

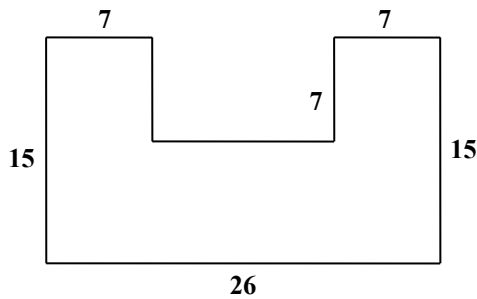
Geometry H Semester 2 Practice Exam

Note: Diagrams and figures on this assessment are not necessarily drawn to scale.

1. A tire has a radius of 15 inches. What is the approximate circumference, in inches, of the tire?

A. 47 in.
B. 94 in.
C. 188 in.
D. 707 in.

2. In the figure below, adjacent sides of the polygon are perpendicular.



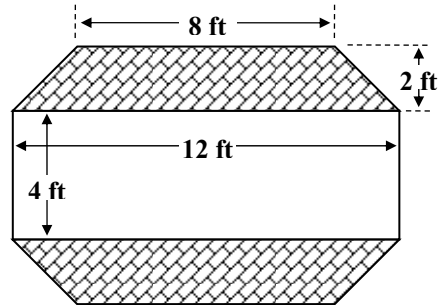
What is the perimeter of the figure?

A. 77
B. 82
C. 89
D. 96

3. The length of a rectangular patio is 32 feet. Its area is 800 square feet. What is the perimeter of the patio in feet?

A. 25 ft
B. 57 ft
C. 114 ft
D. 368 ft

4. A rectangular garden is to be edged with decorative brick as shown by the shaded region in the figure. The flower garden is 4 feet by 12 feet. The trapezoids are 2 feet high.



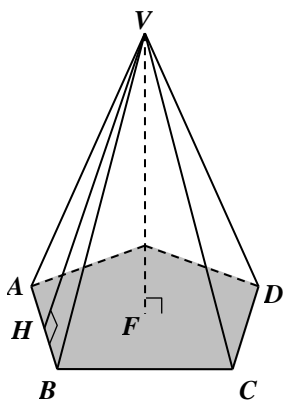
What is the area of the decorative edge (the shaded region) in square feet?

A. 20 ft^2
B. 26 ft^2
C. 40 ft^2
D. 48 ft^2

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5. Given the figure below:



What is the best description of \overline{VF} ?

- A. altitude
- B. base edge
- C. lateral edge
- D. slant height

6. The surface area of a cylinder is $2 \times (\text{Area of Base}) + (\text{Circumference of the Base}) \times \text{height}$.

In the cylinder below, the radius is 4 centimeters and surface area is 72π square centimeters.



What is the height of the cylinder?

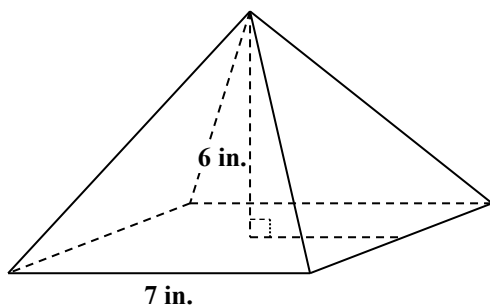
- A. 4 cm
- B. 5 cm
- C. 6 cm
- D. 9 cm

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7. A regular pyramid has height of 6 inches and the measure of the base edge is 7 inches.

$$\text{Volume} = \frac{1}{3} \times (\text{Area of Base}) \times \text{height}$$

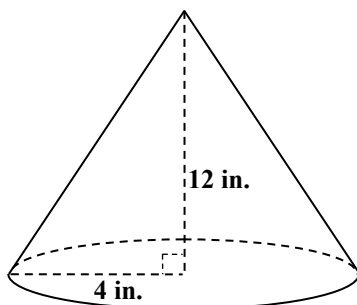


What is the volume of the pyramid?

- A. 49 in.³
 - B. 98 in.³
 - C. 147 in.³
 - D. 294 in.³
-

8. What is the volume of the cone below?

$$\text{Volume} = \frac{1}{3} \times (\text{Area of Base}) \times \text{height}$$



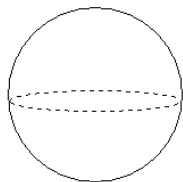
- A. 192π in.³
- B. 96π in.³
- C. 64π in.³
- D. 48π in.³

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9. A group of students wants to make a fabric toy ball to donate to the canine rescue. The diameter of the ball is 3 inches.

Surface area = $4 \times$ (Area of a Great Circle).

