```
import numpy as np
import pandas as pd
```

```
lemon = pd.read_csv('/content/Lemonade Lab8.csv')
```

```
lemon.head()
```

	Date	Location	Lemon	Orange	Temperature	Leaflets	Price
0	7/1/16	Park	97	78	70	90	0.25
1	7/2/16	Park	98	67	72	90	0.25
2	7/3/16	Park	110	54	71	104	0.25
3	7/4/16	Beach	134	56	76	98	0.25
4	7/5/16	Beach	159	90	78	135	0.25

```
lemon.isnull()
```

	Date	Location	Lemon	Orange	Temperature	Leaflets	Price
0	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...
58	False	False	False	False	False	False	False
59	False	False	False	False	False	False	False
60	False	False	False	False	False	False	False
61	False	False	False	False	False	False	False
62	False	False	False	False	False	False	False

63 rows × 7 columns

```
lemon.isnull().any()
```

```
Date           False
Location       False
```

```
Lemon          False
Orange         False
Temperature    False
Leaflets       False
Price          False
dtype: bool
```

```
lemon.duplicated()
```

```
0     False
1     False
2     False
3     False
4     False
      ...
58    False
59    False
60    False
61    False
62    False
Length: 63, dtype: bool
```

```
lemon.duplicated().any()
```

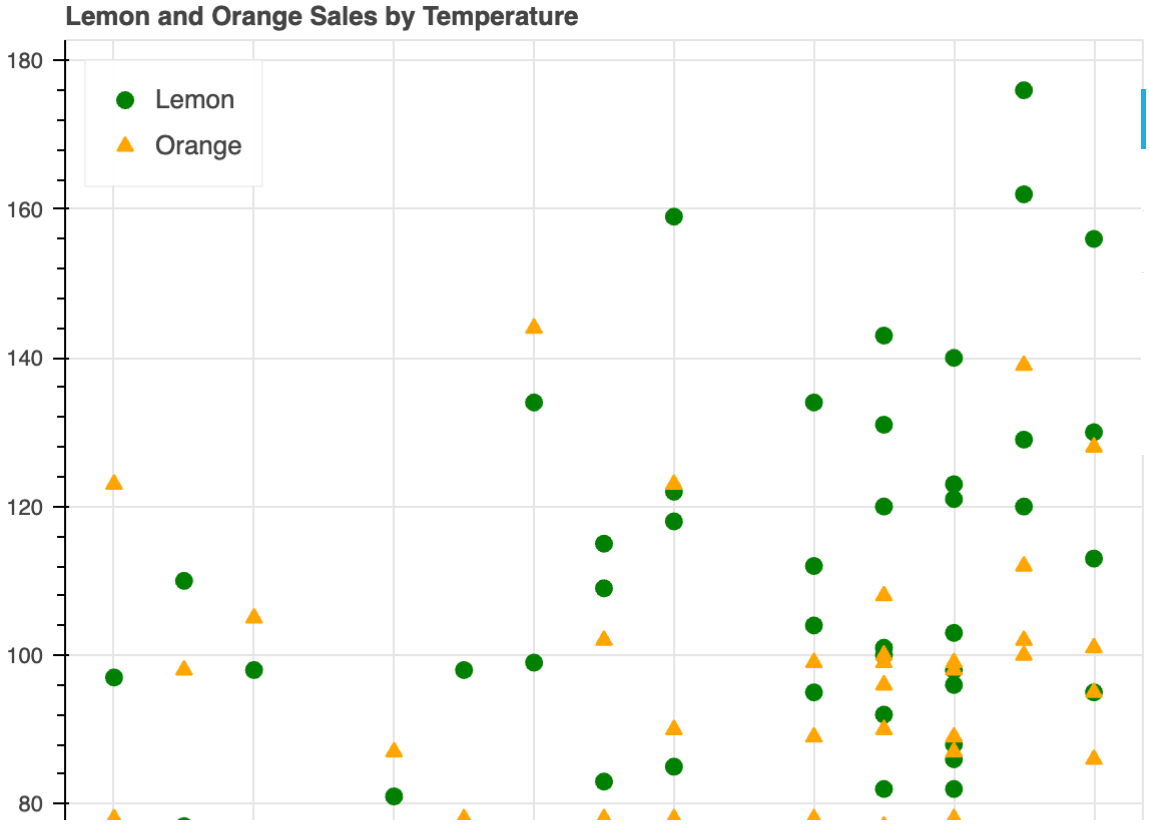
```
False
```

```
from bokeh.models import ColumnDataSource
source_Q4 = ColumnDataSource(lemon)

from bokeh.io import output_notebook, show
output_notebook()

from bokeh.plotting import figure
p1 = figure(title = 'Lemon and Orange Sales by Temperature')
p1.circle('Temperature', 'Lemon', source = source_Q4, color = 'green', size =8, legenc
p1.triangle('Temperature', 'Orange', source = source_Q4, color = 'orange', size =8, le
p1.legend.location = 'top_left'

show(p1)
```



