1. Which one of the following Diophantine Equations is **not** solvable over the integers? *(3 points)*

   A. $3x + 6y + 9z = 24$

   B. $2x + 8y + 4z = 94$

   C. $4x + 8y + 12z = 68$

   ✓ D. $5x + 10y + 15z = 127$

2. Given that gcd(3,17)=1, which of the following equations is **not** solvable over the integers?
   (3 points)

   A. 3x + 17y = 1

   B. 6x + 34y = 2

   C. 17x + 3y = 1

   ✓ D. 3x + 18y = 17

3. Suppose you are asked to solve the Diophantine equation 3x +7y = 41 over the **natural numbers**. Consider the parameterized equation 41 = 3(-82+7k) + 7(41-3k) for all integers k. Which of the following choices for **k** generates an acceptable solution for the Diophantine equation?
(3 points)

A. 11

✓ B. 13

C. 14

D. 15