soal

In [ ]:
```
# Data tunggal
data = [90, 79, 82, 82, 71, 84, 63, 70,
        66, 62, 67, 65, 93, 75, 81, 100,
        90, 62, 61, 88, 77, 68, 86, 79,
        77, 96, 78, 85, 92, 62]
```

problem solve

In [ ]:
```
from statistics import log
import numpy as np
from prettytable import PrettyTable
import matplotlib.pyplot as plt
```

In [ ]:
```
J = max(data) - min(data)
# Dibulatkan kebawah
K = int(
    (1 + 3.3) * log(
        len(data),10
        ) #Basic log 10
)
P = round(J / K) #Dibulatkan
```

In [ ]:
```
# Menentukan jumlah kelas (bins)
n_bins = K-1

# Membuat distribusi frekuensi
frekwensi, bats_kelas = np.histogram(data, bins=n_bins)
nilai = (bats_kelas[:-1] + bats_kelas[1:]) / 2 # titik tengah kelas
```

In [ ]:
```
# Membuat tabel
table = PrettyTable()
table.field_names = ["Kelas Interval", "Frekuensi"]

bats_kelas_str = []

# Mengisi tabel
for i in range(n_bins):
    kelas_interval = f"{bats_kelas[i]} - {bats_kelas[i+1]}"
    frekuensi_kelas = frekwensi[i]
    bats_kelas_str.append(kelas_interval)
    table.add_row([kelas_interval, frekuensi_kelas])
```

In [ ]:
```
tb = bats_kelas[0] - 0.5
ta = bats_kelas[1] + 0.5
```

In [ ]:
```
mean = np.average(nilai, weights=frekwensi)
modus = nilai[np.argmax(frekwensi)]
```

In [ ]:
```
sorted_data = np.sort(data)
n = len(data)
```

```
if n % 2 == 0:
    median = (sorted_data[n // 2 - 1] + sorted_data[n // 2]) / 2
else:
    median = sorted_data[n // 2]
```

In [ ]:
```
quartiles = np.percentile(data, [25, 50, 75])
```

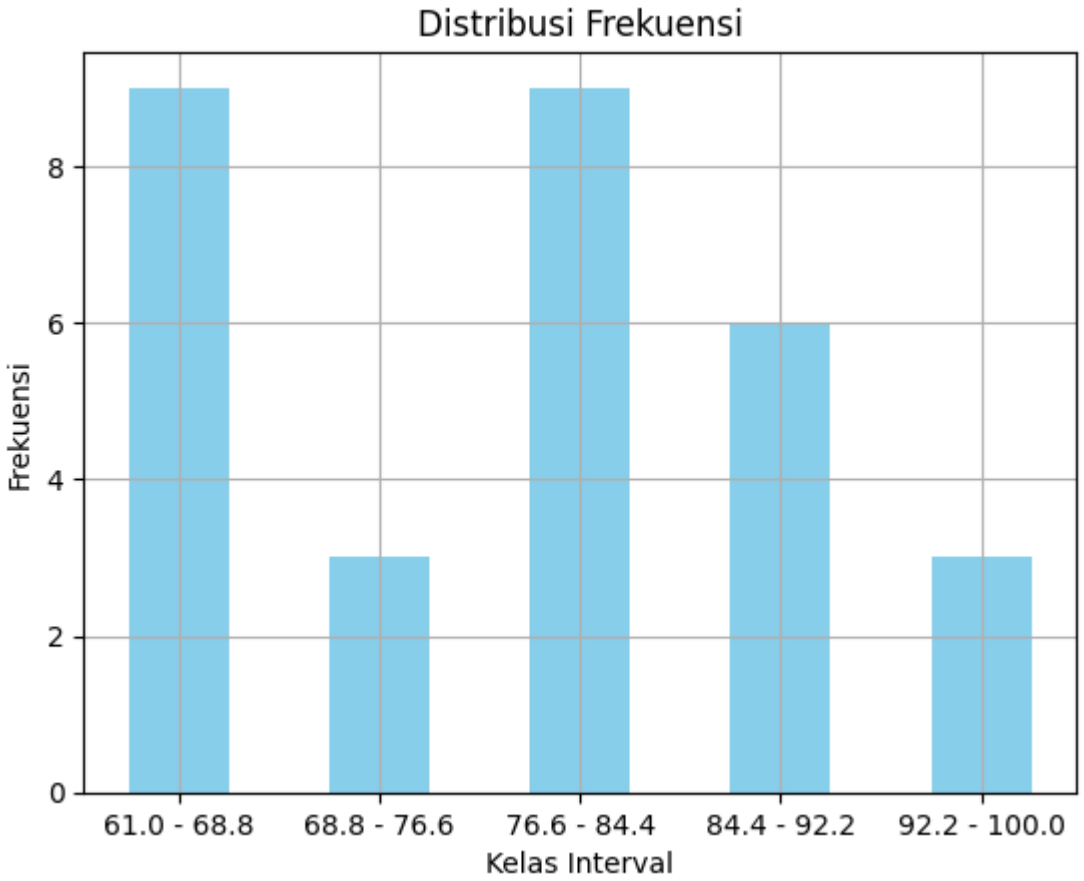
In [ ]:
```
variansi = np.var(data)
std_deviasi = np.std(data)
```

