40\right)}{3}\pi in^3$

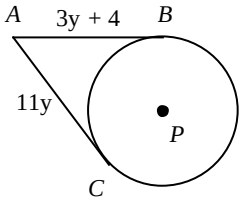
94. Identify the secant that intersects $\odot A$.



a. $\overleftrightarrow{BC}$ b. l c. $\overline{DC}$ d. $\overline{DA}$

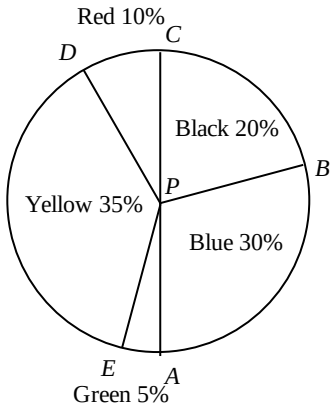
95. A satellite rotates 50 miles above Earth's atmosphere. An astronaut works on the satellite and sees the sun rise over Earth. To the nearest mile, what is the distance from the astronaut to the horizon? (*Hint*: Earth's radius is about 4,000 miles.)
a. 634 mi b. 402,500 mi c. 630 mi
d. 397,500 mi

96. $\overline{AB}$ and $\overline{AC}$ are tangent to $\odot P$. Find AB.



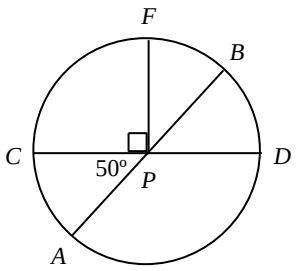
a. $AB = \frac{11}{2}$ b. $AB = \frac{1}{2}$ c. $AB = 2$ d. $AB = 10$

97. The circle graph shows the colors of automobiles sold at a car dealership. Find $m\overset{\frown}{CD}$.



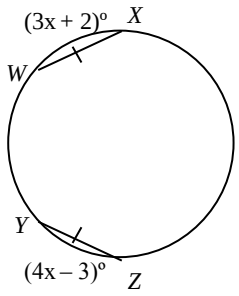
a. $m\overset{\frown}{CD} = 36°$ b. $m\overset{\frown}{CD} = 10°$ c. $m\overset{\frown}{CD} = 170°$ d. $m\overset{\frown}{CD} = 20°$

98. Find $m\overset{\frown}{CFB}$.



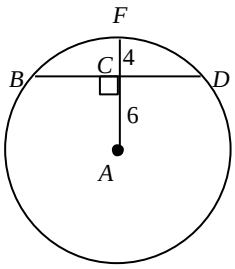
a. $m\overset{\frown}{CFB} = 130°$ b. $m\overset{\frown}{CFB} = 140°$ c. $m\overset{\frown}{CFB} = 230°$ d. $m\overset{\frown}{CFB} = 90°$

99. $\overline{WX} \cong \overline{YZ}$. Find $m\overset{\frown}{WX}$.



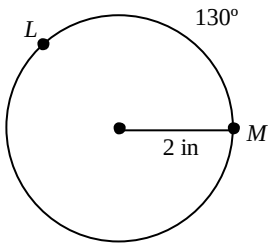
a. $m\overset{\frown}{WX} = 17°$ b. $m\overset{\frown}{WX} = 5°$ c. $m\overset{\frown}{WX} = 1°$ d. $m\overset{\frown}{WX} = 23°$

100. Find BD.



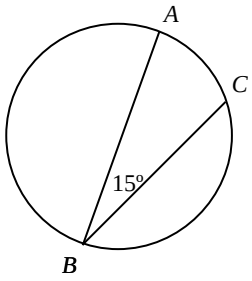
a. $BD = 16$ b. $BD = 8$ c. $BD = 5$ d. $BD = 10$

101. Find the arc length of an arc with measure 130° in a circle with radius 2 in. Round to the nearest tenth.



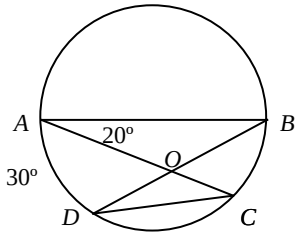
a. 4.5 in b. 2.3 in c. 10.2 in d. 0.5 in

102. Find $m\overset{\frown}{AC}$.



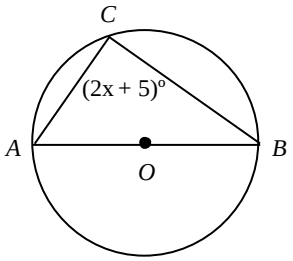
a. $m\overset{\frown}{AC} = 30°$ b. $m\overset{\frown}{AC} = 15°$ c. $m\overset{\frown}{AC} = 20°$
d. $m\overset{\frown}{AC} = 12.5°$