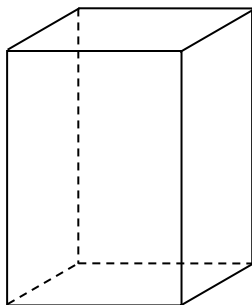


Approximately how many square inches of fabric will they need for each ball?

- A. 29 in.²
 - B. 57 in.²
 - C. 76 in.²
 - D. 114 in.²
-

10. A cereal box is 18 inches by 3 inches by 12 inches. After breakfast, the box is one-third full.

Volume = (Area of Base) \times height



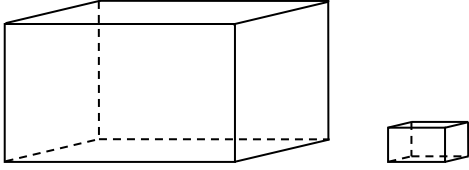
How many cubic inches of cereal are left inside?

- A. 36 in.³
- B. 72 in.³
- C. 216 in.³
- D. 648 in.³

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11. Two similar rectangular prisms have a scale factor of 4:1. The smaller prism has a volume of 6 cubic centimeters.



What is the volume of the larger prism in cubic centimeters?

- A. 24 cm^3
 - B. 96 cm^3
 - C. 384 cm^3
 - D. 1536 cm^3
12. A pizza parlor has two different sizes of circular pizzas. The smaller one has a diameter of 12 inches and the larger one has a diameter of 20 inches.

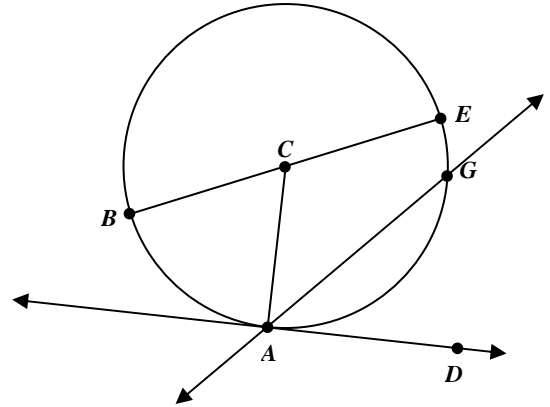
What is the ratio of their areas?

- A. 9:25
- B. 3:5
- C. $2\sqrt{3} : 2\sqrt{5}$
- D. $\sqrt{6} : \sqrt{10}$

13. Which accurately describes a tangent?

- A. A segment whose endpoints are on the circle.
- B. A line that intersects a circle in two points and passes through the center of the circle.
- C. A segment having an endpoint on the circle and an endpoint at the center of the circle.
- D. A line that intersects a circle at exactly one point.

14. Use the figure below.



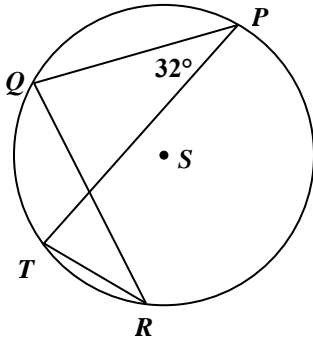
Which of the following represent a secant?

- A. \overleftrightarrow{AG}
- B. \overline{BE}
- C. \overline{CA}
- D. \overleftrightarrow{DA}

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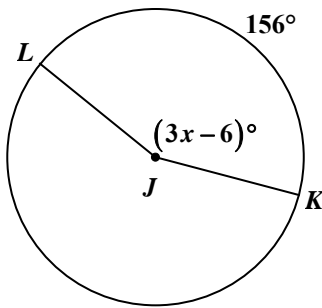
15. In circle S below,



The $m\angle QPT = 32^\circ$, what is the measure of $\angle QRT$?

- A. 16°
- B. 32°
- C. 64°
- D. 128°

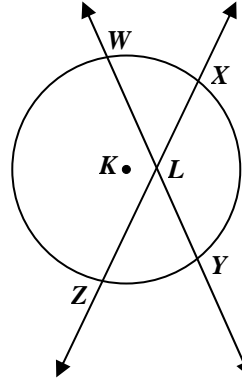
16. Use circle J below.



What is the value of x ?

