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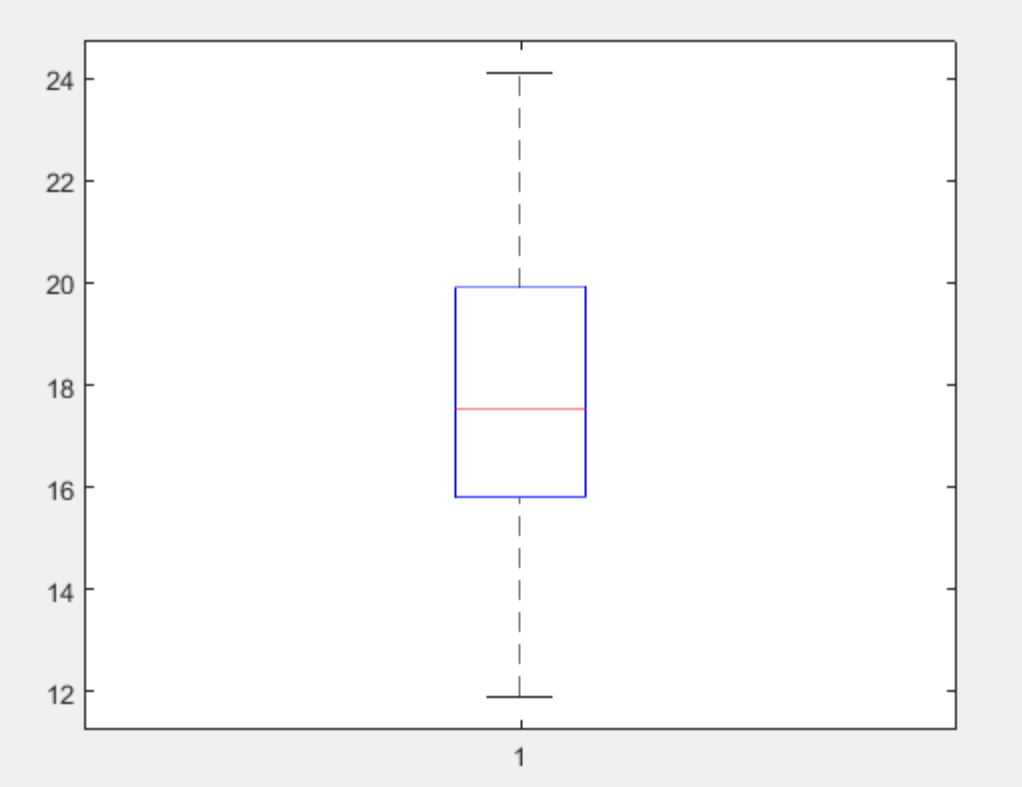
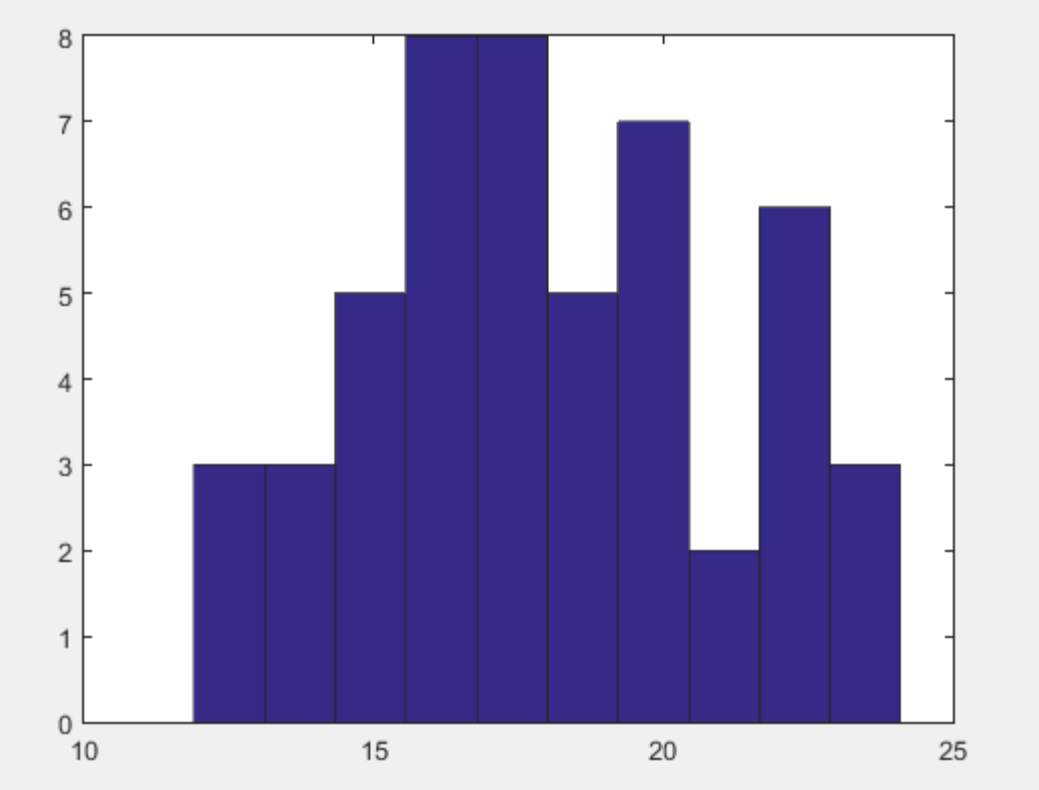
Probability

