

## Answer on Question #70662 – Math – Statistics and Probability

### Question

Table 1

18 15 17 22 12 20

19 15 20 25 16 13

Calculate the mean, the median, the mode, the standard deviation, the Pearson coefficient of skewness of assembling time.

### Solution

$$\text{mean: } \frac{18 + 15 + 17 + 22 + 12 + 20 + 19 + 15 + 20 + 25 + 16 + 13}{12} = \frac{53}{3} \approx 17.6667$$

*median:* 12, 13, 15, 15, 16, 17, 18, 19, 20, 20, 22, 25

$$\frac{17 + 18}{2} = \frac{35}{2} = 17.5$$

12 occurs in the set once  
13 occurs in the set once  
15 occurs in the set twice  
16 occurs in the set once  
17 occurs in the set once  
18 occurs in the set once  
19 occurs in the set once  
20 occurs in the set twice  
22 occurs in the set once  
25 occurs in the set once

Here 15 and 20 occur twice. This is higher than any of the other data values. Thus, we say that the data set is bimodal, meaning that it has two modes.

$$\begin{aligned} \text{Variance: } \sigma^2 &= \left(12 - \frac{53}{3}\right)^2 + \left(13 - \frac{53}{3}\right)^2 + \left(15 - \frac{53}{3}\right)^2 + \left(15 - \frac{53}{3}\right)^2 + \\ &+ \left(16 - \frac{53}{3}\right)^2 + \left(17 - \frac{53}{3}\right)^2 + \left(18 - \frac{53}{3}\right)^2 + \left(19 - \frac{53}{3}\right)^2 + \left(20 - \frac{53}{3}\right)^2 + \\ &+ \left(20 - \frac{53}{3}\right)^2 + \left(22 - \frac{53}{3}\right)^2 + \left(25 - \frac{53}{3}\right)^2 = \frac{1410}{9} = \frac{470}{3} \approx 156.6667 \end{aligned}$$

$$\text{Standard deviation: } \sigma = \sqrt{\sigma^2} = \sqrt{\frac{470}{3}} = \frac{\sqrt{1410}}{3} \approx 12.5167$$

The Pearson coefficient of skewness using the median

$$Sk_2 = \frac{3(\bar{X} - Md)}{\sigma}$$

$$Sk_2 = \frac{3\left(\frac{53}{3} - \frac{35}{2}\right)}{\frac{\sqrt{1410}}{3}} \approx 0.040$$

**Answer:** 17.6667; 17.5; 15 and 20; 12.5167; 0.040.