

# Problem E

## Extended Ping Pong

Ping pong is a simple but captivating sport with a clear scoring system. Matches are usually played in the form of 5 or 7 games, in which each game is won by the player who reaches 11 points first. However, if the score reaches 10-10, the match will continue until one player has a two-point advantage. Players take turns serving, with the serve changing after every two points. A point is awarded when the opponent fails to return the ball. The player or team that reaches 11 points with at least a two-point lead will win, and the overall winner of the match is determined by winning the majority of the games.

In this problem, we will consider ping pong matches with a slightly different scoring system. We will say that the winning player must have at least  $n$  points and be leading by at least two points. Alice and Bob are currently playing ping pong with each other using this new scoring system. After the match is over, Alice has scored  $s_A$  points, and Bob has scored  $s_B$  points. The match is intense and exciting, but after the match, both Alice and Bob are exhausted and have forgotten the details of the match. After resting, they want to remember together how the match unfolded. However, the number of possible scenarios that could result in the scores  $s_A$  and  $s_B$  is actually quite large.

Given three numbers  $n$ ,  $s_A$ , and  $s_B$ , help Alice and Bob count the number of possible scenarios that could occur when they play ping pong with the new scoring system, so that after the match, Alice has  $s_A$  points and Bob has  $s_B$  points.

A ping pong scenario is defined as a sequence of events that occur during the match, where the  $i$ -th event records the player who scores after the  $i$ -th serve, and the winner is determined after the last event. For example, with  $n = 3$ :

- The scenario “Alice, Alice, Bob, Alice” is a valid scenario, with Alice scoring 3 points and Bob scoring 1 point.
- The scenario “Alice, Bob, Alice, Bob, Alice” is not a valid scenario. After the last event, Alice has 3 points, but Bob has 2 points, so the match is not over because Alice does not have a two-point lead over Bob.
- The scenario “Alice, Bob, Bob, Alice, Alice, Alice” is also a valid scenario, with scores  $s_A = 4$  and  $s_B = 2$ . Now Alice is leading Bob by 2 points.

Two scenarios with the same final score are considered different if there exists an event  $i$  where the scoring player in one scenario is Alice while the scoring player in the other scenario is Bob.

## Input

The first line contains a single integer  $T$  ( $1 \leq T \leq 125$ ) – the number of test cases.

$T$  test cases follow, each contains a single line with three integers  $n$ ,  $s_A$ , and  $s_B$  ( $2 \leq n \leq 10$ ,  $0 \leq s_A, s_B \leq 10$ ) – respectively, the minimum score limit that the winning player needs to achieve, the final score of Alice after the match, and the final score of Bob after the match.

## Output

For each test case, print a single integer, the number of possible scenarios when Alice and Bob play ping pong with the new scoring rule, so that after the match ends, Alice has  $s_A$  points, and Bob has  $s_B$  points.

### Sample Input 1

```
2
2 0 0
2 0 2
```

### Sample Output 1

```
0
1
```