

### Q4 Geometry Benchmark Review (FINAL EXAM REVIEW)

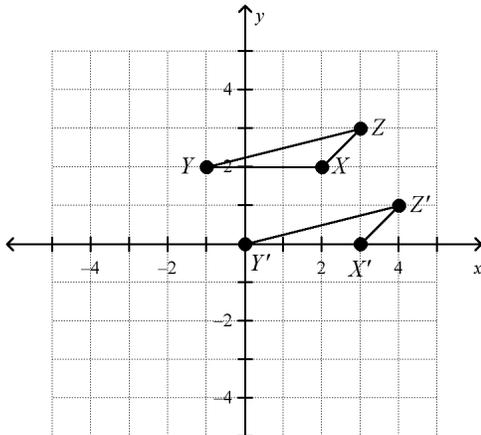
#### Multiple Choice

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

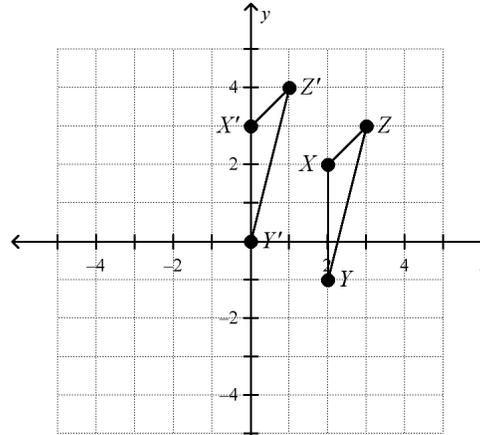
Graph the image of each figure under a translation by the given vector.

- \_\_\_\_\_ 1.  $\triangle XYZ$  with vertices  $X(2, 2)$ ,  $Y(-1, 2)$ ,  $Z(3, 3)$ ;  $\vec{a} = \langle 1, -2 \rangle$

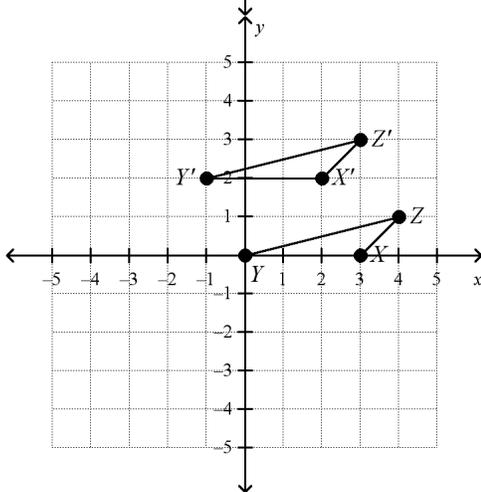
a.



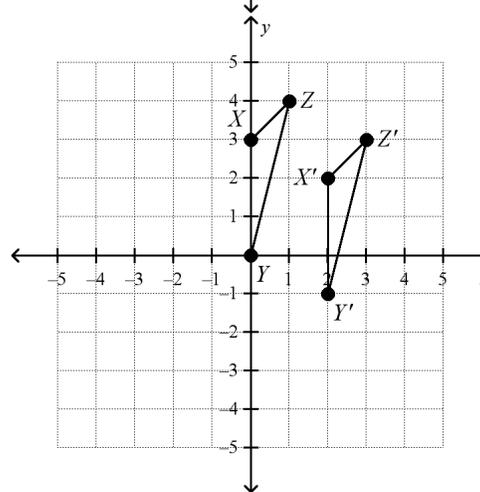
c.



b.



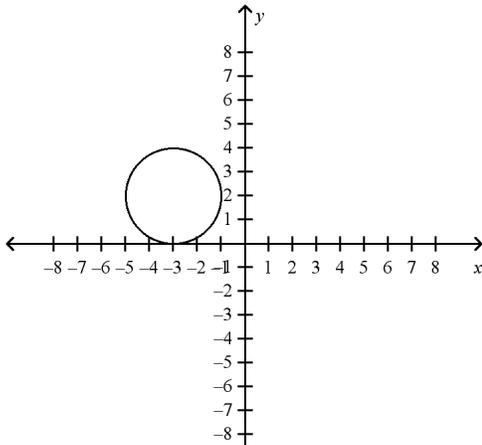
d.



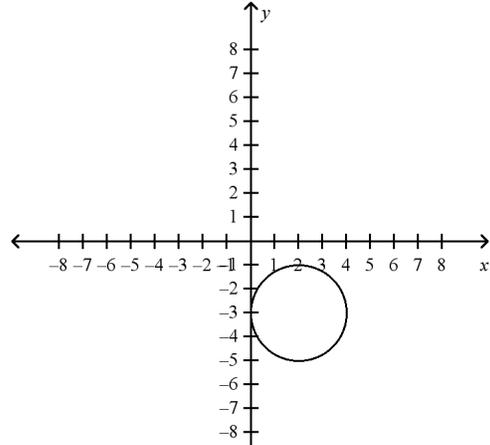
Graph the equation.

\_\_\_\_\_ 2.  $(x+3)^2 + (y-2)^2 = 4$

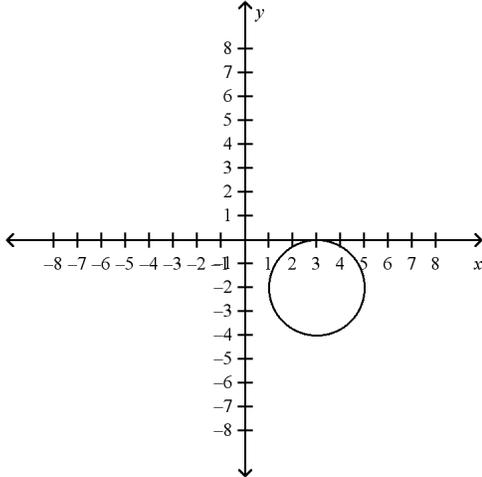
a.