- A. 78
- B. 54
- C. 50
- D. 27

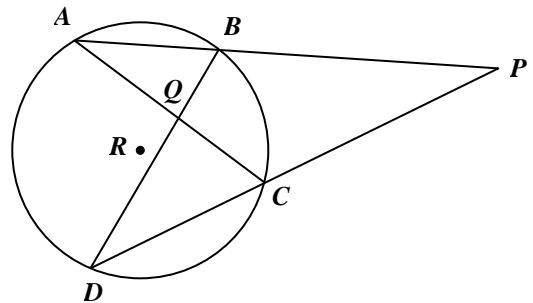
17. In $\square K$, $m\angle XY = (7x - 9)^\circ$,
 $m\angle WZ = 3(2x + 15)^\circ$, and
 $m\angle XLY = 148^\circ$.



What is the value of x ?

- A. 20
- B. 54
- C. 131
- D. 350

18. In the figure below, $m\angle BC = 75^\circ$ and
 $m\angle AD = 135^\circ$,



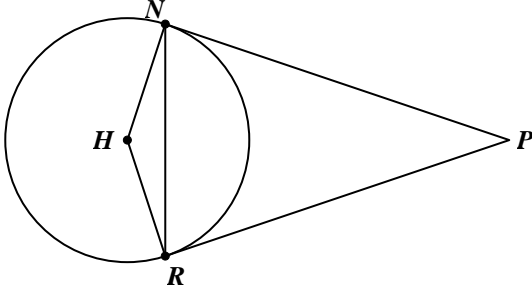
What is $m\angle P$?

- A. 15°
- B. 30°
- C. 45°
- D. 60°

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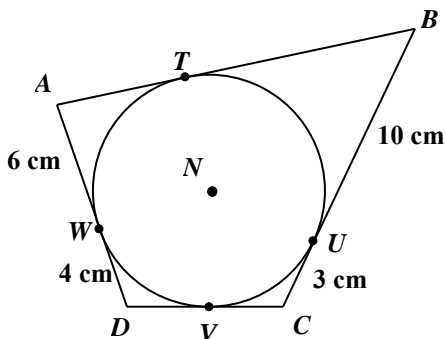
Note: Diagrams and figures on this assessment are not necessarily drawn to scale.

19. Two tangents are drawn from point P to circle H .



What conclusion is guaranteed by this diagram?

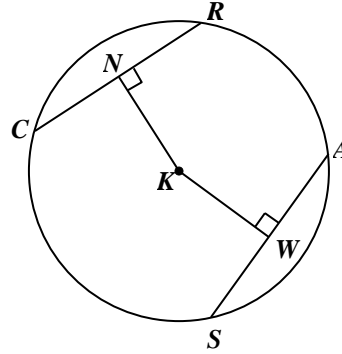
- A. $\frac{1}{2}m\widehat{NR} = m\angle NPR$
- B. $\triangle HNR$ is a right triangle.
- C. $HNPR$ is a rhombus.
- D. $HNPR$ is a kite.
20. All of the segments shown in the figure below are tangents to $\odot N$.



Given the measures in the figure above, what is the perimeter of quadrilateral $ABCD$?

- A. 23 cm
- B. 40 cm
- C. 46 cm
- D. 52 cm

21. In $\square K$, $NK = 3x + 4$, $KW = 5x - 8$, $SA = 5x - 4$, and $\overline{KN} \cong \overline{KW}$.



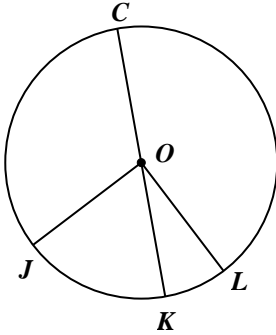
What is CN ?

- A. 6
- B. 13
- C. 22
- D. 26

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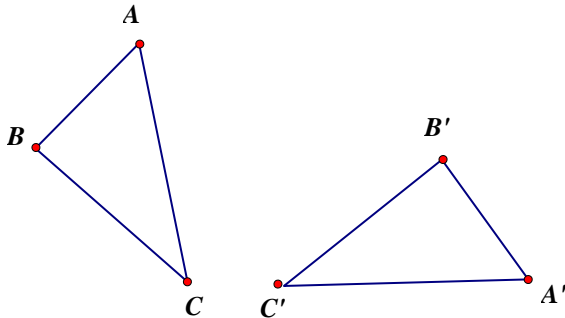
Note: Diagrams and figures on this assessment are not necessarily drawn to scale.

22. \overline{CK} is the diameter of $\square O$,
 $m\angle JOC = (19x)^\circ$, and
 $m\angle JOK = (9(x+2) - 6)^\circ$.



What is the value of x ?

- A. $\frac{4}{5}$
 B. $\frac{5}{6}$
 C. 4
 D. 6
23. Determine the transformation that has mapped $\triangle ABC$ to $\triangle A'B'C'$.

