```
In [2]:  from __future__ import print_function
         %matplotlib inline
         import matplotlib
         import matplotlib.pyplot as plt
         import math
         import matplotlib.cm as cm
```

Rollercoaster data analysis

```
In [15]:  def myread(myfile):
              """
              reads from a textfile that contains tab delimited (\t) columns
              """
              read_data=[]
              with open(myfile,'r') as f:
                  for line in f:
                      read_data.append(line.rstrip().split('\t'))
              return read_data
```

```
In [16]:  data = myread('rollercoaster.txt')
```

```
In [18]:  print(data[:1])
```

```
[['Name', 'Park', 'City', 'State', 'Country', 'Type', 'Construction',
'Height', 'Speed', 'Length', 'Inversions', 'Numinversions', 'Duration'
, 'GForce', 'Opened', 'Region']]
```

```
In [19]:  print(data[0][8])
```

```
Speed
```
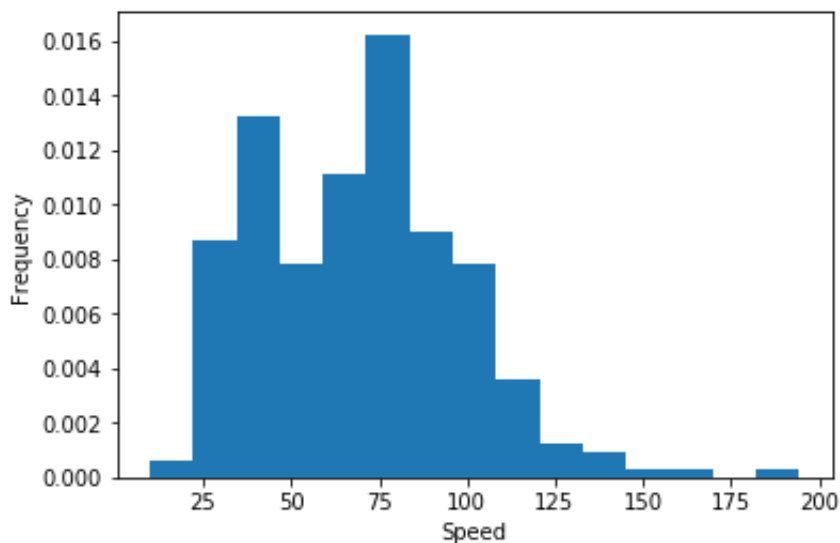
```
In [73]:  speed = [float(di[8]) for di in data[1:] if di[8]!='""']
```

```
In [74]: print(speed)

         [81.0, 45.36, 76.14, 76.14, 89.1, 32.4, 35.64, 100.44, 105.3, 81.0, 81
         .0, 34.02, 90.72, 89.1, 89.1, 56.7, 137.7, 89.1, 81.0, 56.7, 68.04, 79
         .38, 105.3, 34.02, 89.1, 43.74, 89.1, 16.2, 61.56, 51.84, 64.8, 89.1,
         105.3, 81.0, 102.06, 81.0, 59.94, 89.1, 162.0, 100.44, 56.7, 81.0, 50.
         22, 105.3, 113.4, 64.8, 123.12, 132.84, 81.0, 81.0, 72.9, 82.62, 30.78
         , 95.58, 32.4, 77.76, 66.42, 50.22, 108.54, 81.0, 82.62, 76.14, 76.14,
         81.0, 81.0, 85.86, 51.84, 113.4, 97.2, 105.3, 64.8, 22.68, 97.2, 105.3
         , 113.4, 100.44, 137.7, 50.22, 50.22, 106.92, 81.0, 81.0, 89.1, 24.3,
         46.98, 118.26, 34.02, 82.62, 113.4, 81.0, 68.04, 56.7, 64.8, 103.68, 6
         4.8, 68.04, 77.76, 129.6, 64.8, 81.0, 82.62, 87.48, 97.2, 81.0, 64.8,
         9.72, 116.64, 97.2, 113.4, 105.3, 150.66, 98.82, 92.34, 42.12, 126.36,
         194.4, 89.1, 116.64, 64.8, 45.36, 76.14, 69.66, 79.38, 72.9, 89.1, 34.
         02, 80.0, 75.6, 88.5, 34.9, 120.0, 36.0, 85.3, 46.8, 36.0, 88.5, 26.0,
         60.0, 86.9, 60.0, 75.6, 88.0, 36.0, 65.0, 90.1, 66.2, 85.3, 75.6, 77.0
         , 60.0, 45.0, 80.0, 64.4, 40.0, 103.0, 104.6, 104.6, 85.0, 28.0, 105.6
         , 45.0, 40.0, 93.2, 72.0, 50.0, 30.0, 91.0, 75.6, 80.0, 36.0, 75.6, 80
         .0, 46.8, 50.0, 22.7, 65.0, 50.0, 55.0, 65.0, 75.6, 76.0, 36.0, 36.0,
         40.0, 35.0, 65.0, 60.0, 90.0, 32.0, 47.0, 92.0, 36.0, 26.0, 45.0, 36.0
         , 71.0, 60.0, 34.0, 40.0, 40.0, 84.0, 60.0, 40.0, 47.0, 42.0, 45.0, 35
         .0, 45.0, 80.0, 35.0, 80.0, 63.0, 80.0, 100.0, 75.6, 50.0, 120.0, 45.0
         , 100.0, 22.5, 39.0, 33.0, 30.0, 73.4, 80.0, 60.0, 120.0, 30.0, 32.0,
         36.0, 30.0, 30.0, 39.0, 60.0, 42.0, 100.0, 26.0, 36.0, 45.0, 24.0, 45.
         0, 55.0, 32.0, 30.0, 80.0, 90.0, 36.0, 36.0, 26.0, 56.3, 80.0, 79.0, 4
         6.0, 65.0, 70.0, 39.0, 56.0, 50.0, 36.0, 50.0, 53.0, 127.0, 105.0, 36.
         0, 60.0, 64.4, 45.0, 25.0, 66.0, 60.0]
```

```
In [75]: bins=plt.hist(speed,bins=15,normed=True)
         plt.ylabel('Frequency')
         plt.xlabel('Speed')
```

