Student Name: _____

1. The sum of the ages of Alice and Bob is 78. Bob is 32 years older than Alice. How old is Alice?

   Answer: _____
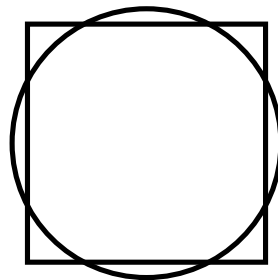
2. How many non-zero digits are there in 2000^{12}?

   Answer: _____

3. Two 12-hour, analog clocks are hanging on the wall beside each other. One of them shows the correct time and the other is running backwards. At noon, both clocks show 12:00 at the same time. When will both clocks show the same time next?

   Answer: _____

4. A circle and a square have the same centre. The circle intersects the square twice on each of its four sides. The area inside the square but outside the circle is equal to the area inside the circle but outside the square. If the side length of the square is 2, what is the area of the circle?

   Answer: _____

5. How many numbers between 1 and 300 (including 1 and 300) are divisible by both 4 and 6?

   Answer: _____

6. George is taking a bus to school. The chance that it rains is $\frac{1}{4}$. The chance he misses his bus is $\frac{1}{3}$, regardless of whether it is raining. What is the chance he misses the bus when it is raining?
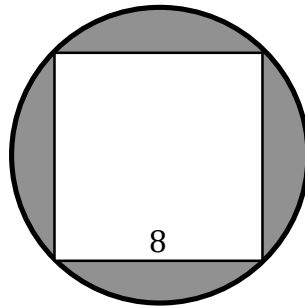
   Answer: _____

Student Name: _____

7.   Harry must pick an <u>even</u> number n with the property that both $\frac{n}{2}$ and $4 \times n$ are three-digit numbers. How many choices does he have?

Answer: _____

8.   A square with side length 8 is inscribed in a circle in the figure below. Find the area of the shaded region.

Answer: _____