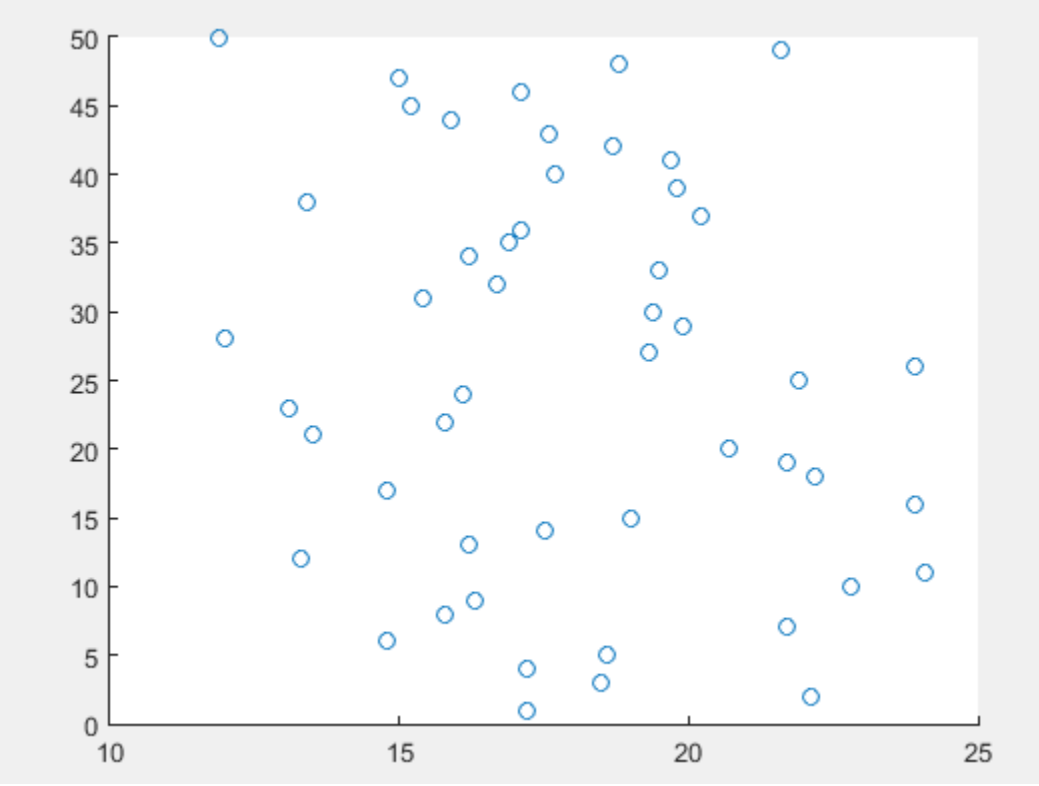
Graphing in MatLab

i)

```
B = [17.2 22.1 18.5 17.2 18.6 14.8 21.7 15.8 16.3 22.8 24.1 13.3 16.2 17.5
19.0 23.9 14.8 22.2 21.7 20.7 13.5 15.8 13.1 16.1 21.9 23.9 19.3 12.0 19.9
19.4 15.4 16.7 19.5 16.2 16.9 17.1 20.2 13.4 19.8 17.7 19.7 18.7 17.6 15.9
15.2 17.1 15.0 18.8 21.6 11.9];
Minb = min(B);
Maxb = max(B);
yb = quantile(B,[0.25, 0.5, 0.75]);
boxplot(B)
hist(B)  % It doesn't support the claim
scatter(B,[1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50])
```

