

Name: key

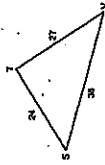
Period: _____

Score: _____ / 10

SEMESTER 2 FINAL REVIEW PACKET

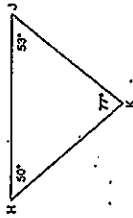
You will complete the following problems. We will have time to work on this in class, and you will continue working on it at home. Answers (not solutions) are posted on the classroom website - CHECK THEM! This packet is worth 10 points! It is due on the day of your final exam (June 6 for periods 1 and 2....June 7 for period 3....June 8 for periods 5 and 6)

- Write the angles in order from smallest to largest.



$\angle N, \angle S, \angle T$

- Write the sides in order from shortest to longest.



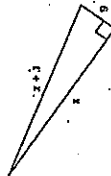
$\overline{JK}, \overline{HK}, \overline{HJ}$

- Tell whether a triangle can have sides with the given lengths. Explain.

- 3, 5, 8
- 11, 15, 21

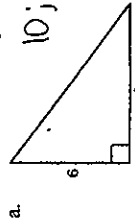
No, $5+3$ is not greater than 8
 Yes, $11+15 > 21$ (sum of 2 shorter sides is greater than largest side)

- Find the value of x . Give exact answer(s) only.



$$x = 5$$

- Find the missing side length. Tell whether the side lengths form a Pythagorean Triple. Explain.



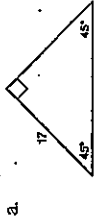
10; yes because all side lengths are integer values
 15, 20, 25; No, 15 is not an integer

- Tell whether the measures can be side lengths of a triangle. If so, classify the triangle as acute, right, or obtuse.

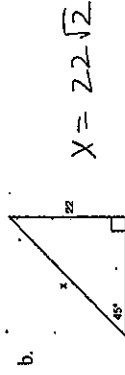
- 4, 7, 9
- 8, 8, 11
- 5, 14, 20

yes $\triangle$ obtuse $\triangle$
 yes $\triangle$ acute $\triangle$
 NO $\triangle$

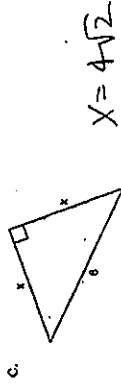
- Find the value of x . Give exact answer(s) only.



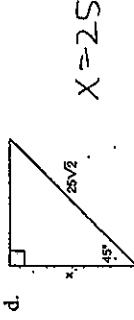
$$x = 17\sqrt{2}$$



$$x = 22\sqrt{2}$$

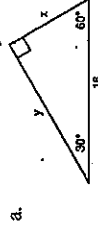


$$x = 4\sqrt{2}$$



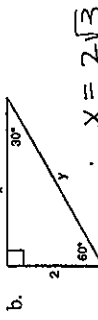
$$x = 25$$

- Find the values of x and y . Give exact answers only.



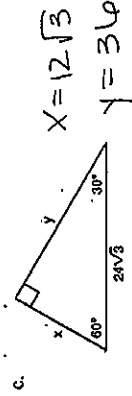
$$x = 9$$

$$y = 9\sqrt{3}$$



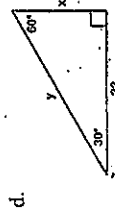
$$x = 2\sqrt{3}$$

$$y = 4$$



$$x = 12\sqrt{3}$$

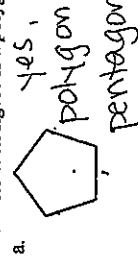
$$y = 36$$



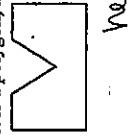
$$x = 11\sqrt{3}$$

$$y = 22\sqrt{3}$$

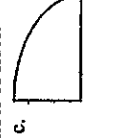
- Tell whether each figure is a polygon. If it is a polygon, name it by the number of sides.



yes, polygon; pentagon



yes, polygon; heptagon



not a polygon

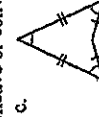
- Tell whether each polygon is regular or irregular. Then tell whether it is concave or convex.