103. A wheel from a motor has springs arranged as in the figure. Find $m\angle DOC$.



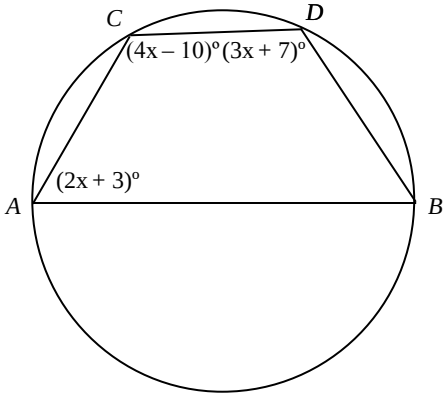
a. $m\angle DOC = 145°$ b. $m\angle DOC = 150°$
c. $m\angle DOC = 140°$ d. $m\angle DOC = 130°$

104. Solve for *x*.



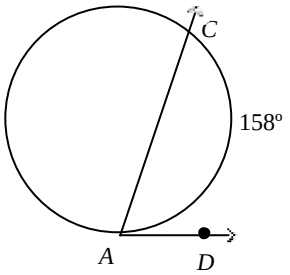
a. $x = 42.5$ b. $x = 90$ c. $x = 87.5$ d. $x = 27.5$

105. Find the angle measures of *ABCD*.



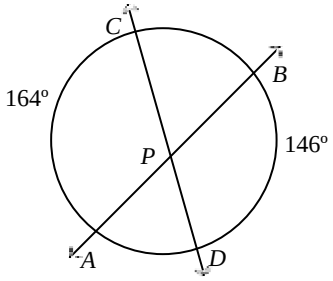
a. $m\angle A = 71°$, $m\angle B = 54°$, $m\angle C = 126°$, and $m\angle D = 109°$ b. $m\angle A = 34°$, $m\angle B = 54°$, $m\angle C = 126°$, and $m\angle D = 146°$ c. $m\angle A = 35°$, $m\angle B = 134°$, $m\angle C = 54°$, and $m\angle D = 145°$
d. $m\angle A = 71°$, $m\angle B = 50°$, $m\angle C = 130°$, and $m\angle D = 109°$

106. Find $m\angle CAD$.



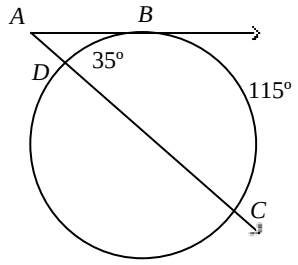
a. $m\angle CAD = 79°$ b. $m\angle CAD = 158°$
c. $m\angle CAD = 90°$ d. $m\angle CAD = 89°$

107. Find $m\angle BPD$.



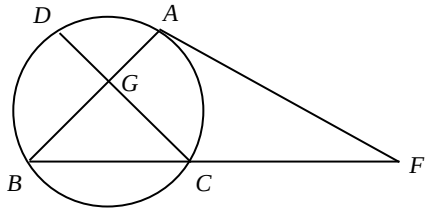
a. m$\angle BPD = 155°$ b. m$\angle BPD = 9°$
c. m$\angle BPD = 146°$ d. m$\angle BPD = 164°$

108. Find m$\angle A$.



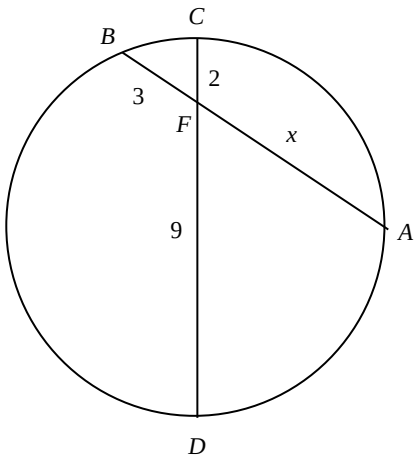
a. m$\angle A = 40°$ b. m$\angle A = 80°$ c. m$\angle A = 75°$
d. m$\angle A = 20°$

109. Given m$\angle AFB = 25°$, m$\angle BAF = 105°$, and m$\angle AGD = 86°$, find m$\overset{\frown}{AC}$.



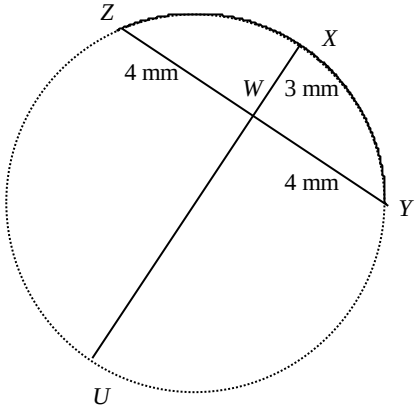
a. m$\overset{\frown}{AC} = 50°$ b. m$\overset{\frown}{AC} = 100°$ c. m$\overset{\frown}{AC} = 130°$ d. m$\overset{\frown}{AC} = 105°$

