1. Your conclusion about the relationship between d, n and l

>> $d \approx \sqrt{N} \cdot L$

Where d = Distance, N = Number of Steps, L = Length of step (In our case L = 1)

According to the experiment, we have performed various running steps for getting different readings for d(distance) which is directly proportional to square root of N (Number of steps). The relationship between them as depicted by keeping the value of L as constant as the length of the step is going to be equal for every step.

We can conclude from the readings by seeing their mean values that the result is deviated and is nearly equal to the square root of N. However, accuracy may vary with the number of readings.

2. Your evidence to support that relationship

Let N = 25

Exp. 1

```
Steps: 25 Distance: 6.082762530298219
Steps: 25 Distance: 1.0
Steps: 25 Distance: 2.23606797749979
Steps: 25 Distance: 1.0
Steps: 25 Distance: 6.4031242374328485
Steps: 25 Distance: 7.280109889280518
Steps: 25 Distance: 4.123105625617661
Steps: 25 Distance: 4.123105625617661
Steps: 25 Distance: 1.0
Steps: 25 Distance: 5.0
```

Your Histogram	
Mean	3.823
Standard Deviation (s)	2.3966
Lowest Score	1
Highest Score	7.28
Distribution Range	6.28
Total Number of Scores	10
Number of Distinct Scores	7
Lowest Class Value	0
Highest Class Value	7.99
Number of Classes	4
Class Range	2

Exp. 2

```
Steps: 25 Distance: 5.0
Steps: 25 Distance: 3.605551275463989
Steps: 25 Distance: 1.0
Steps: 25 Distance: 5.385164807134504
Steps: 25 Distance: 5.0
Steps: 25 Distance: 3.605551275463989
Steps: 25 Distance: 1.0
Steps: 25 Distance: 7.810249675906654
Steps: 25 Distance: 5.385164807134504
Steps: 25 Distance: 2.23606797749979
```

Your Histogram	
Mean	4
Standard Deviation (s)	2.15452
Lowest Score	1
Highest Score	7.81
Distribution Range	6.81
Total Number of Scores	10
Number of Distinct Scores	6
Lowest Class Value	0
Highest Class Value	7.99
Number of Classes	4
Class Range	2

Exp. 3

```
Steps: 25 Distance: 2.23606797749979
Steps: 25 Distance: 5.0
Steps: 25 Distance: 6.708203932499369
Steps: 25 Distance: 3.0
Steps: 25 Distance: 3.605551275463989
Steps: 25 Distance: 5.0
Steps: 25 Distance: 3.605551275463989
Steps: 25 Distance: 4.123105625617661
Steps: 25 Distance: 6.082762530298219
Steps: 25 Distance: 1.0
```

Your Histogram	
Mean	4.033
Standard Deviation (s)	1.73438
Lowest Score	1
Highest Score	6.7
Distribution Range	5.7
Total Number of Scores	10
Number of Distinct Scores	8
Lowest Class Value	0
Highest Class Value	6.79
Number of Classes	4
Class Range	1.7

Let N = 100

Exp. 1

```
Steps: 100 Distance: 10.0
Steps: 100 Distance: 10.770329614269007
Steps: 100 Distance: 6.324555320336759
Steps: 100 Distance: 10.0
Steps: 100 Distance: 3.1622776601683795
Steps: 100 Distance: 7.615773105863909
Steps: 100 Distance: 12.083045973594572
Steps: 100 Distance: 4.0
Steps: 100 Distance: 20.396078054371138
Steps: 100 Distance: 4.0
```

Your Histogram	
Mean	8.8341
Standard Deviation (s)	5.13417
Lowest Score	3.162
Highest Score	20.39
Distribution Range	17.228
Total Number of Scores	10
Number of Distinct Scores	8
Lowest Class Value	3
Highest Class Value	22.999
Number of Classes	4
Class Range	5

Exp. 2

```
Steps: 100 Distance: 11.661903789690601
Steps: 100 Distance: 5.0990195135927845
Steps: 100 Distance: 7.211102550927978
Steps: 100 Distance: 8.0
Steps: 100 Distance: 15.231546211727817
Steps: 100 Distance: 4.47213595499958
Steps: 100 Distance: 5.830951894845301
Steps: 100 Distance: 18.384776310850235
Steps: 100 Distance: 5.830951894845301
Steps: 100 Distance: 17.08800749063506
```

Your Histogram	
Mean	9.8808
Standard Deviation (s)	5.28761
Lowest Score	4.4721
Highest Score	18.384
Distribution Range	13.9119
Total Number of Scores	10
Number of Distinct Scores	9
Lowest Class Value	4
Highest Class Value	19.9999
Number of Classes	4
Class Range	4