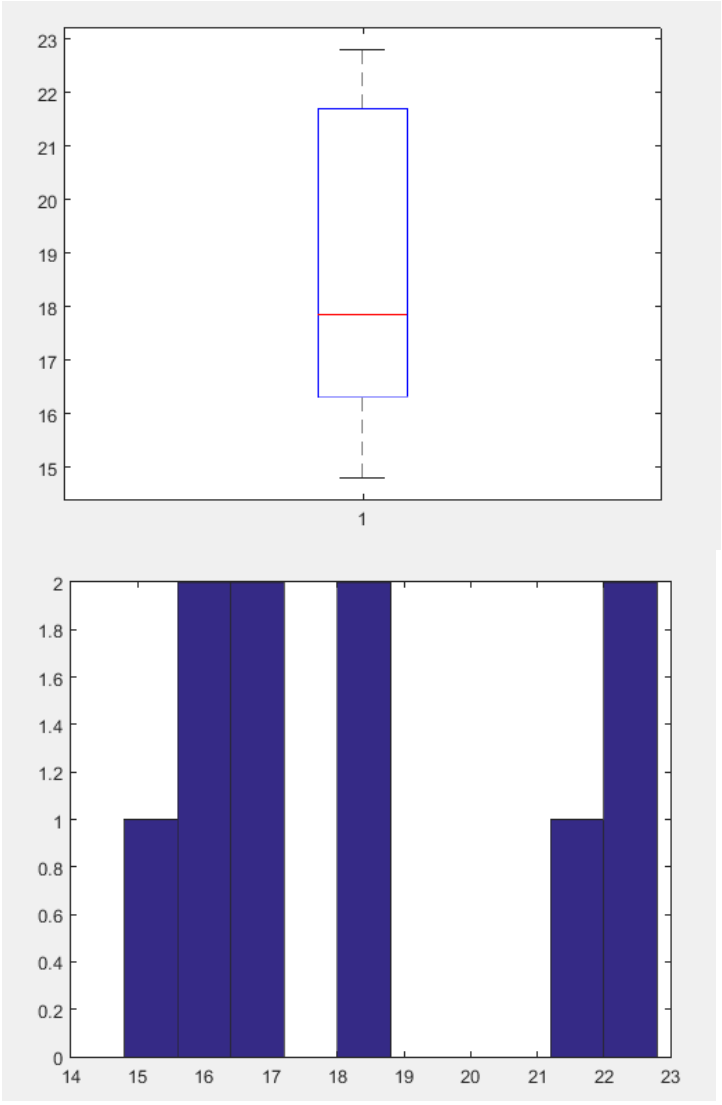


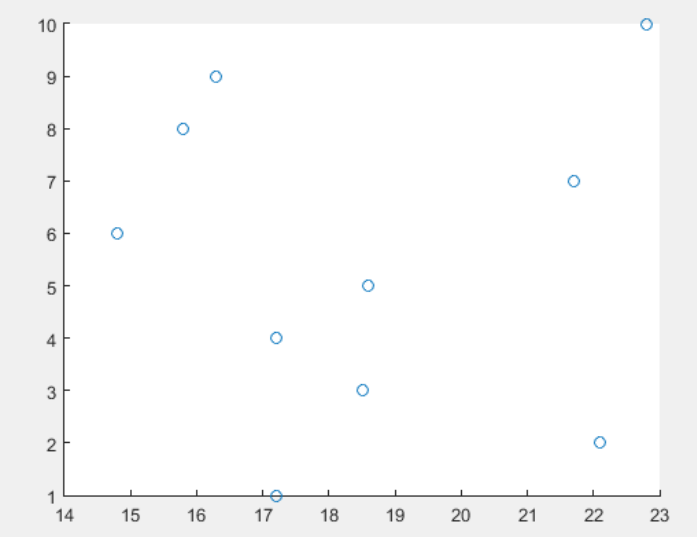

8
7
6
5
4
3
2
1
0
10
15
20
25


50
45
40
35
30
25
20
15
10
5
0
10
15
20
25

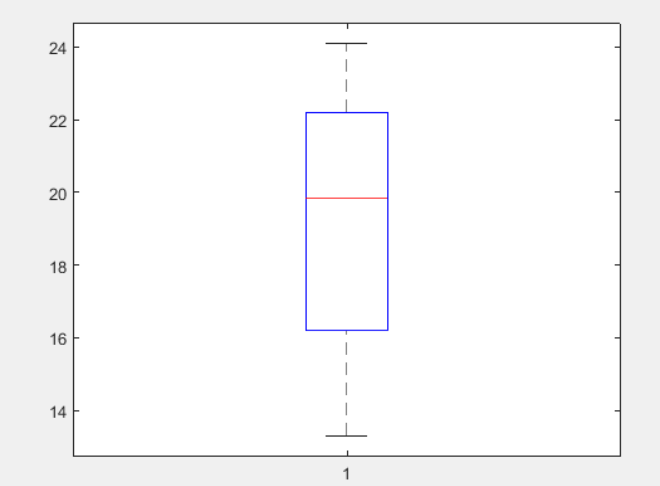
ii)

