NAME Key - Group Quiz DATE _____ SCORE _____

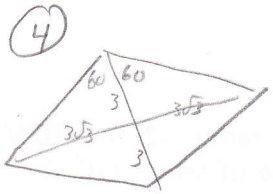
Areas of Plane Figures

For use after Chapter 11

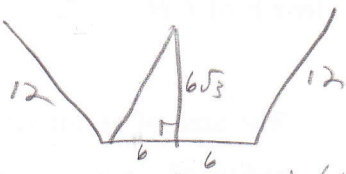
Find the area of each figure described.

1. A rectangle with length 15 and width 12 180 un^2
2. A parallelogram with base 18 and height 9 162 un^2
3. A triangle with base 13 and height 8 52 un^2
4. A rhombus with shorter diagonal 6 cm and a 120° angle $18\sqrt{3}$ un^2
5. A square whose perimeter is 60 225 un^2
6. A regular hexagon with side 12 $216\sqrt{3}$ un^2
7. A regular pentagon with side s and apothem 3 $7.5s$ un^2 ($\frac{15s}{2}$) (32.7)
8. A rhombus with diagonals 6 and 14 42 un^2
9. An isosceles trapezoid with legs 13 and bases 12 and 22 204 un^2

10. Find the circumference and area of a circle with radius 10. Use $\pi \approx 3.14$.
    $C \approx$ 62.8 (20π), $A \approx$ 314 (100π)
11. The area of a circle is 144π. Find the circumference. 24π (75.36)
12. Find the area of the shaded region of $\odot O$. $16\pi - 8$ (42.24)
13. In circle P with diameter 10, $m\angle APB = 60$. Find the length of $\overset{\frown}{AB}$ and the area of sector APB.
    length of $\overset{\frown}{AB}$ = $\frac{5\pi}{3}$ (5.2), A = $\frac{25\pi}{6}$ (13.1)
14. The ratio of the areas of two rectangles is 36 : 64. Find the scale factor and the ratio of the perimeters.
    scale factor = 3:4, ratio of the perimeters = 3:4
15. Two similar polygons have scale factor 3 : 4. The area of the smaller polygon is 108. Find the area of the larger polygon.
    192 $\quad \frac{9}{16} = \frac{108}{x} \quad 9x = 1728 \quad x = 192$
16. The ratio of the areas of $\triangle ABC$ and $\triangle ADC$ is 17:7.
17. The areas of two circles are 144π and 64π. The ratio of their circumferences is 3:2.
18. The ratio of the perimeters of two similar triangles is 3 : 5. The scale factor is 3:5 and the ratio of their areas is 9:25.

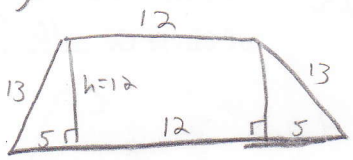


(4) $\frac{1}{2}(6)(6\sqrt{3})$

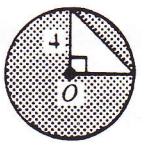


(6) 12 $\quad \frac{1}{2}(6\sqrt{3})(72)$

(7) $\frac{1}{2}(3)(5s)$



(9) 22 $\quad \frac{1}{2}(12)(12+22)$ 204

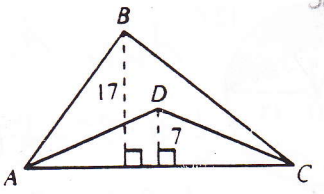


Ex. 12

(12) $A_{circle} - A_{\triangle}$
$16\pi - \frac{1}{2}(4 \cdot 4)$
$16\pi - 8$

(11) r=12, d=24, C=24π

(13) $\frac{60}{360}$ $\quad \frac{1}{6} \cdot 2 \cdot \pi \cdot 5$ $\quad \frac{1}{6} \cdot \pi \cdot 5^2$



Ratio of $A = \frac{144\pi}{64\pi} = \frac{144}{64} = \frac{36}{16} = \frac{9}{4}$

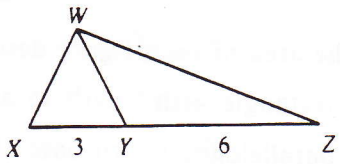
#7 $\quad \tan 36° = \frac{x}{3}$ $\quad x = 3(\tan 36°)$ $\quad x \approx 2.18$
1 side = 2x = 4.36 $\quad P = (5) \approx 21.8$ $\quad A = \frac{1}{2}(3)(21.8) \approx 32.7$

19. Two similar polygons have scale factor 3 : 5. The area of the larger polygon is 125.

The area of the smaller polygon is 45.

