

Answer on Question #61630 – Math – Statistics and Probability

Question

6. Find the mode of 3, 6, 10, 13, 14, 17, 19 and 22

20

17

20

13

Solution

The mode is the score that occurs most frequently.

These numbers are already sorted from the least to the greatest.

None of the numbers occurred more than one time.

So, there is no mode.

Answer: None.

Question

7. Find the median of 3, 19, 6, 17, 10, 13, 14, and 22

13

20

17

13.5

Solution

The numbers are sorted from the least to the greatest:

3, 6, 10, 13, 14, 17, 19, 22

$N=8$ is even.

Median=(fourth term + fifth term)/2=(13+14)/2=13.5

Answer: 13.5.

Question

8. Calculate the arithmetic mean of 3, 6, 10, 13, 14, 17, 19 and 22

20

15

13

17

Solution

$$\mu = \frac{3 + 6 + 10 + 13 + 14 + 17 + 19 + 22}{8} = 13.$$

Answer: 13.

Question

9. The mean of four numbers is 5 and the mean deviation is 3. Find the fourth number if the mean deviation of the first three numbers is 2.

- 12
- 20
- 11
- 15

Solution

The mean of four numbers is

$$\bar{x} = \frac{1}{4} \sum_{i=1}^4 x_i = 5 \Rightarrow \sum_{i=1}^4 x_i = 20.$$

The mean deviation of four numbers is

$$MD = \frac{1}{4} \sum_{i=1}^4 |x_i - 5| = 3 \Rightarrow \sum_{i=1}^4 |x_i - 5| = 12 \quad (1)$$

The mean deviation of the first three numbers is

$$MD^* = \frac{1}{3} \sum_{i=1}^3 |x_i - 5| = 2 \Rightarrow \sum_{i=1}^3 |x_i - 5| = 6, \quad (2)$$

From (1) and (2) it follows that

$$\begin{aligned} 6 + |x_4 - 5| &= 12 \\ |x_4 - 5| &= 6 \\ x_4 - 5 &= -6 \text{ or } x_4 - 5 = 6 \\ x_4 &= -1 \text{ or } x_4 = 11 \end{aligned}$$

From the given list we choose one possible answer $x_4 = 11$.

Answer: 11.

Question

10. From the set $A = \{3, \sqrt{2}, \sqrt{23}, \sqrt{9}, \sqrt{7}\}$ a number is selected at random. Find the probability that is a rational number.

- 2/5
- 3/5
- 3/4

Solution

There are two rational numbers ($3, \sqrt{9} = 3$) and 3 irrational numbers ($\sqrt{2}, \sqrt{23}, \sqrt{7}$) in the set A of 5 numbers. Thus, the probability that a rational number is selected at random equals $2/5$.

Answer: 2/5.