Geometry 400
11-6 worksheet

Name_____

Leave your answers in terms of π.

1. Find the <u>arc length</u> in a circle with radius 6 and an arc measure of 270°.

$$\frac{270}{360} \cdot \pi(12)$$

$$\frac{3}{4} \cdot 12\pi = 9\pi$$

1. __9π__ in

2. Find the <u>area of a sector</u> in a circle with radius 14 and arc measure of 135°.

$$\frac{135}{360} \cdot \pi(14^2)$$

$$\frac{3}{8} \cdot 196\pi = \frac{147\pi}{2}$$

73.5π

2. __$\frac{147}{2}\pi$__

3. Given a circle with an arc length of 20.9 and a radius of 10, find the <u>arc measure and area of the sector</u>. (find arc measure to nearest degree)

$$20.9 = \frac{n}{360} \cdot \pi(20)$$ $$20.9 = \frac{n\pi}{18}$$ $$Area = \frac{120}{360} \cdot \pi(10^2)$$

$$20.9 = \frac{20\pi n}{360}$$ $$376.2 = n\pi$$ $$= \frac{1}{3} \cdot 100\pi = \boxed{\frac{100\pi}{3}}$$

$$\boxed{120 = n}$$

Arc measure __120°__   Area of sector __$\frac{100\pi}{3}$ un²__

4. Find the <u>radius and arc length</u> if the area of a sector is 27π with an arc measure of 120°.

$$27\pi = \frac{120}{360}\pi(r^2)$$ $$81\pi = r^2\pi$$ Arc Length $= \frac{1}{3} \cdot 18\pi$
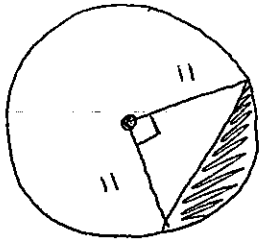
$$27\pi = \frac{r^2\pi}{3}$$ $$81 = r^2$$ $$\boxed{9 = r}$$ $$\boxed{6\pi}$$

Radius __9__ un.   Arc length __6π__ un

5. Find the <u>area of the segment</u> of a circle with radius 11 with an arc measure of $90°$.
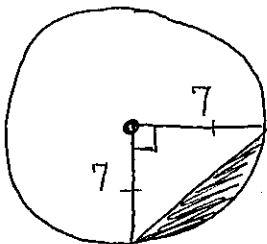
$$A \text{ Sector} - A_\triangle$$

$$\frac{90}{360} \pi (11^2) - \frac{11 \cdot 11}{2}$$

$$\boxed{\frac{121\pi}{4} - \frac{121}{2} \text{ un}^2}$$

5. _____

6. Find the <u>area of a segment</u> in a circle with radius 7 and an arc measure of $90°$.

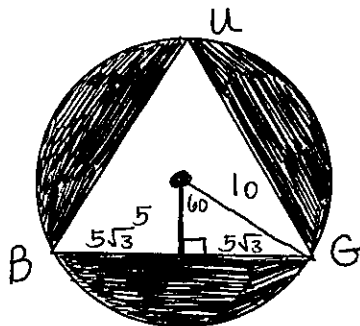$$A \text{ sector} - A_\triangle$$

$$\frac{90}{360} \pi (7^2) - \frac{7 \cdot 7}{2}$$

$$\boxed{\frac{49\pi}{4} - \frac{49}{2} \text{ un}^2}$$

6. _____

Find the area of each <u>shaded</u> region.

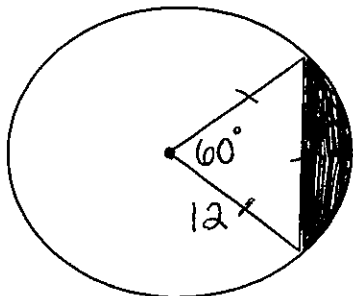7. The radius of the circle is 10 and $\triangle BUG$ is equilateral.

$$A_O - A_\triangle$$

$$\pi (10^2) - \frac{(10\sqrt{3})^2 \sqrt{3}}{4} \qquad = \boxed{100\pi - 75\sqrt{3} \text{ un}^2}$$

$$100\pi - \frac{300\sqrt{3}}{4}$$

7. _____

8.

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

$$\frac{60}{360} \pi r^2 - \frac{s^2 \sqrt{3}}{4}$$

$$\frac{144\pi}{6} - 36\sqrt{3}$$

$$\boxed{24\pi - 36\sqrt{3}}$$

8. _____