

GEOMETRY
SEMESTER 2 FINAL REVIEW

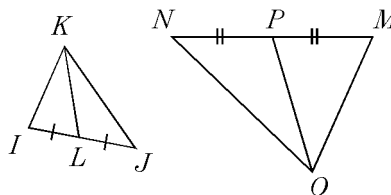
Name _____

Date _____

1. Given that $\triangle ABC \sim \triangle DEF$ with $AB = 8$, $BC = 10$, and $DE = 12$. Find the length of $\overline{EF}$.

a) 8 b) 10 c) 12 d) 14 e) 15

2. Given the following diagram with $\triangle IJK \sim \triangle MNO$, $KI = 24$, $OM = 30$, $KL = 3x + 4$, and $OP = 6x - 4$. If $\overline{KL}$ and $\overline{OP}$ are medians, find the value of KL .



a) 12 b) 16 c) 20 d) 27 e) 33

3. Regular hexagons $ABCDEF$ and $UVWXYZ$ are similar. $AB = 10$, $VW = 8x - 9$ and $YZ = 2x + 9$. Find VW .

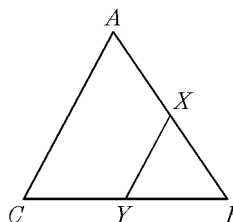
a) 10 b) 15 c) 19 d) 22 e) 25

4. A flagpole 24 ft tall casts a shadow 6 ft long. At the same time, a person casts a shadow $1\frac{1}{2}$ ft long. Find the height of the person.

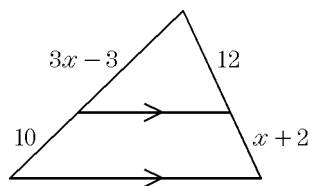
a) $4\frac{1}{2}$ ft b) 5 ft c) $5\frac{1}{2}$ ft d) 6 ft e) $6\frac{1}{2}$ ft

5. What must be shown in order to prove two triangles are similar using *SSS similarity*?

6. In the diagram, $m\angle A = m\angle BXY$. $\triangle YXB \sim$ _____ by _____.

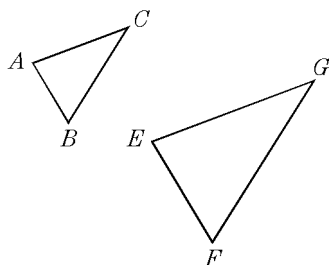


7. Find the value of x .

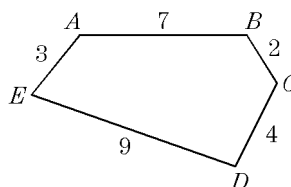


8. On a sunny day, Hillary wants to find the height of a tree. She walks 20 feet along the shadow that the tree casts until her shadow ends at the same point as the tree's shadow. Hillary is 5 feet tall and the length of her shadow is 8 feet. How many *inches* tall is the tree?

9. In the diagram, $\triangle ABC \sim \triangle EFG$, $AB = 1 - x$, $AC = x + 4$, $EF = x^2 - 2x + 1$, and $EG = 4 - 3x - x^2$. What is the value of x ?



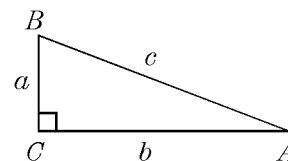
10. Find the ratio of CD to AE .



11. A triangle with sides of 8, 9, and 15 is similar to a triangle whose longest side is 30. What is the perimeter of the larger triangle?

12. In the given figure, if $a = 24$ and $c = 25$, find the value of b .

- a) 5 b) 7
c) $7\sqrt{5}$ d) 10
e) $12\sqrt{5}$



13. In right triangle $\triangle XYZ$ with right angle Y , if $XZ = 25$ and $YZ = 24$, find the length of XY .

- a) 1 b) 7 c) 35
d) 49 e) $\sqrt{1201}$

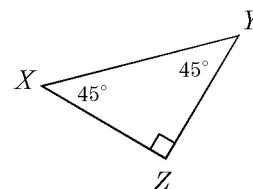
14. In equilateral $\triangle ABC$, point D is located on $\overline{AB}$ and $\overline{CD} \perp \overline{AB}$. If $AC = 10$ then find the length of $\overline{CD}$.