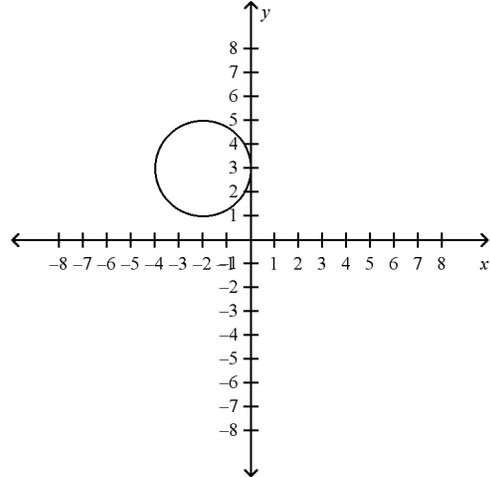
c.



b.

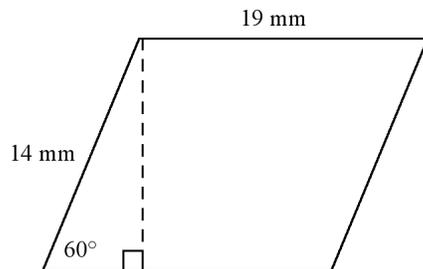


d.

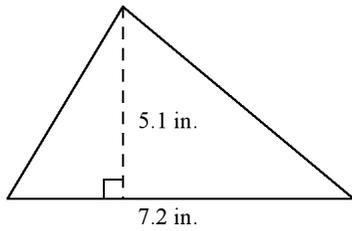


**Short Answer**

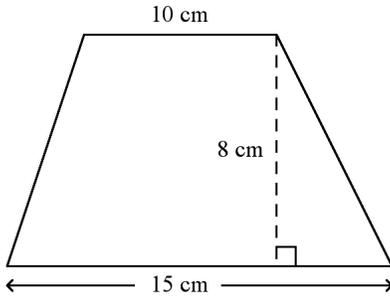
3. Find the perimeter and area of the parallelogram. Round to the nearest tenth if necessary.



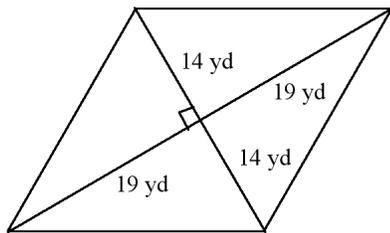
4. Find the area of the figure. Round to the nearest tenth if necessary.



5. Find the area of the figure. Round to the nearest tenth if necessary.



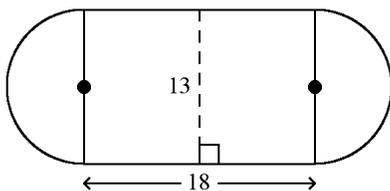
6. Find the area of the figure. Round to the nearest tenth if necessary.



7. Find the area of a regular octagon with apothem length of 20.5 feet. Round to the nearest tenth if necessary.
8. The coordinates of the vertices of a regular polygon are given. Find the area of the polygon to the nearest tenth.  
 $A(0, 0)$ ,  $B(2, -2)$ ,  $C(0, -4)$ ,  $D(-2, -2)$
9. Find the area of a circle having a circumference of  $44\pi$ . Round to the nearest tenth. Use 3.14 for pi.

*Find the area of the figure. Round to the nearest tenth if necessary.*

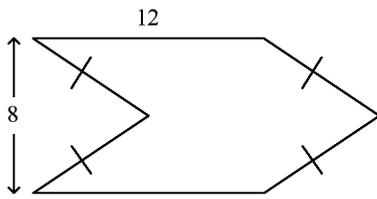
- 10.



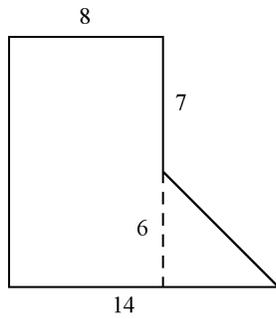
Name: \_\_\_\_\_

ID: A

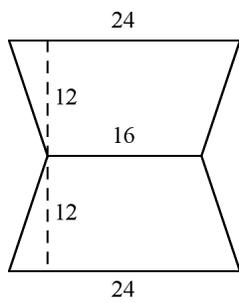
11.



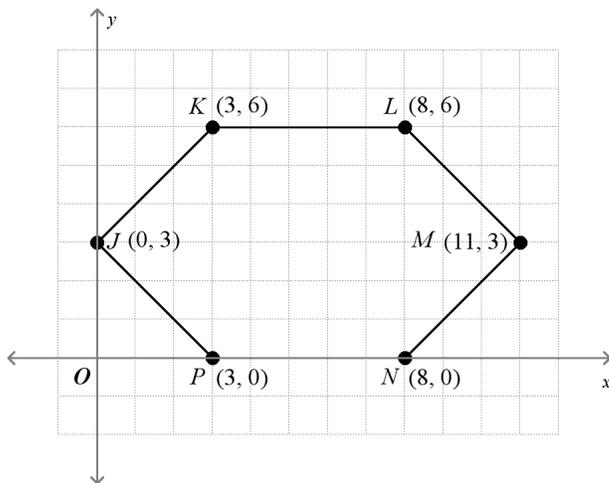
12.