regular, convex



irregular, convex



irregular, concave

11. Find the sum of the interior angle measures of each convex polygon.

a. Pentagon 540°

b. octagon 1080°

c. nonagon 1260°

12. Find the measure of each interior angle of each regular polygon. Round to two decimal places, if necessary.

a. Pentagon 108°

b. heptagon $\approx 128.57^\circ$

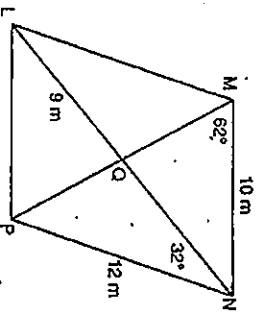
c. 15-gon 156°

13. Find the measure of each exterior angle of each regular polygon.

a. Quadrilateral 90°

b. octagon 45°

14. Use the diagram to find the following in parallelogram LMNP.



a. $ML = 12 \text{ m}$

b. $LP = 10 \text{ m}$

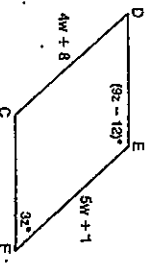
c. $LN = 18 \text{ m}$

d. $QN = 9 \text{ m}$

e. $m\angle LPM = 102^\circ$

f. $m\angle MLN = 32^\circ$

15. CDEF is a parallelogram. Find each measure.



a. $CD = 36$

b. $EF = 36$

c. $m\angle F = 40^\circ$

d. $m\angle E = 132^\circ$

16. The coordinates of three vertices of a parallelogram KLMN are as follows: K(-4, 7), L(3, 6), M(5, 3). Find the coordinates of vertex N.

$(-2, 4)$

17. Determine whether each quadrilateral must be a parallelogram. Justify your answer.

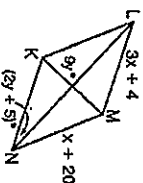
a. yes! if one pair of sides is $\parallel$ AND $\approx$ $\Rightarrow$ 11-gram

b. yes! if diags bisect each other $\Rightarrow$ 11-gram

c. NO (might be a trapezoid)

d. yes! if opp. LS $\approx$ $\Rightarrow$ 11-gram

18. KLMN is a rhombus. Find each measure.



a. $KL = 28$

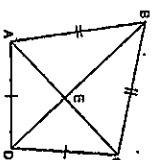
b. $m\angle MNK = 50^\circ$

19. Determine whether the conclusion is valid. If not, tell what additional information is needed to make it valid.

a. EFGH is a rectangle. yes valid!

b. MPQR is a rhombus. NOT valid! we need to know all sides are $\approx$, not just 2

