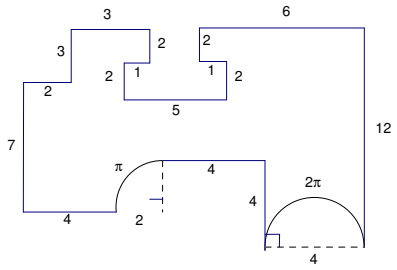
Name: Date:

Instruction: Leave your answers in terms of π in all problems.

1. The figure is $\frac{3}{4}$ of a full circle. So let's find area and perimeter of a whole circle and multiply by $\frac{3}{4}$. $A = \pi r^2 = \pi 9^2 = 81\pi$. $\frac{3}{4} \times 81\pi = \boxed{60.75\pi = \frac{243}{4}\pi}$. $C = 2\pi r = 2\pi 9 = 18\pi$. $\frac{3}{4} \times 18\pi = \frac{27}{2}\pi$. Now to find the perimeter of the WHOLE figure, we have to add the two radii. So $\frac{27}{2}\pi + 2 \times 9 = \boxed{\frac{27}{2}\pi + 18 = 13.5\pi + 18}$

2. Find the area of the sidewalks by finding the area of the big rectangle and subtract the area of the pool. So area of sidewalk is $35 \times 52 - 44 \times 27 = 1820 - 1188 = 632$ square feet. If it costs \$0.10 per square foot, then it costs $632 \times \$0.10 = \boxed{\$63.20}$

3. Fill in the side measurements. We find the round pieces by using the circumference equation and dividing by 4 for the quarter circle and by 2 for the half. We add up the measurements and we get $\boxed{60 + 3\pi}$



4. The area of the figure is the area of the four quarter circles. We do $\frac{1}{4}\pi r_1^2 + \frac{1}{4}\pi r_2^2 + \frac{1}{4}\pi r_3^2 + \frac{1}{4}\pi r + 4^2 = \frac{1}{4}\pi(8^2 + 5^2 + 9^2 + 3^2) = \frac{179}{4}\pi = \boxed{44.75\pi}$.

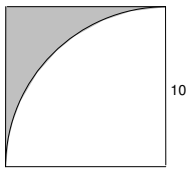
   The perimeter is the quarter-circumferences of the four circles, plus the line segments. So we find $\frac{1}{4}\pi(2r_1 + 2r_2 + 2r_3 + 2r_4) = \frac{1}{2}\pi(8 + 5 + 9 + 3) = \frac{25}{2}\pi = 12.5\pi$. Now we add up the line segments, which are $3 + 4 + 6 + 5 = 18$. So perimeter is $\boxed{18 + 12.5\pi}$

5. Find the area of the rectangle, the triangles, and the circle:

   $R = 8 \times 12 = 96$. $T = \frac{1}{2} \times 8 \times 7 = 28$. $C = 4\pi$.

   Now add the rectangle and triangle and subtract the circle: $R + T - C = \boxed{124 - 4\pi}$

6. Simplify the drawing like this.



   Now we will find the area of the square, subtract the area of a quarter-circle, and multiply by 2.

   Area of square = 100. Area of quarter circle: $\frac{1}{4}\pi 10^2 = 25\pi$. So $2(100 - 25\pi) = \boxed{200 - 50\pi}$

7. For the first figure, find the area of the rectangle and subtract the three non shaded triangles:
   $(6+3+9)(3+9) - \frac{1}{2}12 \times 6 - \frac{1}{2}10 \times 15 - \frac{1}{2}9 \times 9 = \boxed{64.5}$
   For the second figure, find the area of the large triangle and subtract the two non-shaded triangles:
   $\frac{1}{2}55 \times (30+20+15+20) - \frac{1}{2}30 \times 30 - \frac{1}{2}32 \times 20 = \boxed{1407.5}$