Central Tendencies Assignment

(1) 9, 7, 11, 13, 2, 4, 5, 5

$$\mu = \frac{9+7+11+13+2+4+5+5}{8}$$

$$\mu = \frac{56}{8} = 7.$$

```
import numpy as np.
a = np.array([9, 7, 11, 13, 2, 4, 5, 5])
mean_val = a.mean()
```

↳ 7.0

(2) 2.2, 10.2, 14.7, 5.9, 4.9, 11.1, 10.5

$$\mu = \frac{59.5}{7} = 8.5$$

numpy

a.mean() → 8.5

(3)

$\frac{11}{4}, \frac{21}{2}, \frac{51}{2}, \frac{31}{4}, \frac{21}{2}$

$\frac{11^2 + 42 + 10^2 + 6^2 + 4^2}{4}$

$= 64.75 = 12.95$

$\mu = \frac{2.75 + 10.5 + 25.5 + 7.75 + 10.5}{5}$

$= 11.4$

(4) Fibonacci mean

```
n1, n2 = 0, 1
nterms = 10
lst = [7]
for i in range(nterms):
    lst.append(n1)
    new = n1 + n2
    n1 = n2
    n2 = new
```

print (sum(lst) / len(lst))

= 8.8

(5) Mean and median of first 5 Prime numbers

Primes = [2]

count = 1

x = 3

while count < 6:

for y in range (3, x, 2):

if x % y == 0:

x += 2

break

else:

Primes.append(x)

x += 2.

count += 1

Print (Primes) → [2, 3, 5, 7, 11]

arr = np.array (Primes)

Print (arr.mean()) → 5.6

Print (np.median (arr)) → 5.0

(6) $$\frac{8+11+6+14+x+13}{6} = 66.$$

$$\frac{52+x}{6} = 66.$$

$$x = 396 - 52.$$

$$x = 344$$

(7) $$\frac{6+8+(x+2)+10+(2x-1)+2}{6} = 9$$

$$\frac{26+(3x+1)}{6} = 9.$$

$$3x = 54 - 26 - 1$$

$$x = \frac{27}{3} = 9$$

(8) a)

Age	12	10	15	14	8
Boys	5	3	2	6	4

$$12\times5 + 10\times3 + 15\times2 + 14\times6 + 8\times4 = 236$$

$$\mu = 236/20 = 11.8$$

(b)

Marks	25	30	15	20	24
Studuls	8	12	10	6	4

$25 \times 8 + 30 \times 12 + 15 \times 10 + 20 \times 6 + 24 \times 4 = 926$

$\mu = \frac{926}{40} = 23.15$.

(9) a) 12, 8, 4, 8, 18, 9, 11, 9, 10, 12, 8

mode = 8

b) 15, 22, 17, 19, 22, 17, 29, 24, 17, 15

mode = 17

c) x = [0, 3, 2, 1, 3, 5, 4, 3, 4 2, 1, 2, 0]

```
from scipy import stats
a = np.array([x])
m = stats.mode(a)
```

mode: m -> 3

d) 1, 7, 2, 4, 5, 9, 8, 3

mode = 1 (lowest number)

(10) a) 17, x, 24, x+7, 35, 36, 46.

no of observation = 7

median = $\frac{7+1}{2}$ = 4th observation

$x + 7 = 25$

$x = 18$

b) two possibilities exist.

either $x = 25$

$\therefore x + 7 \Rightarrow 32$.

or $x + 7 = 25$

$x = 18$

(11)

option d) Mode can be used to find the most common favourite colour.