

# MCMC Sample Problems - Advanced

1. What is the units digit of  $67^{2025}$ ?

- (a) 1                                      (b) 3                                      (c) 5  
(d) 7                                      (e) 9

2. Benny has the first 2025 primes. He gets bored and multiplies all of them together. What is the units digit of his product?

- (a) 0                                      (b) 5                                      (c) 2  
(d) 4                                      (e) 3

3. Benny has four action figures: two identical figures (let's assume Steel and Farmer are identical) and two unique figures (Megahertz and Vivian). He calls the figures Steel, Megahertz, Farmer, and Vivian. How many ways can he arrange the action figures if Vivian can't be next to Megahertz?

- (a) 6                                      (b) 7                                      (c) 8  
(d) 9                                      (e) 12

4. Benny wants to minimize  $a + b + c$ , where  $a, b, c \geq 0$  and  $abc = \frac{1}{27}$ . Help Benny out by choosing the minimal value of  $a+b+c$ .

- (a) 1                      (b)  $\frac{1}{2}$                       (c)  $\frac{1}{3}$                       (d)  $\frac{1}{4}$                       (e)  $\frac{1}{5}$

5. Benny has an equilateral triangle. If the medians of the triangle intersect at G, and one of the vertices is A, and AG intersects BC at D. Then, what is the ratio of AG/GD?

- (a) 1                      (b) 2                      (c) 3                      (d) 4                      (e) 5