Geometry Final 2017 Review

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

____ 1. Which letter has rotational symmetry?
a. Z b. W c. F d. P

____ 2. Which letter has at least one line of symmetry?
a. S b. R c. Z d. V

Short Answer

3. You want to draw an enlargement of a design that is printed on a card that is 4 in. by 5 in. You will be drawing this on an piece of paper that is $8\frac{1}{2}$ in. by 11 in. What are the dimensions of the largest complete enlargement you can make?

4. 3 and 7

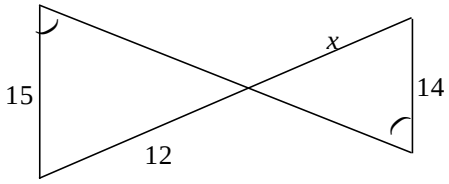
5. If $\frac{a}{b} = \frac{2}{5}$, then $5a =$ ____.

6. On a blueprint, the scale indicates that 8 cm represent 13 feet. What is the length of a room that is 15.2 cm long and 3 cm wide on the blueprint?

7. A model is built having a scale of 1 : 100,000. How high would a 48,500-ft mountain be in the model? Give your answer to the nearest one thousandth of an inch.

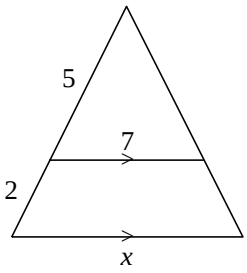
Explain why the triangles are similar. Then find the value of *x*.

8.



Not drawn to scale

9.



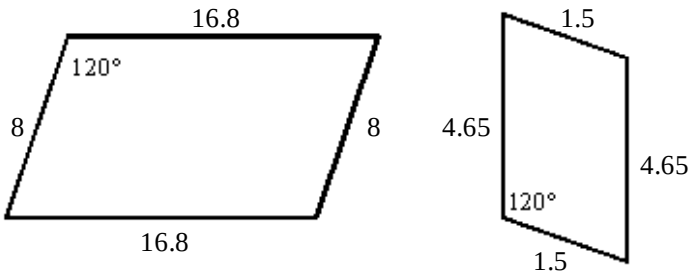
Not drawn to scale

Solve the proportion.

10. $\frac{4}{a} = \frac{16}{32}$

11. You want to produce a scale drawing of your living room, which is 26 ft by 30 ft. If you use a scale of 2 in. = 4 ft, what will be the dimensions of your scale drawing?

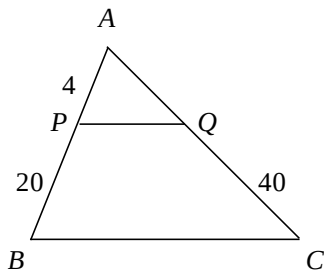
12. Determine whether the figures are similar.



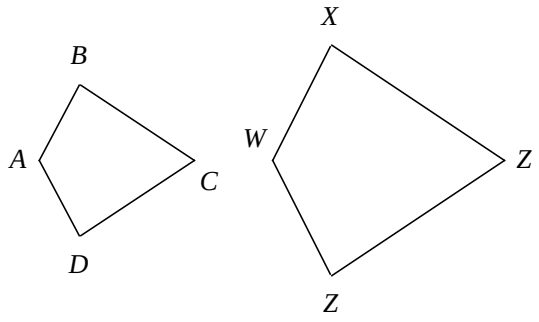
Not drawn to scale

13. An artist's canvas forms a golden rectangle. The longer side of the canvas is 30 inches. How long is the shorter side? Round your answer to the nearest tenth of an inch.

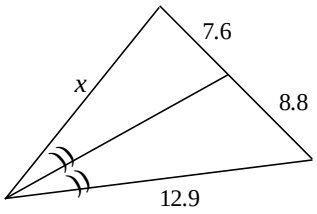
14. Given: $PQ \parallel BC$. Find the length of $\overline{AQ}$. The diagram is not drawn to scale.



15. *ABCD* ~ *WXYZ*. *AD* = 8, *DC* = 4, and *WZ* = 48. Find *YZ*. The figures are not drawn to scale.



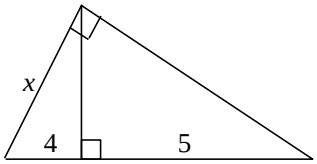
16. Find x to the nearest tenth.



Not drawn to scale

Solve for x.

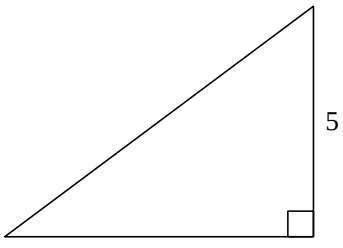
17.



Not drawn to scale

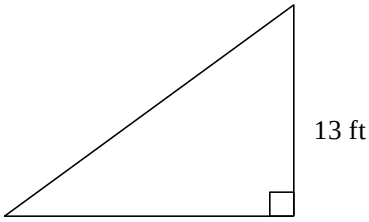
Find the length of the missing side. The triangle is not drawn to scale.

18.



Find the length of the missing side. Leave your answer in simplest radical form.

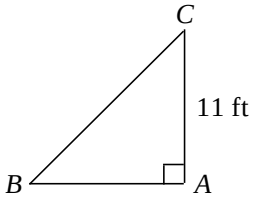
19.



Not drawn to scale

20. A triangle has side lengths of 14 cm, 48 cm, and 49 cm. Classify it as acute, obtuse, or right.

21. In triangle *ABC*, $\angle A$ is a right angle and $m\angle B = 45°$. Find *BC*. If you answer is not an integer, leave it in simplest radical form.



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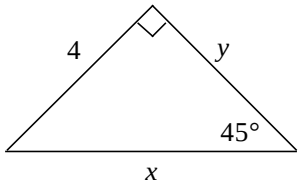
22. Find the lengths of the missing sides in the triangle. Write your answers as integers or as decimals rounded to the nearest tenth.



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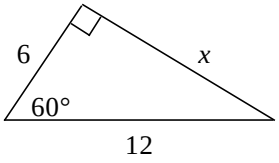
Find the value of the variable(s). If your answer is not an integer, leave it in simplest radical form.

23.



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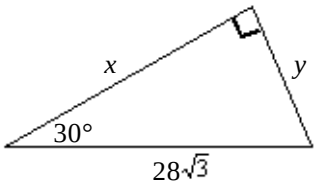
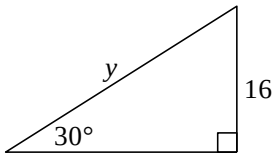
24.



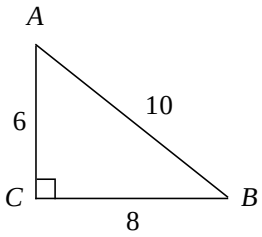
Not drawn to scale

25.



Not drawn to scale

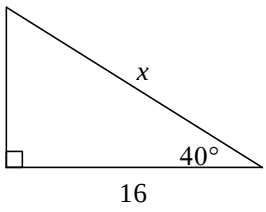
26. Write the ratios for sin *A* and cos *A*.



Not drawn to scale

Find the value of *x*. Round to the nearest tenth.

27.



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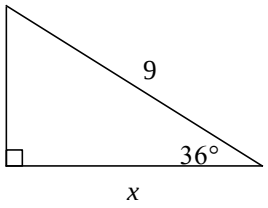
28.