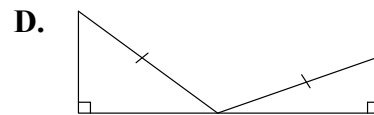
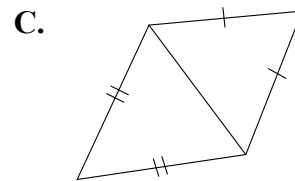
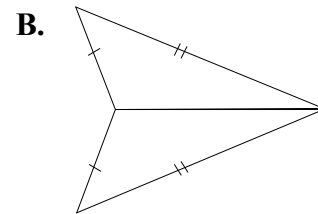
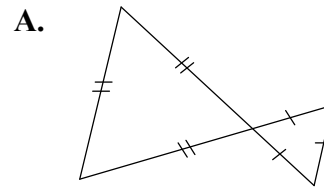


- A. dilation
 B. reflection
 C. rotation
 D. translation

24. How many lines of symmetry does a square have?

- A. 0
 B. 1
 C. 2
 D. 4

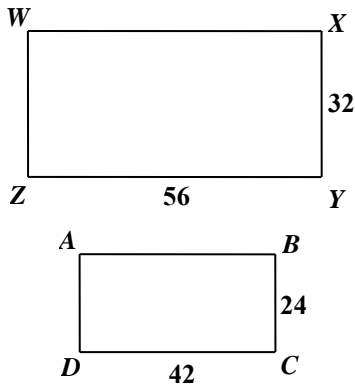
25. Which figure contains two similar triangles that are not congruent?



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26. The following figures are similar.



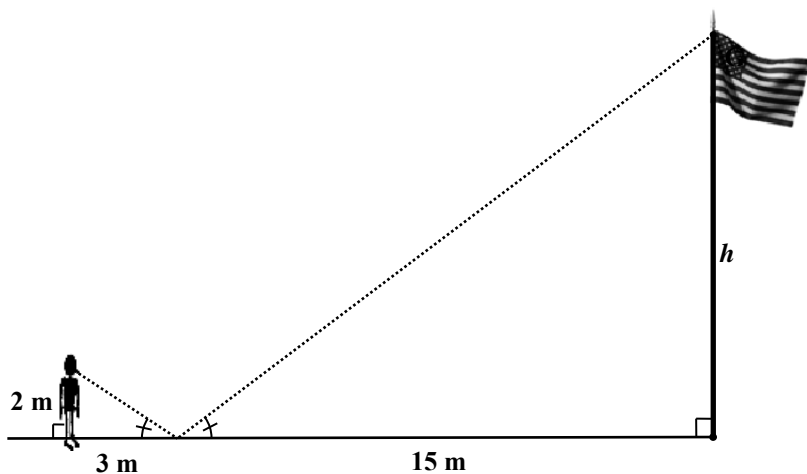
What is the scale factor of $WXYZ$ to $ABCD$?

- A. 1 to 2
B. 3 to 1
C. 3 to 2
D. 4 to 3
27. Two plasma screen TVs are similar rectangles. Their scale factor is 8:5. The perimeter of the smaller TV is 70 inches. The lengths of the sides of the larger TV are represented by the variable expressions shown in the diagram below.
-
- Diagram showing a rectangle with a top side labeled $(3x - 4)$ in. and a right side labeled $(2x)$ in.
- What is the value of x ?
- A. 8
B. 12
C. 16
D. 24
28. The measures of the angles of a triangle have the ratio 4:6:7. What type of triangle is it?
- A. acute
B. isosceles
C. obtuse
D. right
29. The perimeter of a right triangle is 90 feet. The ratio of the legs is 5:12. What is the length of the longest leg of the triangle?
- A. 12 ft
B. 32 ft
C. 36 ft
D. 90 ft
30. Pat measures the length of the shadow of a tree to be 54 feet long. At the same time he measures his own shadow to be 12 feet long and his height to be 5 feet. How tall is the tree in feet?
- A. $27\frac{1}{2}$ feet
B. 25 feet
C. $22\frac{1}{2}$ feet
D. 20 feet

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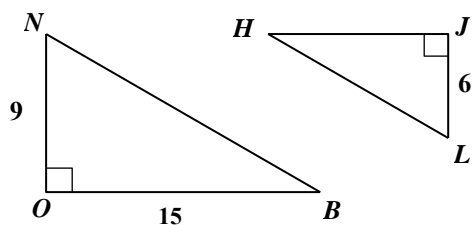
31. Kris places a mirror on the ground. She stands so that she can see the reflection of the top of a flagpole in the mirror.



What is the height h of the flagpole in meters?