- a) $3\sqrt{3}$ b) $5\sqrt{3}$ c) $6\sqrt{3}$ d) $7\sqrt{6}$ e) $7\sqrt{6}$

15. If a 25-foot ladder is placed against a wall so that it reaches a height of 24 feet, how far away from the base of the wall are the feet of the ladder?

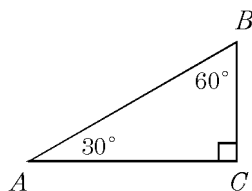
16. In the given figure, if $XY = 12$, find the length of $\overline{XZ}$.

- a) 3 b) $6\sqrt{2}$
c) $8\sqrt{2}$ d) $12\sqrt{2}$
e) 24



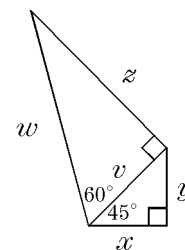
17. In the given figure, if $AB = 36$, find the length of $\overline{BC}$.

- a) 9 b) 18
c) $15\sqrt{3}$ d) $16\sqrt{3}$
e) 33



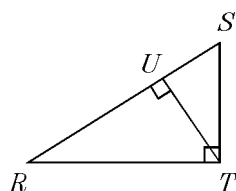
18. In the given figure, if $x = 4$, find the value of w .

- a) 4 b) $4\sqrt{3}$ c) $8\sqrt{2}$
d) $8\sqrt{3}$ e) $8\sqrt{6}$



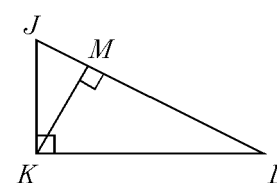
19. Given the figure with $\angle RTS$ a right angle, and $\overline{TU}$ is an altitude. If $RU = 8$ and $TU = 4$, find the value of US .

- a) 2 b) 4 c) 8
d) 10 e) 12



20. In the figure, $\triangle JKL$ is a right triangle with $\overline{KM}$ an altitude. If $JK = 24$ and $JM = 8$, find the value of JL .

- a) 18 b) 24
c) $20\sqrt{2}$ d) 42
e) 72



21. Find the distance between the points (1, 4) and (4, 8).

- a) 2 b) 3 c) 4 d) 5 e) 6

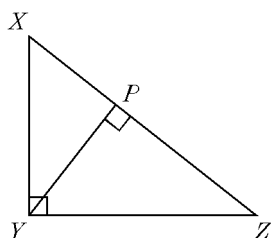
22. Given the coordinates $A(6, -3)$ and $B(4, -5)$, find the length of $\overline{AB}$.

- a) $2\sqrt{2}$ b) $2\frac{1}{2}$ c) $3\sqrt{2}$ d) $4\frac{1}{2}$ e) $5\sqrt{2}$

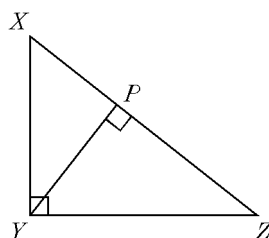
23. What is the geometric mean between $\sqrt{2}$ and $2\sqrt{2}$?

24. If 5 is the geometric mean between 3 and x , what is the value of x ?

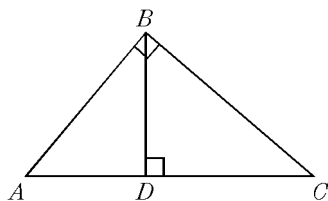
25. In the diagram, $ZP = 6$ and $XZ = 9$. What is the length of $\overline{YZ}$?



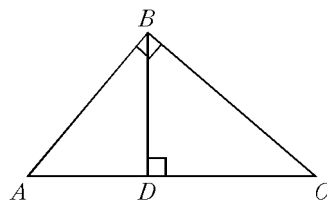
26. In the diagram, $XY = 7$ and $XP = 4$. What is the length of $\overline{XZ}$?