20. In kite ABCD, $m\angle BCD = 98^\circ$ and $m\angle ADE = 47^\circ$. Find each measure.

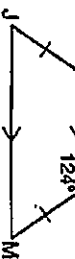


a. $m\angle DAE = 43^\circ$

b. $m\angle BCE = 55^\circ$

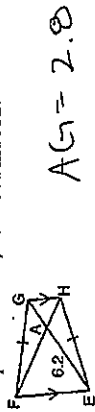
c. $m\angle ABC = 70^\circ$

21. Find $m\angle J$ in trapezoid JKLM.



56°

22. In trapezoid EFGH, FH = 9. Find AG.



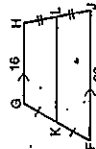
$$AG = 2.8$$

23. In the diagram, $AC = 2z + 9$ and $BD = 4z - 3$. Find the value of z that makes the trapezoid isosceles.



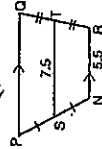
$$z = 6$$

24. Find KL.



$$KL = 21$$

25. Find PQ.



$$PQ = 9.5$$

26. Solve each proportion.

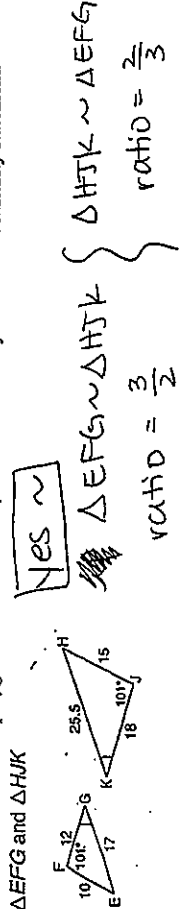
a. $\frac{24}{42} = \frac{y}{7}$

$$y = 4$$

b. $\frac{2a}{3} = \frac{8}{3a}$

$$a = \pm 2$$

27. Determine whether the polygons are similar. If so, write the similarity ratio and a similarity statement.



YES ~

$$\triangle EFG \sim \triangle HJK \quad \text{ratio} = \frac{3}{2}$$

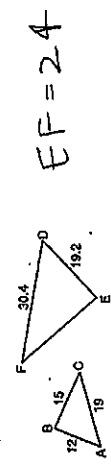
28. A rectangle is 3.2 cm wide and 8 cm long. A similar rectangle is 5 cm long. What is the width of the second rectangle?

$$2 \text{ cm}$$

29. Rectangle CDEF ~ rectangle GHJK, and the similarity ratio of CDEF to GHJK is $\frac{1}{16}$. If DE = 20, what is JK?

$$JK = 320$$

30. $\triangle ABC \sim \triangle DEF$. What is EF?

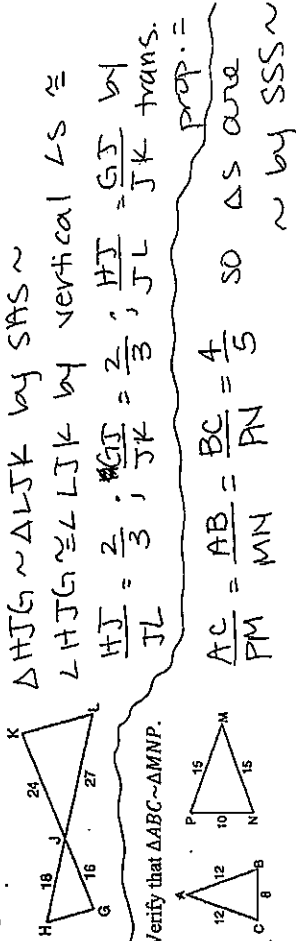


$$EF = 24$$

31. $\triangle MNP \sim \triangle QRS$ and the ratio of $\triangle MNP$ to $\triangle QRS$ is 5:2. If MN = 42 meters, what is QR?

$$QR = 16.8$$

32. Explain how you know the triangles are similar, and write a similarity statement.

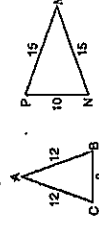


$\triangle HJG \sim \triangle LJK$ by SAS ~

$\angle HJG \cong \angle LJK$ by vertical $\angle$ s ~

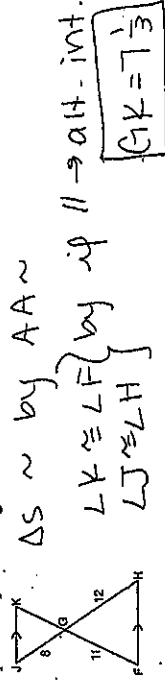
$$\frac{HJ}{JL} = \frac{24}{30.4} = \frac{2}{2.5} = \frac{4}{5}; \frac{JG}{JK} = \frac{30.4}{38} = \frac{4}{5}; \frac{HG}{KL} = \frac{18}{27} = \frac{2}{3} \text{ trans.}$$

33. Verify that $\triangle ABC \sim \triangle MNP$.



$$\frac{AC}{PM} = \frac{AB}{MN} = \frac{BC}{PN} = \frac{4}{5} \text{ so } \triangle s \text{ are } \sim \text{ by SSS}$$

34. Explain why the triangles are similar. Then find GK.

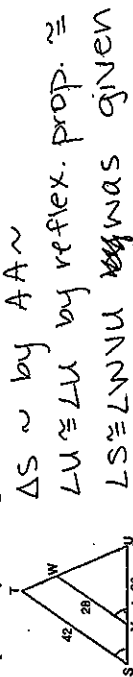


$\triangle s \sim$ by AA ~

$\angle K \cong \angle L$ by alt. int. $\angle$ s ~

$$\angle J \cong \angle H$$

35. Explain why the triangles are similar. Then find US.



$\triangle s \sim$ by AA ~

$\angle K \cong \angle L$ by reflex. prop. ~

$\angle J \cong \angle H$ by reflex. prop. ~

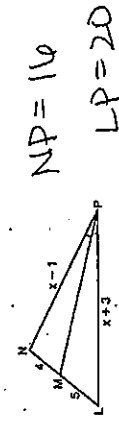
$$US = 39$$

36. Find JN.



$$JN = 30.4$$

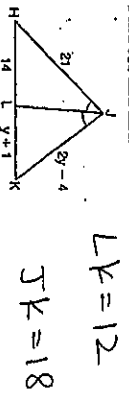
37. Find NP and LP.



