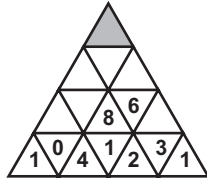# FEBRUARY CHALLENGE

Name _____

*Calculators may **not** be used.*

1. _____

There are 16 non-overlapping equilateral triangles (unit triangles) in the figure shown. Each new number to be written in an empty unit triangle is the product of the three closest numbers in the row directly below it. What number will be written in the shaded unit triangle at the top?

2. _____ students
The ratio of girls to boys in a volleyball club at Ash Middle School is 7 to 4. There are 42 girls in the club. What is the total number of students in the club?

3. _____ inches
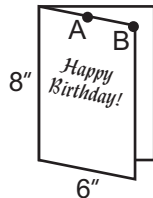
A greeting card is 6 inches wide and 8 inches tall. Point A is 3 inches from the fold, as shown. As the card is opened to an angle of 45 degrees, through how many more inches than point A does point B travel? Express your answer as a common fraction in terms of π.

4. _____
Three standard dice are rolled. What is the probability that the sum of the numbers on the tops of the three dice is 17 or greater? Express your answer as a common fraction.

5. _____
On a graph, a lattice point is an ordered pair (x, y) with integers x and y. Exactly 15 lattice points lie strictly in the interior of the triangular region (not on the triangle) with vertices $(0, 0)$, $(N, 0)$ and (N, N), where $N > 0$. What is the value of N?