13.



14.

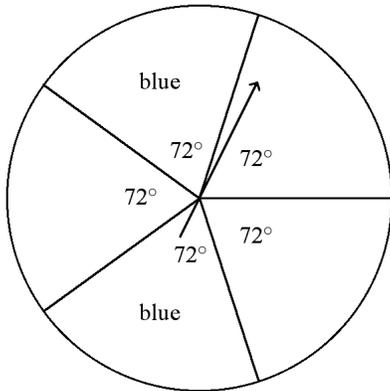


Name: \_\_\_\_\_

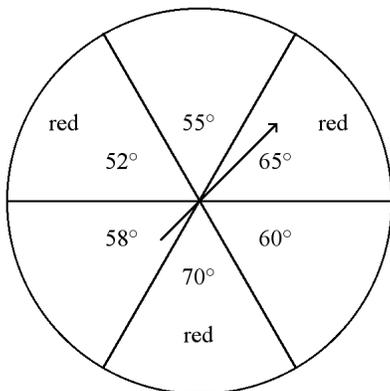
ID: A

Find the area of the indicated sector(s). Then find the probability of spinning the color indicated if the diameter of the spinner is 12.

15. blue



16. red

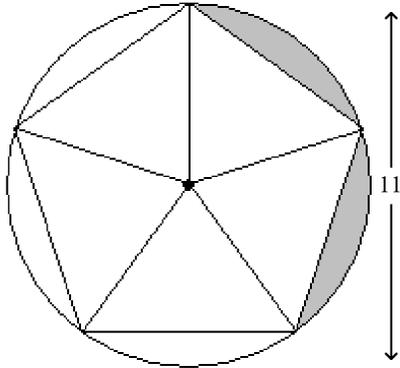


Name: \_\_\_\_\_

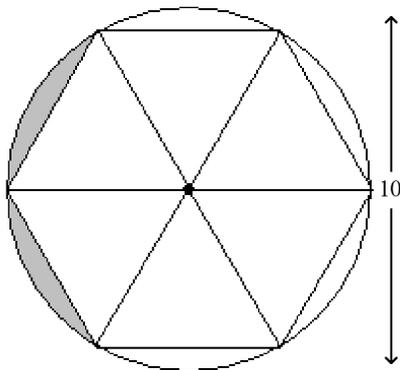
ID: A

Find the area of the shaded region. Round answers to the nearest tenth. Assume all inscribed polygons are regular.

17.

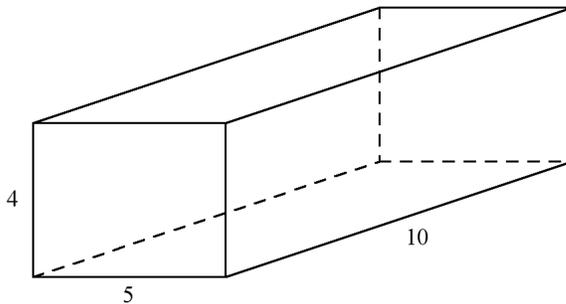


18.



Find the lateral area of each prism. Round to the nearest tenth if necessary.

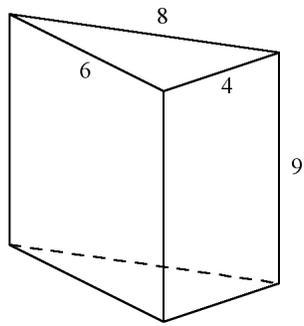
19. The dimension labeled 10 is the height of the prism.



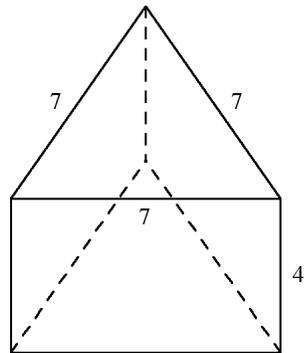
Name: \_\_\_\_\_

ID: A

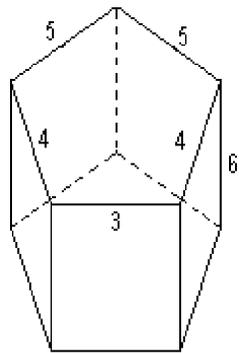
20.



21.

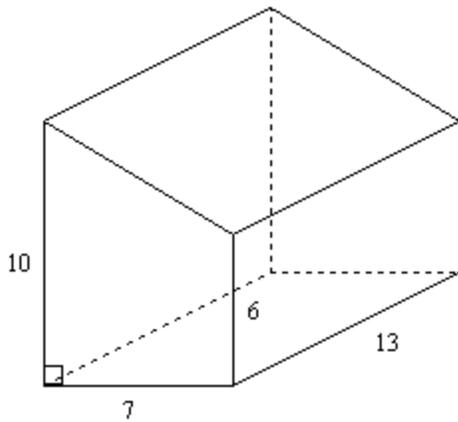


22.



Find the surface area of each prism. Round to the nearest tenth if necessary while doing your calculations as well as in your final answer.

23.

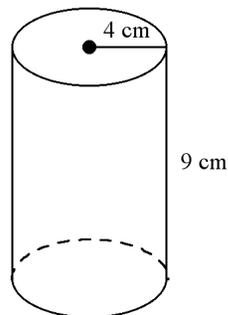


Find the lateral area of a cylinder with the given measurements. Use 3.14 for  $\pi$  and round your answer to the nearest tenth.

24. height: 7 inches  
diameter: 7 inches

Find the surface area of the cylinder. Use 3.14 for  $\pi$  and round your answer to the nearest tenth.