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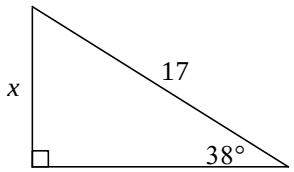
29.



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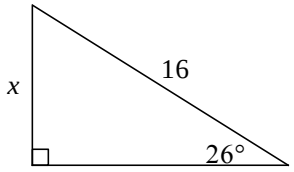
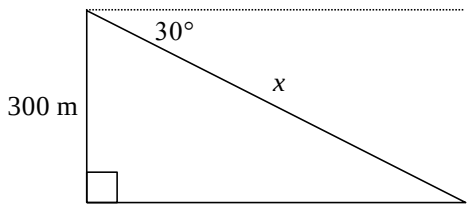
30.



Not drawn to scale

Find the value of *x*. Round the length to the nearest tenth.

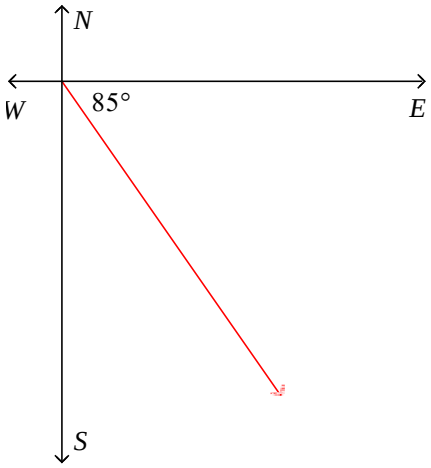
31.



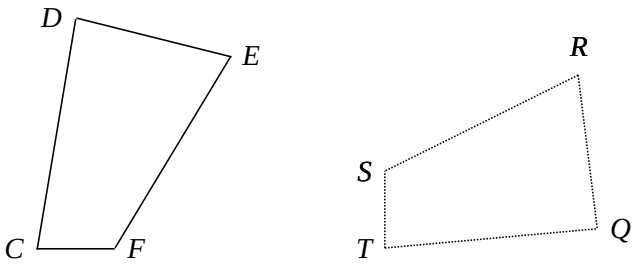
Not drawn to scale

Use compass directions to describe the direction of the vector. (Not drawn to scale)

32.



In the diagram, the dashed figure is the image of the solid figure.



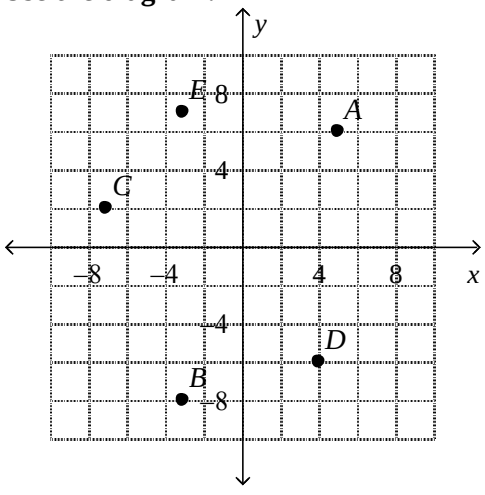
33. Name the image of $\angle D$.

34. The vertices of a triangle are $P(-3, 4)$, $Q(1, -5)$, and $R(-2, 4)$. Name the vertices of the image reflected in the x-axis.

35. Describe in words the translation represented by the vector $\langle -2, -6 \rangle$.

36. Use an ordered pair to describe the translation that is 6 units to the left and 2 units up.

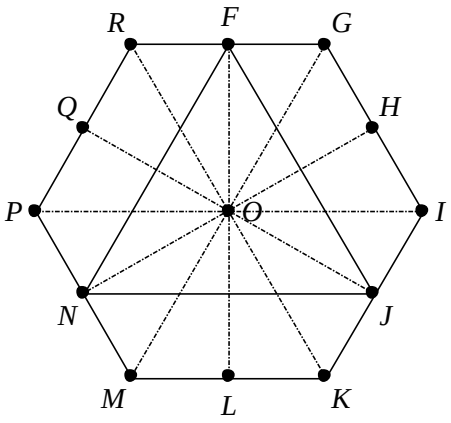
Use the diagram.



37. Find the vector that describes the translation $B \rightarrow C$.

38. Find the image of C under the translation described by the vector $\langle 4, 5 \rangle$.

The hexagon *GIKMPR* and $\triangle FJN$ are regular. The dashed line segments form 30° angles.

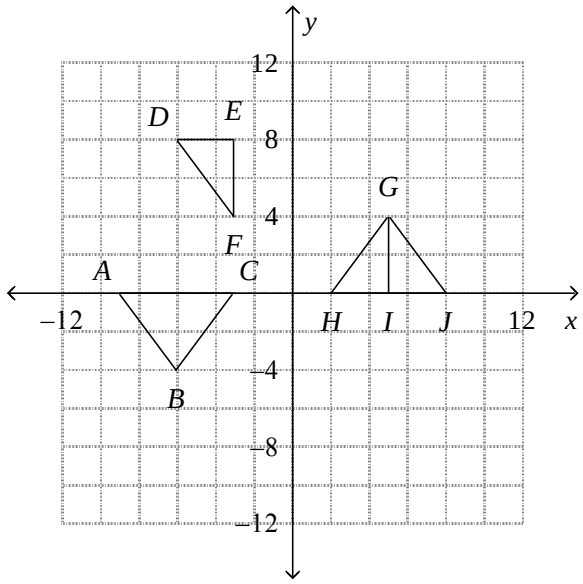


39. Find the angle of rotation about O that maps $\overline{JK}$ to $\overline{FG}$.

40. Find the image of point P after a rotation of 240° about point M.

41. $P \rightarrow P'(-2, -4)$ for the glide vector $\langle -5, -1 \rangle$ and the reflection line $y = -x$. Find the coordinates of P.

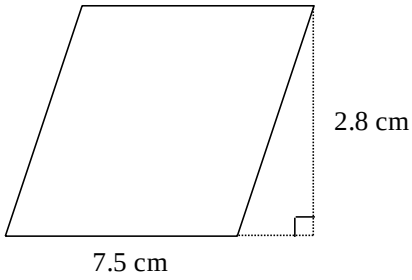
42. Identify $\triangle JIG \rightarrow \triangle DEF$ as a reflection, translation, rotation, or glide reflection. Find the reflection line, translation vector, center and angle of rotation, or glide vector and reflection line.



43. A blueprint for a house has a scale of 1 : 5. A wall in the blueprint is 3 in. What is the length of the actual wall?

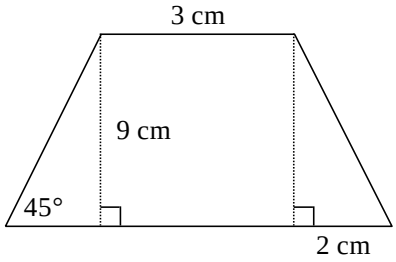
Find the area. The figure is not drawn to scale.

44.



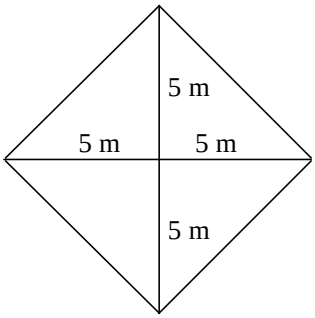
Find the area of the trapezoid. Leave your answer in simplest radical form.

45.