27. In the diagram, $\overline{BD} = 6$ and $AC = 12$. What is the length of $\overline{AD}$?

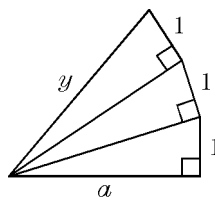


28. In the diagram, $\overline{AB} = 8$ and $AC = 12$. What is the length of $\overline{AD}$?

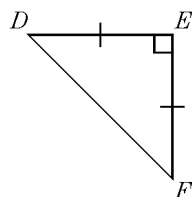


29. A square has a diagonal of length 12. What is the length of one of the sides of the square?

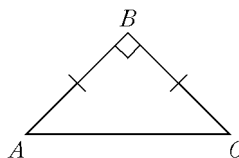
30. What is the value of y in the diagram given $a = 5$?



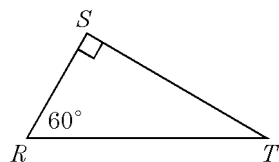
31. In the diagram, $DE = 4$. Find DF .



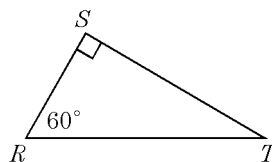
32. In the diagram, $AB = \sqrt{2}$. What is the length of $\overline{AC}$?



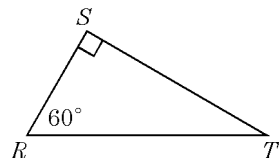
33. In the diagram, $ST = 9\sqrt{3}$. Find SR .



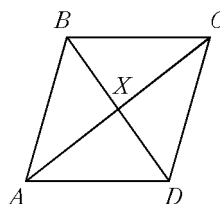
34. In the diagram, $ST = 3\sqrt{3}$. Find SR .



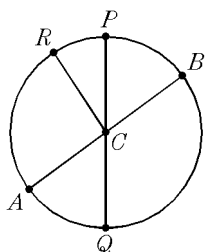
35. In the diagram, $ST = 12\sqrt{3}$. Find the length of $\overline{RT}$.



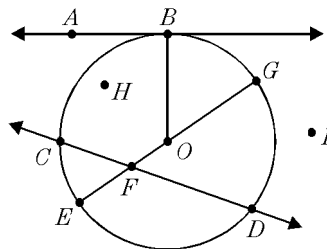
36. In the diagram, $ABCD$ is a rhombus. $m\angle CAD = 30$ and $AC = 20\sqrt{3}$. What is the perimeter of the rhombus?



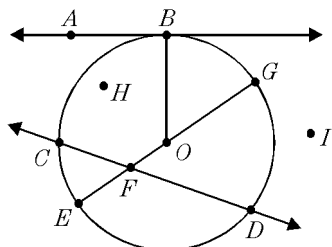
37. For each of the following arcs, state whether it is a *major arc*, a *minor arc*, or a *semicircle* or *C*.



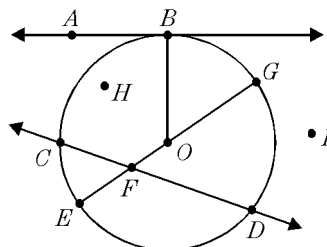
- a) $\widehat{RP}$
- b) $\widehat{AQB}$
- c) $\widehat{BRQ}$
- d) $\widehat{PA}$



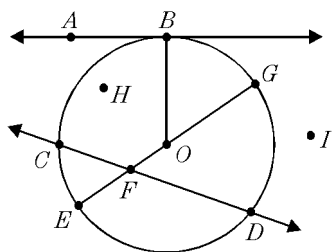
38. Name the circle.



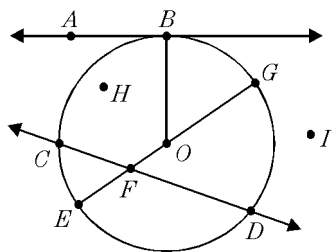
39. Name the center of the circle.



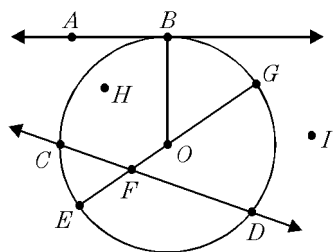
40. Name a radius of the circle.



41. Name a chord of the circle.

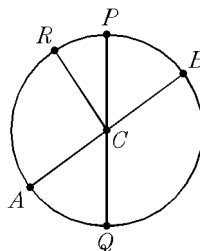


43. Name a secant of the circle.



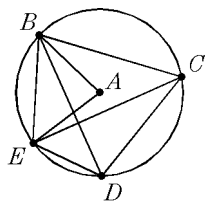
42. Name a tangent of the circle.