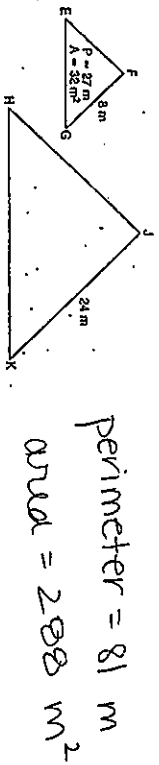
$$NP = 16$$

$$LP = 20$$

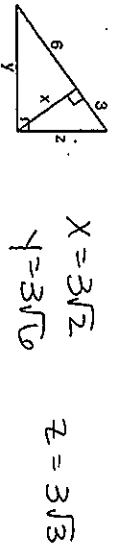
38. Find JK and LK.



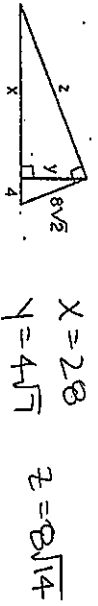
39. $\triangle EFG \sim \triangle HJK$. Find the perimeter and area of $\triangle HJK$.



40. Find the values of x, y, and z.



41. Find the values of x, y, and z.



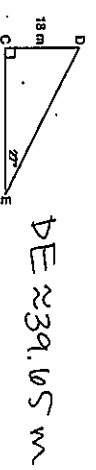
42. Write each trigonometric ratio as a fraction and as a decimal rounded to two decimal places.



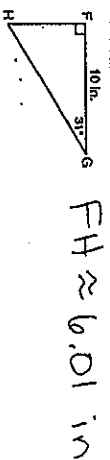
43. Use special right triangles to write each trigonometric ratio in its exact value.



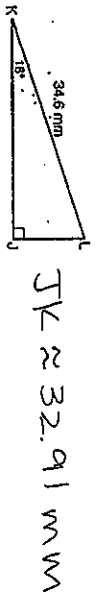
44. Find DE.



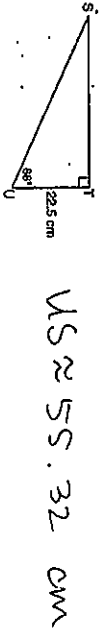
45. Find FH.



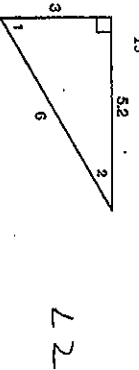
46. Find JK.



47. Find US.



48. If $\cos A = \frac{13}{15}$, $\angle A$ is referring to which angle: $\angle 1$ or $\angle 2$?



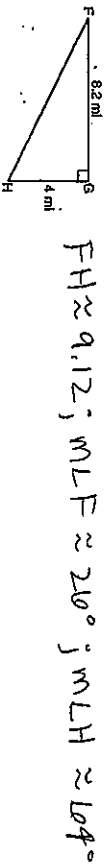
49. In the diagram from #48, if $\tan A = \frac{15}{26}$, $\angle A$ is referring to which angle: $\angle 1$ or $\angle 2$?

$\angle 2$

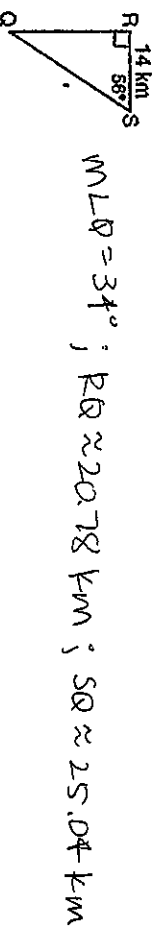
50. Solve the triangle.