110. Find the value of *x* and the length of each chord.



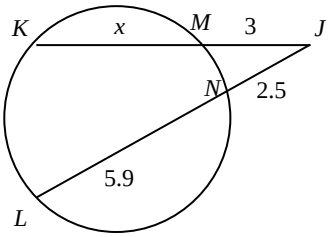
a. $x = 13.5$; $AB = 16.5$; $CD = 11$
b. $x = 10$; $AB = 13$; $CD = 11$
c. $x = 9$; $AB = 12$; $CD = 11$
d. $x = 6$; $AB = 9$; $CD = 11$

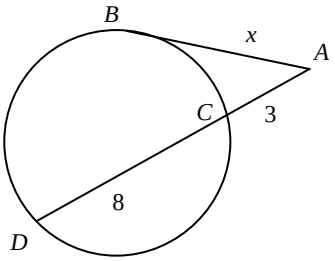
111. Archaeologists found a piece of an old coin. To calculate its original diameter, they drew a chord $\overline{XU}$ and its perpendicular bisector $\overline{ZY}$. Find the coin's diameter.



a. $5\frac{1}{3}$ mm b. 8 mm c. $8\frac{1}{3}$ mm d. 16 mm

112. Find the value of *x* and the length of each secant segment.





a. $x = 4$; $KJ = 7$; $LJ = 8.4$ b. $x = 5.4$; $KJ = 8.4$; $LJ = 8.4$ c. $x = 7$; $KJ = 4$; $LJ = 2.5$ d. $x = 7.08$; $KJ = 10.08$; $LJ = 8.4$

a. 3.32 b. 4.90 c. 5.74 d. 11.00

113. Find the value of x. Round to the nearest hundredth.

114. Write the equation of a circle with center $M(7, -10)$ and radius 2.
a. $(x+10)^2 + (y-7)^2 = 4$ b. $(x-y)^2 + (7+10)^2 = 4$ c. $(x-7)^2 + (y+10)^2 = 4$ d. $(x-7)^2 + (y+10)^2 = 2$

Matching

Match each vocabulary term with its definition.

a. concave
b. convex
c. diagonal
d. regular polygon
e. side of a polygon
f. vertex of a polygon
g. quadrilateral
h. trapezoid

1. a segment that connects any two nonconsecutive vertices of a polygon
2. a polygon in which a diagonal can be drawn such that part of the diagonal contains points in the exterior of the polygon
3. a polygon in which no diagonal contains points in the exterior of the polygon
4. one of the segments that forms a polygon
5. a polygon that is both equilateral and equiangular
6. the common endpoint of two sides of the polygon

Match each vocabulary term with its definition.

a. base of a trapezoid
b. base angle of a trapezoid
c. rectangle
d. rhombus
e. trapezoid
f. midsegment of a trapezoid
g. leg of a trapezoid
h. isosceles trapezoid

7. a quadrilateral with exactly one pair of parallel sides
8. the segment whose endpoints are the midpoints of the legs of the trapezoid
9. one of the two nonparallel sides of the trapezoid
10. a trapezoid in which the legs are congruent
11. one of the two parallel sides of the trapezoid
12. one of a pair of consecutive angles whose common side is a base of the trapezoid

Match each vocabulary term with its definition.

a. kite

b. trapezoid
c. rectangle
d. polygon
e. square
f. rhombus
g. parallelogram

13. a quadrilateral with four right angles
14. a quadrilateral with four congruent sides and four right angles
15. a quadrilateral with four congruent sides
16. a quadrilateral with two pairs of parallel sides
17. a quadrilateral with exactly two pairs of congruent consecutive sides

2015 Geometry Final review
Answer Section

MULTIPLE CHOICE

1. A
2. B
3. C
4. D
5. A
6. C
7. C
8. B
9. A
10. A
11. A
12. A
13. A
14. D
15. C
16. A
17. A
18. A
19. A
20. B
21. A
22. A
23. D
24. C
25. A
26. A
27. A
28. A
29. A
30. A
31. D
32. A
33. C
34. D
35. C
36. A
37. A
38. A
39. A
40. A

41. A
42. A
43. A
44. A
45. A
46. C
47. A
48. A
49. A
50. C
51. D
52. C
53. A
54. C
55. C
56. D
57. C
58. C
59. B
60. C
61. A
62. A
63. D
64. A
65. B
66. D
67. A
68. A
69. C
70. C
71. C
72. D
73. B
74. D
75. A
76. B
77. A
78. B
79. A
80. C
81. B
82. B
83. D
84. D
85. A
86. B
87. B

88. C
89. B
90. B
91. B
92. D
93. B
94. A
95. A
96. A
97. A
98. A
99. A
100. A
101. A
102. A
103. A
104. A
105. A
106. A
107. A
108. A
109. B
110. D
111. C
112. A
113. C
114. C

MATCHING

1. C
2. A
3. B
4. E
5. D
6. F

7. E
8. F
9. G
10. H
11. A
12. B

13. C
14. E
15. F

16. G
17. A