**Exercise – Student Ages Data**

A survey was carried out in a Further Education college where students were asked what age they were on the first day of college. The results were counted and presented in a grouped frequency table as shown below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Age** | **18\_28** | **28\_38** | **38\_48** | **48\_58** | **58\_68** | **68\_78** |
| **No. of Students** | **131** | **172** | **152** | **32** | **12** | **1** |

**You are required to answer the following:**

1. What is the modal class?
2. Calculate the mean.
3. Calculate the standard deviation.

**Solution**

**Mean**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mid interval value | 23 | 33 | 43 | 53 | 63 | 73 |  |  |  |  |  |
| **Age** | **18\_28** | **28\_38** | **38\_48** | **48\_58** | **58\_68** | **68\_78** |  |  |  |  |  |
| **No. of Students** | **131** | **172** | **152** | **32** | **12** | **1** | **Sum of f ->** | 500 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| f by mid interval | 3013 | 5676 | 6536 | 1696 | 756 | 73 | **Sum of fx ->** | 17750 |  | **Mean**(*µ)***=** | 35.5 |

Mean = $\frac{\sum\_{}^{}fx}{\sum\_{}^{}f}$

**Standard Deviation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **x** | **f** | **Mean** | **(x-M)^2** | **f(x-M)^2** |
| 23 | 131 | 35.5 | 156.25 | 20468.8 |
| 33 | 172 | 35.5 | 6.25 | 1075 |
| 43 | 152 | 35.5 | 56.25 | 8550 |
| 53 | 32 | 35.5 | 306.25 | 9800 |
| 63 | 12 | 35.5 | 756.25 | 9075 |
| 73 | 1 | 35.5 | 1406.25 | 1406.25 |
|  |  |  |  |  |
|  | 500 |  |  | 50375 |
|  |  |  |  |  |
|  |  |  | **St. Dev**(σ)= | 10.0374 |

Standard Deviation formula σ = $\sqrt{\frac{\sum\_{}^{}f(x-µ)^{2}}{\sum\_{}^{}f}}$ *(µ represents the Mean)*

**Answers**

1. Modal class = 28 to 38 years old
2. Mean = 35.5 years old
3. Standard deviation = 10.0374 years old