44. In circle C, $\overline{AB}$ and $\overline{PQ}$ are diameters, $m\angle BCP = 52$, and $m\angle ACR = 93$. Find the following measures.

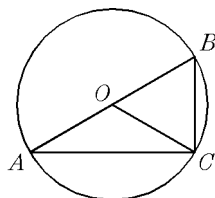


- $m\angle ACQ$
- $m\angle BCQ$
- $m\angle RCP$
- $m\widehat{AQ}$
- $m\widehat{ABR}$

45. In circle A , $m\widehat{BE} = 84$. Find $m\angle BAE + m\angle BCE$.

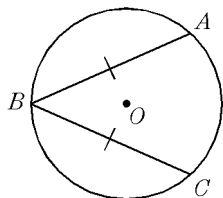


46. In the diagram, $\odot O$ has radius $\overline{OC}$ drawn, $\overline{AB}$ is the diameter, and $\overline{BC} \cong \overline{OC}$. Find the measures of the given angles.

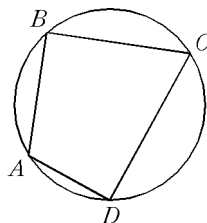


- $m\angle OCB = \underline{\hspace{2cm}}$
- $m\angle OCA = \underline{\hspace{2cm}}$
- $m\angle OAC = \underline{\hspace{2cm}}$
- $m\angle AOC = \underline{\hspace{2cm}}$

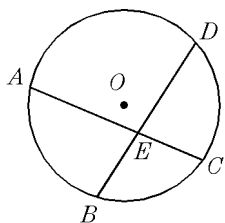
47. In the diagram, what is the measure of $\angle ABC$ if $m\widehat{AB} = 140$?



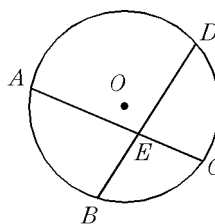
48. In the diagram, $m\angle ABC = 90$, and $m\widehat{AD} = 72$. What is the measure of $\widehat{CD}$?



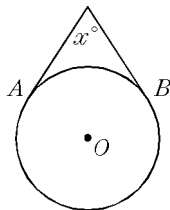
49. In the diagram, two chords of circle O , $\overline{AC}$ and $\overline{BD}$, intersect at E . $m\widehat{AB} = 88$ and $m\widehat{DC} = 62$. What is the measure of $\angle AEB$?



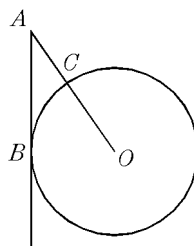
50. In the diagram, two chords of circle O , $\overline{AC}$ and $\overline{BD}$, intersect at E . $m\angle AEB = 80$ and $m\widehat{CD} = 94$. What is the measure of $\widehat{AB}$?



51. In the diagram, what is the value of x if $m\widehat{AB} = 100$?

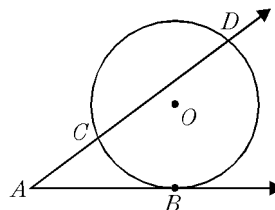


52. In the diagram, $\overline{AB}$ is tangent to $\odot O$ at point B and $m\angle OAB = 38$. What is the measure of $\widehat{BC}$?

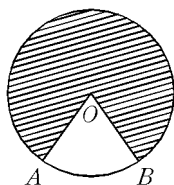


53. An arc of a circle has a length of 3π units. If the circle it comes from has a radius of 8 units, what is the measure of the central angle associated with this arc?

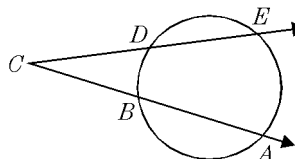
54. In the diagram, $m\widehat{BD} = 160$, and $m\widehat{CD} = 130$. Find $m\angle A$.



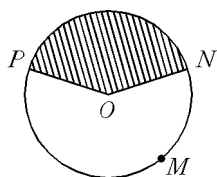
55. In the diagram, the radius of circle O is $4\sqrt{2}$ m and the area of the shaded region is $\frac{44}{9}\pi$ m². Find the degree measure of central angle AOB .