- A. 10 m
- B. 12 m
- C. 18 m
- D. 20 m

32. Given the two triangles pictured below.



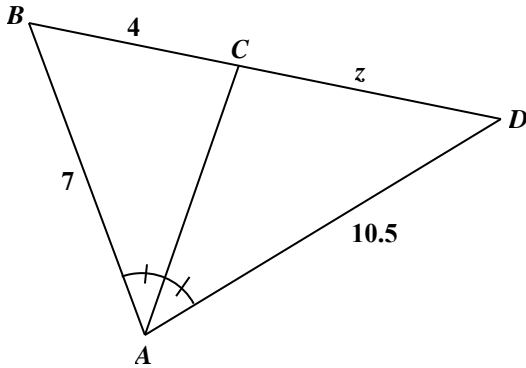
What measure for HJ would make $\triangle NOB \sim \triangle LJH$?

- A. $24\frac{1}{2}$
- B. $13\frac{1}{2}$
- C. 10
- D. 9

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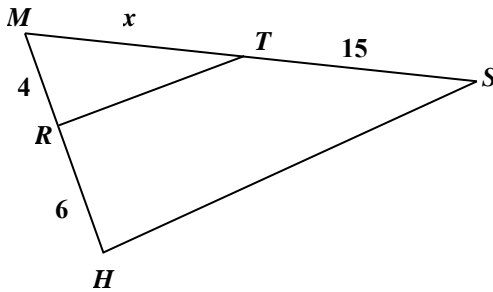
33. In the triangle below, $\angle BAC \cong \angle CAD$.



What is the value of z ?

- A. 6
- B. 12
- C. 13.5
- D. 21.5

34. In the triangle below, $\overline{RT} \parallel \overline{HS}$.



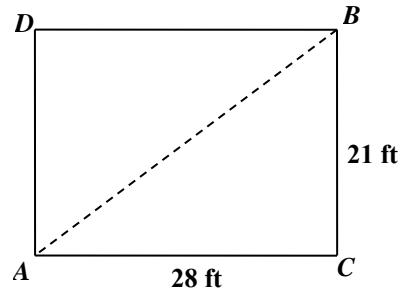
What is the value of x ?

- A. 9
- B. 10
- C. $12\frac{1}{2}$
- D. $22\frac{1}{2}$

35. What is the geometric mean of 16 and 36?

- A. 9
- B. 10
- C. 24
- D. 26

36. Nan stands at the corner of the rectangular driveway shown below.



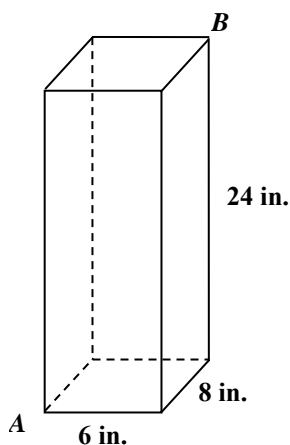
How far must Nan walk diagonally across the driveway (A to B)?

- A. 7 ft
- B. 14 ft
- C. 35 ft
- D. 49 ft

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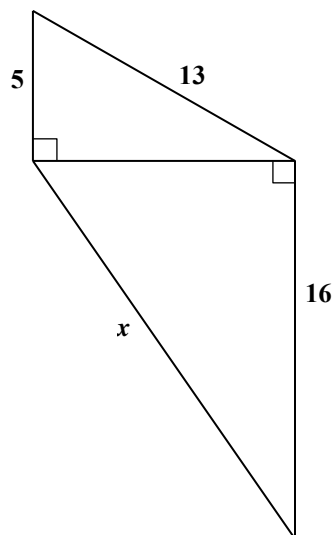
37. A box is shown below.



What is AB ?

- A. 26 in.
- B. 38 in.
- C. $2\sqrt{153}$ in.
- D. $8\sqrt{10}$ in.

38. Use the dimensions given in the diagram below.



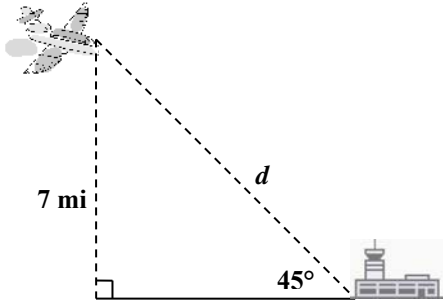
What is the value of x ?

