Activity 1:

Task 1:

1- p = 3, q = 11
2- n = p * q = 3 * 11 = 33
3- $\phi(n) = (p-1) * (q-1) = 2 * 10 = 20$
4- e = 7 (gcd(e, 20) = 1)
5- $d = e^{-1} \bmod \phi(n) = 7^{-1} \bmod 20$ => $d * 7 = 1 \bmod 20$
   $3 * 7 = 21$
   $21 = 1 \bmod 20$
   d = 3
6- public key = {7, 35}
   private key = {3, 35}

Task 2:

1- M = 2
2- C = M^e mod n = 2^7 mod 33 = 29

Task 3:

1- M = C^d mod n = 29^3 mod 33 = 24389 mod 33 = 2

Activity 2:

1- My partner: Harshkumar Mahyavanshi
2- p = 7, g = 13
3- a = 18
4- A = g^a mod p = 13^18 mod 7 = 1
5- B = 6
6- s = B^a mod p = 6^18 mod 7 = 1
7- Same s value is found.