Student Name: _____

Section E

E1
Ambrose tosses 100 fair coins. What is the probability that an even number of them come up heads?
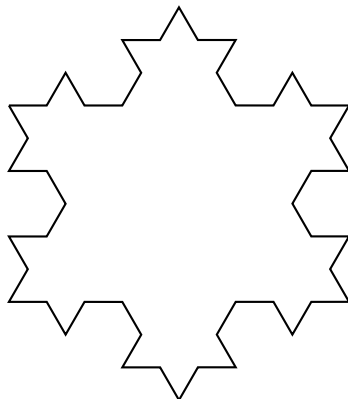
Answer to E1: _____

E2
Alfredo, Cameron, Kasi, Hugo and Shin are to be seated around a circular table. Alfredo refuses to sit next to Cameron. How many possible different seating arrangements are there?

(Note: The table is perfectly circular and does not have a starting point, so ACKHS, CKHSA, KHSAC, HSACK and SACKH are all the same seating arrangment. However, you can tell the difference between being seated clockwise and counterclockwise, so ACKHS and SHKCA are different.)

Answer to E2: _____

E3
The area of this figure is $\frac{5}{6}\sqrt{3}$. The perimeter is one of the following: 0.8, 8, 80, or 800. What is it?

Answer to E3: _____

Student Name: _____

Please write your name on *every* page.

E4

What is the expected number of times a fair coin needs to be tossed in order to see 2 consecutive heads?

Answer to E4: _____

E5

A triangle has side lengths 6, 8, 10. A point P is chosen randomly inside the triangle. What is the probability that the distance from P to the nearest vertex is more than 2?
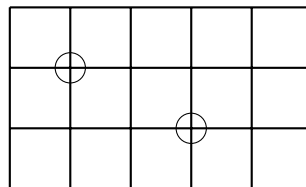
Answer to E5: _____

E6

How many ways are there to arrange the numbers 1, 2, 3, 4, 5, 6 in a row such that the sum of any two adjacent numbers is odd?

Answer to E6: _____

E7

If each move may only be a single point up or right and the indicated points may not be crossed, how many routes are there from the bottom left corner to the top right?

Answer to E7: _____

E8

What is the smallest n such that 2^{15} is a factor of n!?

Answer to E8: _____