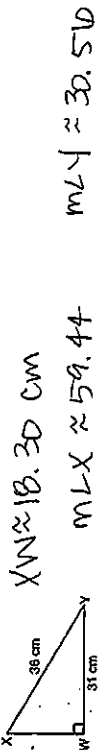
51. Solve the triangle.



52. Solve the triangle.



53. Solve the triangle.



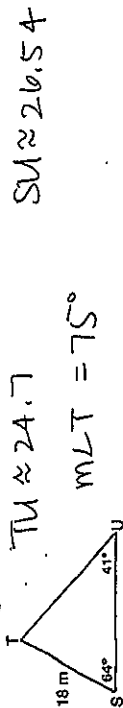
54. When the angle of elevation to the sun is 52° , a tree casts a shadow that is 9 meters long. What is the height of the tree? Round to the nearest tenth of a meter.

$\approx 11.5 \text{ m}$

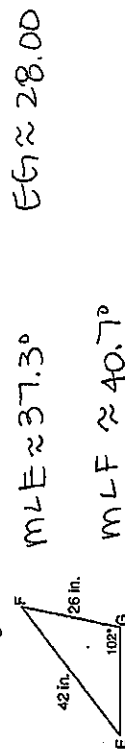
55. A person snorkeling sees a turtle on the ocean floor at an angle of depression of 38° . She is 14 feet above the ocean floor. How far is she from the turtle? Round to the nearest foot.

$\approx 23 \text{ ft}$

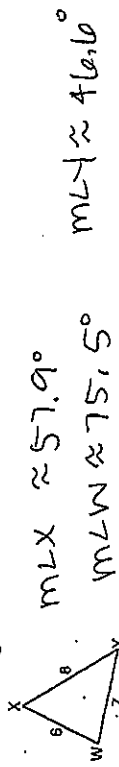
56. Solve the triangle.



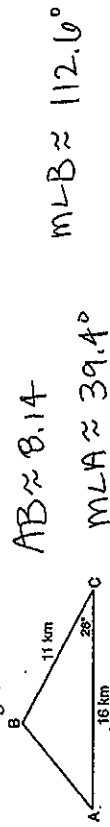
57. Solve the triangle.



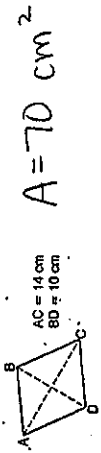
58. Solve the triangle.



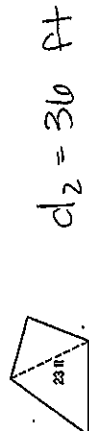
59. Solve the triangle.



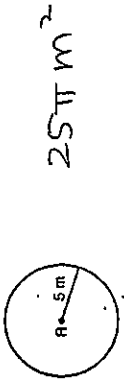
60. Find the area of the rhombus.



61. Find the length of the second diagonal of the kite if the area is 414 ft^2 .



62. Find the area of the circle. Give exact answer.



63. Find the circumference of the circle. Give exact answer.



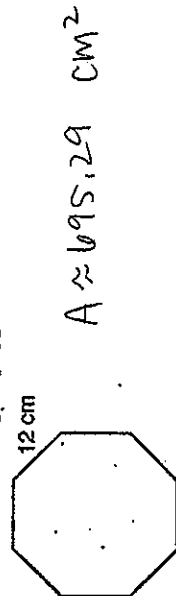
64. Find the circumference of the circle whose area is $49\pi \text{ in}^2$.

$14\pi \text{ in}$

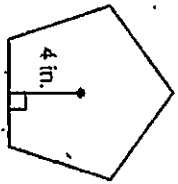
65. Find the radius of the circle whose circumference is $18\pi \text{ cm}$.

9 cm

66. Find the area of the regular polygon.



67. Find the area of the regular polygon.

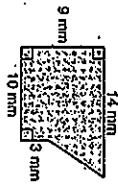


$$A \approx 58.12 \text{ in}^2$$

68. Find the area of the regular hexagon with an apothem of 3m.

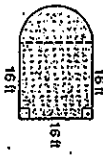
$$A \approx 31.18 \text{ m}^2$$

69. Find the shaded area. Round to two decimal places, if necessary.



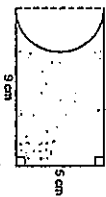
$$102 \text{ mm}^2$$

70. Find the shaded area. Round to two decimal places, if necessary.



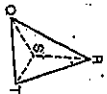
$$A \approx 356.53 \text{ ft}^2$$

71. Find the shaded area. Round to two decimal places, if necessary.

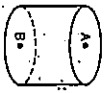


$$\approx 35.18 \text{ cm}^2$$

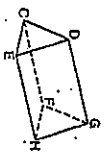
72. Classify the figure given.



a.



b.



c.



d.

