In [1]:

```
import numpy as np
```

In [2]:

```
X= np.array([2,4,6,8,10,12])
np.mean(X)
```

Out[2]:

```
7.0
```

In [3]:

```
np.median(X)
```

Out[3]:

```
7.0
```

In [4]:

```
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
```

In [5]:

```
X= np.array([2,4,6,8,10,12])
df= pd.DataFrame(X)
print (df)
```

```
    0
0   2
1   4
2   6
3   8
4  10
5  12
```

In [6]:

```
plt.boxplot(X)
```

Out[6]:

```
{'whiskers': [<matplotlib.lines.Line2D at 0x1339ef5a630>,
  <matplotlib.lines.Line2D at 0x1339ef5bbf0>],
 'caps': [<matplotlib.lines.Line2D at 0x1339ef5bef0>,
  <matplotlib.lines.Line2D at 0x1339ef94260>],
 'boxes': [<matplotlib.lines.Line2D at 0x1339ef5b860>],
 'medians': [<matplotlib.lines.Line2D at 0x1339ef94560>],
 'fliers': [<matplotlib.lines.Line2D at 0x1339ef94860>],
 'means': []}
```

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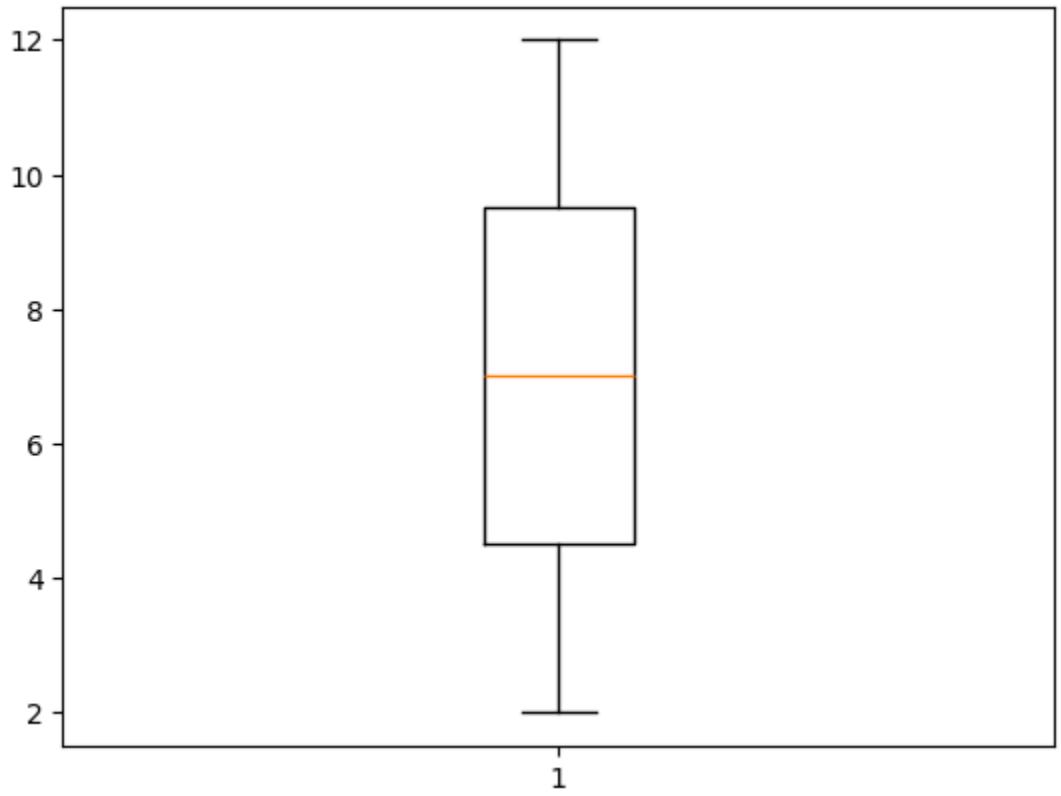
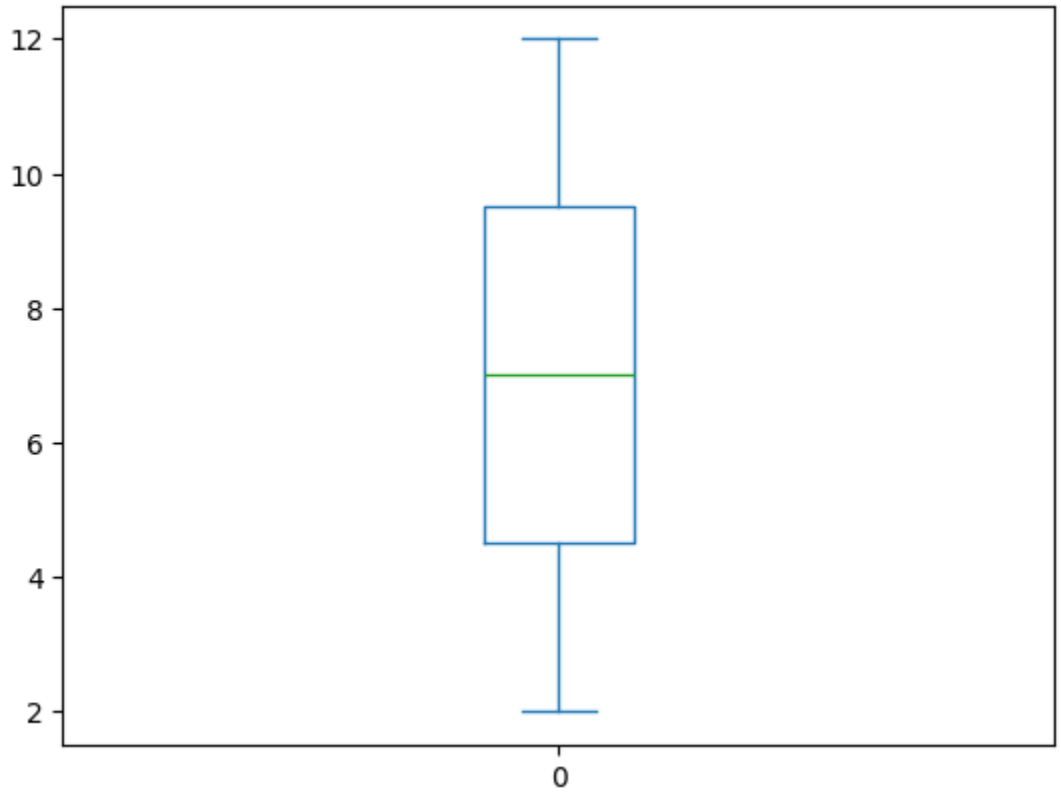


