Overview: This is the review of the Titanic train.csv file for week 1.

Data Preparation

In [98]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns

from pandas import DataFrame, Series
```

Load the test file

In [69]:
```
testdata=pd.read_csv('train.csv')
```

In [70]:
```
# Info

testdata.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
PassengerId    891 non-null int64
Survived       891 non-null int64
Pclass         891 non-null int64
Name           891 non-null object
Sex            891 non-null object
Age            714 non-null float64
SibSp          891 non-null int64
Parch          891 non-null int64
Ticket         891 non-null object
Fare           891 non-null float64
Cabin          204 non-null object
Embarked       889 non-null object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.6+ KB
```

In [71]:
```
# Describe

testdata.describe()
```

Out[71]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	891.000000	891.000000	891.000000	714.000000	891.000000	891.000000	891.000000
mean	446.000000	0.383838	2.308642	29.699118	0.523008	0.381594	32.204208
std	257.353842	0.486592	0.836071	14.526497	1.102743	0.806057	49.693429
min	1.000000	0.000000	1.000000	0.420000	0.000000	0.000000	0.000000
25%	223.500000	0.000000	2.000000	20.125000	0.000000	0.000000	7.910400
50%	446.000000	0.000000	3.000000	28.000000	0.000000	0.000000	14.454200
75%	668.500000	1.000000	3.000000	38.000000	1.000000	0.000000	31.000000
max	891.000000	1.000000	3.000000	80.000000	8.000000	6.000000	512.329200

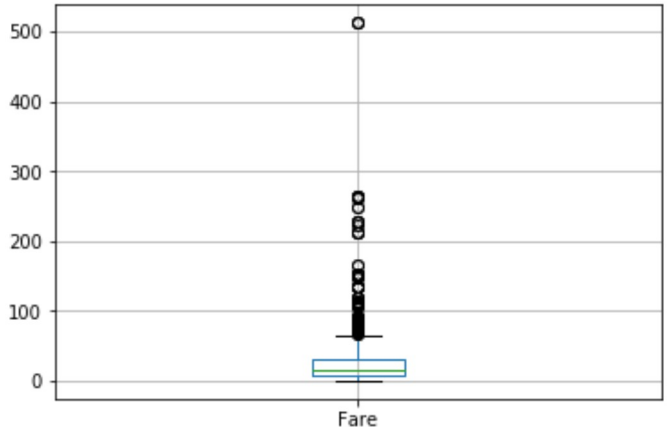
In [72]:
```
# Review first five rows

testdata.head()
```

Out[72]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S

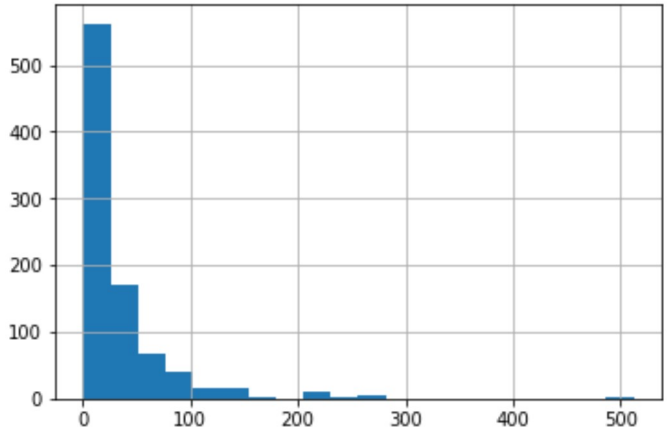
In [73]:
```
# Boxplot for Fare
testdata.boxplot(column='Fare')
```

Out[73]: <matplotlib.axes._subplots.AxesSubplot at 0x2a88a132a58>



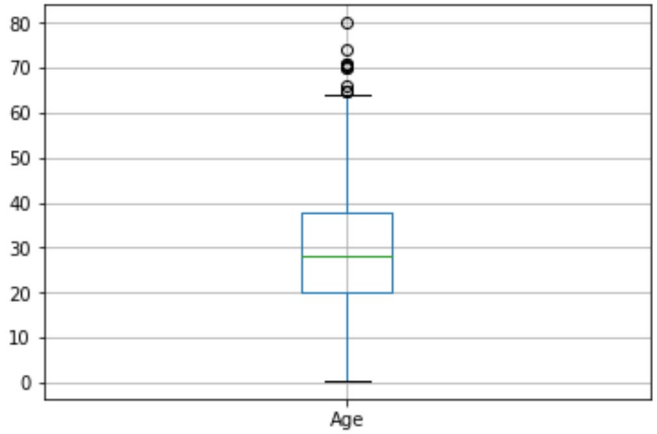
In [74]:
```
# Histogram for Fare
testdata['Fare'].hist(bins=20)
```

Out[74]: <matplotlib.axes._subplots.AxesSubplot at 0x2a88a1d7f98>



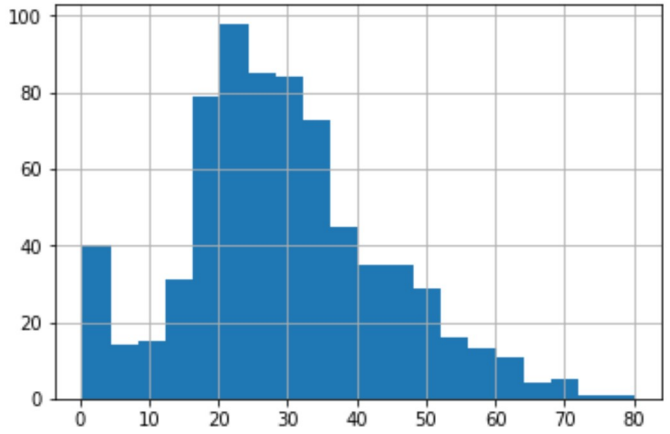
In [75]:
```
# Boxplot for Age
testdata.boxplot(column='Age')
```

Out[75]: <matplotlib.axes._subplots.AxesSubplot at 0x2a88a266e10>



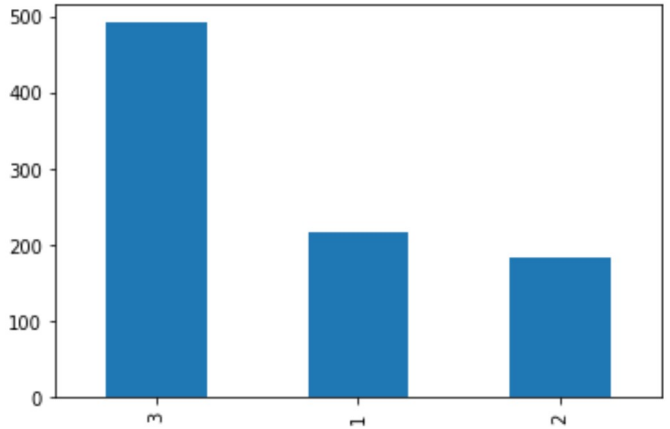
In [76]:
```
# Histogram for Age
testdata['Age'].hist(bins=20)
```

Out[76]: <matplotlib.axes._subplots.AxesSubplot at 0x2a88a2c2b00>



In [77]:
```
# Histogram for Class
testdata["Pclass"].value_counts().plot(kind='bar')
```

Out[77]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2a88a358198>
```