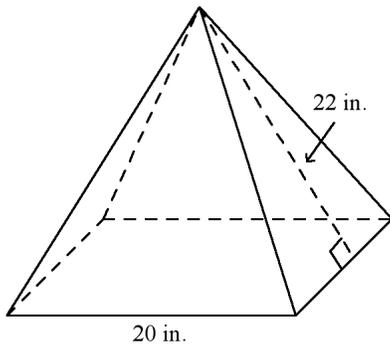
25.



26. Each side of the square base of a regular pyramid is 11.5 centimeters. The sides rise at an angle of  $46^\circ$ . Find the lateral area of the pyramid. Round to the nearest tenth.

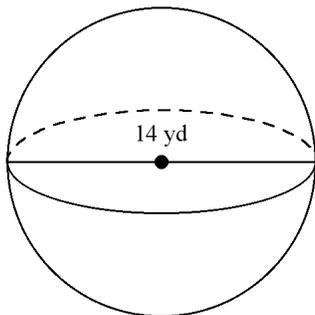
Find the surface area of the regular pyramid. Round to the nearest tenth if necessary.

27.



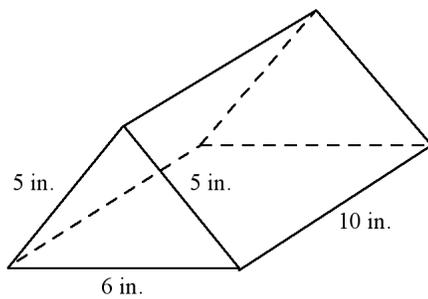
28. Find the lateral area of a cone if the height is 13 inches and the slant height is 15 inches. Use 3.14 for  $\pi$ . Round to the nearest tenth if necessary.

29. Find the surface area of the sphere. Use 3.14 for  $\pi$ . Round to the nearest tenth.



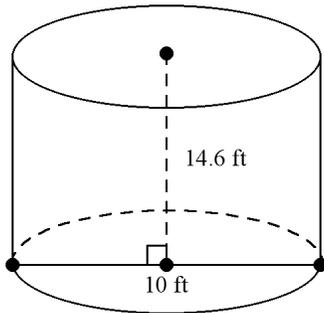
Find the volume of the prism. Round to the nearest tenth if necessary.

30.



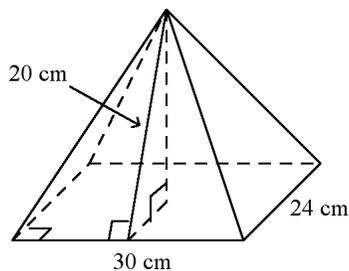
Find the volume of the cylinder. Use 3.14 for  $\pi$ . Round to the nearest tenth.

31.

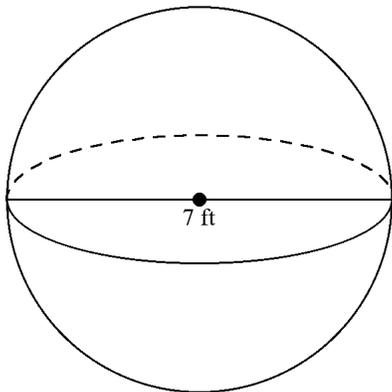


Find the volume of the pyramid. Round to the nearest tenth if necessary.

32.



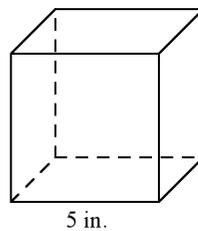
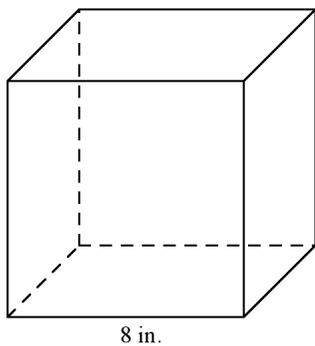
33. Find the volume of the sphere. Use 3.14 for  $\pi$ . Round to the nearest tenth.



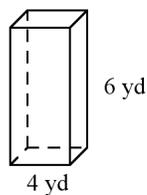
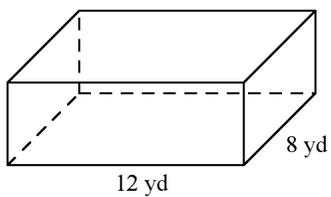
34. Baseballs and softballs come in different sizes for different types of leagues. If the diameter of a baseball is 3 inches and a softball has a diameter of 3.8 inches, find the difference between the volumes of the two balls. Use 3.14 for  $\pi$ . Round to the nearest tenth.
35. A sphere that has a radius of 8 centimeters is inscribed in a cylinder. Find the probability of choosing a point at random inside the cylinder that is also inside the sphere. Use 3.14 for  $\pi$ . Round to the nearest hundredth.

Determine whether the pair of solids are similar, congruent, or neither. Figures are not necessarily drawn to scale.

36.



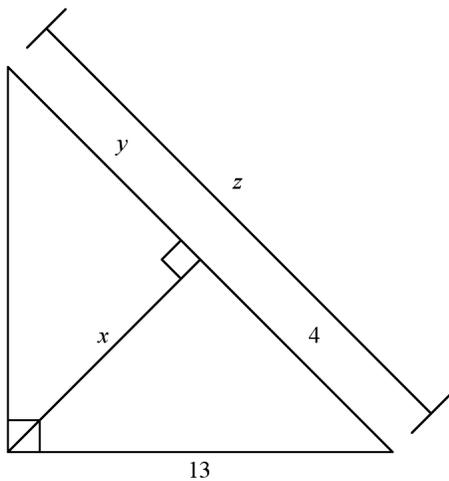
37.



