B. Bear and Tree Jumps

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

A tree is an undirected connected graph without cycles. The distance between two vertices is the number of edges in a simple path between them.

Limak is a little polar bear. He lives in a tree that consists of n vertices, numbered 1 through n.

Limak recently learned how to jump. He can jump from a vertex to any vertex within distance at most k.

For a pair of vertices (s, t) we define $f(s, t)$ as the minimum number of jumps Limak needs to get from s to t. Your task is to find the sum of $f(s, t)$ over all pairs of vertices (s, t) such that $s < t$.

Input

The first line of the input contains two integers n and k ($2 \le n \le 200\,000$, $1 \le k \le 5$) — the number of vertices in the tree and the maximum allowed jump distance respectively.

The next $n - 1$ lines describe edges in the tree. The i-th of those lines contains two integers a_i and b_i ($1 \le a_i, b_i \le n$) — the indices on vertices connected with i-th edge.

It's guaranteed that the given edges form a tree.

Output

Print one integer, denoting the sum of $f(s, t)$ over all pairs of vertices (s, t) such that $s < t$.

Examples

input
6 2 1 2 1 3 2 4 2 5 4 6

output
20

input
13 3 1 2 3 2 4 2 5 2 3 6 10 6 6 7 6 13 5 8 5 9 9 11 11 12

output
114

input
3 5 2 1 3 1

output
3

Note

In the first sample, the given tree has 6 vertices and it's displayed on the drawing below. Limak can jump to any vertex within distance at most 2. For example, from the vertex 5 he can jump to any of vertices: 1, 2 and 4 (well, he can also jump to the vertex 5 itself).

There are pairs of vertices (s, t) such that $s < t$. For 5 of those pairs Limak would need two jumps: $(1, 6), (3, 4), (3, 5), (3, 6), (5, 6)$. For other 10 pairs one jump is enough. So, the answer is $5 \cdot 2 + 10 \cdot 1 = 20$.

In the third sample, Limak can jump between every two vertices directly. There are 3 pairs of vertices $(s < t)$, so the answer is $3 \cdot 1 = 3$.