Name Answer Key
Date _____ Period ___

Geometry Semester Test 2 Review

Classify each triangle with the given side lengths as acute, right or obtuse.

1. 30, 22, 20 obtuse.

$20^2 + 22^2 \quad 30^2$

$884 < 900$

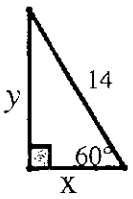
2. 9, 12, 5 obtuse

$5^2 + 9^2 < 12^2$

Solve.

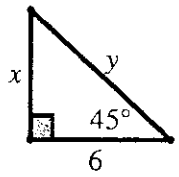
3. $x =$ 7

$y =$ $7\sqrt{3}$



4. $x =$ 6

$y =$ $6\sqrt{2}$



5. Find the length of the altitude of an equilateral triangle with perimeter of 48.

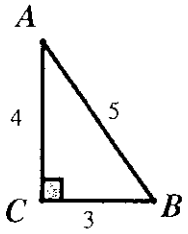
$8\sqrt{3}$

6. 37. Find each trig ratio.

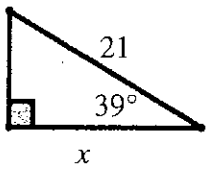
$\tan A =$ 3/4

$\sin A =$ 3/5

$\cos A =$ 4/5

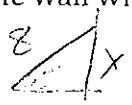


7. Find x. $x =$ 16.3



$\cos(39) = \frac{x}{21}$

8. An 8 foot ladder resting against a building makes a 65° angle with the ground. How high on the wall will the ladder reach?



$\sin(65) = \frac{x}{8}$ 7.3 ft

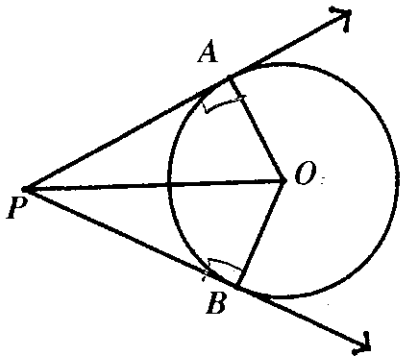
$\overline{PA}$ and $\overline{PB}$ are tangents to circle O. Complete the following.

9. $m\angle OAP =$ 90°

10. If $m\angle BPO = 38°$ find $m\angle BPA$. 76°

11. If $m\angle AOP = 40°$ find $m\angle APB$. 100°

12. If $PA = 15$ find PB. 15



13. GIVEN: Circle O, $\overline{AC}$ is a diameter and $\overline{AE}$ is a tangent. $\overset{\frown}{DC} = 50°$ and $\overset{\frown}{AG} = 70°$, find the following.

a) $\overset{\frown}{AD} =$ 130°

b) $\overset{\frown}{GC} =$ 110°

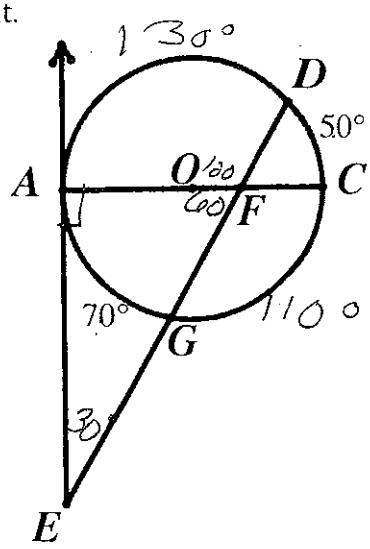
c) $m\angle AFG =$ 60°

d) $m\angle FAE =$ 90°

e) $m\angle E =$ 30°

f) $\overset{\frown}{ADG} =$ 290°

g) $m\angle AFD =$ 120°

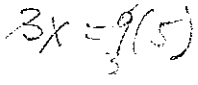


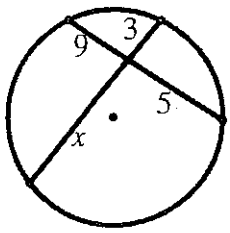
Given the figures with the chords, tangents and secants as shown, solve for x. **SHOW ALL WORK!!!!!**

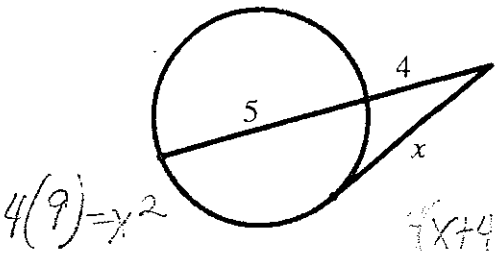
14. 15

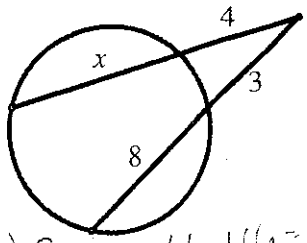
15. 6

16. 4.25





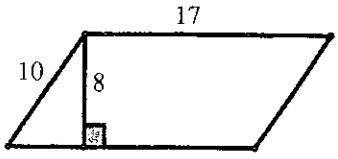




Find the perimeter, area and apothem if applicable of the following figures.