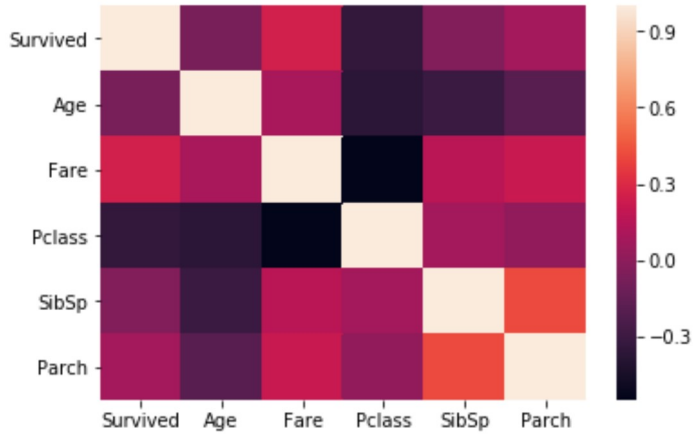


In [78]:
```
# Calc the correlation between Pclass and Fare
# Not surpisingly, they're negatively correlated
testdata['Fare'].corr(testdata['Pclass'])
```

Out[78]:
```
-0.5494996199439078
```

In [102]:
```
corr = testdata[['Survived', 'Age','Fare', 'Pclass', 'SibSp', 'Parch']].corr()
sns.heatmap(corr,
            xticklabels=corr.columns.values,
            yticklabels=corr.columns.values)
```

Out[102]: <matplotlib.axes._subplots.AxesSubplot at 0x2a88b1149e8>



In [87]:
```
# Calc the correlation between Survived and Pclass
testdata['Survived'].corr(testdata['Pclass'])
```

Out[87]: -0.33848103596101475

In [88]:
```
# Calc the correlation between Survived and Age
testdata['Survived'].corr(testdata['Age'])
```

Out[88]: -0.07722109457217764

In [89]:
```
# Calc the correlation between Survived and Fare
testdata['Survived'].corr(testdata['Fare'])
```

Out[89]: 0.25730652238496227

In [79]:
```
# How many passengers were loaded at each embarkation point?
testdata.groupby(['Embarked'])['Fare'].count()
```

Out[79]:
```
Embarked
C    168
Q     77
S    644
Name: Fare, dtype: int64
```

In [82]:
```
# Are there any patterns based on embarkation?
# C embarkation is clearly higher in fare and lower in class, and more likely to survive
testdata.groupby(['Embarked'])['Age','SibSp','Parch','Pclass','Fare', 'Survived'].mean()
```

Out[82]:

Embarked	Age	SibSp	Parch	Pclass	Fare	Survived
C	30.814769	0.386905	0.363095	1.886905	59.954144	0.553571
Q	28.089286	0.428571	0.168831	2.909091	13.276030	0.389610
S	29.445397	0.571429	0.413043	2.350932	27.079812	0.336957

In [83]:
```
# Are there any patterns based on Pclass?
testdata.groupby(['Pclass'])['Age','SibSp','Parch','Fare', 'Survived'].mean()
```

Out[83]:

Pclass	Age	SibSp	Parch	Fare	Survived
1	38.233441	0.416667	0.356481	84.154687	0.629630
2	29.877630	0.402174	0.380435	20.662183	0.472826
3	25.140620	0.615071	0.393075	13.675550	0.242363

In [91]:
```
# Are there any patterns based on Gender?
testdata.groupby(['Sex'])['Age','SibSp','Parch','Fare','Pclass','Survived'].mean()
```

Out[91]:

Sex	Age	SibSp	Parch	Fare	Pclass	Survived
female	27.915709	0.694268	0.649682	44.479818	2.159236	0.742038
male	30.726645	0.429809	0.235702	25.523893	2.389948	0.188908