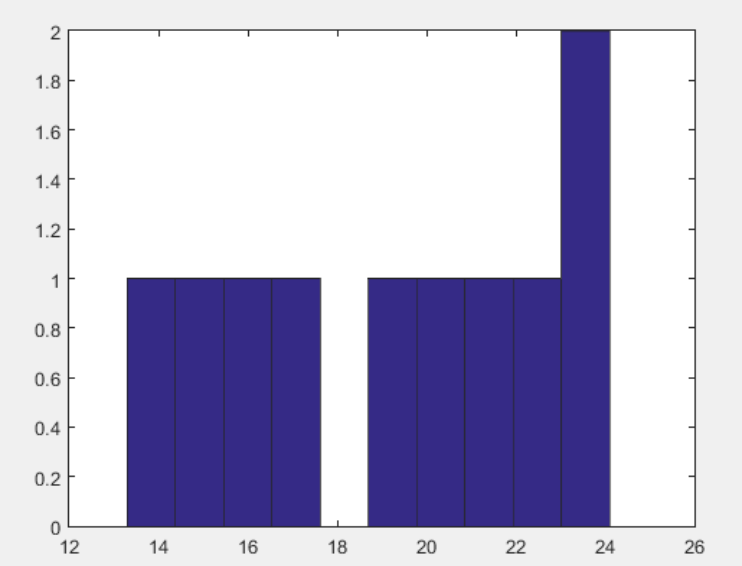
```
C = [17.2 22.1 18.5 17.2 18.6 14.8 21.7 15.8 16.3 22.8];
Minc = min(C);
Maxc = max(C);
yc = quantile(C,[0.25, 0.5, 0.75]);
boxplot(C)
hist(C) % It doesn't support the claim
scatter(C,[1 2 3 4 5 6 7 8 9 10])
```

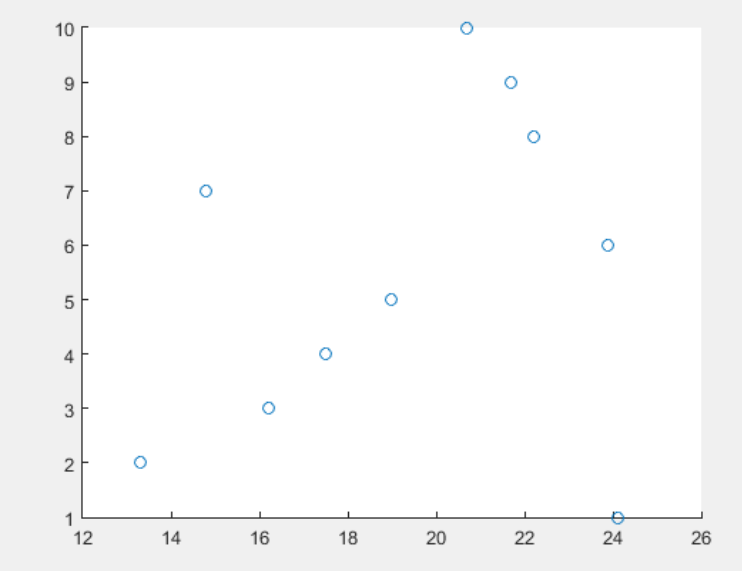




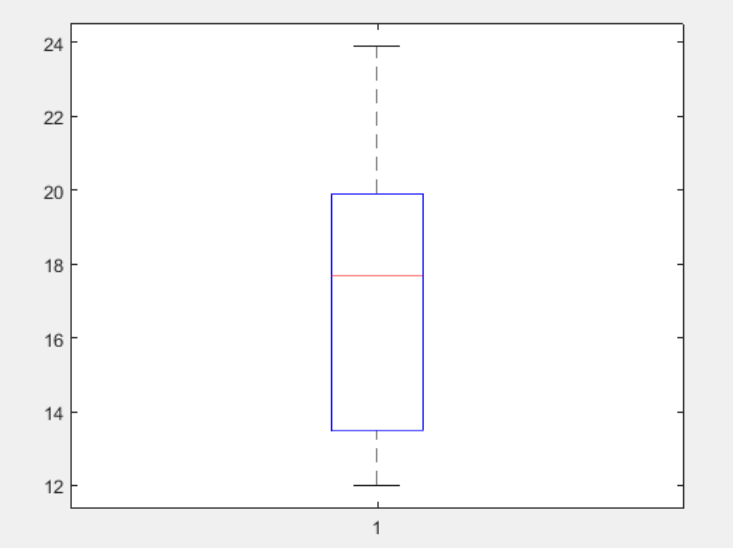

```
D = [24.1 13.3 16.2 17.5 19.0 23.9 14.8 22.2 21.7 20.7];
Mind = min(D);
Maxd = max(D);
yd = quantile(D,[0.25, 0.5, 0.75]);
boxplot(D)
hist(D) % It doesn't support the claim
scatter(D,[1 2 3 4 5 6 7 8 9 10])
```