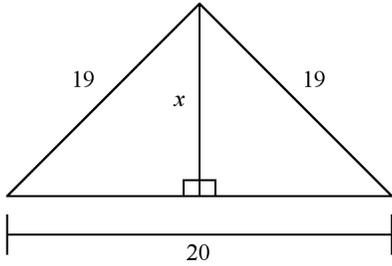
38. Find the geometric mean between each pair of numbers.

$\sqrt{36}$  and  $\sqrt{324}$

39. Find  $x$ ,  $y$ , and  $z$ .



40. Find  $x$ .

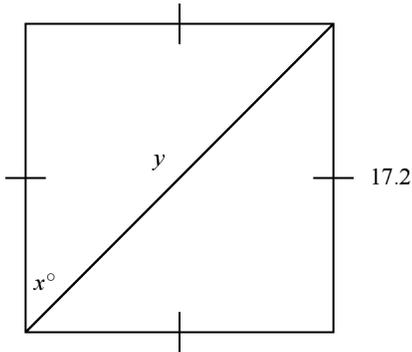


Determine whether  $\triangle QRS$  is a right triangle for the given vertices. Explain.

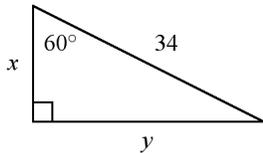
41.  $Q(-19, 20)$ ,  $R(-16, 20)$ ,  $S(-19, -4)$

42. The length of a diagonal of a square is  $40\sqrt{2}$  millimeters. Find the perimeter of the square.

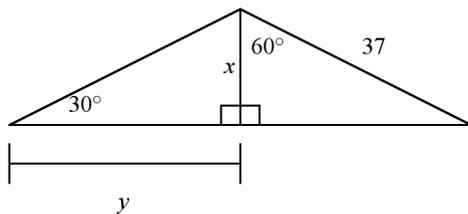
43. Find  $x$  and  $y$ .



44. Find  $x$  and  $y$ .

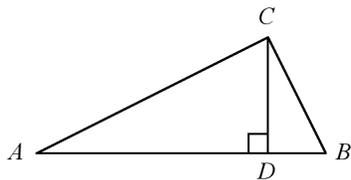


45. Find  $x$  and  $y$ .



46. Use the figure to find the trigonometric ratio below. Express the answer as a decimal rounded to the nearest ten-thousandth.

$\sin A$



$AC = 10/5$ ,  $CB = 1/17$ ,  $AD = 22$ ,  $CD = 4$ ,  $DB = 1$

47. Dante is standing at horizontal ground level with the base of the Empire State Building in New York City. The angle formed by the ground and the line segment from his position to the top of the building is  $48.4^\circ$ . The height of the Empire State Building is 1472 feet. Find his distance from the Empire State Building to the nearest foot.
48. Lynn is standing at horizontal ground level with the base of the Sears Tower in Chicago. The angle formed by the ground and the line segment from her position to the top of the building is  $15.7^\circ$ . The height of the Sears Tower is 1450 feet. Find her distance from the Sears Tower to the nearest foot.
49. A hot air balloon is one mile above sea level when it begins to climb at a constant angle of  $4^\circ$  for the next 50 ground miles. About how far above sea level is the hot air balloon after its climb?
50. A hiker stops to rest and sees a deer in the distance. If the hiker is 48 yards lower than the deer and the angle of elevation from the hiker to the deer is  $15^\circ$ , find the distance from the hiker to the deer.
51. Two horses are observed by a hang glider 80 meters above a meadow. The angles of depression are  $10.4^\circ$  and  $8^\circ$ . How far apart are the horses?
52. After traveling steadily at 400 meters above a shipwrecked hull, a submerged vessel starts to descend when its ground distance from the hull is 7 kilometers. What is the angle of depression for this part of the travel?
53. A playground is situated on a triangular plot of land. Two sides of the plot are 175 feet long and they meet at an angle of  $70^\circ$ . For safety reasons, a fence is to be placed along the perimeter of the property. How much fencing material is needed?
54. Two lifeguards at the lake are stationed 28 meters apart. They both located a struggling swimmer at the same time. The first lifeguard indicated that the position of the swimmer made an angle of  $50^\circ$  with the line between the lifeguard chairs. The second lifeguard indicated that the swimmer made an angle of  $56^\circ$  with the same line. How far is the first lifeguard from the swimmer?
55. In  $\triangle ABC$ , given the following measures, find the measure of the missing side to the nearest tenth.  
 $a = 18.7$ ,  $c = 20.5$ ,  $m\angle B = 75.1$
56. In  $\triangle DEF$ , given the lengths of the sides, find the measure of the stated angle to the nearest degree.  
 $d = 12.8$ ,  $e = 13.3$ ,  $f = 13.7$ ;  $m\angle F$

*Members of the soccer team are trying to map out some new plays before their next game. The goal is 24 feet wide.*

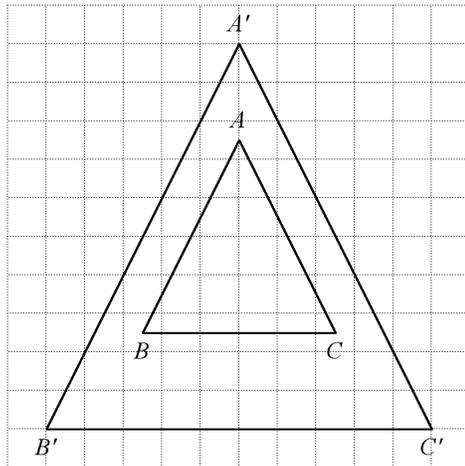
57. Pedro came up with a play that would put him 35 feet from one goal post and 45 feet from the other post. What is his angle to make a shot on goal?