Out[75]: <matplotlib.text.Text at 0x111b2ced0>

```
In [33]:  len(speed)

Out[33]:  270


In [34]:  def mymean(mylist):
              return sum(mylist)/len(mylist)


In [35]:  print("mean:",mymean(speed))

          mean: 69.3626666667


In [43]:  a = [(float(di[8]),float(di[9])) for di in data[1:] if di[8]!='"'"' and di
          speed,length = zip(*a)


In [70]:  plt.plot(speed,length,'r+')
          plt.xlabel('Speed [miles/hour]')
          plt.ylabel("Length [yards]")

Out[70]:  <matplotlib.text.Text at 0x1115bc6d0>
```
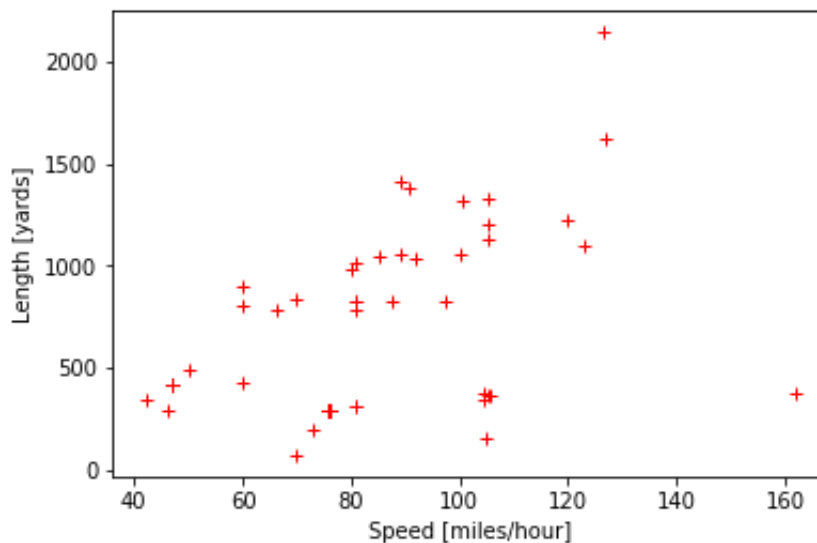


```
In [51]:  a = [(float(di[8]),float(di[9]),float(di[13])) for di in data[1:] if di[8
          speed,length,gforce = zip(*a)


In [52]:  print(sorted(gforce)[0],sorted(gforce)[-1])

          2.1 6.2
```

In [68]:
```python
plt.scatter(speed,gforce,c=length, cmap=cm.jet)
plt.xlabel('Speed [miles/hour]')
plt.ylabel("Gforce")
cbar = plt.colorbar()
cbar.set_label('Length [yards]')
plt.title('Rollercoaster data')
```

Out[68]: <matplotlib.text.Text at 0x111812d10>