In [8]:

```
import pandas as pd
import numpy as np
from scipy import stats
from matplotlib import pyplot as plt
from scipy.stats import norm
from scipy.stats import skew
from scipy.stats import kurtosis
```

Question : 9a

In [2]:

```
ques_9a_data= pd.read_csv('Q9_a.csv')
ques_9a_data
```

Out[2]:

	Index	speed	dist
0	1	4	2
1	2	4	10
2	3	7	4
3	4	7	22
4	5	8	16
5	6	9	10
6	7	10	18
7	8	10	26
8	9	10	34
9	10	11	17
10	11	11	28
11	12	12	14
12	13	12	20
13	14	12	24
14	15	12	28
15	16	13	26
16	17	13	34
17	18	13	34
18	19	13	46
19	20	14	26
20	21	14	36
21	22	14	60
22	23	14	80
23	24	15	20
24	25	15	26
25	26	15	54
26	27	16	32
27	28	16	40
28	29	17	32
29	30	17	40
30	31	17	50
31	32	18	42
32	33	18	56
33	34	18	76

	Index	speed	dist
34	35	18	84
35	36	19	36
36	37	19	46
37	38	19	68
38	39	20	32
39	40	20	48
40	41	20	52
41	42	20	56
42	43	20	64
43	44	22	66
44	45	23	54
45	46	24	70
46	47	24	92
47	48	24	93
48	49	24	120
49	50	25	85

In [4]:

```
ques_9a_data.describe(include='all')
```

Out[4]:

	Index	speed	dist
count	50.00000	50.000000	50.000000
mean	25.50000	15.400000	42.980000
std	14.57738	5.287644	25.769377
min	1.00000	4.000000	2.000000
25%	13.25000	12.000000	26.000000
50%	25.50000	15.000000	36.000000
75%	37.75000	19.000000	56.000000
max	50.00000	25.000000	120.000000

In [27]:

```
skew_9a_data = ques_9a_data.skew( axis = 0, skipna= True) #Skewness calculation
skew_9a_data
```

Out[27]:

```
Index    0.000000
speed   -0.117510
dist     0.806895
dtype: float64
```

In [33]:

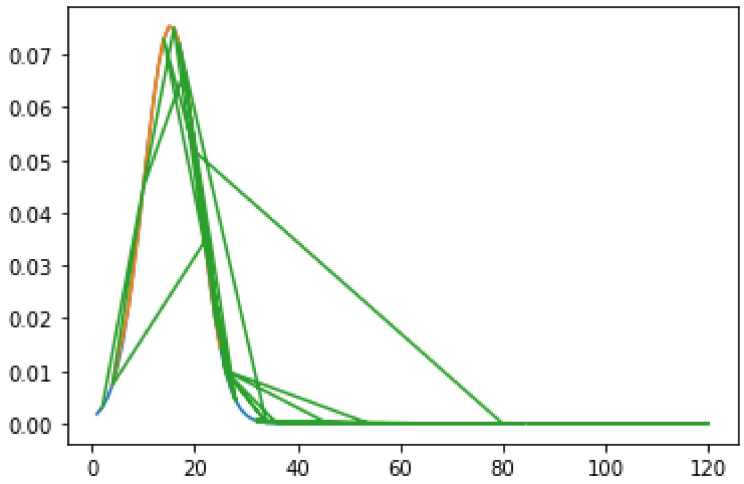
```
kurtosis_9a_data = ques_9a_data.kurtosis(axis = 0 , skipna= True) #Kurtosis calculation
kurtosis_9a_data
```

Out[33]:

```
Index   -1.200000
speed   -0.508994
dist     0.405053
dtype: float64
```

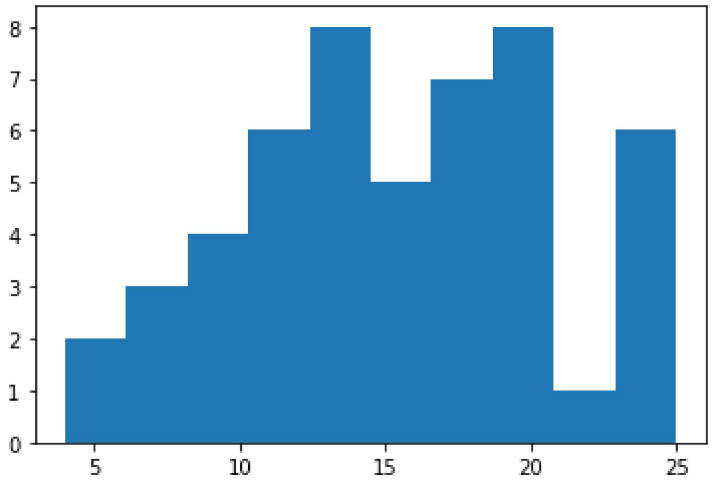
In [9]:

```
plt.plot(ques_9a_data,norm.pdf(ques_9a_data, 15.40, 5.28 )) #Normal distribution Graph for
plt.show()
```