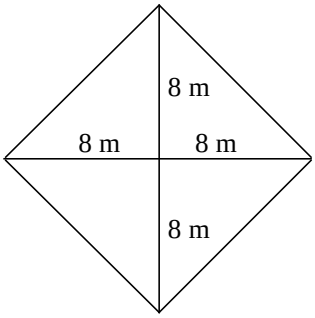


Not drawn to scale

46. Find the area of the rhombus.



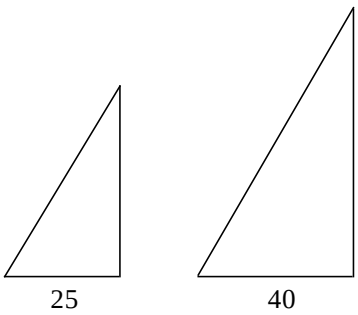
47. Find the area of the rhombus.



48. Given a regular pentagon, find the measures of the angles formed by (a) two consecutive radii and (b) a radius and a side of the polygon.

The figures are similar. Give the ratio of the perimeters and the ratio of the areas of the first figure to the second. The figures are not drawn to scale.

49.



The figures are similar. The area of one figure is given. Find the area of the other figure to the nearest whole number.

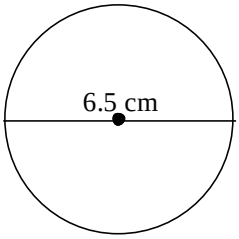
50. The area of a regular octagon is 35 cm^2. What is the area of a regular octagon with sides seven times as large?

Find the area of the regular polygon. Give the answer to the nearest tenth.

51. pentagon with side 6 cm

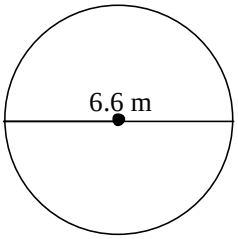
Find the circumference. Leave your answer in terms of π.

52.

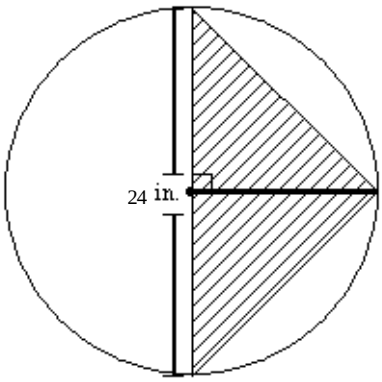


Find the area of the circle. Leave your answer in terms of π.

53.



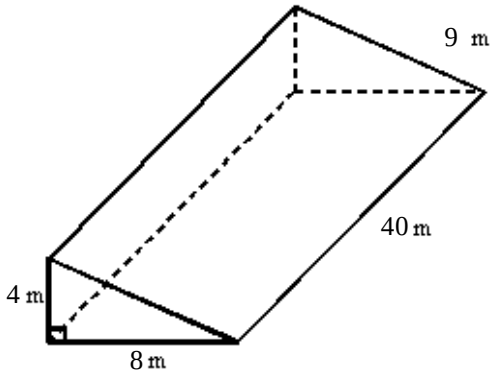
54. Find the probability that a point chosen at random will lie in the shaded area.



55. Mario's company makes unusually shaped imitation gemstones. One gemstone had 12 faces and 12 vertices. How many edges did the gemstone have?

Use formulas to find the lateral area and surface area of the given prism. Show your answer to the nearest whole number.

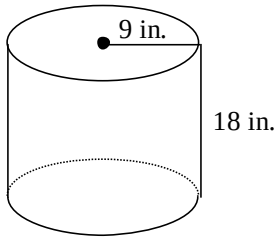
56.



Not drawn to scale

Find the surface area of the cylinder in terms of π.

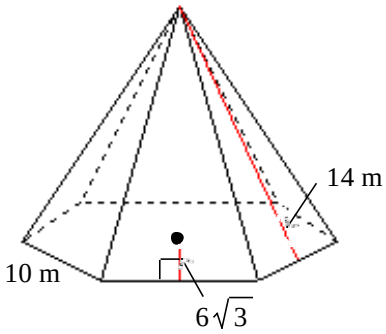
57.



Not drawn to scale

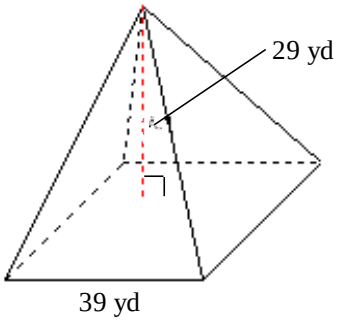
Find the surface area of the pyramid shown to the nearest whole number.

58.



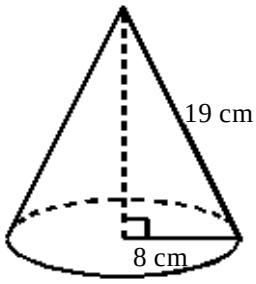
Not drawn to scale

59. Find the lateral area of the pyramid shown to the nearest whole number.



Not drawn to scale

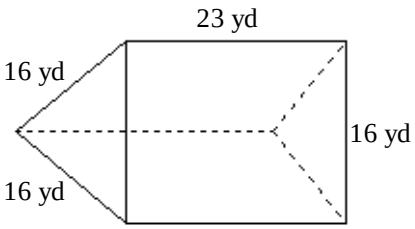
60. Find the surface area of the cone in terms of π.



Not drawn to scale

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

61.

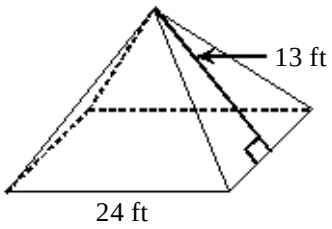


Not drawn to scale

62. Concrete can be purchased by the cubic yard. How much will it cost to pour a slab 15 feet by 15 feet by 4 inches for a patio if the concrete costs $42.00 per cubic yard?

Find the volume of the square pyramid shown. Round to the nearest tenth as necessary.

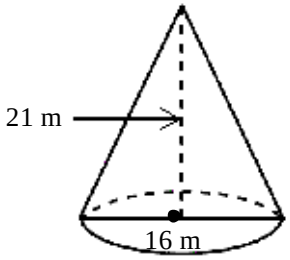
63.



Not drawn to scale

Find the volume of the cone shown as a decimal rounded to the nearest tenth.

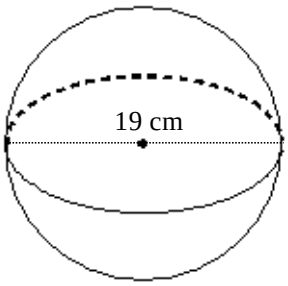
64.



Not drawn to scale

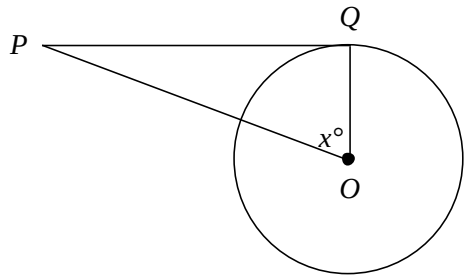
Find the volume of the sphere shown. Give each answer rounded to the nearest cubic unit.

65.

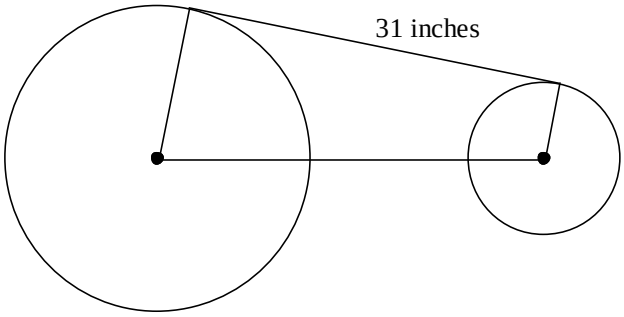


Assume that lines that appear to be tangent are tangent. *O* is the center of the circle. Find the value of *x*. (Figures are not drawn to scale.)

