Geometry Name: _____
2nd Semester Final Review

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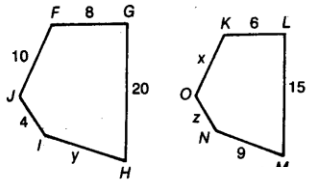
1. Pentagon *FGHIJ* ~ pentagon _____.
2. Find the scale factor of *FGHIJ* to *KLMNO* _____.
3. Find *x.*
4. Find *y.*
5. Find *z.*



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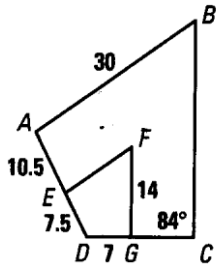
6. Find the scale factor of *ABCD* to *EFGD.*

7. Find the ratio of the perimeter of *ABCD* to the perimeter of *EFGD.*

8. a. *ED* = ___ b. *BC* = _____
c. *EF* = ____ d. $m\angle DGF$ = _____



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9. If a line parallel to one side of a triangle intersects the other two sides, then the triangle formed is **(always, sometimes, never)** similar to the given triangle.
10. Two obtuse triangles are ***(always, sometimes,* or *never)*** similar.
11. Two equilateral triangles are ***(always, sometimes,* or *never)***similar.
12. Two similar triangles are ***(always, sometimes,* or *never)***congruent.
13. Two congruent triangles are ***(always, sometimes,* or *never)*** similar.
14. Two isosceles right triangles are ***(always, sometimes,* or *never)***similar.

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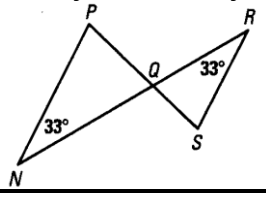
15. Determine whether the triangles can be proved similar or not. Explain why or why not. If they are similar, write a similarity statement.



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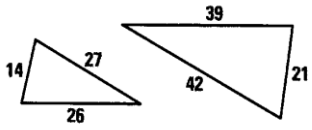
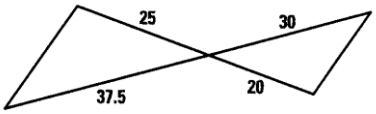
16. Are the triangles similar? If so, state the postulate or theorem that can be used to prove that the triangles are similar.

a.



b.



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17. The length of a diagonal of a square is 16 inches. What is its perimeter?

a. $8\sqrt{2}$ in. b. $16\sqrt{2}$ in. c. $30\sqrt{2}$ in. d. $32\sqrt{2}$ in. e. $48\sqrt{2}$ in.

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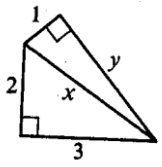
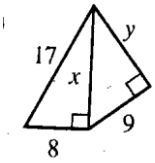
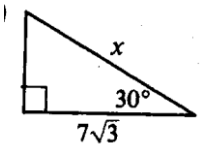
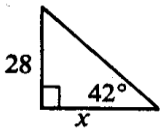
18. A diagonal of a square is 6 inches long. Find its perimeter and its area in simplest radical form.

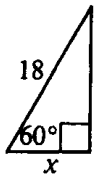
Find the value of each variable.

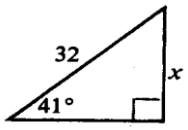
19. 

20. 

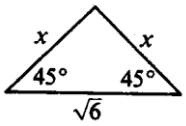
21. 

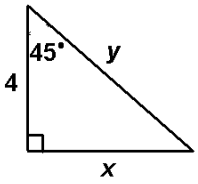
22. 

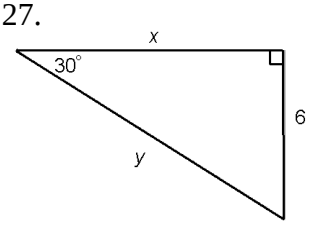
23. 

24. 

Find the value of each variable.

25. 

26. 

27. 

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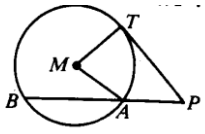
28. List a chord in the diagram: _____
29. List a radius in the diagram: _____
30. List a tangent in the diagram: ___
31. List a secant in the diagram: _____
32. List a point of tangency in the diagram: _____



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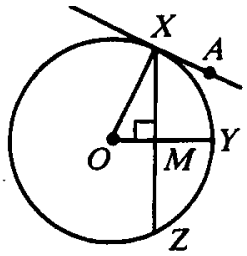
33. If the radius of ○*O* is 13 and *XZ* = 24, what is the distance from *O* to chord $\overline{XZ}$?

a. 5 b. 8 c. 11 d. $\sqrt{407}$



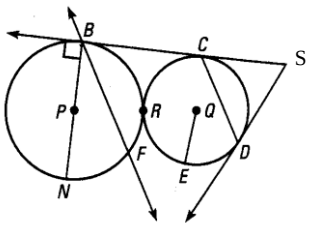
34. If *OM* = 8 and *MY* = 9, what does *XZ* equal?

a. $6\sqrt{2}$ b. $2\sqrt{17}$ c. $\sqrt{145}$ d. 30

Name a point, segment, line, or circle that represents the phrase.