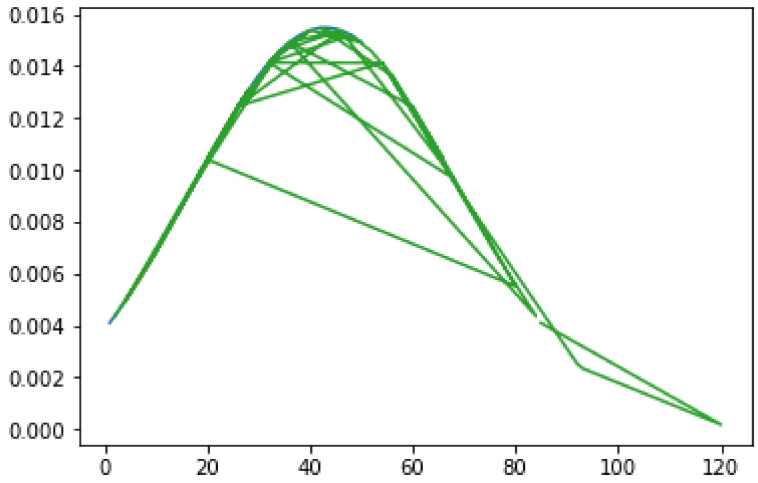
In [45]:

```
plt.hist(x='speed', data=ques_9a_data) # Histogram Graph for speed
plt.show()
```



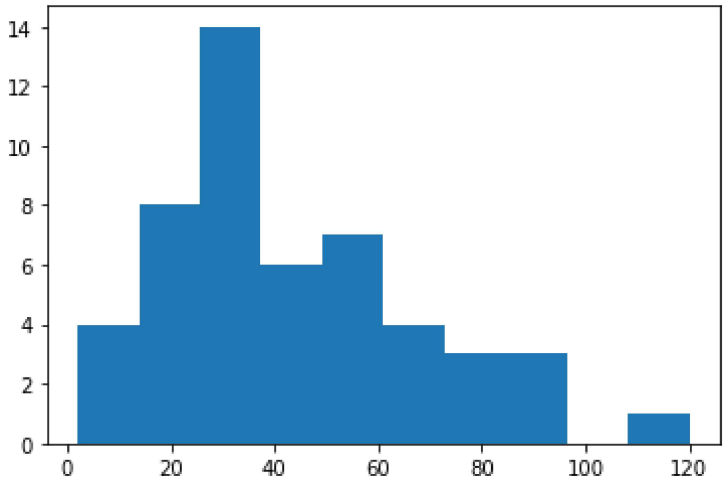
In [28]:

```
plt.plot(ques_9a_data,norm.pdf(ques_9a_data, 42.98, 25.76)) #Normal distribution graph for
plt.show()
```



In [46]:

```
plt.hist(x='dist', data = ques_9a_data) # histogram graph for dist
plt.show()
```



In [ ]:

```

```

Question : 9b

In [10]:

```
ques_9b_data = pd.read_csv('Q9_b.csv')
ques_9b_data
```

Out[10]:

	Unnamed: 0	SP	WT
0	1	104.185353	28.762059
1	2	105.461264	30.466833
2	3	105.461264	30.193597
3	4	113.461264	30.632114
4	5	104.461264	29.889149
...	...	...	...
76	77	169.598513	16.132947
77	78	150.576579	37.923113
78	79	151.598513	15.769625
79	80	167.944460	39.423099
80	81	139.840817	34.948615

81 rows × 3 columns

In [27]:

```
ques_9b_data.describe(include='all')
```

Out[27]:

	Unnamed: 0	SP	WT
count	81.000000	81.000000	81.000000
mean	41.000000	121.540272	32.412577
std	23.526581	14.181432	7.492813
min	1.000000	99.564907	15.712859
25%	21.000000	113.829145	29.591768
50%	41.000000	118.208698	32.734518
75%	61.000000	126.404312	37.392524
max	81.000000	169.598513	52.997752

In [31]:

```
skew_9b =ques_9b_data.skew(axis=0 , skipna = True)
skew_9b
```

Out[31]:

```
Unnamed: 0    0.000000
SP            1.611450
WT           -0.614753
dtype: float64
```

In [34]:

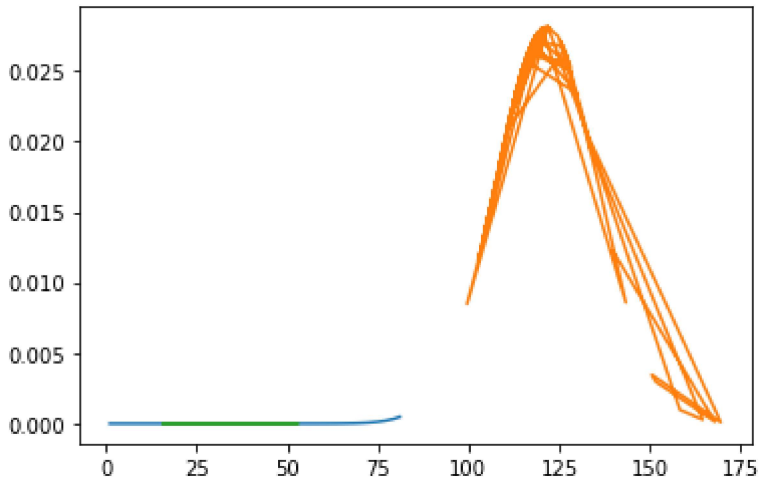
```
kurtosis_9b =  ques_9b_data.kurtosis(axis = 0 , skipna = True)
kurtosis_9b
```