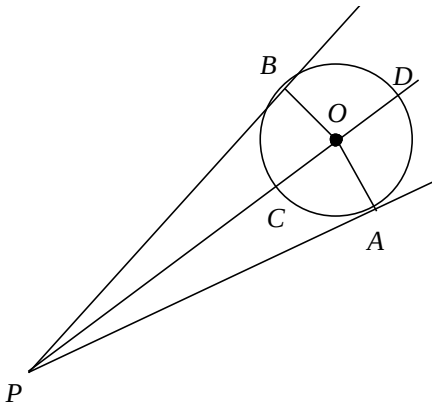
66. $m\angle P = 13$



67. A chain fits tightly around two gears as shown. The distance between the centers of the gears is 33 inches. The radius of the larger gear is 19 inches. Find the radius of the smaller gear. Round your answer to the nearest tenth, if necessary. The diagram is not to scale.



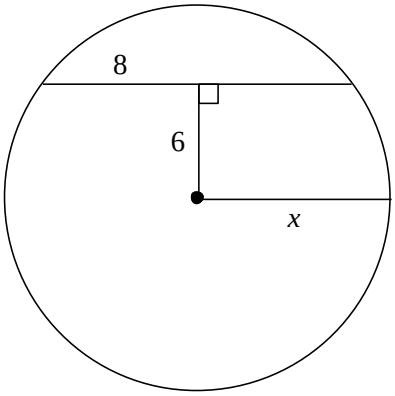
In the figure, $\overrightarrow{PA}$ and $\overrightarrow{PB}$ are tangent to circle *O* and $\overrightarrow{PD}$ bisects $\angle BPA$. The figure is not drawn to scale.



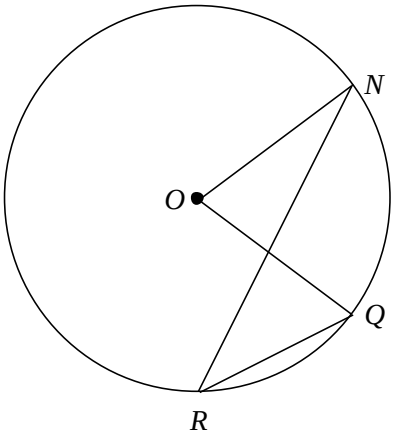
68. For $m\angle AOC = 48$, find $m\angle POB$.

Find the value of *x*. If necessary, round your answer to the nearest tenth. The figure is not drawn to scale.

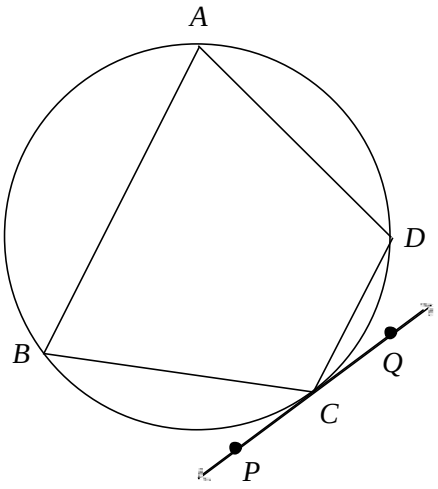
69.



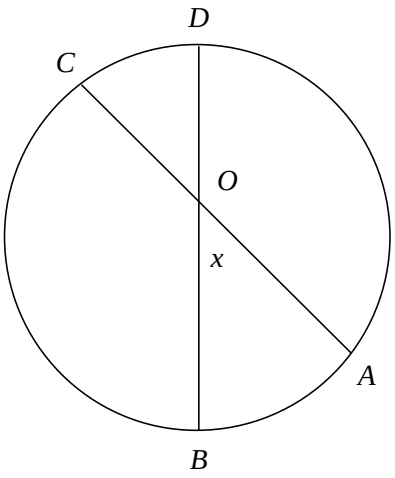
70. $m\angle R = 24$. Find $m\angle O$. (The figure is not drawn to scale.)



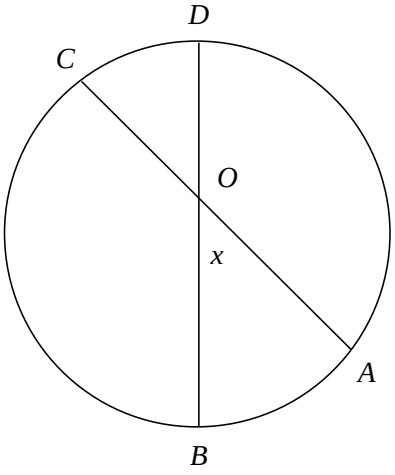
71. In the circle, $m(\text{arc } AD) = 77$, and $m\angle D = 88$. Find $m\angle DCQ$.
(The figure is not drawn to scale.)



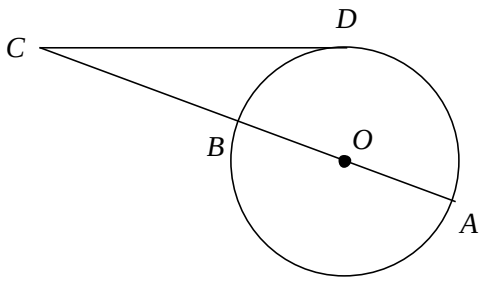
72. Find the value of x for $m(\text{arc } AB) = 47$ and $m(\text{arc } CD) = 27$. (The figure is not drawn to scale.)



73. Find the value of x for $m(\text{arc } AB) = 34$ and $m(\text{arc } CD) = 20$. (The figure is not drawn to scale.)



74. Find the diameter of the circle for $BC = 12$ and $DC = 34$. Round to the nearest tenth.
(The diagram is not drawn to scale.)



75. Find the center and radius of the circle with equation $(x - 7)^2 + (y + 3)^2 = 4$.

Geometry Final 2017 Review
Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: L2 REF: 9-4 Symmetry
   OBJ: 9-4.1 Identifying types of symmetry in figures NAT: NAEP 2005 G2a | ADP K.6
   STA: NY G.G.54 | NY G.G.55 | NY G.G.57 | NY G.G.58 | NY G.G.60
   TOP: 9-4 Example 3 KEY: rotational symmetry | symmetry
2. ANS: D PTS: 1 DIF: L2 REF: 9-4 Symmetry
   OBJ: 9-4.1 Identifying types of symmetry in figures NAT: NAEP 2005 G2a | ADP K.6
   STA: NY G.G.54 | NY G.G.55 | NY G.G.57 | NY G.G.58 | NY G.G.60
   TOP: 9-4 Example 3 KEY: rotational symmetry | symmetry

SHORT ANSWER

3. ANS:
   $8\frac{1}{2}$ in. by $10\frac{5}{8}$ in.

   PTS: 1 DIF: L3 REF: 7-2 Similar Polygons
   OBJ: 7-2.2 Applying Similar Polygons
   NAT: NAEP 2005 G2e | NAEP 2005 M1k | ADP I.1.2 | ADP J.5.1 | ADP K.7
   STA: NY G.CN.1 TOP: 7-2 Example 4 KEY: similar polygons | word problem
4. ANS:
   $\sqrt{21}$

