Name Answer Key Date _____ Period _____

Accelerated Geometry
Chapter 11 Review Sheet

Fill in the blank.

1. The area of a rhombus can be found by taking half the product of its diagonals.
2. The median of a trapezoid is the average of its bases.
3. The scale factor of two similar figures is the same as the ratio of their perimeter.
4. The ratio of the area of two similar figures is the square of the ratio of their sides.
5. To find the central angle of a regular polygon, divide 360° by the number of sides.
6. The apothem of a regular polygon is the (perpendicular) distance from the center of the polygon to a side.
7. Circumference is to a circle what perimeter is to a polygon.
8. To find the arc length of a circle, you multiply the ratio $\frac{x}{360}$ by circumference.
9. To find the area of a sector, multiply the ratio $\frac{x}{360}$ by area.
10. If two triangles have the same height, then the ratio of their areas is equal to the ratio of their bases
11. A wheel travels the distance of its circumference in one revolution.
12. In general, probability is given by the number of favorable outcomes over the number of possible outcomes.

Fill in the chart with the formulas for each figure.

To find:	Formula:
13. Area of a rectangle	$A = bh$
14. Circumference	$C = 2\pi r$ or $C = \pi d$
15. Area of a circle	$A = \pi r^2$
16. Area of a trapezoid	$A = \frac{(b_1 + b_2)h}{2}$
17. Area of a Regular Polygon	$A = \frac{1}{2}Pa$

Find the AREA of each of the following. Show all your work including any formulas and the numbers you are plugging into them. Write answers in exact form, where appropriate. Otherwise, round to the nearest tenth. Also be sure to include the appropriate units!

18. A parallelogram with base 18 *in* and height 9 *in*.

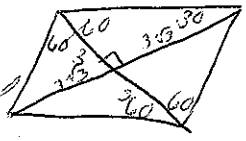
$A = bh$

$A = (18)(9)$

$\boxed{A = 162\ in^2}$

19. A rhombus with a shorter diagonal of 6 *cm* and a 120° angle.

Recall: diagonals are ⊥ & bisect opp ∠'s.



$A = \frac{1}{2} d_1 d_2$

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

$A = 3(6\sqrt{3}) = \boxed{18\sqrt{3}\ cm^2}$

20. A square whose perimeter is 60 *ft*.

$P = 4s$

$60 = 4s$

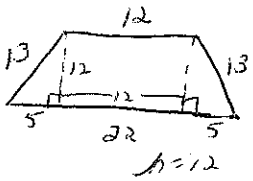
$15 = s$

$A = s^2$

$A = (15)^2$

$\boxed{A = 225\ ft^2}$

21. An isosceles trapezoid with legs 13 *in* and bases 12 *in* and 22 *in*.



$A = \frac{1}{2}(b_1 + b_2)h$

$A = \frac{1}{2}(12 + 22)(12)$

$A = 17(12) = \boxed{204\ in^2}$

22. A circle with circumference 24π *mm*.

$C = \pi d$

$C = 24\pi$

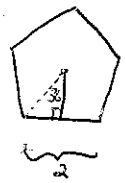
$d = 24 \therefore r = 12$

$A = \pi r^2$

$A = \pi(12)^2$

$\boxed{A = 144\pi\ mm^2}$

23. A regular pentagon with side 2 *cm*.



$P = 5s$

$P = 5(2)$

$P = 10\ cm$

$a = 1\tan 36 = \frac{1}{a}$

$a \approx 1.376$

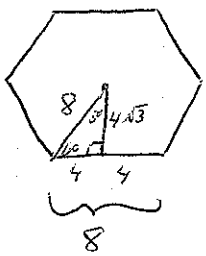
$A = \frac{1}{2}Pa$

$A = \frac{1}{2}(10)(1.376)$

$A = 5(1.376)$

$\boxed{A \approx 6.9\ cm^2}$

24. A regular hexagon with radius 8 *mm*.



$P = 6s$

$P = 6(8)$

$P = 48\ mm$

$A = \frac{1}{2}Pa$

$A = \frac{1}{2}(48)(4\sqrt{3})$

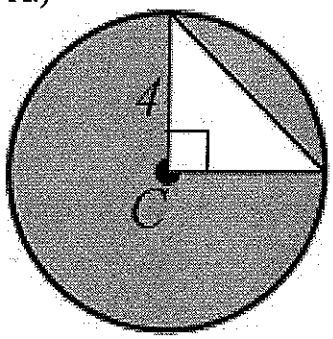
$A = 24(4\sqrt{3})$

$\boxed{A = 96\sqrt{3}\ mm^2}$

Complete the following. Show all your work including any formulas and the numbers you are plugging into them. Also be sure to include the appropriate units!

25. Find the area of the shaded region of Circle C.

A.)



Area of Circle − Area of Triangle

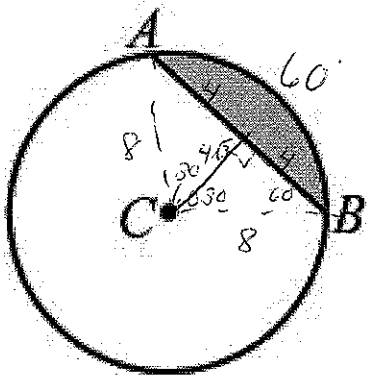
$A = \pi r^2$ − $A = \frac{bh}{2}$

$A = \pi(4)^2$ − $A = \frac{(4)(4)}{2} = \frac{16}{2}$

$A = 16\pi$ − $A = 8$

$\boxed{A = (16\pi - 8)\ un^2}$

B.) Find the area of the shaded region of Circle C below, given that $r = 8\ units$ and $m\overset{\frown}{AB} = 60°$.



