You are given a binary tree in which each node contains an integer value.

Find the number of paths that sum to a given value.

The path does not need to start or end at the root or a leaf, but it must go downwards (traveling only from parent nodes to child nodes).

The tree has no more than 1,000 nodes and the values are in the range -1,000,000 to 1,000,000.

**Example:**

root = [10,5,-3,3,2,null,11,3,-2,null,1], sum = 8

10

/ \

**5** **-3**

**/** **\** **\**

**3** **2** **11**

/ \ **\**

3 -2 **1**

Return 3. The paths that sum to 8 are:

1. 5 -> 3

2. 5 -> 2 -> 1

3. -3 -> 11