35. Diameter of ⊙P.

36. Point of tangency of ⊙Q.



37. Chord of ⊙P.

38. Center of larger circle.

39. Radius of ⊙Q.

40. Common tangent.

41. Secant

42. Point of tangency of ⊙P and ⊙Q.

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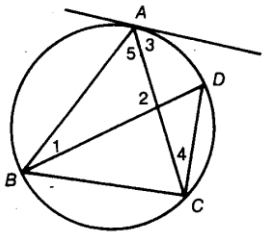
43. If $m\widehat{AB}$ = 130 and $m\widehat{CD}$ = 70, then $m\angle 2$ = _____.
44. If $m\angle 4$ = 26, then $m\angle 1$ = _____.
45. If $m\widehat{AB}$ = 100 and $m\widehat{BC}$ = 120, then $m\angle 3$ = ____.
46. If $\overline{AB} \cong \overline{AC}$ and $m\widehat{AB}$ = 130, then $m\angle 5$ = _____.
47. If $m\angle 2$ = 105 and $m\widehat{DC}$ = 55, then $m\widehat{AB}$ = _____.
48. If $\overline{DB}$ is a diameter, then $m\angle BCD$ = ____.



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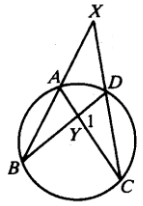
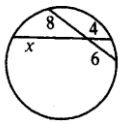
49. If $m\widehat{BC}$ = 120 and $m\widehat{AD}$ = 50, what is the measure of $\angle X$?
a. 25 b. 35 c. 60 d. 70

50. If $m\widehat{BC}$ = 120 and $m\widehat{AD}$ = 50, what is the measure of $\angle 1$?
a. 60 b. 85 c. 90 d. 95



Find the value of *x*.

51.



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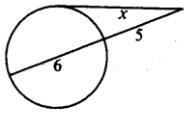

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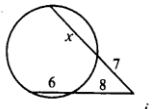
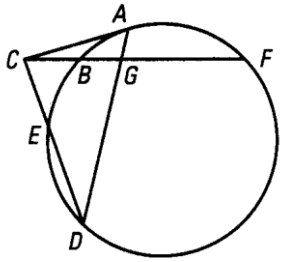


In the diagram shown, $\overline{CA}$ is tangent to the circle at *A*.

54. If *AG* = 2, *GD* = 9 and *BG* = 3, find *GF*.



55. If *CF* = 12, *CB* = 3, and *CD* = 9, find *CE*.

56. If *BF* = 9 and *CB* = 3, find *CA*.

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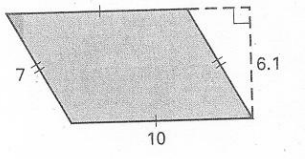
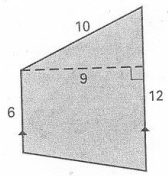
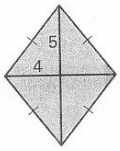
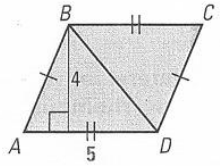
57. A regular polygon is (always, sometimes, never) equilateral.

Find the area of each polygon.

58. 

59. 

60. 

61. 

Find the area of each figure described.

62. A rhombus with diagonals 5 and 4

63. A regular hexagon with apothem $2\sqrt{3}$ cm

64. Find the measure of the central angles of a regular 15-gon.

65. Find the area of an equilateral triangle with sides length 14 inches.

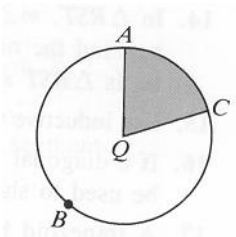
66. A regular octagon has sides of length 12 cm. Another regular octagon has sides of length 18 cm. Find the ratio of the area of the smaller octagon to the area of the larger octagon.

a. 4:9 b. 2:3 c. 12:18 d. 18:12 e. 9:4

67. If the ratio of the perimeters of two similar rectangles is 3:5, then the ratio of their areas is **(*always, sometimes, never***) 9:25.

68. In the diagram of circle *Q*, arc *ABC* is 288˚ and *QA* = 10.

a. Find the length of $\widehat{AC}$ in terms of π.
b. Find the area of sector *AQC* in terms of π.



FORMULAS FOR SOLIDS

Prism	Pyramid	Cylinder	Cone	Sphere
LA = Ph	LA = $\frac{1}{2}Pl$	LA = C·h *or* LA = $2\pi rh$	LA = πrl	A = $4\pi r^2$
TA = LA + 2B	TA = LA + B	TA = LA + 2B	TA = LA + B	V = $\frac{4}{3}\pi r^3$
V = Bh	V = $\frac{1}{3}$Bh	V = Bh	V = $\frac{1}{3}$Bh	

69. Find the lateral area, total area, and volume of a rectangular prism with length 5, width 6, and height 8.

L.A. = _____ T.A. = _____ V = _____

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70. Find the lateral area of a regular pentagonal prism with base edges 6 and height 8.

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71. Find the slant height, lateral area, total area, and volume of a square pyramid with base edge 8 and height 18.

l = _____ L.A. = _____ T.A. = _____ V = _____

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72. Find the lateral area, total area, and volume of a cylinder with $r = 8$ and $h = 12$.

L.A. = _____ T.A. = _____ V = _____

73. Find the lateral area, total area, and volume of a cone with $r = 7$, $h = 24$, and $l = 25$.

L.A. = _____ T.A. = _____ V = _____

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74. Find the area and volume of a sphere with radius 3 cm.

A = _____ V = _____

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75. A man is standing on top of a building. He looks down at a car on the street with an angle of depression of 38 degrees. If the car is 62 feet from the base of the building, how tall is the building?

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76. An observer located 2 km from a helicopter launching pad sees a helicopter at an angle of elevation of 48^{o}. How high is the helicopter at that moment?

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77. Find the area of a regular hexagon that has a perimeter of 120. Give your answer in simplest radical form.