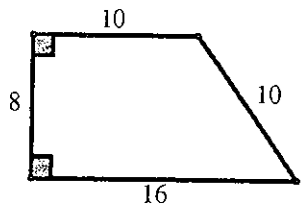
17. P = 54

A = 136



18. P = 44

A = 104



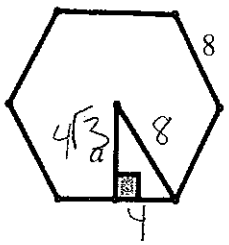
$\frac{(10+16)}{2}8$

19. P = 48

a = $4\sqrt{3}$

A = $96\sqrt{3}$

regular hexagon



20. Find the area of a circle with circumference 128π cm.

$C = 128\pi$ $D = 128$ $r = 64$

$64^2\pi$ $= 4096\pi$

21. Write the equation of a circle with the center (-5, 9) and radius 25.

$(x+5)^2 + (y-9)^2 = 625$

22. Find the center and radius of the circle $(x+3)^2 + (y-2)^2 = 225$.

C = (-3, 2) r = 15

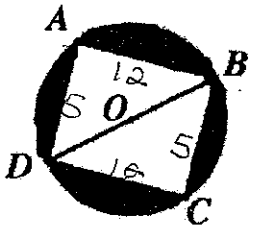
23. Given circle *O* and rectangle *ABCD* with *AB* = 12, *BC* = 5, find the following.

BD = 13

Area of rectangle = 60

Area of circle = $42.25\pi \approx 132.7$

Area of shaded region = 72.7

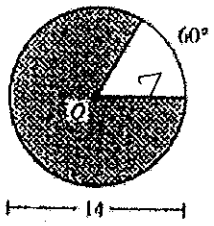


Find the area of each shaded region.

24. A = 128.216

$40.83\overline{3}\pi$

$\frac{300}{360} = \frac{x}{49\pi}$

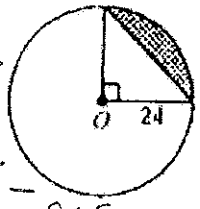


25. A = 164.4

$\frac{1}{4}\ 24^2\pi$

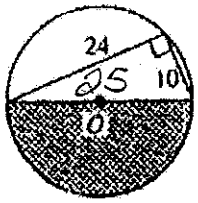
144π

288

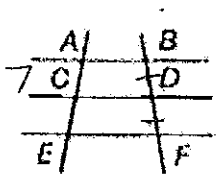


26. 156.25π

$\frac{(12.5)^2\pi}{2}$

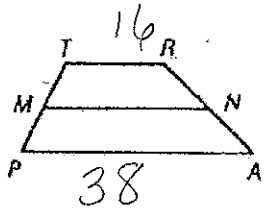


27. $\overline{AB} \parallel \overline{CD} \parallel \overline{EF}$ and $BD = DF$. If $AC = 7$, find AE. 14

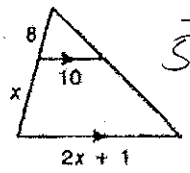


28. $\overline{MN}$ is the median of trapezoid *TRAP*. If $TR = 16$ and $PA = 38$, find *MN*. 27

$\frac{16+38}{2} =$



29. Find the value of x. 12

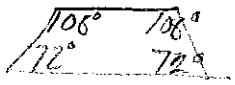


$\frac{4}{5} = \frac{8}{10} = \frac{8+y}{2x+1}$

$8x+4 = 40+5x$

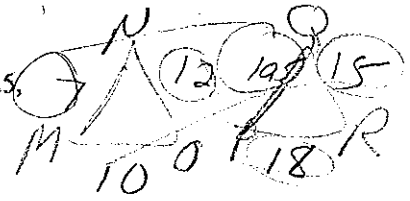
$3x = 36$

30. One angle of an isosceles trapezoid measure 72°. Find the measure of the other angles.



72°, 108°

31. In $\triangle MNO$ and $\triangle PQR$, $MN = 7$, $NO = 12$, $MO = 10$, $PQ = 10.5$, $QR = 15$, and $PR = 18$.

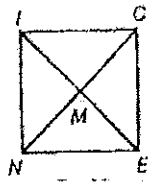


a. Must the two triangles be similar? yes

b. What theorem or postulate justifies your answer to part (a)?

