2. How many 3-digits even numbers can be formed from the digits 1, 2, 3, 4, 5, 6 if the digits can be repeated?

Solution:

Let the 3-digit number be ABC, where C is at the unit's place, B at the tens place and A at the hundreds place.

As the number has to even, the digits possible at C are 2 or 4 or 6. That is number of possible digits at C is 3.

Now, as the repetition is allowed, the digits possible at B is 6. Similarly, at A, also, the number of digits possible is 6.

Therefore, The total number possible 3 digit numbers = $6 \times 6 \times 3 = 108$.