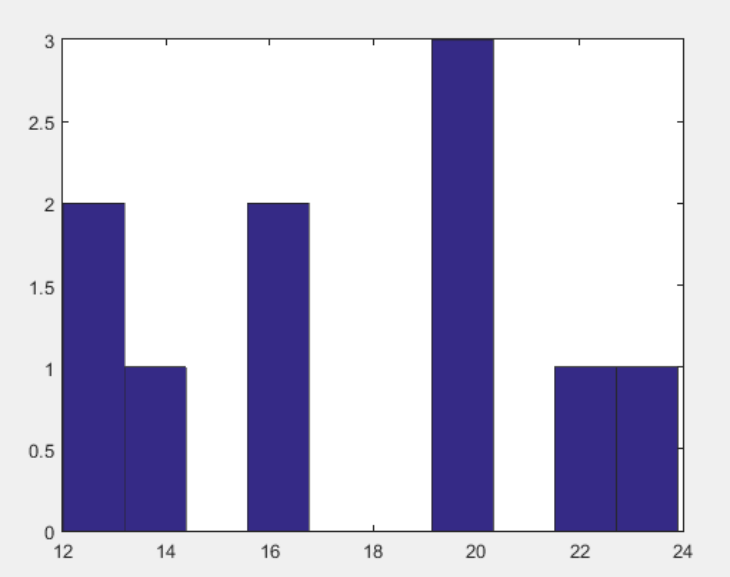


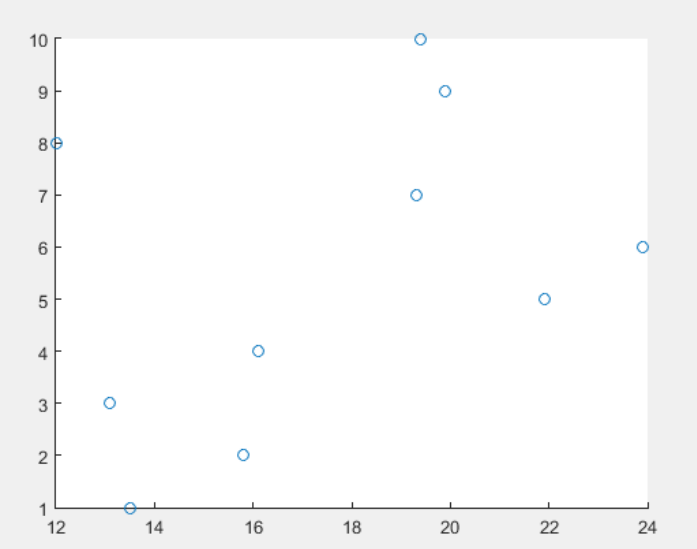

2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12
14
16
18
20
22
24
26


10
9
8
7
6
5
4
3
2
1
12
14
16
18
20
22
24
26

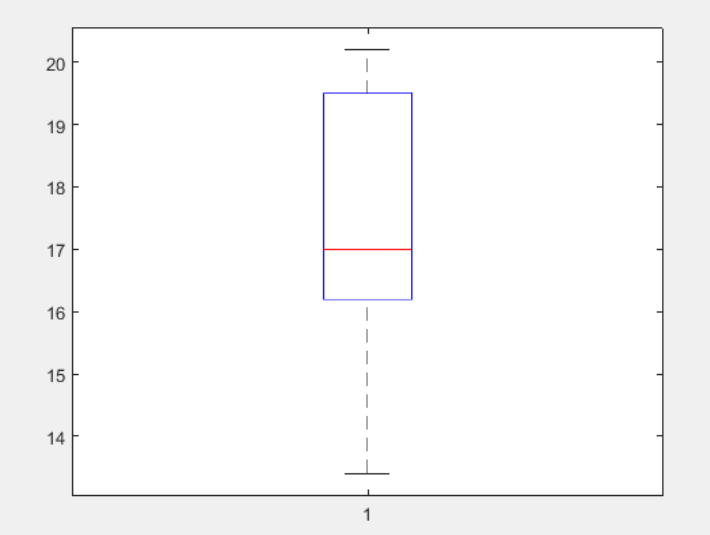
```
E = [13.5 15.8 13.1 16.1 21.9 23.9 19.3 12.0 19.9 19.4];
Mine = min(E);
Maxe = max(E);
ye = quantile(E,[0.25, 0.5, 0.75]);
boxplot(E)
hist(E) % It doesn't support the claim
scatter(E,[1 2 3 4 5 6 7 8 9 10])
```