In [7]:

```
df.plot.box()
```

Out[7]:

<Axes: >



In [8]:

```
df.plot.hist()
```

Out[8]:

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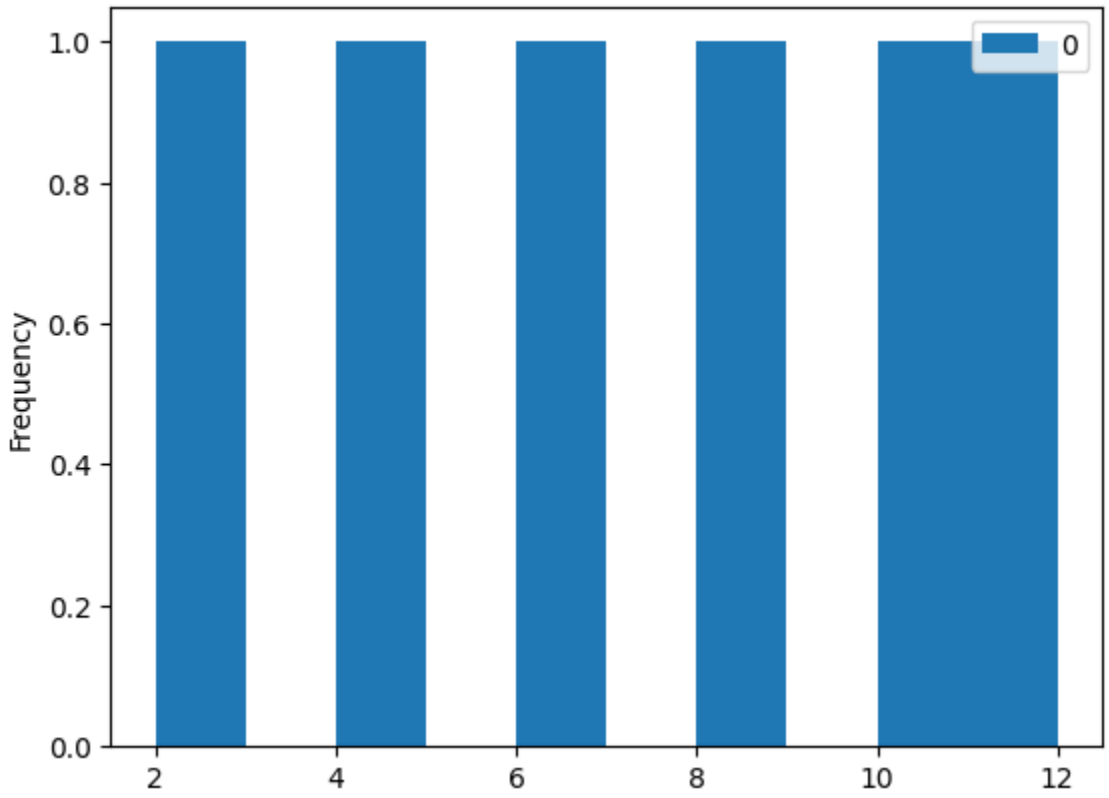
```
<Axes: ylabel='Frequency'>
```