   PTS: 1 DIF: L3 REF: 7-4 Similarity in Right Triangles
   OBJ: 7-4.1 Using Similarity in Right Triangles
   NAT: NAEP 2005 G2e | ADP I.1.2 | ADP K.3
   STA: NY G.PS.4 | NY G.RP.3 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.G.44 | NY G.G.45
   TOP: 7-4 Example 1 KEY: geometric mean | proportion
5. ANS:
   $2b$

   PTS: 1 DIF: L2 REF: 7-1 Ratios and Proportions
   OBJ: 7-1.1 Using Ratios and Proportions
   NAT: NAEP 2005 N4c | ADP I.1.2 | ADP J.5.1 | ADP K.7
   STA: NY G.PS.4 | NY G.PS.6 | NY G.PS.10 | NY G.RP.1 | NY G.RP.3 | NY G.RP.5 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.G.66 | NY G.G.67 TOP: 7-1 Example 2
   KEY: proportion | Cross-Product Property
6. ANS:
   24.7 ft

   PTS: 1 DIF: L2 REF: 7-1 Ratios and Proportions
   OBJ: 7-1.1 Using Ratios and Proportions

NAT: NAEP 2005 N4c | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.PS.4 | NY G.PS.6 | NY G.PS.10 | NY G.RP.1 | NY G.RP.3 | NY G.RP.5 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.G.66 | NY G.G.67 TOP: 7-1 Example 4
KEY: proportion | Cross-Product Property | word problem

7. ANS:
5.82 in.

PTS: 1 DIF: L3 REF: 7-1 Ratios and Proportions
OBJ: 7-1.1 Using Ratios and Proportions
NAT: NAEP 2005 N4c | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.PS.4 | NY G.PS.6 | NY G.PS.10 | NY G.RP.1 | NY G.RP.3 | NY G.RP.5 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.G.66 | NY G.G.67 TOP: 7-1 Example 4
KEY: proportion | Cross-Product Property | scale | word problem

8. ANS:
AA Postulate; $11\frac{1}{5}$

PTS: 1 DIF: L2 REF: 7-3 Proving Triangles Similar
OBJ: 7-3.2 Applying AA, SAS, and SSS Similarity
NAT: NAEP 2005 G2e | ADP I.1.2 | ADP K.3
STA: NY G.PS.4 | NY G.RP.3 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.G.44 | NY G.G.45
TOP: 7-3 Example 3 KEY: Angle-Angle Similarity Postulate

9. ANS:
AA Postulate; $9\frac{4}{5}$

PTS: 1 DIF: L2 REF: 7-3 Proving Triangles Similar
OBJ: 7-3.2 Applying AA, SAS, and SSS Similarity
NAT: NAEP 2005 G2e | ADP I.1.2 | ADP K.3
STA: NY G.PS.4 | NY G.RP.3 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.G.44 | NY G.G.45
TOP: 7-3 Example 3 KEY: Angle-Angle Similarity Postulate

10. ANS:
8

PTS: 1 DIF: L2 REF: 7-1 Ratios and Proportions
OBJ: 7-1.1 Using Ratios and Proportions
NAT: NAEP 2005 N4c | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.PS.4 | NY G.PS.6 | NY G.PS.10 | NY G.RP.1 | NY G.RP.3 | NY G.RP.5 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.G.66 | NY G.G.67 TOP: 7-1 Example 3
KEY: proportion | Cross-Product Property

11. ANS:
13 in. by 15 in.

PTS: 1 DIF: L2 REF: 7-1 Ratios and Proportions
OBJ: 7-1.1 Using Ratios and Proportions
NAT: NAEP 2005 N4c | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.PS.4 | NY G.PS.6 | NY G.PS.10 | NY G.RP.1 | NY G.RP.3 | NY G.RP.5 | NY G.RP.7 | NY

G.CM.2 | NY G.CM.3 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.G.66 | NY G.G.67 TOP: 7-1 Example 4
KEY: proportion | Cross-Product Property | word problem

12. ANS:
not enough information

PTS: 1 DIF: L2 REF: 7-2 Similar Polygons
OBJ: 7-2.1 Similar Polygons
NAT: NAEP 2005 G2e | NAEP 2005 M1k | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.PS.10 | NY G.CN.1 | NY G.CN.4 | NY G.R.2 | NY G.R.3
TOP: 7-2 Example 2 KEY: similar polygons

13. ANS:
18.5 in.

PTS: 1 DIF: L2 REF: 7-2 Similar Polygons
OBJ: 7-2.2 Applying Similar Polygons
NAT: NAEP 2005 G2e | NAEP 2005 M1k | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.CN.1 TOP: 7-2 Example 5 KEY: similar polygons

14. ANS:
8

PTS: 1 DIF: L2 REF: 7-5 Proportions in Triangles
OBJ: 7-5.1 Using the Side-Splitter Theorem
NAT: NAEP 2005 G2e | ADP I.1.2 | ADP J.5.1 | ADP K.3
STA: NY G.CN.1 | NY G.G.45 | NY G.G.47 TOP: 7-5 Example 1
KEY: Side-Splitter Theorem

15. ANS:
24

PTS: 1 DIF: L2 REF: 7-2 Similar Polygons
OBJ: 7-2.1 Similar Polygons
NAT: NAEP 2005 G2e | NAEP 2005 M1k | ADP I.1.2 | ADP J.5.1 | ADP K.7
STA: NY G.PS.10 | NY G.CN.1 | NY G.CN.4 | NY G.R.2 | NY G.R.3
TOP: 7-2 Example 3 KEY: corresponding sides | proportion

16. ANS:
11.1

PTS: 1 DIF: L2 REF: 7-5 Proportions in Triangles
OBJ: 7-5.2 Using the Triangle-Angle-Bisector Theorem
NAT: NAEP 2005 G2e | ADP I.1.2 | ADP J.5.1 | ADP K.3
STA: NY G.CN.1 | NY G.G.45 | NY G.G.47 TOP: 7-5 Example 3
KEY: Triangle-Angle-Bisector Theorem

17. ANS:
$3\sqrt{3}$

PTS: 1 DIF: L2 REF: 7-4 Similarity in Right Triangles
OBJ: 7-4.1 Using Similarity in Right Triangles
NAT: NAEP 2005 G2e | ADP I.1.2 | ADP K.3
STA: NY G.PS.4 | NY G.RP.3 | NY G.RP.7 | NY G.CM.2 | NY G.CM.3 | NY G.G.44 | NY G.G.45
TOP: 7-4 Example 2 KEY: corollaries of the geometric mean | proportion

18. ANS:
13

PTS: 1 DIF: L2 REF: 8-1 The Pythagorean Theorem and Its Converse
OBJ: 8-1.1 The Pythagorean Theorem
NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.1.6 | ADP K.1.2 | ADP K.5 | ADP K.10.3
STA: NY G.CN.1 TOP: 8-1 Example 1
KEY: Pythagorean Theorem | leg | hypotenuse

19. ANS:
$\sqrt{178}$ ft

PTS: 1 DIF: L2 REF: 8-1 The Pythagorean Theorem and Its Converse
OBJ: 8-1.1 The Pythagorean Theorem
NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.1.6 | ADP K.1.2 | ADP K.5 | ADP K.10.3
STA: NY G.CN.1 TOP: 8-1 Example 2
KEY: Pythagorean Theorem | leg | hypotenuse