56. In the diagram, $m\widehat{DB} = 32$ and $m\widehat{EA} = 88$. What is the measure of $\angle ECA$?



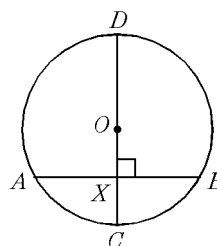
57. In the diagram, the radius of circle O is 12 units and the area of the shaded region is 56π units². Find $m\widehat{PMN}$.



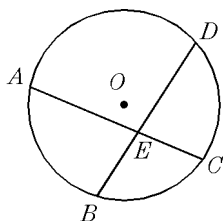
58. Suppose a chord of a circle is 6 cm long and 4 cm from the center. How long is the radius of the circle?

59. Suppose a chord in a circle of radius 9 is 12 units long. How far from the center of the circle is the chord?

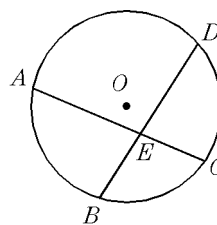
60. In the diagram, if $AB = 14$ and $\overline{CD} \perp \overline{AB}$, what is the length of $\overline{AX}$?



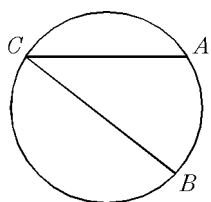
61. In the diagram, chord $\overline{AC}$ bisects chord $\overline{BD}$, $AE = 6$, and $EC = 3$. What is the length of BD ?



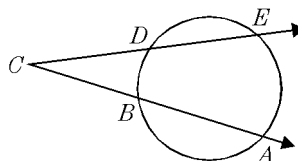
62. In the diagram, $AE = x + 5$, $ED = x + 2$, $BE = x$, and $EC = x - 1$. Solve for x .



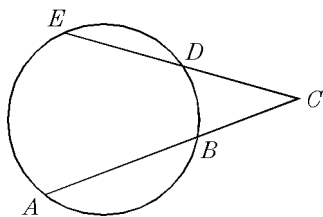
63. In the diagram, $\overline{CB}$ contains the center of the circle, $m\angle ACB = 40$ and $\widehat{AC}$ has a length of 10π units. What is the length of $\overline{CB}$?



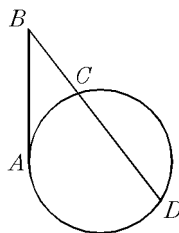
64. In the diagram, $m\angle C = 55$, $m\widehat{BD} = 70$, $\overline{DE} \cong \overline{BA}$ and the radius of the circle is 12 cm. What is the arc length of $\widehat{DE}$ to the nearest hundredth of a centimeter?



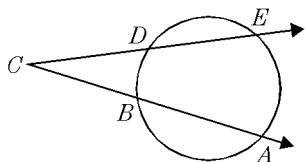
65. In the diagram, $CD = 4$, $ED = 5$, and $BC = 3$. What is the length of $\overline{AB}$?



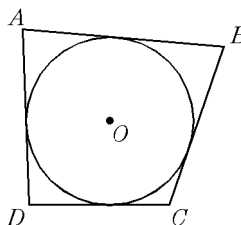
66. In the diagram, $AB = 4$ and $CD = 6$. What is the length of tangent $\overline{BC}$?



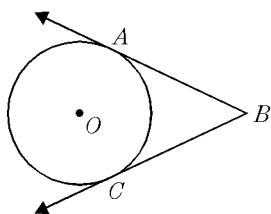
67. In the diagram, $CD = 6$, $DE = 4$, and $BA = 7$. What is the length of $\overline{CB}$?



