Student Name: _____

1. Let x be the lowest common multiple of 14 and 24 and y be the greatest common divisor of 14 and 24. Determine the value of x + y.

    Answer: _____

2. Let aΔb refer to $a^2 + ab + b^2$. For example $1\Delta1 = 1^2 + 1 \times 1 + 1^2 = 3$. Determine the value of $(2\Delta3)\Delta4$.

    Answer: _____

3. Which digits X and Y make 123XY divisible by both 8 and 9?

    Answer: _____

4. In the sequence 32, 8, _____, _____, x, each term after the second is the average of the two terms immediately before it. What is the value of x?

    Answer: _____

5. A circle of radius 4 is inscribed in a regular hexagon. What is the area of the hexagon?

    Answer: _____

6. Three unique numbers are chosen randomly from 1 to 20 (inclusive). What is the probability that all three numbers are divisible by 5?
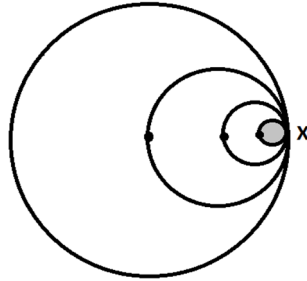
    Answer: _____

7. A number is said to be *cool* if it is odd and if the sum of its digits is even. How many *cool* numbers are there between 1 and 100 inclusive?

    Answer: _____

Student Name: _____

8. Four circles are tangent to one another. The circles are placed such that they all touch "X" (point of tangency). Also, each circle touches the center of the one outside it. If the radius of the biggest circle is 24, what is the circumference of the smallest circle?

Answer: _____