**Measures of central tendency**

**Mean**

**1.Arithmetic mean**

**Direct method**

**12,15,14,13,15,12,16,13,12,10**

X**=∑X/n**

 **=132/10**

 **X =13.2**

**Short cut method**

**X=A+∑d/n**

**Average**

**A=Assumed value 13**

**d=DIFFRENTS BETWEEN THE GIVEN NUMBER AND AVERAGE**

**n= Number of items 10**

|  |  |  |
| --- | --- | --- |
| **Sl number** | **X** | **D=x-A(A=13)** |
| **1** | **12-13** | **-1** |
| **2** | **15-13** | **+2** |
| **3** | **14** | **1** |
| **4** | **13** | **0** |
| **5** | **15** | **2** |
| **6** | **12** | **-1** |
| **7** | **16** | **3** |
| **8** | **13** | **0** |
| **9** | **12** | **-1** |
| **10** | **10** | **-3** |
|  |  | **∑d=2** |

**=13+2/10**

**=13+.2**

**=13.2**

**40,50,55,78,58,60,73,35,43,48**

**Discrete series**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Mark(x)** | **20** | **30** | **35** | **45** | **50** | **55** | **60** | **70** |  |
| **No.of.stu(f)** | **5** | **3** | **6** | **8** | **12** | **7** | **5** | **4** |  |

 |

x=**∑fx/n=∑fx/∑f**

|  |  |  |
| --- | --- | --- |
| **x** | **f** | **fx** |
| **20** | **5** | **100** |
| **30** | **3** | **90** |
| **35** | **6** | **210** |
| **45** | **8** | **360** |
| **50** | **12** | **600** |
| **55** | **7** | **385** |
| **60** | **5** | **300** |
| **70** | **4** | **280** |
|  | **∑f=50** | **∑fx=2325** |

x **=∑fx/∑f**

 **=2325/50**

 **=46.5**

**Short cut method**

x **=A+∑fd/n**

|  |  |  |  |
| --- | --- | --- | --- |
| **x** | **f** | **d=x-A (45)** | **fd** |
| **20** | **5** | **-25** | **-125** |
| **30** | **3** | **-15** | **-45** |
| **35** | **6** | **-10** | **-60** |
| **45** | **8** | **0** | **0** |
| **50** | **12** | **5** | **60** |
| **55** | **7** | **10** | **70** |
| **60** | **5** | **15** | **75** |
| **70** | **4** | **25** | **100** |
|  | **∑f= 50** |  | **∑fd =75** |

x **=A+∑fd/n**

 =45+75/50

 =45+1.5

 =**46.5**

**Continual series**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Mark** | **20-30** | **30-40** | **40-50** | **50-60** | **60-70** | **70-80** |
| **No.of std** | **5** | **8** | **12** | **15** | **6** | **4** |

**Direct method**

**X=∑fm/n**

|  |  |  |  |
| --- | --- | --- | --- |
| **X** | **f** | **m** | **fm** |
| **20-30** | **5** | **25** | **125** |
| **30-40** | **8** | **35** | **280** |
| **40-50** | **12** | **45** | **540** |
| **50-60** | **15** | **55** | **825** |
| **60-70** | **6** | **65** | **390** |
| **70-80** | **4** | **75** | **300** |
|  | **∑f=50** |  | **∑fm=2460** |

**X=∑fm/n**

 **=2460/50**

 **=49.2**

**Short cut method**

**X=A+∑fd/n (d=m-A)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **X** | **f** | **M(X)** | **D=m-A (45)** | **Fd** |
| **20-30** | **5** | **25** | **-20** | **-100** |
| **30-40** | **8** | **35** | **-10** | **-80** |
| **40-50** | **12** | **45** | **0** | **0** |
| **50-60** | **15** | **55** | **10** | **150** |
| **60-70** | **6** | **65** | **20** | **120** |
| **70-80** | **4** | **75** | **30** | **120** |
|  | **∑f=50** |  |  | **∑fd=210** |

**X=A+∑fd/n**

 **=45+210/50**

 **=45+4.2**

 **=49.2**

**2.Harmonic mean**

**3.Geometric mean**

**Median**

**Mode**

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