In [2]:
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.cluster import KMeans
import warnings
warnings.filterwarnings('ignore')
```

In [8]:
```python
data1 = pd.read_csv('../data.csv')
data1 = data1.fillna(value = 0)
X1 = data1.loc[:, ['Monthly Income', 'Purchasing Power Index']].values
data1.head()
```

Out[8]:

	Rank	Country/Region	Cost Index	Monthly Income	Purchasing Power Index
0	1	Bermuda *	157.9	10437.0	103.8
1	2	Cayman Islands *	138.3	5433.0	61.7
2	3	Switzerland	131.4	7454.0	89.1
3	4	Turks and Caicos Islands *	124.6	2013.0	25.4
4	5	Israel	123.1	4554.0	58.1

In [7]:
```python
wcss = []

for i in range(1, 11):
    kmeans = KMeans(n_clusters=i, init="k-means++")
    kmeans.fit(X1)
    wcss.append(kmeans.inertia_)

plt.figure(figsize=(12, 4))
plt.grid()
plt.plot(range(1, 11), wcss, linewidth=2, color="red", marker='8')
plt.xlabel('K value')
plt.ylabel('WCSS')
plt.show()
```

In [237]:
```python
n = 3
```
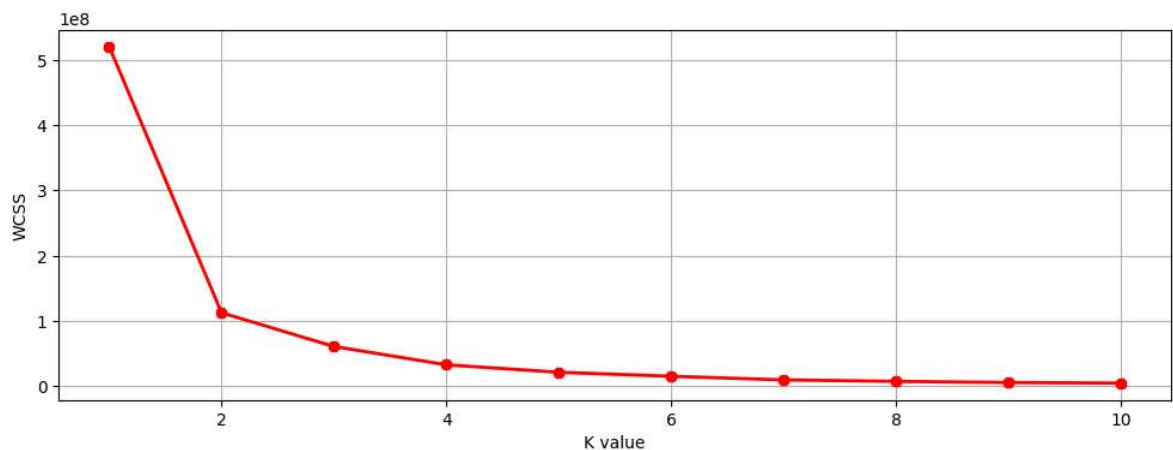
In [238]:
```python
kmeans = KMeans(n_clusters=n)
label = kmeans.fit_predict(X1)
print(label)
```

```
[2 1 2 0 1 0 1 2 2 2 1 1 0 2 1 1 2 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 0 1 1 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0]
```

In [239]:
```python
print(kmeans.cluster_centers_)
```

```
[[ 675.          23.05362319]
 [4248.08        77.816     ]
 [7524.28571429 101.12857143]]
```

In [240]:
```python
plt.scatter(X1[:, 0], X1[:, 1], c=kmeans.labels_, cmap='rainbow')
plt.scatter(kmeans.cluster_centers_[:, 0], kmeans.cluster_centers_[:, 1], col
plt.show()
```