68. In the diagram, $AB = 10$, $BC = 12$, and $CD = 9$. Find the length of $\overline{DA}$.

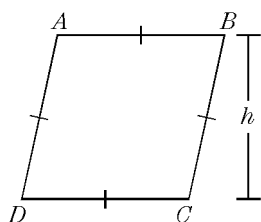


69. In the diagram, $AB = x + 5$ and $CB = 2x - 1$. What is the value of x ?

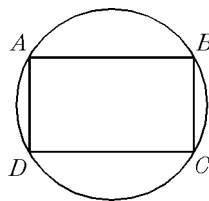


70. What is the area of a parallelogram with a height of $4\sqrt{3}$ cm and a corresponding base of $3\sqrt{5}$ cm?

71. In the diagram, $AD = 9$ and $h = 8$. What is the area of the rhombus $ABCD$?



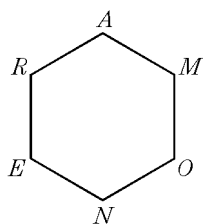
72. In the diagram, a rectangle $ABCD$ is inscribed in a circle of diameter 15. If $AB = 12$, what is the area of the rectangle?



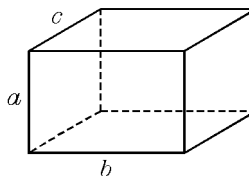
73. A square has a diagonal measuring $6\sqrt{2}$ miles. What is its area?

74. A regular hexagon has a perimeter of 27 and an apothem of $\frac{9\sqrt{3}}{4}$. What is the exact area of this polygon?

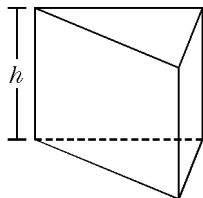
75. In the diagram, hexagon $RAMONE$ is regular. If $RA = 4$, what is the area of the hexagon?



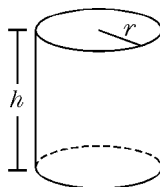
76. A right rectangular prism is shown. If $a = 3$, $b = 6$, and $c = 5$, what is the volume of this prism?



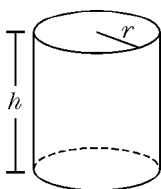
77. The right triangular prism shown has bases that are equilateral triangles. The height h of the prism is 8 in. and the base edges each measure 5 in. Find the exact volume of the prism.



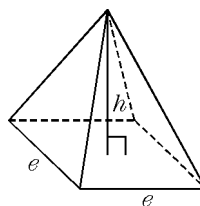
78. The right circular cylinder shown in the diagram has a height of 6 cm and a radius of 3 cm. What is the volume of this cylinder?



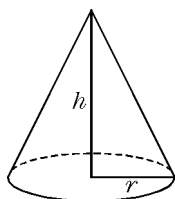
79. In the right cylinder shown, $h = 12$ and $r = 2$. What is the total surface area of this cylinder?



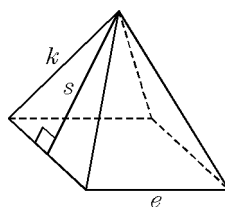
80. In the diagram, a right square pyramid is shown. The altitude $h = 10$ and the base edge $e = 4$. What is the volume of the pyramid?



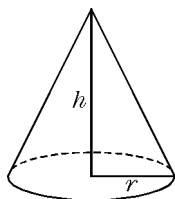
81. In the diagram, the height h of the cone is 15 cm and the radius r of the base is 7 cm. What is the volume of the cone in cubic centimeters?



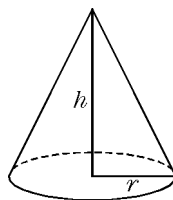
82. A right square pyramid is shown with lateral edge $k = 10$, slant height $s = 8$, and base edge $e = 12$. What is the total surface area of this pyramid?



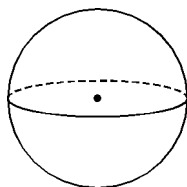
83. In the diagram, the right cone has a height of 12 cm, and a radius of 5 cm. What is the *lateral* surface of the cone?



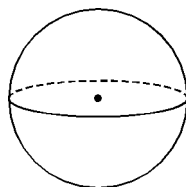
84. In the diagram, the right cone has a height of 12 cm, and a radius of 7 cm. What is the *total* surface area of the cone to the nearest tenth of a square centimeter?



85. The radius of the sphere shown is 3 cm. What is the exact volume of the sphere?



86. The sphere shown has a volume of $972\pi \text{ in}^3$. What is the radius of the sphere?



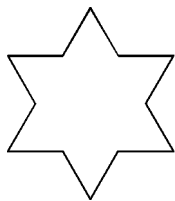
87. What is the surface area of a sphere with a radius of 3 cm?

