

```
In [3]: #import packages
import pandas as pd
import numpy as np
```

```
In [51]: data = pd.read_csv('shots_data.csv')
data.head()
```

Out[51]:

	team	x	y	fgmade
0	Team A	-23.1	3.5	0
1	Team A	0.0	25.1	1
2	Team A	0.5	1.0	1
3	Team A	-5.6	5.2	0
4	Team A	4.0	14.5	1

```
In [32]: data.dtypes
```

```
Out[32]: team      object
x          float64
y          float64
fgmade      int64
diag        float64
2pt         int64
c3pt         int64
3pt         int64
dtype: object
```

```
In [52]: #create column for diagonal
```

```
data['diag'] = data.apply(lambda x: np.sqrt((x['x'] ** 2) + (x['y'] ** 2)),
data.head()
```

Out[52]:

	team	x	y	fgmade	diag
0	Team A	-23.1	3.5	0	23.363647
1	Team A	0.0	25.1	1	25.100000
2	Team A	0.5	1.0	1	1.118034
3	Team A	-5.6	5.2	0	7.641989
4	Team A	4.0	14.5	1	15.041609

```
In [24]: #if y <= 7.8 and x >= 22.0 then it's corner three
#if y<= 7.8 and x < 22.0 then it's 2pt fg
#if y > 7.8 and diag is >= 23.75 then it's 3pt
# if y <7.8 and diag is < 23.75 then it's 2pt fg
def two(x):
    if x['y'] <= 7.8:
        if x['x'] < 22: return 1
        else: return 0
    else:
        if x['diag'] < 23.75: return 1
        else: return 0
def three(x):
    if x['y'] <= 7.8:
        if x['x'] >= 22: return 1
        else: return 0
    else:
        return 0
data['2pt'] = data.apply(two, axis = 1)
data['c3pt'] = data.apply(three, axis = 1)
data['3pt'] = data.apply(lambda x: 1 if x['c3pt'] == 0 and x['2pt'] == 0 el
```

```
In [29]: #create team subsets

#team a
data_a = data[data['team'] == 'Team A']
#team b
data_b = data[data['team'] == 'Team B']
```

```
In [34]: #find the shot distribution for each team

#2pt
two_distr_a = len(data_a[data_a['2pt'] == 1]) / len(data_a)
two_distr_b = len(data_b[data_b['2pt'] == 1]) / len(data_b)

#c3
c3_distr_a = len(data_a[data_a['c3pt'] == 1]) / len(data_a)
c3_distr_b = len(data_b[data_b['c3pt'] == 1]) / len(data_b)

#3pt
nc3_distr_a = len(data_a[data_a['3pt'] == 1]) / len(data_a)
nc3_distr_b = len(data_b[data_b['3pt'] == 1]) / len(data_b)
```

```
In [50]: print('Team A:')
print('2_pointers: ' + str(two_distr_a) + ' Corner 3s: ' + str(c3_distr_a)

print('Team B')
print('2_pointers: ' + str(two_distr_b) + ' Corner 3s: ' + str(c3_distr_b)
```

```
Team A:
2_pointers: 0.6392857142857142 Corner 3s: 0.039285714285714285 Non_Corner
3s: 0.32142857142857145
Team B
2_pointers: 0.6142857142857143 Corner 3s: 0.04285714285714286 Non_Corner
3s: 0.34285714285714286
```

```
In [36]: #efg
```

```
#team A
makesA = data_a[data_a['fgmade'] == 1]
c3pa = len(makesA[makesA['c3pt'] == 1])
threesA = len(makesA[makesA['3pt'] == 1])
fga1 = len(data_a)
efgA = (len(makesA) + (.5 * (c3pa + threesA))) / len(data_a)

#team B
makesB = data_b[data_b['fgmade'] == 1]
c3pb = len(makesB[makesB['c3pt'] == 1])
threesB = len(makesB[makesB['3pt'] == 1])
fga2 = len(data_b)
efgB = (len(makesB) + (.5 * (c3pb + threesB))) / len(data_b)

print('Team A efG%: ' + str(efgA))
print('Team B efG%: ' + str(efgB))
```

```
Team A efG%: 0.4375
Team B efG%: 0.4785714285714286
```

```
In [ ]:
```