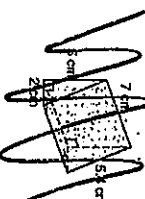
triangular
pyramid

cylinder

triangular
prism

cone

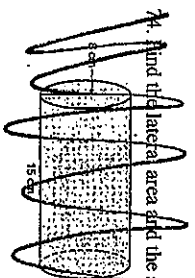
73. Find the lateral area and the surface area of the prism.



$$L.A. = 186.8 \text{ cm}^2$$

$$S.A. = 206.8 \text{ cm}^2$$

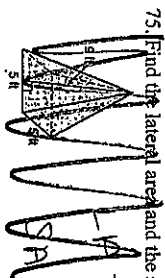
74. Find the lateral area and the surface area of the cylinder. Give exact answers.



$$L.A. = 20\pi \text{ cm}^2$$

$$S.A. = 152\pi \text{ cm}^2$$

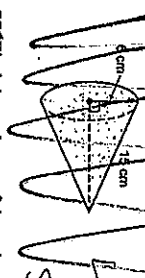
75. Find the lateral area and the surface area of the pyramid. Round to the nearest tenth, if necessary.



$$L.A. = 90 \text{ ft}^2$$

$$S.A. = 115 \text{ ft}^2$$

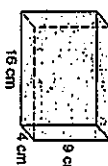
76. Find the lateral area and the surface area of the right cone. Give exact answers.



$$L.A. = 90\pi \text{ cm}^2$$

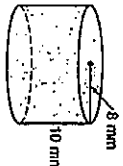
$$S.A. = 126\pi \text{ cm}^2$$

73. Find the volume of the prism.



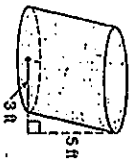
$$V = 576 \text{ cm}^3$$

74. Find the volume of the cylinder. Give exact answer.



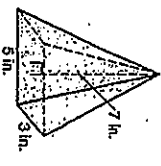
$$V = 640\pi \text{ mm}^3$$

75. Find the volume of the cylinder. Give exact answer.



$$V = 45\pi \text{ ft}^3$$

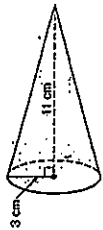
76. Find the volume of the pyramid. Round to the nearest tenth, if necessary.



$$V = 35 \text{ in}^3$$

17.

84. Find the volume of the cone. Give exact answer.

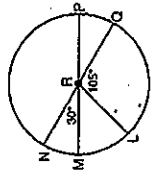


$$V = 33\pi \text{ cm}^3$$

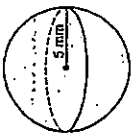
b. $m\angle MPN = 225^\circ$

88. Use the figure to find the following...

a. $m\angle MPN = 75^\circ$

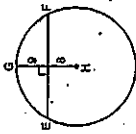


85. Find the volume of the sphere. Give exact answer.



$$V = \frac{500\pi}{3} \text{ mm}^3$$

87. Find EF.



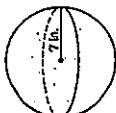
$$EF = 30$$

85. Find the volume of the hemisphere. Give exact answer.



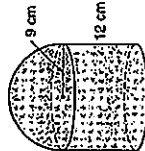
$$V = \frac{16\pi}{3} \text{ ft}^3$$

84. Find the surface area of the sphere. Give exact answer.



$$SA = 196\pi \text{ in}^2$$

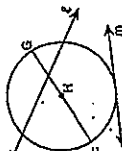
85. Find the surface area AND volume of the composite figure (hemisphere on top of a cylinder). Round answer to the nearest tenth, if necessary.