In [23]:

```
data = {
    "Name": ["Amit", "Renuka", "Raj", "Shital", "Vikram", "Ananya", "Rohan"],
    "Gender": ["Male", "Female", "Male", "Female", "Male", "Female", "Male"],
    "Marks": [85, 80, 78, np.nan, 76, 82, np.nan],
    "Age": [np.nan,21,22,np.nan,24,np.nan,26]
}
df = pd.DataFrame(data)
print(df)
```

```
     Name  Gender  Marks   Age
0    Amit    Male   85.0   NaN
1  Renuka  Female   80.0  21.0
2     Raj    Male   78.0  22.0
3  Shital  Female    NaN   NaN
4  Vikram    Male   76.0  24.0
5  Ananya  Female   82.0   NaN
6   Rohan    Male    NaN  26.0
```

In [24]:

```
df.head()
```

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Out[24]:

	Name	Gender	Marks	Age
0	Amit	Male	85.0	NaN
1	Renuka	Female	80.0	21.0
2	Raj	Male	78.0	22.0
3	Shital	Female	NaN	NaN
4	Vikram	Male	76.0	24.0

In [25]:
```
df.tail()
```
Out[25]:

	Name	Gender	Marks	Age
2	Raj	Male	78.0	22.0
3	Shital	Female	NaN	NaN
4	Vikram	Male	76.0	24.0
5	Ananya	Female	82.0	NaN
6	Rohan	Male	NaN	26.0

In [26]:
```
df.count()
```
Out[26]:
```
Name      7
Gender    7
Marks     5
Age       4
dtype: int64
```
In [27]:
```
df.isnull()
```
Out[27]:

	Name	Gender	Marks	Age
0	False	False	False	True
1	False	False	False	False
2	False	False	False	False
3	False	False	True	True
4	False	False	False	False
5	False	False	False	True
6	False	False	True	False

In [28]:
```
df.isnull().sum()
```
Out[28]:

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```
Name      0
Gender    0
Marks     2
Age       3
dtype: int64
```

In [29]:

```
df.dropna()
```

Out[29]:

	Name	Gender	Marks	Age
1	Renuka	Female	80.0	21.0
2	Raj	Male	78.0	22.0
4	Vikram	Male	76.0	24.0

In [30]:

```
df.fillna(0)
```

Out[30]:

	Name	Gender	Marks	Age
0	Amit	Male	85.0	0.0
1	Renuka	Female	80.0	21.0
2	Raj	Male	78.0	22.0
3	Shital	Female	0.0	0.0
4	Vikram	Male	76.0	24.0
5	Ananya	Female	82.0	0.0
6	Rohan	Male	0.0	26.0

In [31]:

```
df['Marks'].fillna(df['Marks'].mean())
```

Out[31]:

```
0    85.0
1    80.0
2    78.0
3    80.2
4    76.0
5    82.0
6    80.2
Name: Marks, dtype: float64
```

In [32]:

```
df['Age'].fillna(df['Age'].median())
```

Out[32]:

```
0    23.0
1    21.0
2    22.0
3    23.0
4    24.0
5    23.0
```

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```
6    26.0
Name: Age, dtype: float64
```

In [19]:

```
df.fillna(method='bfill')
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_1356\2831856154.py:1: FutureWarning: DataFra
me.fillna with 'method' is deprecated and will raise in a future version. Use obj.ffill
() or obj.bfill() instead.
  df.fillna(method='bfill')
```

Out[19]:

	Name	Gender	Marks	Age
0	Amit	Male	85.0	21.0
1	Priya	Female	80.0	21.0
2	Raj	Male	78.0	22.0
3	Sneha	Female	76.0	24.0
4	Vikram	Male	76.0	24.0
5	Ananya	Female	82.0	26.0
6	Rohan	Male	NaN	26.0