SSS~

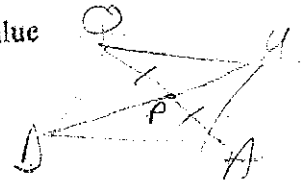
32. Quad. $NICE$ is a square. If $ME = 6x - 15$ and $MI = 3x$, find the value of x. 5



$6x-15 = 3x$

$3x = 15$

33. Given $QUAD$ is a parallelogram with diagonals intersecting at P.



a. If $QP = 5x - 4$, $PA = 4x + 16$, and $DU = 6x + 8$, find the value of DU. 128

$5x-4 = 4x+16$

b. If $QD > QU$, then which angle is larger, $\angle DPQ$ or $\angle QPU$?

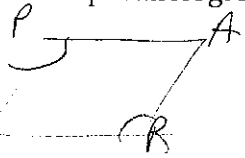
$x = 20$ $\quad 6(20)+8$

34. The ratio of the measure of the angle of a triangle is 3:4:5. Find the measure of each angle.

$3x+4x+5x = 180$

$45° + 60° + 75°$

35. $PART$ is a quadrilateral with $\angle P \cong \angle R$. What additional information would be needed to prove that $PART$ is a parallelogram?



$\angle A$ supp to $\angle R$

36. $\triangle ABC \sim \triangle DEF$

a. If $AB = 9$, $BC = 12$, $DE = 15$, and $DF = 18$, find EF and AC.

$\frac{9}{15} = \frac{12}{EF} = \frac{AC}{18}$

b. What is the scale factor of $\triangle ABC$ to $\triangle DEF$?

$\frac{3}{5}$ $\quad EF = 20$ $\quad AC = 10.8$

37. Complete: If $\frac{x}{3} = \frac{y}{5}$, then $\frac{x+3}{3} =$ $\frac{y+5}{5}$

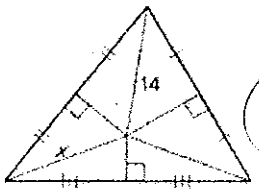
38. Find the value of x if $\frac{x+3}{3} = \frac{x+2}{4}$. $x = -6$

$4x + 12 = 3x + 6$

$x = 6$

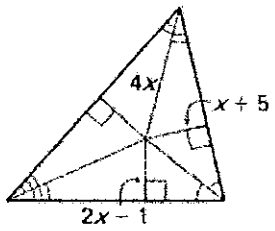
Find the value of x.

39.



$x = 14$

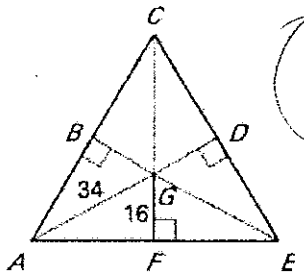
40.



$2x - 1 = x + 5$

$x = 6$

41. Point G is the incenter of $\triangle ACE$. Find BG.

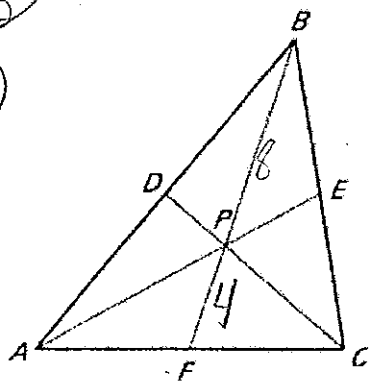


16

42. **In the figure, P is the centroid of $\triangle ABC$ and $BP = 8$.**

4. Find the length of $\overline{BF}$. 12

5. Find the length of $\overline{FP}$. 4



43. What is the measure of each exterior angle of a regular dodecagon?

$\frac{360}{12} = 30°$

44. Find the measure of an exterior and an interior angle to a regular octagon.

$\frac{360}{8} = 45° \& 135°$

45. How many sides does a regular figure have if an exterior angle measure is 3°.

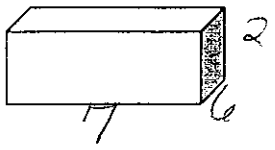
$\frac{360}{3} = 120$ sides

46. How many sides does a polygon have if its interior angle sum is 1620°?

$\frac{1620}{180}$ 9

11-gon

47. Find the lateral area, total area, and volume of a rectangular prism with length 7 cm, width 6 cm, and height 2 cm.



$P = 26$

$A = 42$

LA = 52

TA = 136

V = 84

48. Find the lateral area, total area, and volume of a right triangle prism with height 10 cm. and base edges of 3 cm, 4cm, and 5 cm.

