Answer on Question #40596, Math, Statistics and Probability

Question:

If the five numbers {3, 4, 7, x, y} have a mean of 5 and a standard deviation of the square root of 2, find x and y given that y > x

Solution:

Average value (mean) equals:

$$\frac{3 + 4 + 7 + x + y}{5} = 5$$

$$y + x = 25 - 3 - 4 - 7 = 11$$

For a finite set of numbers, the standard deviation is found by taking the square root of the average of the squared differences of the values from their average value.

$$\sqrt{\frac{(5-3)^2 + (5-4)^2 + (5-7)^2 + (5-x)^2 + (5-y)^2}{5}} = \sqrt{2}$$

$$4 + 1 + 4 + (5-x)^2 + (5-y)^2 = 10$$

$$(5-x)^2 + (5-y)^2 = 1$$

Assuming $y > x$: $x = 5, y = 6$

Answer: $x = 5, y = 6$