88. What is the radius of the sphere that has a surface area of $169\pi \text{ cm}^2$?

89. Name the transformation suggested by the motion of windshield wipers.

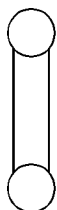
90. Name the transformation suggested by the wings of a butterfly.

91. How many lines of symmetry does the star in the diagram appear to have?

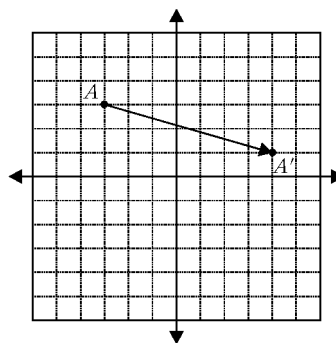


92. In the set of the 26 capitalized letters name all the letters that have *vertical* line symmetry.

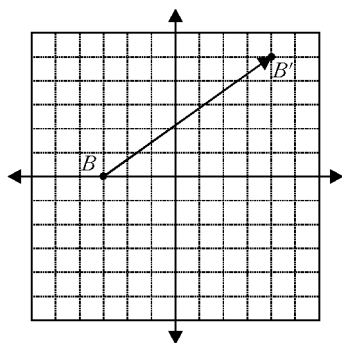
93. How many lines of symmetry does the given object appear to have?



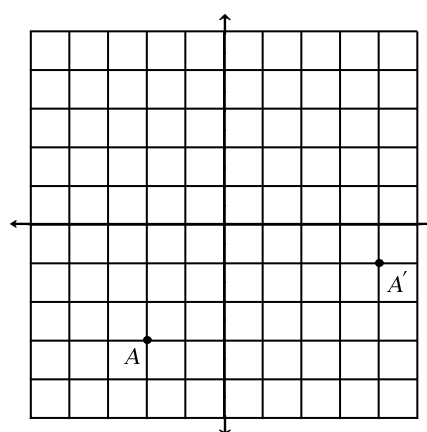
94. In the diagram, describe the translation from A to A' in mapping notation.



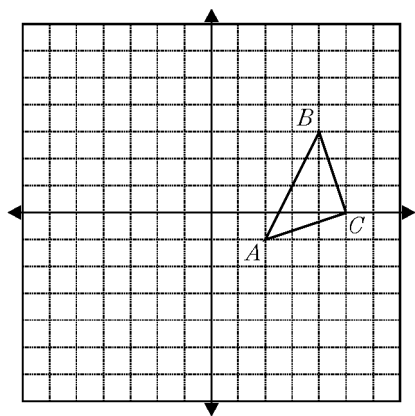
95. In the diagram, describe the translation from B to B' in mapping notation.



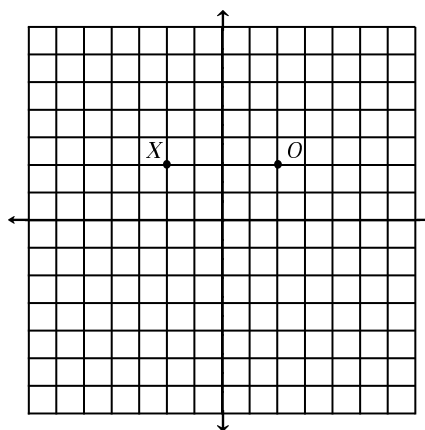
96. In the diagram, describe the translation from A to A' in mapping notation.



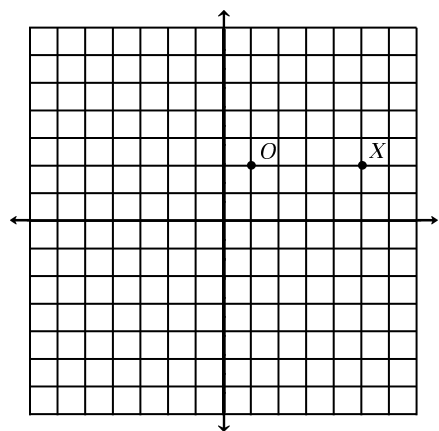
97. Find and sketch the image of $\triangle ABC$ under a rotation of 180° about the origin. Give the coordinates of each point.