Jawaban

In [ ]:
```
print(table)
```

```
+----------------+-----------+
| Kelas Interval | Frekuensi |
+----------------+-----------+
|  61.0 - 68.8   |     9     |
|  68.8 - 76.6   |     3     |
|  76.6 - 84.4   |     9     |
|  84.4 - 92.2   |     6     |
|  92.2 - 100.0  |     3     |
+----------------+-----------+
```

In [ ]:
```
# Membuat grafik batang distribusi frekuensi
plt.bar(bats_kelas_str, frekwensi, width=0.5, color='skyblue')
plt.xlabel('Kelas Interval')
plt.ylabel('Frekuensi')
plt.title('Distribusi Frekuensi')
plt.grid(True)
```



1. Jangkauan (J) kelas interval (K), dan Panjang kelas Interval (P)

`Jangkauan`

In [ ]:
```
J
```

Out[ ]: 39

`Kelas interval`

In [ ]:
```
K
```

Out[ ]: 6

`Panjang kelas`

In [ ]:
```
P
```

Out[ ]: 6

2. Rentang nilai kelas interval pertama beserta berapa frekuensinya

`Rentan kelas pertama`

In [ ]:
```
f"{bats_kelas[0]} - {bats_kelas[1]}"
```

Out[ ]: '61.0 - 68.8'

`Frekwensi`

In [ ]:
```
frekwensi[0]
```

Out[ ]: 9

3. Batas kelas (batas bawah dan batas atas) interval pertama

`Batas bawah`

In [ ]:
```
bats_kelas[0]
```

Out[ ]: 61.0

`Batas atas`

In [ ]:
```
bats_kelas[1]
```

Out[ ]: 68.8

4. Tepi kelas (tepi kelas bawah dan tepi kelas atas) interval pertama

`Tepi kelas bawah`

In [ ]:
```
tb
```

Out[ ]: 60.5

Tepi kelas atas

In [ ]:
```
ta
```

Out[ ]: 69.3

5. Mean berdasarkan data berkelompok

In [ ]:
```
mean
```

Out[ ]: 78.16000000000001

6. Modus berdasarkan data berkelompok

In [ ]:
```
modus
```

Out[ ]: 64.9

7. Median berdasarkan data berkelompok

In [ ]:
```
median
```

Out[ ]: 78.5

8. Quartile berdasarkan data berkelompok

In [ ]:
```
list(quartiles)
```

Out[ ]: [67.25, 78.5, 85.75]

9. Nilai variansi berdasarkan data berkelompok

In [ ]:
```
variansi
```

Out[ ]: 124.87666666666665

10. Nilai standar deviasi berdasarkan data berkelompok

In [ ]:
```
std_deviasi
```

Out[ ]: 11.174822891959705