20. ANS:
acute

PTS: 1 DIF: L2 REF: 8-1 The Pythagorean Theorem and Its Converse
OBJ: 8-1.2 The Converse of the Pythagorean Theorem
NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.1.6 | ADP K.1.2 | ADP K.5 | ADP K.10.3
STA: NY G.PS.10 | NY G.CM.2 | NY G.CM.5 | NY G.CM.7 | NY G.G.48
TOP: 8-1 Example 5 KEY: right triangle | obtuse triangle | acute triangle

21. ANS:
$11\sqrt{2}$ ft

PTS: 1 DIF: L3 REF: 8-2 Special Right Triangles
OBJ: 8-2.1 45°-45°-90° Triangles NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.5.1 | ADP K.5
STA: NY G.PS.10 | NY G.CM.2 | NY G.CM.5 | NY G.CM.7 | NY G.G.48
TOP: 8-2 Example 1 KEY: special right triangles

22. ANS:
$x = 5.7$, $y = 4$

PTS: 1 DIF: L3 REF: 8-2 Special Right Triangles
OBJ: 8-2.1 45°-45°-90° Triangles NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.5.1 | ADP K.5
STA: NY G.PS.10 | NY G.CM.2 | NY G.CM.5 | NY G.CM.7 | NY G.G.48
TOP: 8-2 Example 2 KEY: special right triangles | hypotenuse | leg

23. ANS:
$6\sqrt{3}$

PTS: 1 DIF: L2 REF: 8-2 Special Right Triangles
OBJ: 8-2.2 Using 30°-60°-90° Triangles NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.5.1 | ADP K.5
STA: NY G.G.48 TOP: 8-2 Example 4
KEY: special right triangles | leg | hypotenuse

24. ANS:
$x = 42$, $y = 14\sqrt{3}$

PTS: 1 DIF: L2 REF: 8-2 Special Right Triangles

OBJ: 8-2.2 Using 30°-60°-90° Triangles NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.5.1 | ADP K.5
STA: NY G.G.48 TOP: 8-2 Example 4
KEY: special right triangles | leg | hypotenuse

25. ANS:
$x = 16\sqrt{3}$, $y = 32$

PTS: 1 DIF: L2 REF: 8-2 Special Right Triangles
OBJ: 8-2.2 Using 30°-60°-90° Triangles NAT: NAEP 2005 G3d | ADP I.4.1 | ADP J.5.1 | ADP K.5
STA: NY G.G.48 TOP: 8-2 Example 4
KEY: special right triangles | leg | hypotenuse

26. ANS:
$\sin A = \frac{8}{10}$, $\cos A = \frac{6}{10}$

PTS: 1 DIF: L2 REF: 8-4 Sine and Cosine Ratios
OBJ: 8-4.1 Using Sine and Cosine in Triangles
NAT: NAEP 2005 M1m | ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2
STA: NY G.PS.10 TOP: 8-4 Example 1
KEY: sine | cosine | sine ratio | cosine ratio

27. ANS:
20.9

PTS: 1 DIF: L2 REF: 8-4 Sine and Cosine Ratios
OBJ: 8-4.1 Using Sine and Cosine in Triangles
NAT: NAEP 2005 M1m | ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2
STA: NY G.PS.10 TOP: 8-4 Example 2
KEY: cosine | side length using since and cosine | cosine ratio

28. ANS:
7.3

PTS: 1 DIF: L2 REF: 8-4 Sine and Cosine Ratios
OBJ: 8-4.1 Using Sine and Cosine in Triangles
NAT: NAEP 2005 M1m | ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2
STA: NY G.PS.10 TOP: 8-4 Example 2
KEY: cosine | side length using since and cosine | cosine ratio

29. ANS:
10.5

PTS: 1 DIF: L2 REF: 8-4 Sine and Cosine Ratios
OBJ: 8-4.1 Using Sine and Cosine in Triangles
NAT: NAEP 2005 M1m | ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2
STA: NY G.PS.10 TOP: 8-4 Example 2
KEY: sine | side length using since and cosine | sine ratio

30. ANS:
7

PTS: 1 DIF: L2 REF: 8-4 Sine and Cosine Ratios
OBJ: 8-4.1 Using Sine and Cosine in Triangles
NAT: NAEP 2005 M1m | ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2
STA: NY G.PS.10 TOP: 8-4 Example 2

KEY: sine | side length using since and cosine | sine ratio

31. ANS:
600 m

PTS: 1 DIF: L2 REF: 8-5 Angles of Elevation and Depression
OBJ: 8-5.1 Using Angles of Elevation and Depression
NAT: NAEP 2005 M1k | ADP I.1.2 | ADP I.4.1 | ADP K.11.2 STA: NY G.PS.10
TOP: 8-5 Example 3
KEY: sine | side length using since and cosine | sine ratio | angles of elevation and depression

32. ANS:
85° south of east

PTS: 1 DIF: L2 REF: 8-6 Vectors OBJ: 8-6.1 Describing Vectors
NAT: NAEP 2005 G4e | ADP I.4.1 STA: NY G.CM.2 TOP: 8-6 Example 2
KEY: initial point of a vector | terminal point of a vector | vector

33. ANS:
$\angle Q$

PTS: 1 DIF: L2 REF: 9-1 Translations
OBJ: 9-1.1 Identifying isometries
NAT: NAEP 2005 G2a | NAEP 2005 G2b | NAEP 2005 G2c | ADP K.6
TOP: 9-1 Example 2 KEY: image-preimage | corresponding parts

34. ANS:
$P'(-3, -4), Q'(1, 5), R'(-2, -4)$

PTS: 1 DIF: L2 REF: 9-2 Reflections
OBJ: 9-2.1 Finding reflection images
NAT: NAEP 2005 G2a | NAEP 2005 G2b | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.5 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-2 Example 1
KEY: image-preimage | corresponding parts | coordinate plane | reflection

35. ANS:
2 units to the left and 6 units down

PTS: 1 DIF: L2 REF: 9-1 Translations
OBJ: 9-1.2 Translations using vectors
NAT: NAEP 2005 G2a | NAEP 2005 G2b | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.6 | NY G.CM.7 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-1 Example 3 KEY: translation | vector

36. ANS:
$\langle -6, 2 \rangle$

PTS: 1 DIF: L2 REF: 9-1 Translations
OBJ: 9-1.2 Translations using vectors
NAT: NAEP 2005 G2a | NAEP 2005 G2b | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.6 | NY G.CM.7 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-1 Example 3 KEY: translation | vector

37. ANS:

$\langle -4, 10 \rangle$

PTS: 1 DIF: L2 REF: 9-1 Translations
OBJ: 9-1.2 Translations using vectors
NAT: NAEP 2005 G2a | NAEP 2005 G2b | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.6 | NY G.CM.7 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-1 Example 2 KEY: translation | vector | coordinate plane | translation rule

38. ANS:
E

PTS: 1 DIF: L2 REF: 9-1 Translations
OBJ: 9-1.2 Translations using vectors
NAT: NAEP 2005 G2a | NAEP 2005 G2b | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.6 | NY G.CM.7 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-1 Example 3 KEY: translation | vector | coordinate plane | translation rule

39. ANS:
120°

PTS: 1 DIF: L2 REF: 9-3 Rotations
OBJ: 9-3.1 Drawing and identifying rotation images
NAT: NAEP 2005 G2a | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.5 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-3 Example 3 KEY: rotation | degree of rotation | image