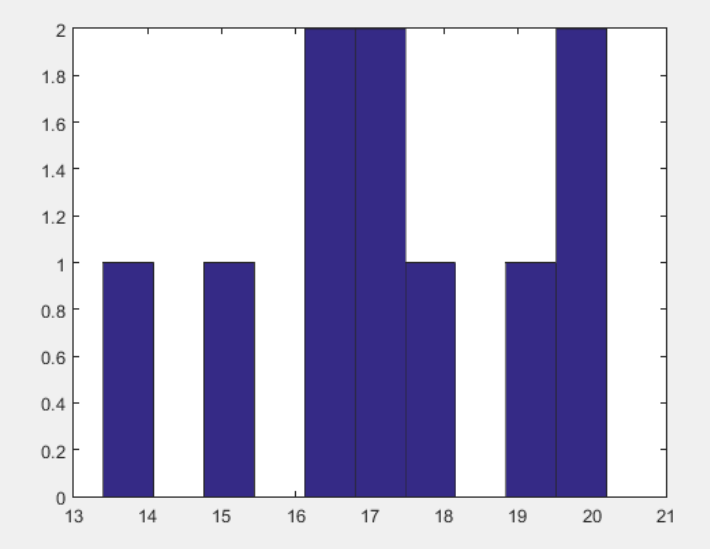


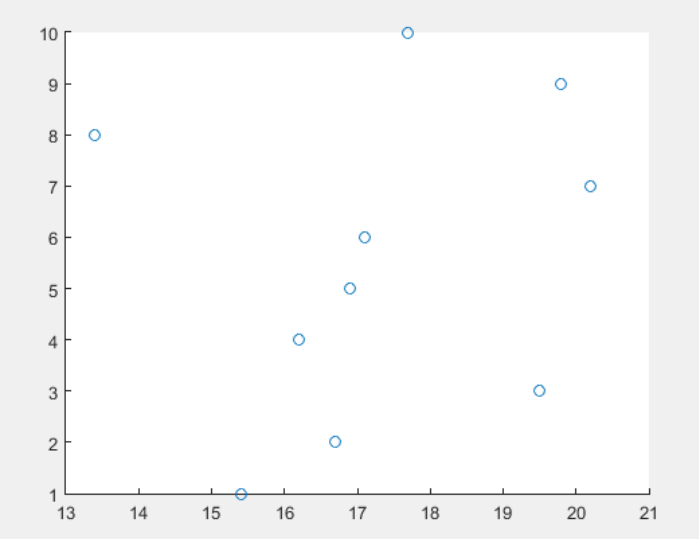




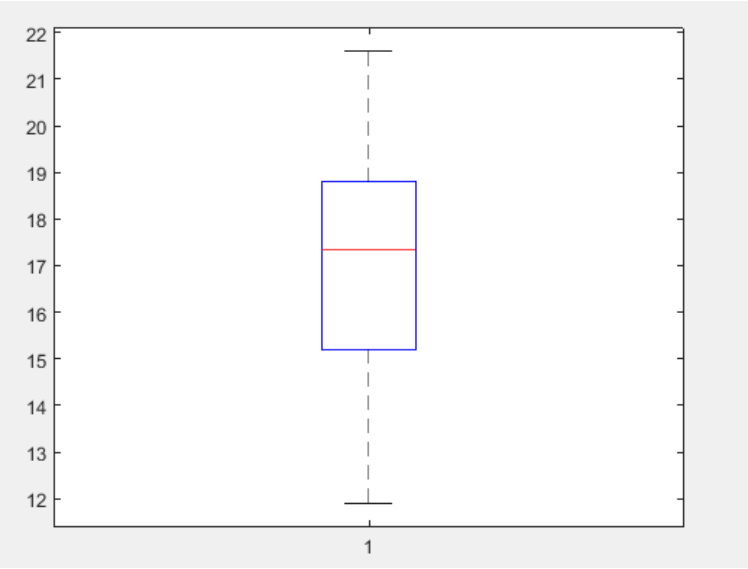

```
F = [15.4 16.7 19.5 16.2 16.9 17.1 20.2 13.4 19.8 17.7];
Minf = min(F);
Maxf = max(F);
yf = quantile(F,[0.25, 0.5, 0.75]);
boxplot(F)
hist(F) % It doesn’t support the claim
scatter(F,[1 2 3 4 5 6 7 8 9 10])
```

