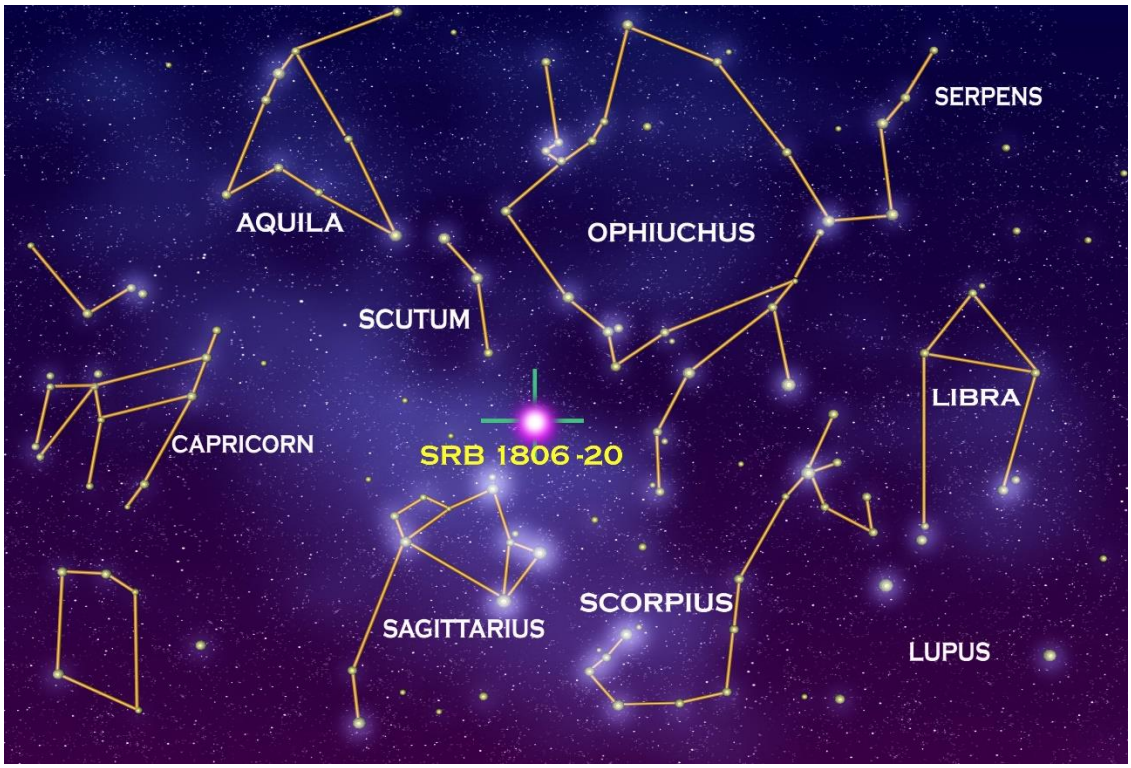
Title: Constellations

This question is graded for 1%

Problem Statement:



Abby the Astronaut wants to create new constellations. Given a star map with n different stars, he wants to find the number of different **configurations** he can make to the star map.

He can make a **constellation** from the star map by grouping up x different stars together, where a <= x <= b. He needs to fill the star map with different constellations until no more constellations are possible to be made for it to count as a valid **configuration**. Every star can only be part of at most 1 constellation.

Note that the order where he fills up constellations matters, ie: [1] [2] is different from [2] [1], but [1, 2] is the same as [2, 1].

Input:

In a single line, integers n, a, b. (max(1, n/10) <= a <= b <= n <= 50) (b – a <= 5)

Output:

In a single line, the total number of configurations he can make to a star map with n stars, constellations of size a to b, modulo 10^9 + 7.

Example:

Sample Input 1: 3 * stars(2,1,3) + 3*stars(1,1,3) + 1*stars(0,1,3)

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3 1 3
```

Sample Output 1:

```
13
```

Sample Input 2:

```
7 6 7
```

Sample Output 2:

```
8
```

Explanation:

For Sample Input 1, he can make these 13 configurations:

```
Config 1: [1, 2, 3]
Config 2: [1, 2] [3]
Config 3: [1, 3] [2]
Config 4: [2, 3] [1]
Config 5: [1] [2, 3]
Config 6: [2] [1, 3]
Config 7: [3] [1, 2]
Config 8: [1] [2] [3]
Config 9: [1] [3] [2]
Config 10: [2] [1] [3]
Config 11: [2] [3] [1]
Config 12: [3] [1] [2]
Config 13: [3] [2] [1]
```

For Sample Input 2, there are 7 possible configurations with 1 constellation of 6 stars and 1 star unpicked, and 1 configuration with 1 constellation of 7 stars only.

Appendix: Modulo Distributive Rules:

(a + b) % c = ((a % c) + (b % c)) % c

(a * b) % c = ((a % c) * (b % c)) % c

(a – b) % c = ((a % c) – (b % c)) % c

Image source: https://www.nasa.gov/sites/default/files/thumbnails/image/constellation_.jpg