$B = 6\,cm^2$

$LA = Ph = 12 \cdot 10 = 120\,cm^2$

LA = $120\,cm^2$

TA = $132\,cm^2$

V = $60\,cm^3$

49. Find the lateral area, total area, and volume of a square pyramid with height of 6 cm, slant height of 7.5 cm, and base edge of 9 cm.

$B = 81$

$P = 36$

$\frac{1}{2}Pl$

$\frac{1}{3}Bh$

LA = $135\,cm^2$

TA = $216\,cm^2$

V = $162\,cm^3$

50. Given a right circular cylinder with a radius of 8 cm. and a height of 6 cm. Find the following.

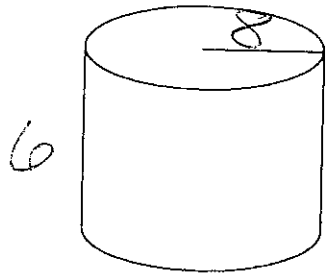
Circumference: 16π

Base Area: 64π

Lateral Area: 96π

Total Area: 224π

Volume: 384π



51. Given a right circular cylinder with a circumference of 25.12 cm. and a height of 5 cm. Find the lateral area, total area, and volume.
(Use 3.14 for π)

$25.12 \cdot 5$

$25.12 = C$

$8 = d$

$r = 4$

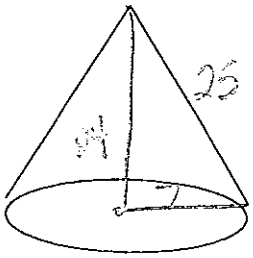
$B = 16\pi = 50.24$

LA = 125.6

TA = 226.08

V = 251.2

52. Find the lateral area, total area, and volume of a cone with a radius of 7 cm and a height of 24 cm.



$C = 14\pi$

$B = 49\pi$

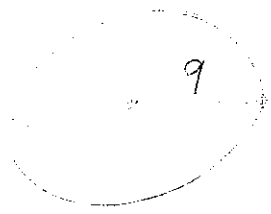
$LA = \frac{1}{2}Cl$ $V = \frac{1}{3}Bh$

LA = 175π

TA = 224π

V = 392π

53. Find the area and the volume of a sphere with a radius of 9 inches.



$A = 4\pi r^2$

$V = \frac{4}{3}\pi r^3$

A = 324π

V = 972π

54. The area of a sphere is 256π. Find the radius and the volume of the sphere.

$4\pi r^2 = 256\pi$

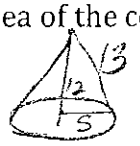
$r^2 = 64$

$r = 8$

$\frac{4}{3}\pi r^3$

$V = 682\frac{2}{3}\pi$

55. A cone has a radius of 5 *cm* and a volume of 100π cm^2. Find the height, slant height, lateral area, and total area of the cone.



h = 12

l = 13

LA = 65π

TA = 90π

$V = \frac{Bh}{3}$

$100\pi = \frac{25\pi h}{3}$

$300 = 25h$

$12 = h$

$\frac{cl}{2}$

$+B$

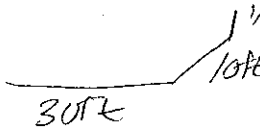
56. A right rectangular container is 30 cm wide, 45 cm long and contains water to a depth of 20 cm. A stone is placed in the water and the water rises .5 cm. Find the volume of the stone.

$.5(45)(30)$

Volume of stone: $675\ cm^3$

57. A driveway 30 ft long and 10 ft wide is to be paved with cement 6 inches thick. How many cubic yards of cement are needed for the job?

Cubic yards of cement: $5\frac{5}{9}\ yd^3$



$30(10)(\frac{1}{2})$

$150\ ft^3$

ft^3

$\frac{27\ ft^3}{1\ yd^3} = \frac{150}{x}$

58. The volume of a right circular cylinder is 72π cubic cm. If h = 8 cm., find the lateral area.

Lateral Area: $48\pi\ cm^2$

$V = 72\pi$

$V = Bh$

$72\pi = 8r^2\pi$

$9 = r^2$

$r = 3$

$4\pi(8)$

Study your quad family tree!