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x 48  
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**Daily 3.1 – 3.2**

**FREE RESPONSE:** Show all your work for full credit. Use correct notation and units when appropriate.

- +2 1. The symbol for sample mean is  $\bar{X}$  and the notation for population mean is  $\mu$ .
2. Calculate the mean, median, and mode for the following data set. Must show work to earn full credit. You can use the calculator to check!

+2

$$\bar{x} = \frac{10 + 12 + 20 + 15 + 20}{5} = \frac{77}{5} = 15.4$$

Mode: 20  
Median: 15 +3  
Mean: 15.4

+2  $\hat{x} = 10 \ 12 \ \textcircled{15} \ 20 \ 20$

3. **Football: Age of Professional Players**

How old are professional football players? The 11<sup>th</sup> Edition of *The Pro Football Encyclopedia* gave the following information. Random sample of pro football players ages in years:

24	23	25	23	30	29	28	26	33	29	n = 20
24	37	25	23	22	27	28	25	31	29	

- a) Compute the mean, median, and mode of the ages. Box your final answers. LABEL!

+3

$$\bar{x} = 27.05$$

$$\hat{x} = 26.5$$

Mode = none

23 x 3  
24 x 2  
25 x 3  
29 x 3

- b) Compute the standard deviation, variance and range of the data above.

+2

$$S_x = 3.832$$

$$S_x^2 = 14.684$$

+1 Range:  $37 - 22 = \boxed{15}$

- c) Statisticians would like to compare data, but need the units to all be comparable. Compute the coefficient of variation for the professional football players' ages.

+3

$$CV = \frac{S_x}{\bar{x}} (100) = \frac{3.832}{27.05} (100) = \boxed{14.166\%}$$

+18

4. Calculate the mean ( $\mu$ ), variance ( $\sigma^2$ ), standard deviation ( $\sigma$ ), and coefficient of variation (CV) of the population data set provided below. Show work or write the calculator steps for full credit.

ROUND ANSWER TO THE THOUSANDTH IF NECESSARY!

15    21    18    26    25

$\times 2$  a) Mean: 21    N = 5

x	$x - \mu$	$(x - \mu)^2$
15	$15 - 21 = -6$	$(-6)^2 = 36$
21	$21 - 21 = 0$	$0^2 = 0$
18	$18 - 21 = -3$	$(-3)^2 = 9$
26	$26 - 21 = 5$	$5^2 = 25$
25	$25 - 21 = 4$	$4^2 = 16$

$\times 3$  b) Variance =  $\frac{86}{4} = 21.5$     86

$\times 2$  c) Standard deviation =  $\sqrt{21.5} \approx 4.637$

$\times 1$  d) What notation is used for variation in this situation?  $\sigma^2$

**MULTIPLE CHOICE:** Circle the best answer!

5. Which of the following is the most influential by outliers/influential observations?

- $\times 1$   A. Mean  
 B. Median  
 C. Mode  
 D. Standard deviation

**SHORT ANSWER:** Write in complete sentences. Be clear and concise.

6. Describe in words the difference in finding the median when a data set has an odd and even number of data entries.

$\times 3$  The middle # for odd and the average of the middle #'s for even.

7. Describe in your own words what standard deviation does for statisticians.

$\times 3$  Allow for knowledge on variation between each value and the mean as the center of the distribution.

$\times 30$