40. ANS:
K

PTS: 1 DIF: L2 REF: 9-3 Rotations
OBJ: 9-3.1 Drawing and identifying rotation images
NAT: NAEP 2005 G2a | NAEP 2005 G2c | ADP K.6
STA: NY G.CM.5 | NY G.G.54 | NY G.G.55 | NY G.G.56 | NY G.G.57 | NY G.G.61
TOP: 9-3 Example 2 KEY: rotation | degree of rotation | image

41. ANS:
(9, 3)

PTS: 1 DIF: L4 REF: 9-6 Compositions of Reflections
OBJ: 9-6.2 Glide reflections NAT: NAEP 2005 G2d | ADP K.6
STA: NY G.G.54 | NY G.G.55 | NY G.G.57 | NY G.G.58 | NY G.G.60
KEY: algebra | composition of transformations | coordinate plane | image-preimage | glide reflection | image | line of reflection | reflection line | glide vector

42. ANS:
rotation; 180° about (1, 4)

PTS: 1 DIF: L3 REF: 9-6 Compositions of Reflections
OBJ: 9-6.2 Glide reflections NAT: NAEP 2005 G2d | ADP K.6
STA: NY G.G.54 | NY G.G.55 | NY G.G.57 | NY G.G.58 | NY G.G.60
TOP: 9-6 Example 5
KEY: reflection | orientation | isometry | translation | rotation | glide reflection | translation vector | center of rotation | angle of rotation | glide vector | reflection line

43. ANS:

1.25 feet

PTS: 1 DIF: L2 REF: 9-5 Dilations
OBJ: 9-5.1 Locating dilation images NAT: NAEP 2005 G2c | ADP K.7
TOP: 9-5 Example 2 KEY: dilation | enlargement | scale factor | word problem

44. ANS:
21 cm^2

PTS: 1 DIF: L2 REF: 10-1 Areas of Parallelograms and Triangles
OBJ: 10-1.1 Area of a Parallelogram NAT: NAEP 2005 M1h | ADP J.1.6 | ADP K.8.2
STA: NY G.G.54 | NY G.G.55 | NY G.G.57 | NY G.G.58 | NY G.G.60
TOP: 10-1 Example 1 KEY: area | parallelogram | base | height

45. ANS:
76.5 cm^2

PTS: 1 DIF: L3 REF: 10-2 Areas of Trapezoids, Rhombuses, and Kites
OBJ: 10-2.1 Area of a Trapezoid NAT: NAEP 2005 M1h | ADP J.1.6 | ADP K.8.2
STA: NY G.R.6 TOP: 10-2 Example 2 KEY: area | trapezoid

46. ANS:
50 m^2

PTS: 1 DIF: L2 REF: 10-2 Areas of Trapezoids, Rhombuses, and Kites
OBJ: 10-2.2 Finding Areas of Rhombuses and Kites NAT: NAEP 2005 M1h | ADP K.8.2
STA: NY G.R.6 TOP: 10-2 Example 4 KEY: area | rhombus

47. ANS:
128 m^2

PTS: 1 DIF: L2 REF: 10-2 Areas of Trapezoids, Rhombuses, and Kites
OBJ: 10-2.2 Finding Areas of Rhombuses and Kites NAT: NAEP 2005 M1h | ADP K.8.2
STA: NY G.R.6 TOP: 10-2 Example 4 KEY: area | rhombus

48. ANS:
72°; 54°

PTS: 1 DIF: L3 REF: 10-3 Areas of Regular Polygons
OBJ: 10-3.1 Areas of Regular Polygons NAT: NAEP 2005 M1h | ADP K.8.2
STA: NY G.R.6 TOP: 10-3 Example 1
KEY: regular polygon | multi-part question

49. ANS:
5 : 8 and 25 : 64

PTS: 1 DIF: L3 REF: 10-4 Perimeters and Areas of Similar Figures
OBJ: 10-4.1 Finding Perimeters and Areas of Similar Figures
NAT: NAEP 2005 M2g | NAEP 2005 N4c | ADP I.1.2 | ADP K.8.3
STA: NY G.RP.1 | NY G.CM.2 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.R.6 TOP: 10-4 Example 1 KEY: perimeter | area | similar figures

50. ANS:
1715 cm^2

PTS: 1 DIF: L3 REF: 10-4 Perimeters and Areas of Similar Figures
OBJ: 10-4.1 Finding Perimeters and Areas of Similar Figures

NAT: NAEP 2005 M2g | NAEP 2005 N4c | ADP I.1.2 | ADP K.8.3
STA: NY G.RP.1 | NY G.CM.2 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3 | NY G.R.6 TOP: 10-4 Example 2 KEY: similar figures | area

51. ANS:
61.9 cm^2

PTS: 1 DIF: L2 REF: 10-5 Trigonometry and Area
OBJ: 10-5.1 Finding the Area of a Regular Polygon
NAT: NAEP 2005 M1h | ADP I.4.1 | ADP K.11.3 STA: NY G.R.6
TOP: 10-5 Example 1
KEY: area of a regular polygon | area | regular polygon | tangent | measure of central angle of a regular polygon

52. ANS:
6.5π cm

PTS: 1 DIF: L2 REF: 10-6 Circles and Arcs
OBJ: 10-6.2 Circumference and Arc Length NAT: NAEP 2005 M1h | ADP K.4
TOP: 10-6 Example 4 KEY: circumference | diameter

53. ANS:
10.89π m^2

PTS: 1 DIF: L2 REF: 10-7 Areas of Circles and Sectors
OBJ: 10-7.1 Finding Areas of Circles and Parts of Circles
NAT: NAEP 2005 M1h | ADP I.4.1 | ADP J.1.6 | ADP K.4 | ADP K.8.2
TOP: 10-7 Example 1 KEY: area of a circle | radius

54. ANS:
0.32

PTS: 1 DIF: L3 REF: 10-8 Geometric Probability
OBJ: 10-8.1 Using Segment and Area Models NAT: ADP K.4 | ADP L.4.1 | ADP L.4.5
STA: NY G.R.6 TOP: 10-8 Example 4 KEY: geometric probability

55. ANS:
22 edges

PTS: 1 DIF: L3 REF: 11-1 Space Figures and Cross Sections
OBJ: 11-1.1 Identifying Nets of Space Figures NAT: NAEP 2005 G1b | ADP K.9
STA: NY G.RP.1 | NY G.CM.4 | NY G.CN.1 | NY G.CN.2 | NY G.CN.4 | NY G.R.2 | NY G.R.3
TOP: 11-1 Example 2
KEY: edge | Euler's Formula | face | polyhedron | problem solving | word problem | vertices

56. ANS:
840 m^2 ; 872 m^2

PTS: 1 DIF: L2 REF: 11-2 Surface Areas of Prisms and Cylinders
OBJ: 11-2.1 Finding Surface Area of a Prism
NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2 | ADP K.9
STA: NY G.CM.2 TOP: 11-2 Example 2
KEY: surface area formulas | lateral area | surface area | prism | surface area of a prism

57. ANS:
486π in.^2

PTS: 1 DIF: L2 REF: 11-2 Surface Areas of Prisms and Cylinders
OBJ: 11-2.2 Finding Surface Area of a Cylinder
NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2 | ADP K.9
STA: NY G.CM.7 | NY G.G.10 | NY G.G.14 TOP: 11-2 Example 3
KEY: surface area of a cylinder | cylinder | surface area formulas | surface area

