Description:

The implementation for the Broken Stick Problem is solved by having nested for loops iterate through the entire stick. Each for loop represents the different points A and B. With the nested loops, we are able to simulate a large number of varying values of points A and B. In my implementation, I assume the for loop to have a size of 10,000, representing the stick to have a size of 10,000. With points A and B on the stick, the first segment would be the minimum of both points from 0. The second segment would be the distance between the two points, and the third segment would be the maximum of the two points until 10,000. From the Triangle Inequality Theorem, for a triangle to exist, two sides added together must be greater than the third side. If this condition is satisfied, a triangle can be created. However, if this is not satisfied, a triangle cannot be created, and using these two values, we can calculate the probability of a triangle being created for this problem.

Probability:

The probability calculated by the code to 3 significant digits is 0.250, or 25.0%.

Code:

```
#include <iostream>
#include <iomanip>
using namespace std;
int main(){
    unsigned int segmentOne = 0, segmentTwo = 0, segmentThree = 0;
    double triangleFailure = 0.0, triangleSuccess = 0.0;
    for (unsigned int pointA = 0; pointA <= 10000; pointA++) {
        for (unsigned int pointB = 0; pointB <= 10000; pointB++){
            segmentOne = min(pointA,pointB);
            segmentTwo = max(pointA,pointB) - min(pointA, pointB);
            segmentThree = 10000 - max(pointA,pointB);
            if ((min(min(segmentOne,segmentTwo),segmentThree) +
max(min(segmentOne,segmentTwo), min(max(segmentOne,segmentTwo),
segmentThree))) > max(max(segmentOne,segmentTwo), segmentThree))
                triangleSuccess++;
            else
                triangleFailure++;
        }
    }
    cout << "Probability: " << setprecision(3) << triangleSuccess /
(triangleSuccess + triangleFailure) << endl;
    return 0;
}
```

- Triangle Inequality Theorem: https://andymath.com/triangle-inequality-theorem/
- Median of 3 Numbers using Min and Max: https://stackoverflow.com/questions/1582356/fastest-way-of-finding-the-middle-value-of-a-triple