3D Cover

In the 3D Cartesian coordinate system, there are n cubes.These cubes are all axis-paralleled. What's the volume of the union of these cubes?

Input

There is a single integer m in the very first line of the input, the number of test cases. m blocks follow.

For each test, the first line contains a single integer n(1<=n<=100), the number of cubes. n lines follow, each contains four integers x,y,z,r(-1000<=x,y,z<=1000,1<=r<=200), separated by spaces. x,y,z are the X,Y,Z coordinates of the center of the cube, and r is the distance between the center and any surface of the cube.

Output

m lines,each contains a single integer - the answer.

Example

Sample Input:
1
3
0 0 0 3
1 -1 0 1
19 3 5 6
Sample Output:
1944