

Standard Deviation WS Answer Key

Typically, mean answers were rounded to the nearest hundredth and variance/standard deviation answers to the nearest thousandth if the answer was not a terminating decimal.

1.) 6, 22, 4, 15, 14, 8, 8 → 4, 6, 8, 8, 14, 15, 22

$$\text{Mean} = 77 \div 7 = 11$$

$$\text{Median} = 8$$

$$\text{Variance} = 34$$

$$\text{Standard Deviation} = 5.831$$

$$\text{IQR} = 15 - 6 = 9$$

2.) 15, 11, 19, 14, 14, 13, 17, 18 → 11, 13, 14, 14, 15, 17, 18, 18

$$\text{Mean} = 120 \div 8 = 15$$

$$\text{Median} = (14 + 15) \div 2 = 14.5$$

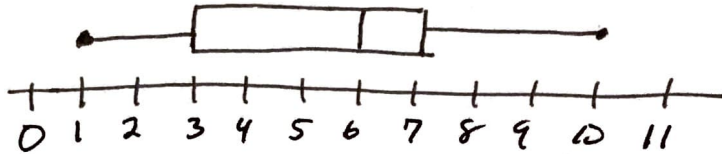
$$\text{Variance} = 51 \div 8 = 6.375$$

$$\text{Standard Deviation} = 2.525$$

$$\text{IQR} = 17.5 - 13.5 = 4$$

Practice B key
 Measure of central Tendency & Variation

2) 1, 3 | 3, 6 | 6, 7 | 7, 10



Min = 1

Max = 10

$Q_1 = 3$

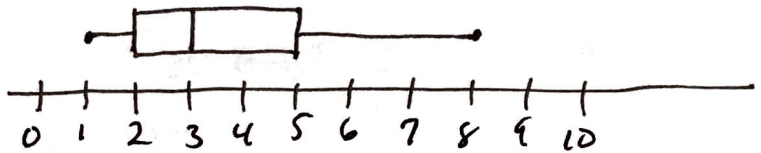
$Q_2 = 6$

$Q_3 = 7$

4) 1, 2, 2, 3 | 3, 5, 5, 8

Min = 1 $Q_1 = 2$ $Q_3 = 5$

Max = 8 $Q_2 = 3$



5) 7, 4, 3, 9, 2

$\bar{x} = 5$

$$V = \frac{(7-5)^2 + (4-5)^2 + (3-5)^2 + (9-5)^2 + (2-5)^2}{(5-1)} = \frac{4 + 1 + 4 + 16 + 9}{4} = 8.5 \quad \text{Variance}$$

Standard Deviation: $\sqrt{8.5} \approx 2.92$

6) 35, 67, 21, 16, 24, 51, 18, 32

$\bar{x} = 33$

$$\frac{(35-33)^2 + (67-33)^2 + (21-33)^2 + (16-33)^2 + (24-33)^2 + (51-33)^2 + (18-33)^2 + (32-33)^2}{(8-1)}$$

~~S.D.~~ = $\frac{4 + 1156 + 144 + 289 + 81 + 324 + 256 + 1}{7}$

~~S.D.~~ = 322.14

S.D. = $\sqrt{322.14}$
 = 17.9

$$7) \bar{X} = 20$$

$$\frac{(19-20)^2 + (23-20)^2 + (17-20)^2 + (20-20)^2 + (25-20)^2 + (19-20)^2 + (15-20)^2 + (22-20)^2}{(8-1)}$$

$$\text{Variance} = \frac{1 + 9 + 9 + 0 + 25 + 1 + 25 + 4}{7}$$

$$\text{Variance} = 10.57$$

$$\begin{aligned} \text{S.D.} &= \sqrt{10.57} \\ &= 3.25 \end{aligned}$$

$$8) \bar{X} = 10.75$$

$$\text{Variance: } \frac{(5-10.75)^2 + (12-10.75)^2 + (10-10.75)^2 + \cancel{(10-13)^2} + (13-10.75)^2 + (8-10.75)^2 + (11-10.75)^2 + (15-10.75)^2 + (12-10.75)^2}{(8-1)}$$

$$\text{Variance} = \frac{33.06 + 1.5625 + .5625 + 5.06 + 7.56 + .06 + 18.06 + 1.56}{7}$$

$$\text{Variance} = 9.64$$

$$\begin{aligned} \text{S.D.} &= \sqrt{9.64} \\ &= 3.10 \end{aligned}$$

$$9) 5(.05) + 6(.10) + 7(.64) + 8(.21) = 7.01 \text{ inches}$$

$$10) 41, 45, 39, 42, 38, 88, 43, 40, 44, 39, 42, 40.$$

$$\bar{X} = 45.08$$

$$\text{Variance} = 16.6 + .0064 + 36.97 + 9.49 + 50.13 + 1842.13 + 4.33 + 25.81 + 1.17 + 36.97 + 9.49 + 25.81$$

$$\text{Variance} = 187.17$$

$$(12-1)$$

$$\text{S.D.} = 13.68$$