WITH AN INCREASE IN TEMPERATURE LEMON SALES GO UP WHILE WITH LOW TEMPERATURE, ORANGE SALES ARE PROMINENT.

```
avg = lemon.groupby('Temperature')['Lemon'].mean()
std = lemon.groupby('Temperature')['Lemon'].std()
```

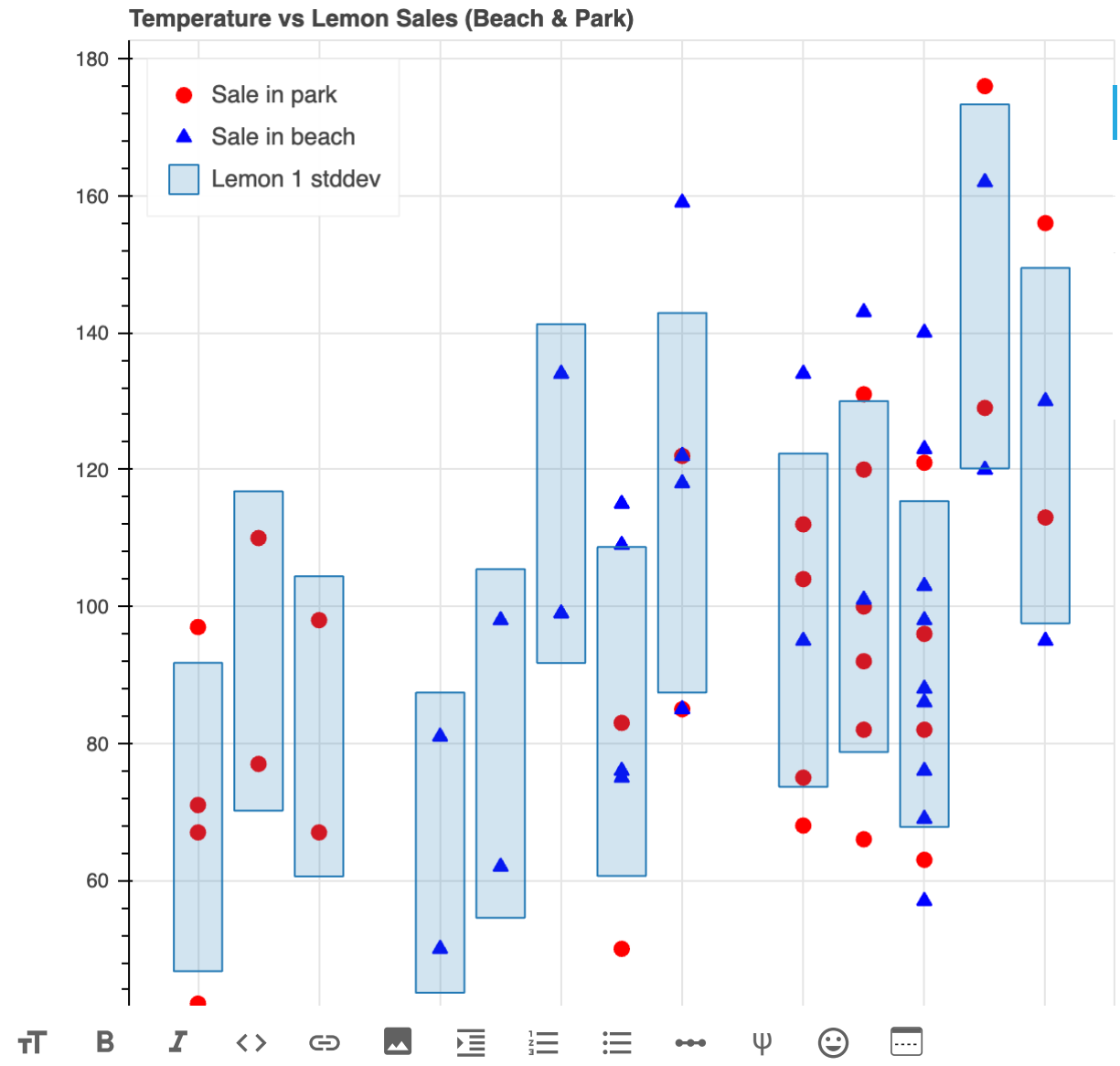
```
temp = list(lemon.groupby('Temperature').groups)
```

```
from bokeh.models import ColumnDataSource, CDSView, GroupFilter
source_Q6 = ColumnDataSource(lemon)

park = CDSView(source = source_Q6, filters = [GroupFilter(column_name='Location', grou
beach = CDSView(source = source_Q6, filters = [GroupFilter(column_name='Location', gro
p2 = figure(title = 'Temperature vs Lemon Sales (Beach & Park)')
p2.circle('Temperature', 'Lemon', source = source_Q6, color = 'red', size =8, view= pa
p2.triangle('Temperature', 'Lemon', source = source_Q6, color = 'blue', size =8, view=
p2.legend.location = 'top_left'

p2.vbar(x = temp, top = avg+std, width =0.8, bottom = avg -std, fill_alpha = 0.2, lege

show(p2)
```




```
Rising temperature sees a an increase in n
```

Rising temperature sees a an increase in number of sales at the beach

Colab paid products - Cancel contracts here

✓ 0s completed at 15:35