- A. 12
 - B. 20
 - C. 22
 - D. 30
39. The three sides of a triangle are $\sqrt{3}$ centimeters, $\sqrt{5}$ centimeters, and $\sqrt{7}$ centimeters. What is the best description for this triangle?
- A. acute triangle
 - B. equiangular triangle
 - C. obtuse triangle
 - D. right triangle

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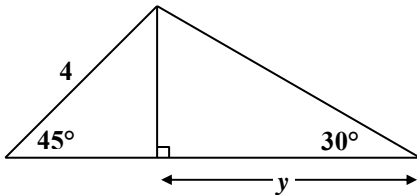
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40. A jet is flying 7 miles above the ground. The pilot spots an airport as shown below.



What is the distance d from the plane to the airport?

- A. $7\sqrt{2}$ mi
 B. $7\sqrt{3}$ mi
 C. 7 mi
 D. 14 mi
41. Use the dimensions given in the diagram below.



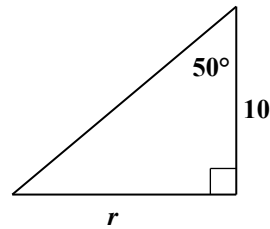
What is the value of y ?

- A. $4\sqrt{3}$
 B. $2\sqrt{3}$
 C. $4\sqrt{6}$
 D. $2\sqrt{6}$

42. In rectangle $ABCD$, $BD = 12$ and $m\angle ABD = 30^\circ$. What is the length of the longer side of the rectangle?

- A. 6
 B. 12
 C. $6\sqrt{2}$
 D. $6\sqrt{3}$

43. Use the table and the dimensions given in the diagram below.



θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
20°	.3420	.9397	.3640
30°	.5000	.8660	.5774
40°	.6428	.7660	.8391
50°	.7660	.6428	1.1918

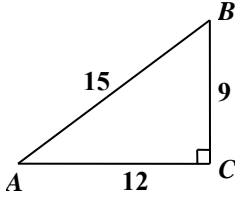
What is the value of r ?

- A. 11.918
 B. 8.391
 C. 7.660
 D. 6.428

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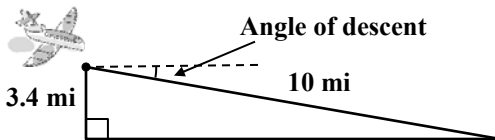
44. Use the dimensions given in the right triangle below.



What is the cosine of $\angle A$?

- A. $\frac{9}{12}$
- B. $\frac{9}{15}$
- C. $\frac{12}{9}$
- D. $\frac{12}{15}$

45. Use the table and the dimensions given in the diagram below.

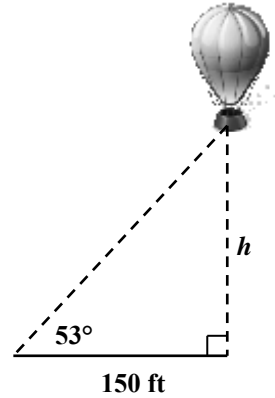


θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
20°	.3420	.9397	.3640
30°	.5000	.8660	.5774
40°	.6428	.7660	.8391
50°	.7660	.6428	1.1918

What is the approximate angle of descent?

- A. 50°
- B. 40°
- C. 30°
- D. 20°

46. Use the dimensions given in the diagram below.



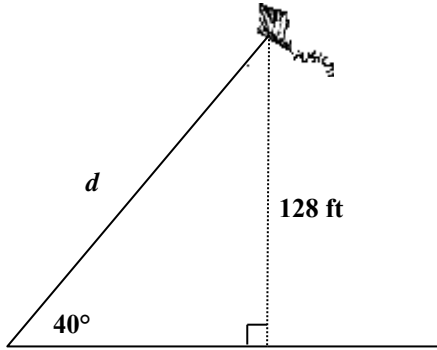
Which equation would be used to find the distance h from the hot air balloon to the ground?

- A. $h = 150 \tan 53^\circ$
- B. $h = 150 \sin 53^\circ$
- C. $h = \frac{150}{\tan 53^\circ}$
- D. $h = \frac{150}{\sin 53^\circ}$

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47. Use the table and the dimensions given in the diagram below.

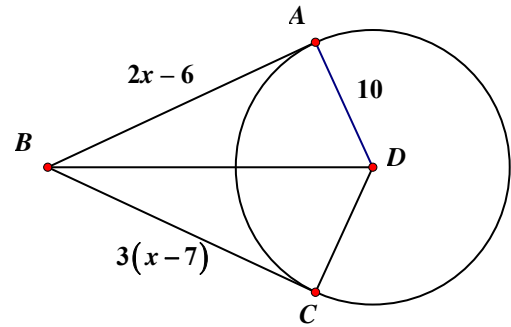


θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
20°	.3420	.9397	.3640
30°	.5000	.8660	.5774
40°	.6428	.7660	.8391
50°	.7660	.6428	1.1918

What is the approximate length d of the kite string?