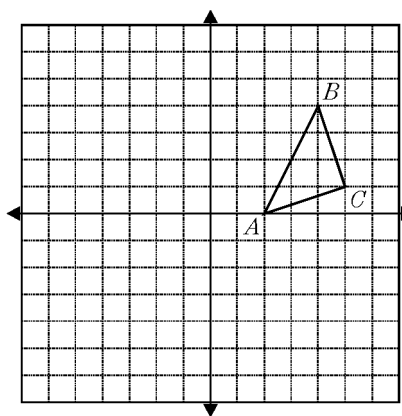
98. Plot and label point X' , the image of point X when it is rotated 180 degrees about point O . What are the coordinates of X' ?



99. Plot and label point Z' , the image of point Z when it is rotated 180 degrees about point O . What are the coordinates of Z' ?



100. Find and sketch the image of $\triangle ABC$ under a rotation of 270° about the origin. Give the coordinates of each point.



Answer List

- | | | |
|---|--|--|
| 1. e | 2. b | 3. b |
| 4. d | 5. the measures of all corresponding sides of the triangles are proportional | 6. $\triangle CAB$; $AA \sim$ |
| 7. 6 | 8. 210 in. | 9. -1 |
| 10. $\frac{4}{3}$ | 11. 64 units | 12. b |
| 13. b | 14. b | 15. 7 ft |
| 16. b | 17. b | 18. c |
| 19. a | 20. e | 21. d |
| 22. a | 23. 2 | 24. $\frac{25}{3}$ |
| 25. $3\sqrt{6}$ units | 26. 8.25 units | 27. 6 units |
| 28. $\frac{16}{3}$ units | 29. $6\sqrt{2}$ units | 30. $2\sqrt{7}$ |
| 31. $4\sqrt{2}$ | 32. 2 units | 33. 9 |
| 34. 3 | 35. 24 units | 36. 80 units |
| 37. minor; semicircle; major; minor | 38. $\odot O$ | 39. O |
| 40. $\overline{OB}$ or $\overline{OG}$ or $\overline{OE}$ | 41. $\overline{EG}$ or $\overline{CD}$ | 42. $\overrightarrow{AB}$ |
| 43. $\overline{CD}$ | 44. 52; 128; 35; 52; 267 | 45. 126 |
| 46. 60; 30; 30; 120 | 47. 40° | 48. 108° |
| 49. 75° | 50. 66° | 51. 80° |
| 52. 52° | 53. 67.5° | 54. 45 |
| 55. 55° | 56. 28° | 57. 220 |
| 58. 5 cm | 59. $3\sqrt{5}$ units | 60. 7 |
| 61. $6\sqrt{2}$ | 62. 2.5 | 63. 36 units |
| 64. 11.52 cm | 65. 9 units | 66. 2 |
| 67. 5 units | 68. 7 units | 69. 6 |
| 70. $12\sqrt{15}$ cm ² | 71. 72 units ² | 72. 108 units ² |
| 73. 36 mi ² | 74. $\frac{243\sqrt{3}}{8}$ units ² | 75. $24\sqrt{3}$ units ² |
| 76. 90 units ³ | 77. $50\sqrt{3}$ in ³ | 78. 54π cm ³ |
| 79. 56π units ² | 80. $\frac{160}{3}$ units ³ | 81. 245π cm ³ |
| 82. 336 units ² | 83. 65π cm ² | 84. 459 cm ² |
| 85. 36π cm ³ | 86. 9 in. | 87. 36π cm ² |
| 88. 6.5 cm | 89. rotation | 90. reflection |
| 91. 6 | 92. A, H, I, M, O, T, U, V, W, X, Y | 93. 2 |
| 94. $T: (x, y) \rightarrow (x + 7, y - 2)$ | 95. $T: (x, y) \rightarrow (x + 7, y + 5)$ | 96. $T: (x, y) \rightarrow (x + 6, y + 2)$ |
| 97. $A'(-2, 1)$, $B'(-4, -3)$, $C'(-5, 0)$ | 98. $X'(6, 2)$ | 99. $Z'(-3, 2)$ |
| 100. $A'(0, -2)$, $B'(4, -4)$, $C'(1, -5)$ | | |