In [33]:

```
df.fillna(method='pad')
```

```
C:\Users\Admin\AppData\Local\Temp\ipykernel_1356\196241153.py:1: FutureWarning: DataFram
e.fillna with 'method' is deprecated and will raise in a future version. Use obj.ffill()
or obj.bfill() instead.
  df.fillna(method='pad')
```

Out[33]:

	Name	Gender	Marks	Age
0	Amit	Male	85.0	NaN
1	Renuka	Female	80.0	21.0
2	Raj	Male	78.0	22.0
3	Shital	Female	78.0	22.0
4	Vikram	Male	76.0	24.0
5	Ananya	Female	82.0	24.0
6	Rohan	Male	82.0	26.0

In [34]:

```
df['Age'].plot.hist()
```

Out[34]:

```
<Axes: ylabel='Frequency'>
```

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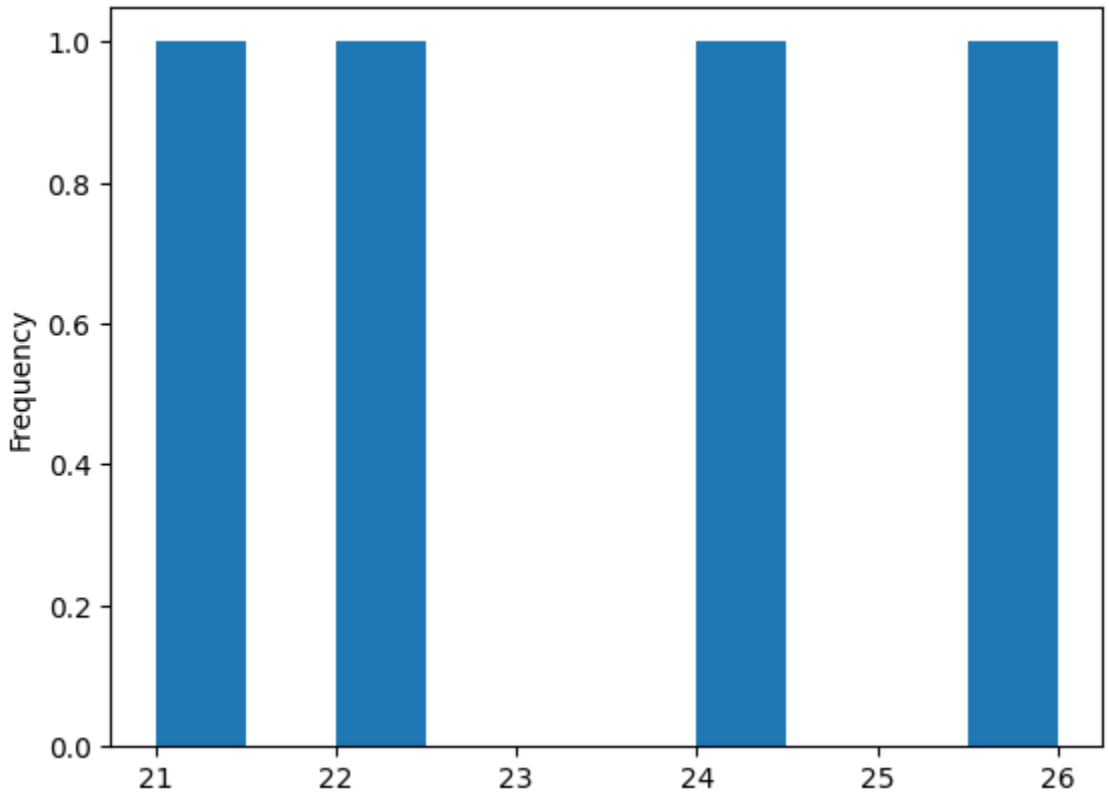

In [35]:

```
df=pd.read_csv("Student_performance_data _.csv")
df
```

Out[35]:

	StudentID	Age	Gender	Ethnicity	ParentalEducation	StudyTimeWeekly	Absences	Tutoring	Pa
0	1001	17	1	0	2	19.833723	7	1	
1	1002	18	0	0	1	15.408756	0	0	
2	1003	15	0	2	3	4.210570	26	0	
3	1004	17	1	0	3	10.028829	14	0	
4	1005	17	1	0	2	4.672495	17	1	
...	...	...	...	...	...	...	...	...	
2387	3388	18	1	0	3	10.680555	2	0	
2388	3389	17	0	0	1	7.583217	4	1	
2389	3390	16	1	0	2	6.805500	20	0	
2390	3391	16	1	1	0	12.416653	17	0	
2391	3392	16	1	0	2	17.819907	13	0	

2392 rows × 15 columns

In [ ]:

```

```

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