Graph each figure and its image under the given translation.

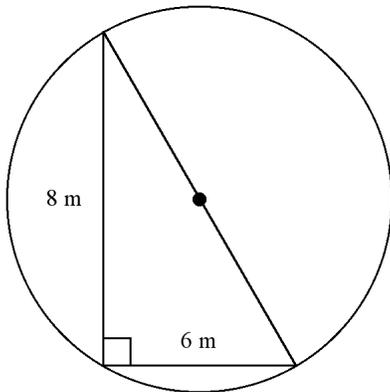
58.  $\triangle EFG$  with vertices  $E(-2, -3)$ ,  $F(-3, -2)$ ,  $G(-1, -1)$  under the translation left three units and down two units

Determine the scale factor for each dilation. Determine whether the dilation is an enlargement, reduction, or congruence transformation.

- 59.



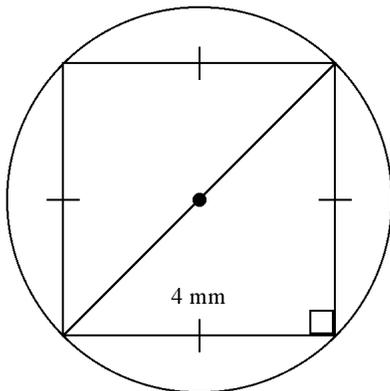
60. Find the magnitude and direction of  $\vec{CD}$  for the given coordinates. Round to the nearest tenth.  
 $C(7, -8)$ ,  $D(3, -4)$
61. What is the magnitude and direction of  $\vec{w} \langle 16, -13 \rangle$ ? Round to the nearest tenth.
62. Find the exact circumference of the circle.



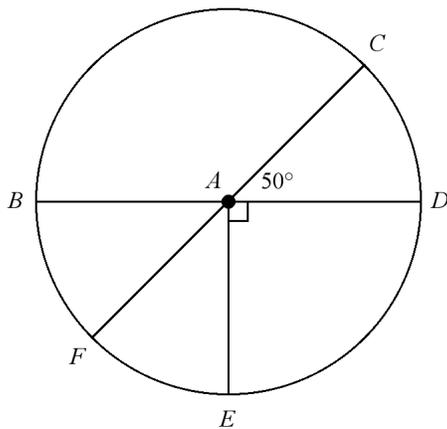
Name: \_\_\_\_\_

ID: A

63. Find the exact circumference of the circle.



Use the diagram to find the measure of the given angle.



64.  $m\angle BAC$

65.  $m\angle BAF$

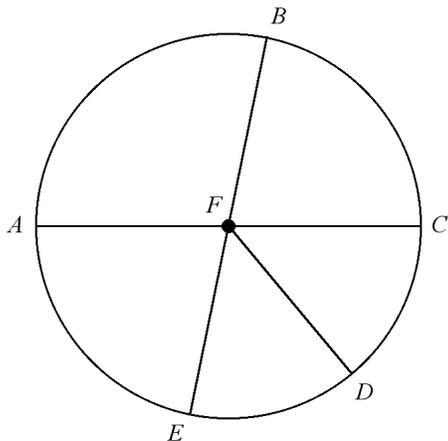
66.  $m\angle EAD$

67.  $m\angle FAE$

68.  $m\angle CAE$

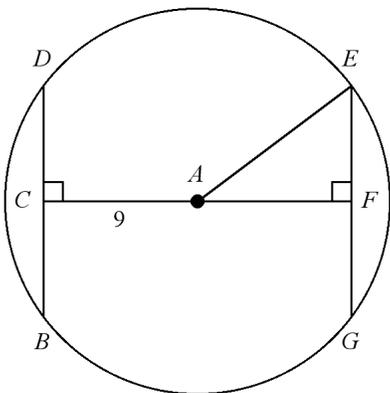
69.  $m\angle DAF$

70. In  $\odot F$ ,  $\angle CFD \cong \angle DFE$ ,  $m\angle BFA = 8x$ ,  $m\angle AFE = 6x + 12$ , and  $\overline{BE}$  and  $\overline{AC}$  are diameters.



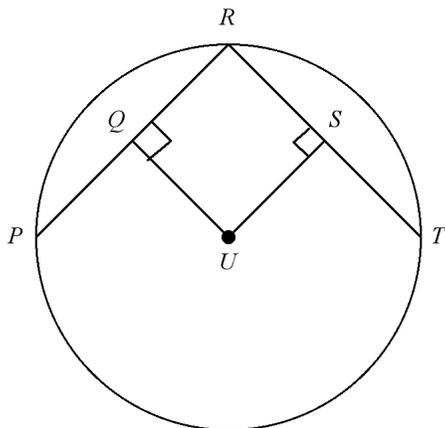
Find  $m$  arc  $DC$ .

71. In  $\odot A$ ,  $\overline{AC} \cong \overline{AF}$  and  $AE = 41$ .

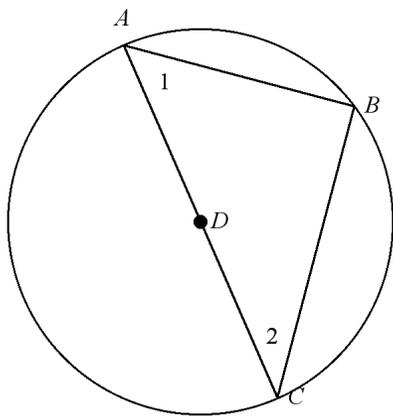


Find  $m\overline{EG}$ .