- A. 256 ft
- B. 200 ft
- C. 168 ft
- D. 100 ft

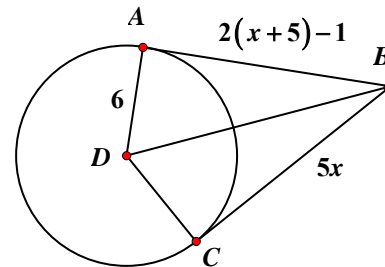
48. In circle D below, \overline{AB} is tangent to $\square D$ at A , and \overline{CB} is tangent to $\square D$ at C .



What is the length of \overline{BD} ?

- A. 14
- B. 15
- C. 24
- D. 26

49. In the figure below, \overline{AB} is tangent to $\square D$ at A and \overline{BC} is tangent to $\square D$ at C .



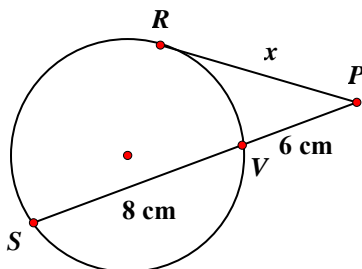
What is the value of x ?

- A. 2
- B. 3
- C. 4
- D. 5

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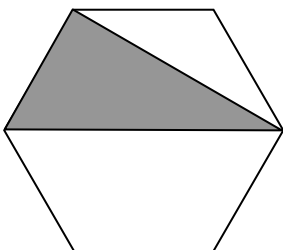
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50. In the figure below, \overline{RP} is tangent to the circle at R and \overline{SP} is a secant.



What is the value of x ?

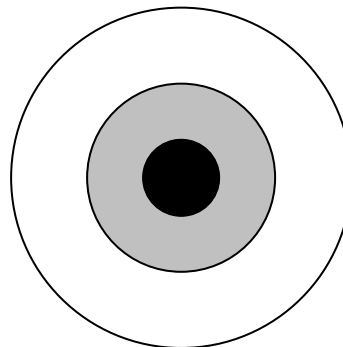
- A. 48 cm
 - B. 84 cm
 - C. $4\sqrt{3}$ cm
 - D. $2\sqrt{21}$ cm
51. The figure below is a regular hexagon with a side length of 8 centimeters.



What is the probability that a randomly thrown dart will land in the shaded region?

- A. $\frac{1}{6}$
- B. $\frac{1}{3}$
- C. $\frac{\sqrt{2}}{3}$
- D. $\frac{\sqrt{6}}{9}$

52. The concentric circles below have radii of 4 centimeters, 10 centimeters, and 18 centimeters.



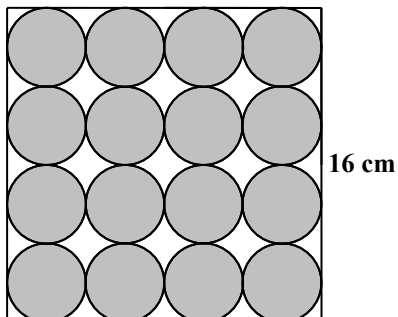
What is the probability that a randomly thrown dart will land in the white region, assuming it hits the board?

- A. $\frac{4}{81}$
- B. $\frac{21}{81}$
- C. $\frac{25}{81}$
- D. $\frac{56}{81}$

Geometry H Semester 2 Practice Exam

Note: Diagrams and figures on this assessment are not necessarily drawn to scale.

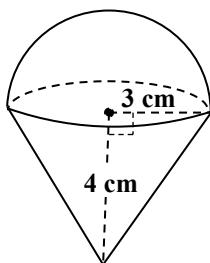
53. In the square below, all adjacent circles are congruent, externally tangent to each other, and outer circles are tangent to the square.



What is the area of the unshaded region?

- A. $(256 - 4\pi) \text{ cm}^2$
- B. $(256 - 64\pi) \text{ cm}^2$
- C. $(256 - 128\pi) \text{ cm}^2$
- D. $(256 - 256\pi) \text{ cm}^2$

54. A snow cone consisting of a cone and a half-sphere is shown below. The base of the cone is a great circle on the sphere.



Surface area of a cone = (Area of Base) + $\pi \times$ radius \times slant height

Surface area of a sphere = $4 \times$ (Area of a Great Circle)

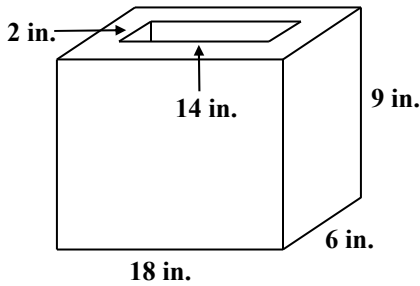
What is the surface area of the three-dimensional object in square centimeters?