58. ANS:
732 m^2

PTS: 1 DIF: L2 REF: 11-3 Surface Areas of Pyramids and Cones
OBJ: 11-3.1 Finding Surface Area of a Pyramid
NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2 | ADP K.9
STA: NY G.CM.7 | NY G.G.10 | NY G.G.14 TOP: 11-3 Example 1
KEY: surface area of a pyramid | surface area formulas | pyramid

59. ANS:
2726 yd^2

PTS: 1 DIF: L2 REF: 11-3 Surface Areas of Pyramids and Cones
OBJ: 11-3.1 Finding Surface Area of a Pyramid
NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2 | ADP K.9
STA: NY G.CM.7 | NY G.G.10 | NY G.G.14 TOP: 11-3 Example 2
KEY: slant height of a pyramid | lateral area | pyramid | surface area formulas | Pythagorean Theorem

60. ANS:
$216\pi \text{ cm}^2$

PTS: 1 DIF: L2 REF: 11-3 Surface Areas of Pyramids and Cones
OBJ: 11-3.2 Finding Surface Area of a Cone
NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2 | ADP K.9
STA: NY G.G.13 | NY G.G.13 | NY G.G.15 TOP: 11-3 Example 3
KEY: surface area of a cone | surface area formulas | surface area | cone

61. ANS:
2549.6 yd^3

PTS: 1 DIF: L2 REF: 11-4 Volumes of Prisms and Cylinders
OBJ: 11-4.1 Finding Volume of a Prism NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2
STA: NY G.G.13 | NY G.G.13 | NY G.G.15 TOP: 11-4 Example 2
KEY: volume of a triangular prism | volume formulas | volume | prism

62. ANS:
$116.67

PTS: 1 DIF: L3 REF: 11-4 Volumes of Prisms and Cylinders
OBJ: 11-4.1 Finding Volume of a Prism NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2
STA: NY G.G.13 | NY G.G.13 | NY G.G.15 TOP: 11-4 Example 1
KEY: volume of a rectangular prism | prism | problem solving | word problem | volume formulas | volume

63. ANS:
960 ft^3

PTS: 1 DIF: L2 REF: 11-5 Volumes of Pyramids and Cones
OBJ: 11-5.1 Finding Volume of a Pyramid

NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2
STA: NY G.CM.5 | NY G.CN.3 | NY G.R.6 | NY G.G.11 | NY G.G.12 | NY G.G.14
TOP: 11-5 Example 1
KEY: volume of a pyramid | pyramid | volume formulas | volume | height of a pyramid | Pythagorean Theorem

64. ANS:
1,407.4 m^3

PTS: 1 DIF: L2 REF: 11-5 Volumes of Pyramids and Cones
OBJ: 11-5.2 Finding Volume of a Cone NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2
STA: NY G.R.6 | NY G.G.13 | NY G.G.13 | NY G.G.15 TOP: 11-5 Example 4
KEY: volume of a cone | volume formulas | volume | cone

65. ANS:
3,591 cm^3

PTS: 1 DIF: L2 REF: 11-6 Surface Areas and Volumes of Spheres
OBJ: 11-6.1 Finding Surface Area and Volume of a Sphere
NAT: NAEP 2005 M1j | ADP I.4.1 | ADP J.1.6 | ADP K.8.2
STA: NY G.R.6 | NY G.G.13 | NY G.G.13 | NY G.G.15 TOP: 11-6 Example 3
KEY: volume of a sphere | sphere | volume formulas | volume

66. ANS:
77

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.1 Using the Radius-Tangent Relationship NAT: NAEP 2005 G3e | ADP K.4
STA: NY G.CM.2 TOP: 12-1 Example 1
KEY: tangent to a circle | point of tangency | angle measure | properties of tangents | central angle

67. ANS:
7.7 inches

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.1 Using the Radius-Tangent Relationship NAT: NAEP 2005 G3e | ADP K.4
STA: NY G.CM.2 TOP: 12-1 Example 2
KEY: word problem | tangent to a circle | point of tangency | properties of tangents | right triangle | Pythagorean Theorem

68. ANS:
48

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.2 Using Multiple Tangents NAT: NAEP 2005 G3e | ADP K.4
STA: NY G.PS.4 | NY G.PS.8 | NY G.G.50 | NY G.G.53 TOP: 12-1 Example 4
KEY: properties of tangents | tangent to a circle | Tangent Theorem

69. ANS:
10

PTS: 1 DIF: L2 REF: 12-2 Chords and Arcs
OBJ: 12-2.2 Lines Through the Center of a Circle NAT: NAEP 2005 G3e | ADP K.4
STA: NY G.PS.4 | NY G.PS.8 | NY G.CM.4 | NY G.CM.7 | NY G.G.49 | NY G.G.51
TOP: 12-2 Example 3
KEY: bisected chords | circle | perpendicular | perpendicular bisector | Pythagorean Theorem

70. ANS:
48

PTS: 1 DIF: L2 REF: 12-3 Inscribed Angles
OBJ: 12-3.1 Finding the Measure of an Inscribed Angle NAT: NAEP 2005 G3e | ADP K.4
STA: NY G.PS.4 | NY G.PS.8 | NY G.CM.4 | NY G.CM.7 | NY G.G.49 | NY G.G.51
TOP: 12-3 Example 2
KEY: circle | inscribed angle | intercepted arc | inscribed angle-arc relationship

71. ANS:
53.5

PTS: 1 DIF: L2 REF: 12-3 Inscribed Angles
OBJ: 12-3.2 The Angle Formed by a Tangent and a Chord NAT: NAEP 2005 G3e | ADP K.4
STA: NY G.PS.8 | NY G.G.51 | NY G.G.52 TOP: 12-3 Example 3
KEY: circle | inscribed angle | tangent-chord angle | intercepted arc | arc measure | angle measure

72. ANS:
37°

PTS: 1 DIF: L2 REF: 12-4 Angle Measures and Segment Lengths
OBJ: 12-4.1 Finding Angle Measures NAT: NAEP 2005 G3e | ADP J.5.1 | ADP K.4
STA: NY G.PS.8 | NY G.G.51 | NY G.G.52 TOP: 12-4 Example 1
KEY: circle | secant | angle measure | arc measure | intersection inside the circle

73. ANS:
27°

PTS: 1 DIF: L2 REF: 12-4 Angle Measures and Segment Lengths
OBJ: 12-4.1 Finding Angle Measures NAT: NAEP 2005 G3e | ADP J.5.1 | ADP K.4
STA: NY G.PS.8 | NY G.G.51 | NY G.G.52 TOP: 12-4 Example 1
KEY: circle | secant | angle measure | arc measure | intersection inside the circle

74. ANS:
84.3

PTS: 1 DIF: L2 REF: 12-4 Angle Measures and Segment Lengths
OBJ: 12-4.2 Finding Segment Lengths NAT: NAEP 2005 G3e | ADP J.5.1 | ADP K.4
STA: NY G.PS.4 | NY G.PS.8 | NY G.CM.4 | NY G.CM.7 | NY G.G.49 | NY G.G.51
TOP: 12-4 Example 3
KEY: circle | intersection outside the circle | secant | tangent | diameter

75. ANS:
center (7, –3); $r = 2$

PTS: 1 DIF: L2 REF: 12-5 Circles in the Coordinate Plane
OBJ: 12-5.2 Finding the Center and Radius of a Circle NAT: NAEP 2005 G4d | ADP K.10.4
STA: NY G.CM.2 | NY G.G.71 | NY G.G.72 | NY G.G.73 | NY G.G.74
TOP: 12-5 Example 3 KEY: center | circle | coordinate plane | radius