Exp. 3

```
Steps: 100 Distance: 8.246211251235321
Steps: 100 Distance: 9.055385138137417
Steps: 100 Distance: 18.973665961010276
Steps: 100 Distance: 8.602325267042627
Steps: 100 Distance: 8.94427190999916
Steps: 100 Distance: 12.649110640673518
Steps: 100 Distance: 12.649110640673518
Steps: 100 Distance: 17.08800749063506
Steps: 100 Distance: 7.615773105863909
· Steps: 100 Distance: 7.211102550927978
```
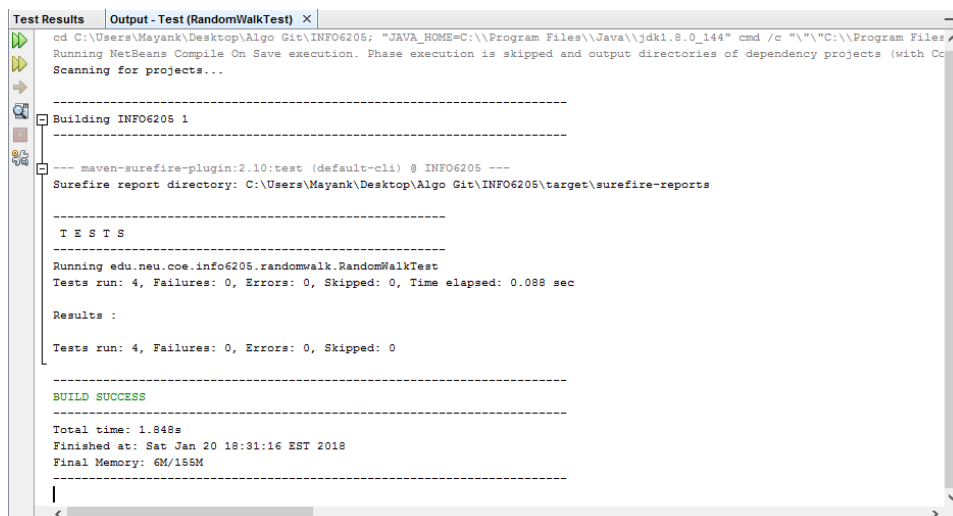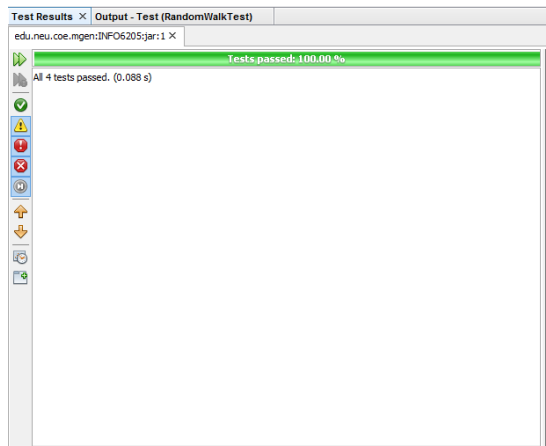
Your Histogram	
Mean	11.10338
Standard Deviation (s)	4.12464
Lowest Score	7.2111
Highest Score	18.973
Distribution Range	11.7619
Total Number of Scores	10
Number of Distinct Scores	9
Lowest Class Value	7
Highest Class Value	18.9999
Number of Classes	4
Class Range	3

3. Your code (RandomWalk.java plus anything else that you changed or created)

>> Submitted

4. Evidence (screen shot) of the unit tests all passing.

Screen Shot for multiple run of same steps:

```
Steps: 10 Distance: 1.4142135623730951
Steps: 10 Distance: 2.8284271247461903
Steps: 10 Distance: 2.8284271247461903
Steps: 10 Distance: 2.8284271247461903
Steps: 10 Distance: 1.4142135623730951
Steps: 10 Distance: 2.0
Steps: 10 Distance: 4.47213595499958
Steps: 10 Distance: 5.0990195135927845
Steps: 10 Distance: 1.4142135623730951
Steps: 10 Distance: 1.4142135623730951


Steps: 17 Distance: 2.23606797749979
Steps: 17 Distance: 3.605551275463989
Steps: 17 Distance: 7.0
Steps: 17 Distance: 5.0
Steps: 17 Distance: 3.0
Steps: 17 Distance: 4.123105625617661
Steps: 17 Distance: 5.0
Steps: 17 Distance: 5.385164807134504
Steps: 17 Distance: 1.0
Steps: 17 Distance: 5.0


Steps: 50 Distance: 8.0
Steps: 50 Distance: 7.0710678118654755
Steps: 50 Distance: 6.324555320336759
Steps: 50 Distance: 4.0
Steps: 50 Distance: 7.615773105863909
Steps: 50 Distance: 7.615773105863909
Steps: 50 Distance: 3.1622776601683795
Steps: 50 Distance: 7.615773105863909
Steps: 50 Distance: 7.0710678118654755
Steps: 50 Distance: 5.830951894845301


Steps: 100 Distance: 4.47213595499958
Steps: 100 Distance: 12.0
Steps: 100 Distance: 14.560219778561036
Steps: 100 Distance: 21.213203435596427
Steps: 100 Distance: 5.0990195135927845
Steps: 100 Distance: 7.211102550927978
Steps: 100 Distance: 3.1622776601683795
Steps: 100 Distance: 8.246211251235321
Steps: 100 Distance: 15.556349186104045
Steps: 100 Distance: 8.48528137423857
```

```
Steps: 300 Distance: 31.906112267087632
Steps: 300 Distance: 5.0990195135927845
Steps: 300 Distance: 38.28837943815329
Steps: 300 Distance: 12.083045973594572
Steps: 300 Distance: 17.88854381999832
Steps: 300 Distance: 12.806248474865697
Steps: 300 Distance: 26.90724809414742
Steps: 300 Distance: 7.0710678118654755
Steps: 300 Distance: 18.973665961010276
Steps: 300 Distance: 14.0


 Steps: 1000 Distance: 26.30589287593181
 Steps: 1000 Distance: 21.633307652783937
 Steps: 1000 Distance: 2.8284271247461903
 Steps: 1000 Distance: 16.1245154965971
 Steps: 1000 Distance: 17.4928556845359
 Steps: 1000 Distance: 13.416407864998739
 Steps: 1000 Distance: 29.966648127543394
 Steps: 1000 Distance: 30.0
 Steps: 1000 Distance: 29.966648127543394
 Steps: 1000 Distance: 15.231546211727817
```