$\frac{9}{25} = \frac{x}{125}$ $\quad 25x = 1125$

20. The ratio of the areas of $\triangle WXY$ and $\triangle WYZ$ is 1:2.



21. In circle O with radius 12, $m\angle GOH = 30$. Find the length of $\overset{\frown}{GH}$ and the area of sector GOH.

length of $\overset{\frown}{GH}$ = 2π, A = 12π

$\frac{30}{360} = \frac{1}{12} \cdot 2 \cdot \pi \cdot 12$

$\frac{1}{12} \cdot \pi \cdot 12^2$

22. The area of sector AOB is 20π and $m\angle AOB = 100$. Find the radius of circle O. $6\sqrt{2}$ (8.49)

23. The length of $\overset{\frown}{CD}$ is 4.2π and $m\angle COD = 70$. Find the radius of circle O. 10.8

(22) $20\pi = \frac{100}{360} \cdot \pi \cdot r^2$

$20\pi = \frac{5}{18} \cdot \pi \cdot r^2$

$20 = \frac{5}{18} \cdot r^2$

$72 = r^2$

$r = \sqrt{72}$

$r = 6\sqrt{2}$

$4.2 = \frac{7}{18} \cdot r$

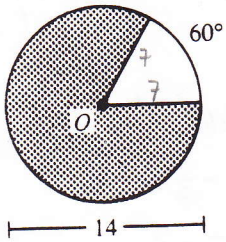
$10.8 = r$

$4.2\pi = \frac{70}{360} \cdot 2\pi r$

$4.2\pi = \frac{7}{36} \cdot 2\pi r$

Find the area of each shaded region. Point O marks the center of a circle.

24.

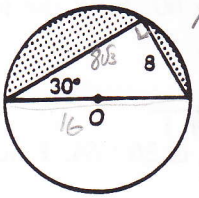


$\frac{5}{6} \cdot \pi \cdot 7^2$

178.88 (182.57)

$A = \frac{245\pi}{6}$ OR $40\frac{5}{6}\pi$ OR $49\pi - \frac{49\pi}{6}$

25.



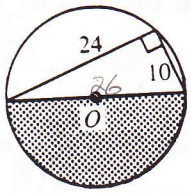
$A_{\frac{1}{2}\text{ circle}} - A_{\triangle}$

$\frac{1}{2} \cdot 64\pi - \frac{1}{2} \cdot 8 \cdot 8\sqrt{3}$

$32\pi - 32\sqrt{3}$

area = $32\pi - 32\sqrt{3}$ (45.11)

26.



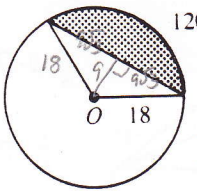
$d = 26$

$r = 13$

$\frac{1}{2} \cdot \pi \cdot 13^2$

$A = \frac{169\pi}{2}$ $\quad 84.5\pi$

27.



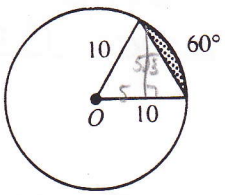
$A_{sector} - A_{triangle}$

$\frac{1}{3} \cdot \pi \cdot 18^2 - \frac{1}{2}(18\sqrt{3})(9)$

$108\pi - 81\sqrt{3}$

$A = 108\pi - 81\sqrt{3}$

28.



$A = \frac{50\pi}{3} - 25\sqrt{3}$ (16⅔ π − 25√3)

$A_{sector} - A_{\triangle}$

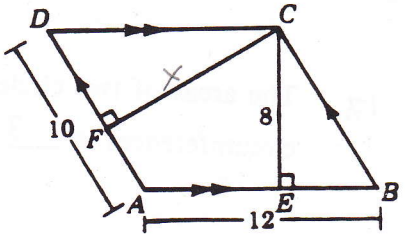
$\frac{1}{6} \cdot \pi \cdot 10^2 - \frac{1}{2} \cdot (10)(5\sqrt{3})$

$\frac{100\pi}{6} - \frac{1}{2}(50\sqrt{3})$

(9.06)

(198.996)

29) find CF. (265.46)



$A_{\square} = 8 \cdot 12 = 96$

$CF = 9.6$

$96 = 10 \cdot x$