Math 20-2   Name: _____
5.3 Standard Deviation

1. Three different math classes (each with 5 students) are given the same test. The scores of the tests are shown below:

	Mr. Math	Ms. Trig	Mrs. Quadratics
A Student	50	70	90
B Careful	50	70	90
C Landscape	50	50	50
D Bunck	50	30	10
E Race	50	30	10
Mean	50	50	50
Standard Deviation	0	17.9	35.8

a) Determine the mean (average) of each class. Which class is 'best'?

Based on the mean there is no best.

b) Determine the standard deviation for each class. Which class is more consistent?

lowest standard deviation: Mr. Math

2. *Investigate the Math* (page 254)

The coach of a varsity girls' basketball team keeps statistics on all the players. Near the end of one game, the score is tied and the best starting guard has fouled out. The coach needs to make a substitution. The coach examines the field goal stats for five guards on the bench in the last 10 games.

Player	Field Goal Percent in last 10 games										Mean	SD
Anna	36	41	43	39	45	27	40	37	31	28	36.7	5.9
Patrice	36	39	36	38	35	37	35	36	38	34	36.4	1.5
Morgan	34	41	38	37	48	19	33	43	21	44	35.8	9.0
Paige	34	35	33	35	33	34	33	35	34	33	33.9	0.8
Star	41	33	39	36	38	36	29	34	38	39	36.3	3.3

a) Determine the mean for each player.

b) Which player has the better average? Anna.

c) Determine the standard deviation for each player.

d) Which player is more consistent? PAIGE.

e) How can the coach use the data to determine which player should be substituted into the game?

Anna, highest average..

PAIGE, most consistent.

Patrice... good average and very consistent.

3. *Example 1* (page 256)

Brendan works part-time in the canteen at his local community center. One of his tasks is to unload delivery trucks. He wondered about the accuracy of the mass measurements given on two cartons that contained sunflower seeds.

Masses of 227g Bags (g)			
228	220	233	227
230	227	221	229
226	232	218	218
224	235	224	231
229	232	236	223

Masses of 454g Bags (g)			
458	445	457	458
452	457	445	452
463	455	451	460
455	453	456	459
451	455	456	450

a) Find the standard deviation for both cartons of sunflower seeds.

$227g \quad \sigma = 5.2 \qquad 454g \quad \sigma = 4.5$

b) How can measures of dispersion be used to determine if the accuracy of measurement is the same for both bag sizes?

Which bag is more consistent with its label?

454g has lower σ so more consistent size packages.

3.3 Standard Deviation key

4. *Example 2* (page 257)

Angel conducted a survey to determine the number of hours per week that Grade 11 males in her school play video games. She determined that the mean was 12.84 h, with a standard deviation of 2.16 h.

$\bar{X} = 12.8$

$\sigma = 2.2$

Jenessa conducted a similar survey of Grade 11 females in her school. She organized her results in this frequency table.

Gaming Hours per Week for Gr. 11 Females	
Hours	Frequency
3-5	7
5-7	11
7-9	16
9-11	19
11-13	12
13-15	5

middle

L_1	L_2
4	7
6	11
8	16
10	19
12	12
14	5

1-VARIABLE STATS L_1, L_2

OR

data: L_1
frequency: L_2

$\bar{X} = 8.9$

$\sigma = 2.8$

Compare the results of the two surveys using the mean and standard deviation.

Based on mean and deviation boys play more hours/week and girls have more dispersion in hours/week.

"more diversified"

Practice Questions

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