72. In  $\odot U$ ,  $TS = 9$ ,  $UQ = US$ . Find  $m\overline{PR}$ .

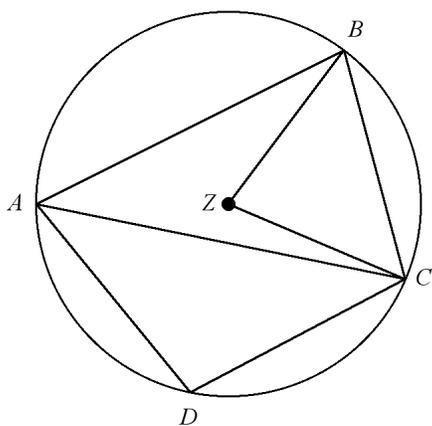


73.

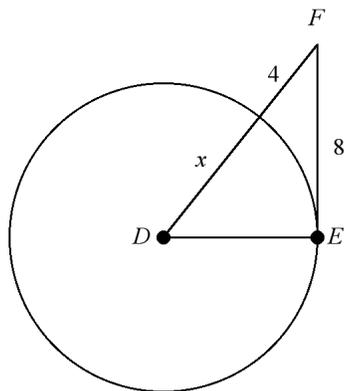


If  $m\angle 1 = 2x + 6$ ,  $m\angle 2 = 19x$ , find  $m\angle 1$ .

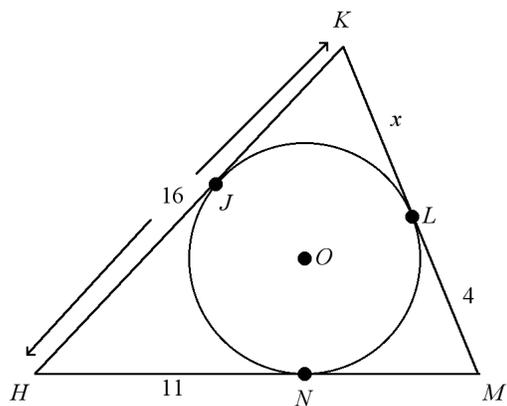
74. Quadrilateral  $ABCD$  is inscribed in  $\odot Z$  such that  $\overline{AB} \parallel \overline{DC}$  and  $m\angle BZC = 82$ . Find  $m\angle DCA$ .



75. Find  $x$ . Assume that segments that appear tangent are tangent.

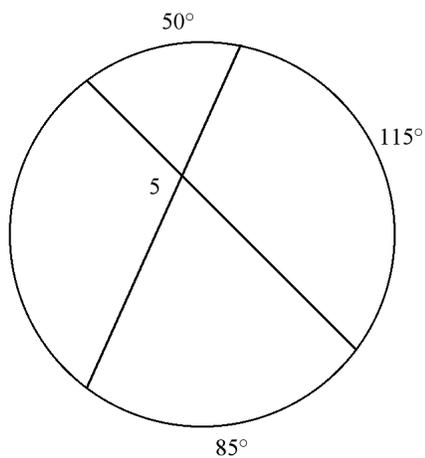


76. Find  $x$ . Assume that segments that appear tangent are tangent.

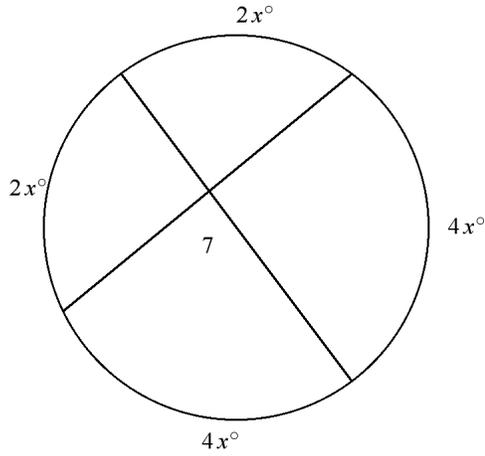


Find the measure of the numbered angle.

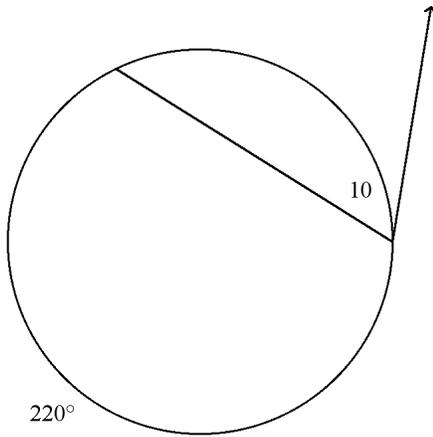
77.



78.

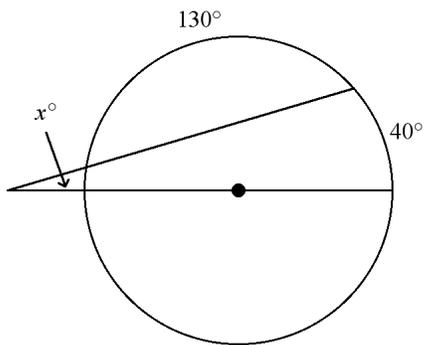


79.