Out[34]:

```
Unnamed: 0   -1.200000
SP            2.977329
WT            0.950291
dtype: float64
```

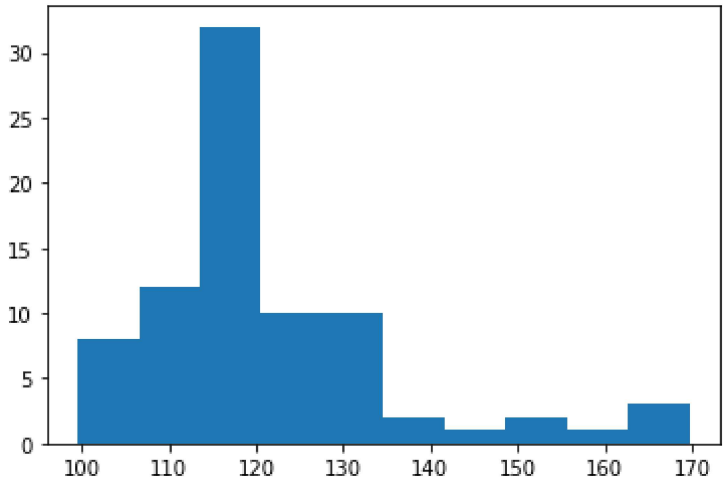
In [33]:

```
plt.plot(ques_9b_data,norm.pdf(ques_9b_data,121.54,14.18)) #normal distribution graph for S
plt.show()
```



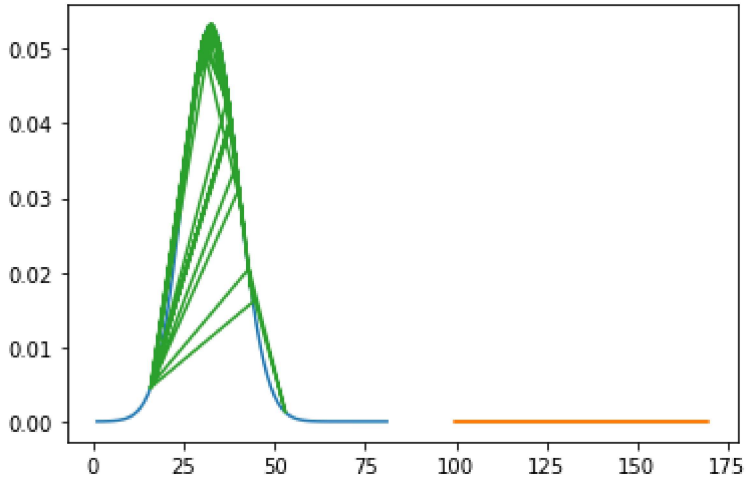
In [11]:

```
plt.hist(x='SP', data=ques_9b_data) # histogram graph for SP
plt.show()
```



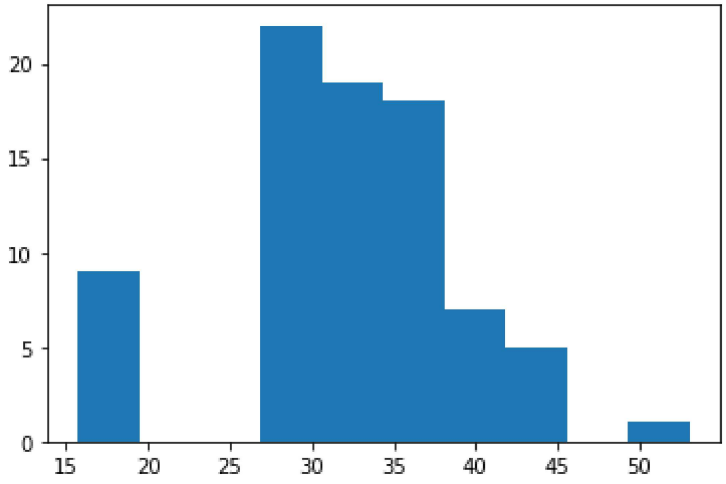
In [34]:

```
plt.plot(ques_9b_data,norm.pdf(ques_9b_data,32.41,7.49)) #normal distribution graph for WT
plt.show()
```



In [12]:

```
plt.hist(x='WT', data = ques_9b_data) #histogram graph for WT
plt.show()
```



In [ ]:

```
```