$$SA \approx 1441.98 \text{ cm}^2$$

$$V \approx 4580.44 \text{ cm}^3$$

86. Give a name to each line or segment that intersects the circle.

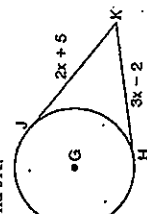


$\overline{FG}$: secant

$\overline{HF}$: tangent

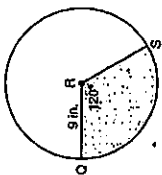
$\overline{HG}$: radius

87. Find JK.



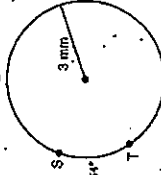
$$JK = 19$$

87. Find the area of the shaded sector. Give exact answer.



$$27\pi \text{ in}^2$$

87. Find the length of ST.

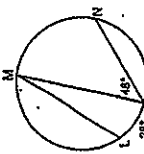


$$\frac{9\pi}{10} \text{ mm} \approx 2.83 \text{ mm}$$

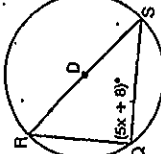
88. Use the diagram to find the following...

a. $m\angle MNP = 18^\circ$

b. $m\angle MPN = 96^\circ$

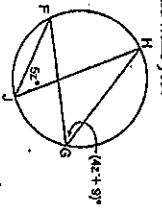


88. Find the value of x.



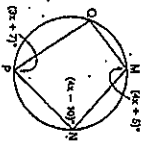
$$x = 16.4$$

90. Find $m\angle F/H$.



45°

91. Find the measures of each angle in the inscribed quadrilateral.



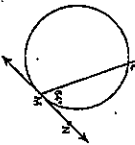
$m\angle M = 101^\circ$

$m\angle P = 79^\circ$

$m\angle N = 86^\circ$

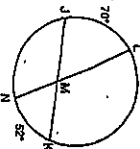
$m\angle Q = 94^\circ$

92. Find $m\angle M$.



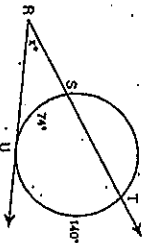
128°

93. Find $m\angle JML$.



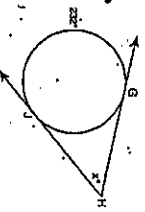
101°

94. Find the value of x.



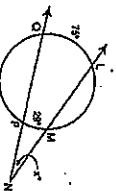
33

95. Find the value of x.



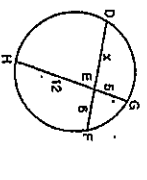
52

96. Find the value of x.



23

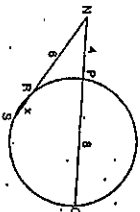
97. Find the value of x. Then find the length of each chord.



$x = 10$

$DE = 16$, $GH = 17$

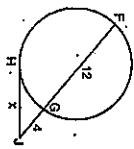
98. Find the value of x. Then find the length of each secant segment.



$x = 2$

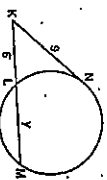
$NQ = 12$, $NS = 8$

99. Find the value of x.



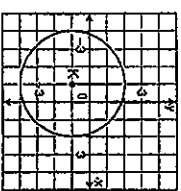
$x = 8$

100. Find the value of y.



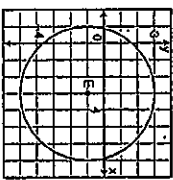
$y = 7.5$

101. Write the equation of the circle.



$(x+1)^2 + (y-1)^2 = 9$

102. Write the equation of the circle.



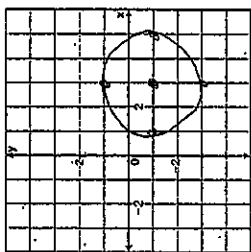
$(x-3)^2 + (y+1)^2 = 16$

103.

107. Find the equation of the circle that passes through (3, 6) and has center B(-2, 6)

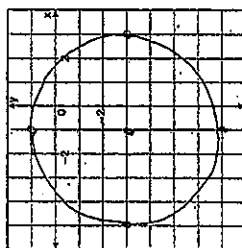
$$(x+2)^2 + (y-6)^2 = 25$$

108. Graph the equation:
 $(x-3)^2 + (y+1)^2 = 4$



104.

109. Graph the equation:
 $(x+1)^2 + (y+3)^2 = 16$



105.