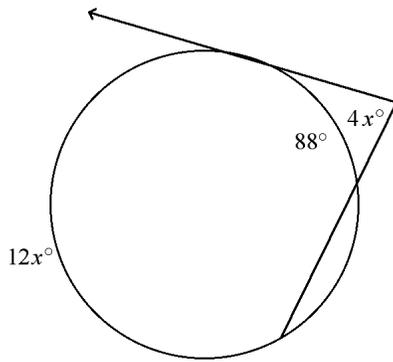


Find  $x$ . Assume that any segment that appears to be tangent is tangent.

80.

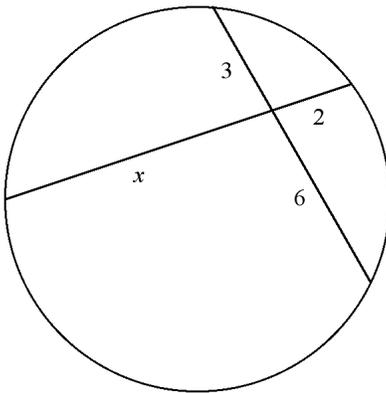


81.



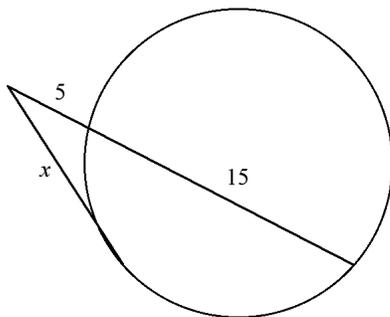
Find  $x$ . Round to the nearest tenth if necessary.

82.



Find  $x$ . Round to the nearest tenth if necessary. Assume that segments that appear to be tangent are tangent.

83.



Name: \_\_\_\_\_

ID: A

84. Write an equation for a circle with center at  $(7, 6)$  and diameter 8.
85. Write an equation for a circle with a diameter that has endpoints at  $(4, -3)$  and  $(6, -7)$ . Round to the nearest tenth if necessary.

## Q4 Geometry Benchmark Review (FINAL EXAM REVIEW)

### Answer Section

#### MULTIPLE CHOICE

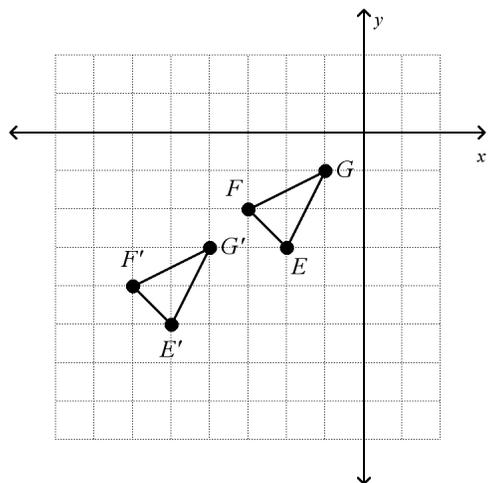
1. A
2. A

#### SHORT ANSWER

3. 66 mm;  $230.4 \text{ mm}^2$
4.  $18.4 \text{ in}^2$
5.  $100 \text{ cm}^2$
6.  $532 \text{ yd}^2$
7.  $1394 \text{ units}^2$
8. 8
9.  $1519.8 \text{ units}^2$
10.  $366.7 \text{ units}^2$
11.  $96 \text{ units}^2$
12.  $122 \text{ units}^2$
13.  $480 \text{ units}^2$
14.  $48 \text{ units}^2$
15.  $45.2 \text{ units}^2$ , 0.4
16.  $58.7 \text{ units}^2$ , 0.52
17.  $9.2 \text{ units}^2$
18.  $4.5 \text{ units}^2$
19.  $180 \text{ units}^2$
20.  $162 \text{ units}^2$
21.  $84 \text{ units}^2$
22.  $126 \text{ units}^2$
23.  $516.3 \text{ units}^2$
24.  $153.9 \text{ in}^2$
25.  $326.6 \text{ cm}^2$
26.  $190.4 \text{ centimeters}^2$
27.  $1280.0 \text{ in}^2$
28.  $352.5 \text{ inches}^2$
29.  $615.4 \text{ yd}^2$
30.  $120.0 \text{ in}^3$
31.  $1146.1 \text{ ft}^3$
32.  $3840 \text{ cm}^3$
33.  $179.5 \text{ ft}^3$

34.  $14.6 \text{ in}^3$
35.  $0.67$
36. similar
37. cannot be determined
38.  $6/3$
39.  $x \cup 12.4, y \cup 38.3, z \cup 42.3$
40.  $3/29$
41. yes;  $QR = 3, QS = 24, RS = 3/65; QR^2 + QS^2 = RS^2$
42. 160 millimeters
43.  $x = 45^\circ, y = 17.2\sqrt{2}$
44.  $x = 17, y = 17\sqrt{3}$
45.  $x = 18.5, y = 18.5\sqrt{3}$
46.  $0.1789$
47. 1307 ft
48. 5159 ft
49. 4.5 mi
50. 185.46 yd
51. 133.3 m
52.  $3.27^\circ$
53. 550.8 ft
54. 24.1 m
55.  $b = 23.9$
56. 63
57. 31.9

58.



59. 2; enlargement
60. 5.7,  $135.0^\circ$
61. 20.6,  $320.9^\circ$
62.  $10\pi \text{ m}$
63.  $4\pi\sqrt{2} \text{ mm}$
64. 130

65. 50

66. 90

67. 40

68. 140

69. 130

70. 48

71. 80

72. 18

73. 14

74. 41

75. 6

76. 5

77. 112.5

78. 90

79. 70

80. 15

81. 22

82. 9

83. 10

84.  $(x-7)^2 + (y-6)^2 = 16$

85.  $(x-5)^2 + (y+5)^2 = 5$