- A. $30\pi \text{ cm}^2$
- B. $33\pi \text{ cm}^2$
- C. $39\pi \text{ cm}^2$
- D. $42\pi \text{ cm}^2$

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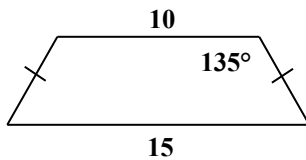
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55. A glass block is in the shape of a rectangular prism. It has a hole passing through it also in the shape of a rectangular prism.



What is the volume of glass needed in cubic inches?

- A. 80 in.^3
B. 252 in.^3
C. 720 in.^3
D. 972 in.^3
56. Use the dimensions given in the diagram of an isosceles trapezoid below.



What is the area of the trapezoid?

- A. $125\sqrt{2}$
B. $\frac{125}{2}\sqrt{2}$
C. $\frac{125}{4}$
D. $\frac{125}{2}$

57. Given a 30° - 60° - 90° triangle, what is the cosine of the 60° angle?

- A. $\frac{1}{2}$
B. $\frac{\sqrt{3}}{2}$
C. $\frac{\sqrt{3}}{3}$
D. $\sqrt{3}$

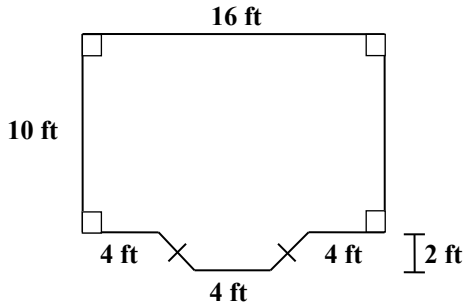
58. A circle with a point $(3, -2)$ is centered at $(-5, 4)$. What is the equation of the circle?

- A. $(x-5)^2 + (y+4)^2 = 41$
B. $(x+5)^2 + (y-4)^2 = 41$
C. $(x-5)^2 + (y+4)^2 = 100$
D. $(x+5)^2 + (y-4)^2 = 100$

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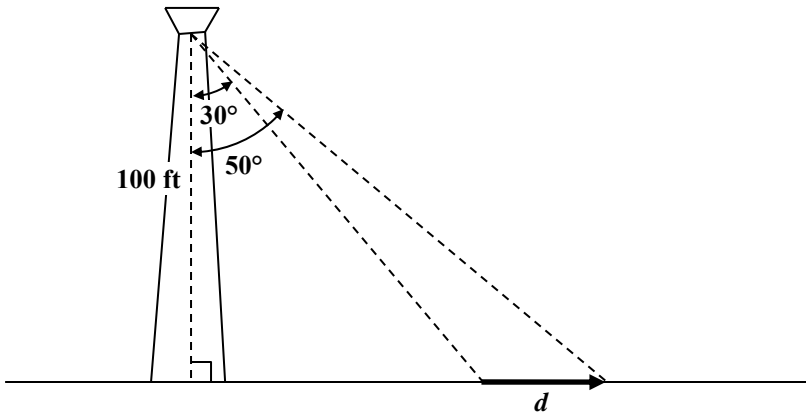
59. The room shown below is to have crown molding installed around the ceiling's perimeter.



Approximately how many feet of molding are needed to complete the room?

- A. 40 ft
- B. 52 ft
- C. 54 ft
- D. 60 ft

60. A lighthouse keeper spots a boat moving away from the lighthouse, first at 30° and then at 50° . The height of the lighthouse shown below is 100 feet above sea level.



θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
20°	.3420	.9397	.3640
30°	.5000	.8660	.5774
40°	.6428	.7660	.8391
50°	.7660	.6428	1.1918

What is the approximate distance d the boat traveled?

- A. 22 ft
- B. 61 ft
- C. 72 ft
- D. 89 ft



Geometry H Semester 2 Practice Exam
Free Response

1. Given $\triangle ABC$ with right angle at C and altitude \overline{CD} , draw the picture and prove $\triangle ABC \sim \triangle CBD$.

Geometry H Semester 2 Practice Exam Free Response

2. Find the length of the altitude of an isosceles triangle with vertex angle 120° and a base length of x centimeters. Give answer in simplified radical form in terms of x .

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3. Explain how to find the area of a regular hexagon if only the length of the apothem is known.