Area of Sector − Area of Triangle

$A = \frac{60}{360}(\pi(8)^2) - A = \frac{bh}{2}$

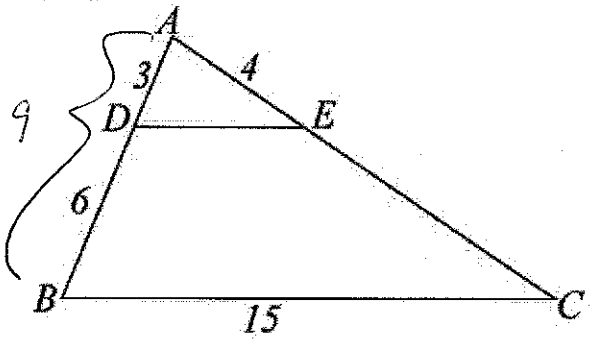
$A = \frac{1}{6}(64\pi) - A = \frac{(8)(4\sqrt{3})}{2}$

$A = \frac{64\pi}{6} - \frac{32\sqrt{3}}{2}$

need common denominator!

$A = \frac{32\pi}{3} - \frac{16\sqrt{3}}{1} \cdot \frac{3}{3} = \boxed{\frac{32\pi - 48\sqrt{3}}{3}\ un^2}$

26. Given $\triangle ABC \sim \triangle ADE$ find the probability that a point selected at random from $\triangle ABC$ will lie inside quadrilateral $BDEC$.



Find scale factor: $\frac{3}{9} = \frac{1}{3}$

Find ratio of areas: $\frac{1^2}{3^2} = \frac{1}{9}$ ← lil Δ / ← big Δ

Area of quad: $9 - 1 = 8$

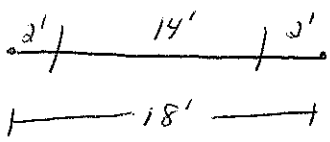
$\therefore \boxed{\frac{8}{9}}$

27. Use the figure from #26 above. If 25 points were selected at random from $\triangle ABC$, approximately how many of them would be expected to lie inside quadrilateral $BDEC$?

$25\left(\frac{8}{9}\right) = \frac{200}{9} = 22.2 \approx \boxed{22\ pts}$

Complete the following. Show all your work including any formulas and the numbers you are plugging into them. Also be sure to include the appropriate units!

28. A piece of rope 18 *ft* long is cut into two pieces at a random point. What is the probability that both pieces of rope will be at least 2 *ft* long?



$\frac{14}{18} = \boxed{\frac{7}{9}}$

29. The corresponding sides of two similar rectangles are in the ratio 3:4. If the smaller rectangle has an area of 54 ft^2, find the area of the larger rectangle.

need ratio of areas! $\frac{3^2}{4^2} = \frac{9}{16}$

set up proportion! $\frac{1}{16} = \frac{6}{x}$

$\boxed{x = 96\ ft^2}$

30. Find the circumference of a circle with area 25π un^2.

$C = 2\pi r$

$C = 2\pi(5)$

$\boxed{C = 10\pi\ un}$

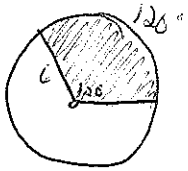
$A = \pi r^2$

$25\pi = \pi r^2$

$\sqrt{25} = \sqrt{r^2}$

$5 = r$

31. Find the area of a sector with radius 6 *cm* and central angle of 120°.



$\frac{120}{360} = \frac{1}{3}$

$A = \pi r^2$

$A = \pi(6)^2$

$A = 36\pi$

Area of sector

$A = \frac{1}{3}(36\pi)$

$\boxed{A = 12\pi\ cm^2}$

32. A circle has an area of 1296π ft^2. If an arc of this circle has a length of 12π *ft*, find its central angle.

$A = \pi r^2$

$1296\pi = \pi r^2$

$\sqrt{1296} = \sqrt{r^2}$

$36 = r$

$C = 2\pi r$

$C = 2\pi(36)$

$C = 72\pi$

Arc length = Radius · Circumference

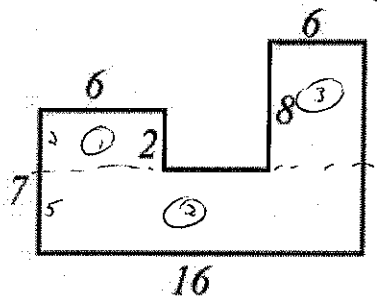
$12\pi = \frac{x}{360}(72\pi)$

$5 \cdot 12 = \frac{x}{5} \cdot 5$

$\boxed{60^\circ = x}$

$2x$ = central angle

33. Find the area of the below figure.



$A = bh$

① $A = (2)(6) = 12$

② $A = (5)(16) = 80$

③ $A = 6(8) = 48$

$12 + 80 + 48 = \boxed{140\ un^2}$

34. Two similar octagons have areas in the ratio 50 : 81. Find the ratio of the perimeters.

$\sqrt{\frac{50}{81}} = \boxed{\frac{5\sqrt{2}}{9}}$