GEOMETRY
FINAL EXAM REVIEW

I. MATCHING
_____ reflexive
A. a(b + c) = ab + ac
_____ transitive
B. If a = b & b = c, then a = c.
_____ symmetric
C. If D lies between A and B, then AD + DB = AB.
_____ substitution
D. If a = b, then b = a.
_____ distributive
E. a = a
_____ definition of midpoint
F. If D is the midpoint of \(\overline{AB}\), then AD = \(\frac{1}{2}\)AB.
_____ midpoint theorem
G. If a + b = c and a = d, then d + b = c.
_____ segment addition postulate
H. If D is the midpoint of \(\overline{AB}\), then AD = DB.

II. Fill in the blank.
1. An equilateral triangle is also a(n) ________ triangle.
2. The ________ is the longest side of a right triangle.
3. Similar triangles have congruent corresponding _________ and the corresponding ________ are in proportion.
4. In an isosceles triangle, the ________ angle is the angle that is different.
5. The ________ of a triangle is a segment from a vertex to the midpoint of the opposite side.
6. A(n) ________ of a triangle is a segment from a vertex \(\perp\) to the opposite side.
7. A(n) ________ __________ of a segment is a line, segment, or ray \(\perp\) to a segment at its midpoint.
8. The measure of a central angle is ________ to its intercepted arc.
9. Two ________ angles have a sum of 90°.
10. Two ________ angles have a sum of 180°.
11. A ________ has only 1 endpoint.
12. If two lines are ________, they form right angles.
13. Two lines intersect in a ________.
14. Two planes intersect in a ________.
15. Through any three collinear points there are ________ ________.
   Through any three non-collinear points there is ________ ________ ________.
16. ________ angles measure between 0° and 90°.
17. ________ angles measure between 90° and 180°.
18. Find the side of square with area 16 units\(^2\). ________
19. If the ratio of the measures of the angles of a triangle is 2:2:5, then the triangle is a(n) ________ triangle.
20. If 4 points all lie on the same line, then the points are ________.

Name___________________
21. The interior angle sum of a hexagon is ________°.
22. The exterior angle sum of a decagon is ________°.
23. If each interior angle of a regular polygon is 144°, then the polygon is a __________.
24. If each exterior angle of a regular polygon is 30°, then the polygon has ____________ sides.
25. In a 30° - 60° - 90° triangle, the long leg is ______ times the short leg.
26. In a 45° - 45° - 90° triangle, the hypotenuse is ______ times the leg.
27. An angle inscribed in a semicircle is a __________ angle.
28. Write $\sqrt{32}$ in simplest radical form. ______
29. If $\angle A$ is a right angle and $m \angle A = (4x + 10)^\circ$, then $x = \ ________$. 

![Diagram of parallel lines and angles](image1)

30. $\angle 3$ & $\angle 5$ are __________ angles & therefore are __________.
31. $\angle 4$ & $\angle 5$ are __________ angles & therefore are __________.
32. $\angle 2$ & $\angle 6$ are __________ angles & therefore are __________.
33. If $m \angle 6 = (x + 5)^\circ$ and $m \angle 4 = (2x + 10)^\circ$, then $m \angle 4 = \ ________$. 

34. True or False. A triangle may have sides of 7, 12, and 18.
35. To find the area of a right triangle, the __________ can be used as the base and height.

![Diagram of line segments](image2)

36. $\overline{OB}$ is a __________.
37. $\overline{AB}$ is a __________.
38. $\overline{BC}$ is a __________.
39. $\overline{BC}$ is a __________.
40. $\overline{DA}$ is a __________.
41. Point $O$ is the ________________.
42. Point $A$ is the ________________.

43. $x = \ ______$
44. $m \angle ABD = \ ______$
45. \( x = \_\_\_\_ \)

![Triangle Diagram]

46. B and E are the midpoints of AD and AG.
If DG = 40, then CF _____.

![Midpoint Diagram]

47. Find the perimeter of a right triangle with legs 6 and 8. _____
48. If the diagonals of a rhombus are 20 and 36, then the area is _____.
49. Find the area of a right triangle whose hypotenuse is 25 and whose leg is 7. _____

Name the theorem or postulate used to prove the triangles congruent.

50. __________

51. __________

52. __________

53. __________

54. \( m \overset{\frown}{CB} = \_\_\_\_ \)
55. \( m \overset{\frown}{BD} = \_\_\_\_ \)
56. \( m \angle COB = \_\_\_\_ \)
57. \( m \angle AOB = \_\_\_\_ \)
58. Draw \( \angle ACB \). \( m \angle ACB = \_\_\_\_ \)

Given: O is the center.

\( m \overset{\frown}{AC} = 130^\circ \)
\( \triangle XYZ \) is an equilateral triangle.

59. \( ZY = \) _____
60. \( m \angle Z = \) _____
61. altitude = _____

62. Area of Circle = _____
63. Area of Square = _____
64. Area of shaded region = _____
65. Circumference of Circle = _____
66. Perimeter of Square = _____

67. Area of parallelogram = _____

Round your answer to the nearest whole number or degree.

68. Find \( x \approx \) _________.

69. Find \( y \approx \) _________

70. A ladder is positioned against a house at a 65° angle. The ladder is 10 feet tall. How far away from the house is the base of the ladder? Round your answer to the nearest tenth.