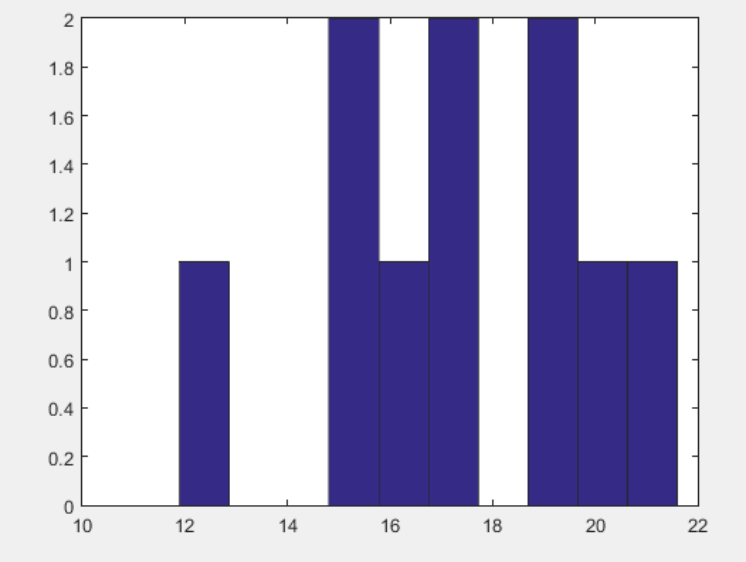


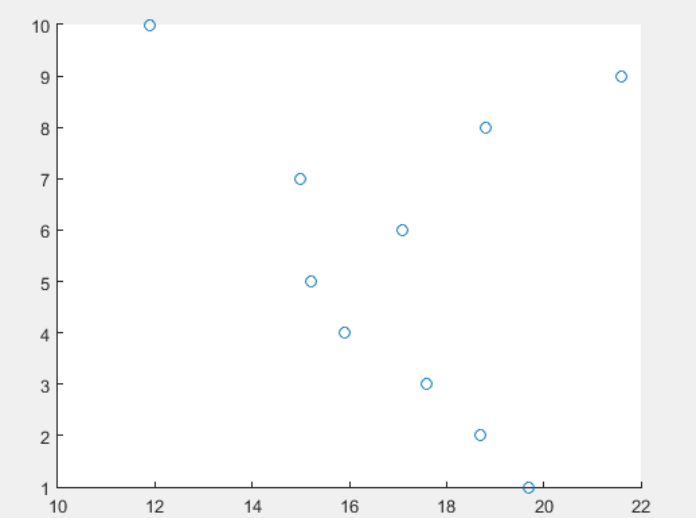

2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
13
14
15
16
17
18
19
20
21


10
9
8
7
6
5
4
3
2
1
13
14
15
16
17
18
19
20
21

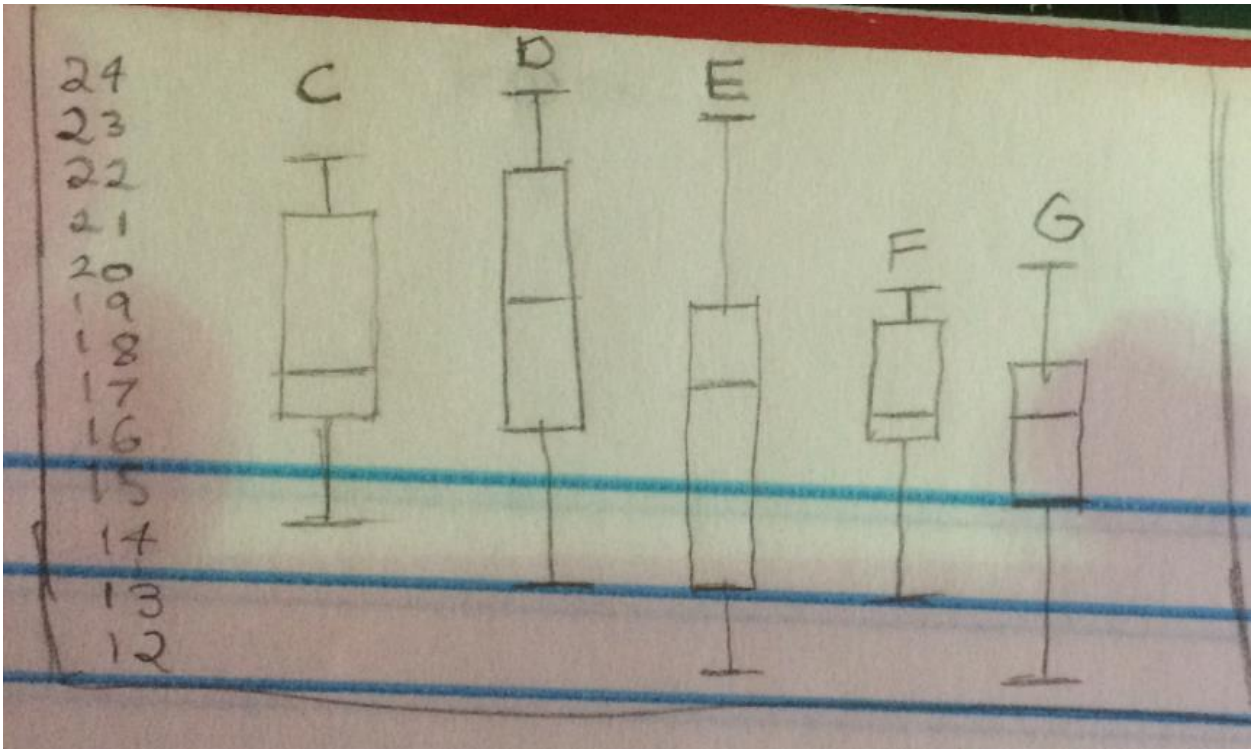
```
G = [19.7 18.7 17.6 15.9 15.2 17.1 15.0 18.8 21.6 11.9];
Ming = min(G);
Maxg = max(G);
yg = quantile(G,[0.25, 0.5, 0.75]);
boxplot(G)
hist(G) % It doesn't support the claim
scatter(G,[1 2 3 4 5 6 7 8 9 10])
```