71. \( x = \) _____
72. \( y = \) _____
73. \( z = \) _____
74. $x = \_\_\_\_

75. 2 tangent lines drawn to a circle from the same point are __________.
76. If the diagonals of a quadrilateral are $\perp$, then the quad. is a _______ or a _______.
77. If the diagonals of a quad. are $\perp$ and $\cong$, then the quad. is a _______________.
78. If the diagonals of a quad. are $\cong$, then the quad. is a ______________ or a _____________.
79. The legs of an isosceles trapezoid are 10 ft. and the bases are 10 ft. and 22 ft. The length of the median is _____. The area of the trapezoid is ______________.
80. In a parallelogram, _______ angles are supplementary and _______ angles are congruent.
81. Given $\triangle XYZ \cong \triangle RSN$, then $\angle Y \cong _____$ and $\overline{XZ} \cong _____$.
82. $x = _____$

83. $m \widehat{WY} = 100^\circ$, $m \widehat{YZ} = 90^\circ$, $m \angle X = _____$
84. $\widehat{WY}$ is a ____________ arc.
85. $\widehat{WYZ}$ is a ____________ arc.

86. Find the volume of a rectangular prism with length 6 in, width 3 in, and height 4 in.
87. Find the total (surface) area of a cylinder with radius 4 m and height of 3 m.
88. The total (surface) area of a cylinder is $66\pi \text{ cm}^2$ and the radius is 3 cm. Find the volume.
89. What is the volume of a cone whose radius is 9 and slant height is 13?
90. The total (surface) area of a sphere is $64\pi$. Find the radius of the sphere.
91. Find $m \angle BCD$.

92. Given: $Y$ is the midpoint of $XZ$ and $WV$.
Prove: $\angle W \cong \angle V$

93. List the sides from largest to smallest.

94. Points $A$, $B$, and $C$ are collinear. If $AC = 8$, $BC = 6$, and $AB = 14$, which point is in between the other two? ________________

95. $OA = 8$ and $m \angle AOB = 90$. Find $AB$.

96. In $\odot O$, the radius is 41, and $XZ = 18$, find $OM$.

97. Find the scale factor of two rectangles if the perimeters are 36 cm and 48 cm respectively.
98. Name the transformation.

99. Name the transformation that maps \( \triangle ABC \) to \( \triangle ADE \).

100. Two similar polygons are shown. Find the scale factor and the value of \( x \).

101. \( YZ = \sqrt{5} \) and \( XZ = \sqrt{2} \). Find \( XY \). Answer in simplified radical form.

102. Describe the triangle with sides of 8, \( 2\sqrt{3} \), 9.

103. If the hypotenuse in an isosceles right triangle measures \( 6\sqrt{2} \) ft., then the length of each leg is ________.

104. Find the volume of a square pyramid with base edge 5 in. and height 3 in.
Answers

Matching
E, B, D, G, A, H, F, C

Fill in the Blank

1) Equiangular
2) Hypotenuse
3) Angles; sides
4) Vertex
5) Median
6) Altitude
7) ⊥ Bisector
8) Equal
9) Complementary
10) Supplementary
11) Ray
12) Perpendicular
13) Point
14) Line
15) Infinite Planes; Exactly One Plane
16) Acute
17) Obtuse
18) 4 units
19) Isosceles
20) Collinear
21) 720°
22) 360°
23) Decagon
24) 12
25) √3
26) √2
27) Right
28) 4√2
29) 20
30) Same Side Int.; Supplementary
31) Alt Int;
32) Corresponding; Congruent
33) 120°
34) True
35) Legs
36) Radius
37) Diameter
38) Chord
39) Secant
40) Tangent
41) Center
42) Point of Tangency
43) 20
44) 70°
45) 6
46) 30
47) 24 units
48) 360 units²
49) 84 units²
50) SAS
51) ASA
52) HL or AAS
53) SSS
54) 50°
55) 50°
56) 50°
57) 180°
58) 90°
59) 8
60) 60°
61) 4√3
62) 25π units²
63) 100 units²
64) (100 - 25π) units²
65) 10π units
66) 40 units
67) 120√3 units²
68) 57°
69) 28
70) 4.2 ft.
71) 75°
72) 75°
73) 30°
74) 3
75) Congruent
76) Rhombus; square
77) Square
78) Rectangle; Square
79) 15 ft. and 128 ft²
80) Consecutive; Opposite
81) ∠S: \overline{KN}
82) 70°
83) 35°
84) Minor
85) Major
86) 72 units³
87) 56π units²
88) 72π cm³
89) 54π√22 units³
90) 4
91) 75°
92) Y is the midpoint of \overline{XZ} and \overline{WY}
(Given), \overline{XY} \cong \overline{YZ}; \overline{WY} \cong \overline{VY}
(Def of Midpoint), \angle XYW \cong \angle ZYV
(Vertical Angles are Congruent), \triangle XYW \cong \triangle ZYV
(SAS), \angle W \cong \angle V
(CPCTC)
93) BC, AC, AB
94) C
95) 8√2
96) 40
97) \frac{3}{4}
98) Reflection
99) Dilation
100) \frac{3}{4} and x = \frac{16}{3}
101) \sqrt{7}
102) Obtuse
103) 6 ft.
104) 25 in³