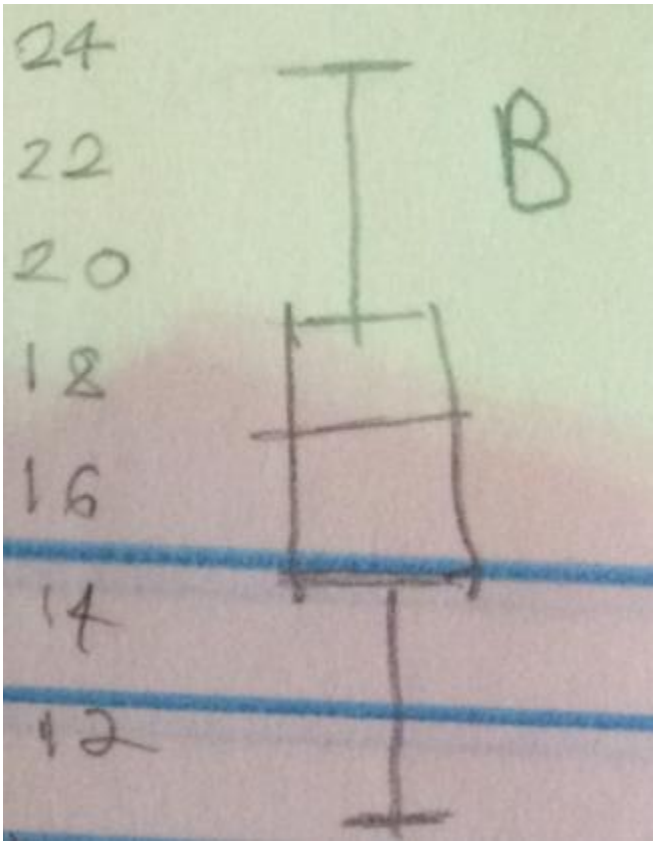






B	*1x50 double*	double
C	[17.2000,22.1000,18.5000,...	double
D	[24.1000,13.3000,16.2000,...	double
E	[13.5000,15.8000,13.1000,...	double
F	[15.4000,16.7000,19.5000,...	double
G	[19.7000,18.7000,17.6000,...	double
Maxb	24.1000	double
Maxc	22.8000	double
Maxd	24.1000	double
Maxe	23.9000	double
Maxf	20.2000	double
Maxg	21.6000	double
Minb	11.9000	double
Minc	14.8000	double
Mind	13.3000	double
Mine	12	double
Minf	13.4000	double
Ming	11.9000	double
N	10000	double
U	*3x10000 double*	double
X	*1x10000 double*	double
Y	*3x10000 logical*	logical
yb	[15.8000,17.5500,19.9000]	double
yc	[16.3000,17.8500,21.7000]	double
yd	[16.2000,19.8500,22.2000]	double
ye	[13.5000,17.7000,19.9000]	double
yf	[16.2000,17,19.5000]	double
yg	[15.2000,17.3500,18.8000]	double


24
23
22
21
20
19
18
17
16
15
14
13
12
C
D
E
F
G


24
22
20
18
16
14
12
B

iii)

```
N = 10000; % Number of simulations
U = rand(3,N); % a 3-by-N matrix of random numbers from [0,1]
Y = (U < 0.5); % Y=1 (heads) if U < 0.5, otherwise Y=0 (tails)
X = sum(Y); % Sums across columns. X = number of heads
hist(X); % Histogram of X
```