

Outcome 2 - Standard Deviation

Bronze example

Examples...

Calculate the standard deviation for the list of numbers below:-

32, 48, 55, 61.

x	$x - \bar{x}$	$(x - \bar{x})^2$
32	-17	289
48	-1	1
55	6	36
61	12	144
total	0	470

1. Find the mean
Mean = $\frac{196}{4} = 49$

2. Draw table

3. Sub into formula
S.D. = $\sqrt{\frac{470}{3}} = 12.52$

Silver example

Examples...

Calculate the standard deviation for the list of numbers below:-

11, 28, 33, 51, 64, 71.

x	$x - \bar{x}$	$(x - \bar{x})^2$
11	-32	1024
28	-15	225
33	-10	100
51	8	64
64	21	441
71	28	784
total	0	2638

1. Find the mean
Mean = $\frac{258}{6} = 43$

2. Draw table

3. Sub into formula
S.D. = $\sqrt{\frac{2638}{5}} = 22.97$

Gold example

Calculate the standard deviation for the list of numbers below:-

1, 2, 4, 7, 8, 9, 10, 15.

x	$x - \bar{x}$	$(x - \bar{x})^2$
1	-6	36
2	-5	25
4	-3	9
7	0	0
8	1	1
9	2	4
10	3	9
15	8	64
total	0	148

1. Find the mean
Mean = $\frac{56}{8} = 7$

2. Draw table

3. Sub into formula
S.D. = $\sqrt{\frac{148}{7}} = 4.60$

Bronze Questions

Calculate the standard deviation for the following data sets...

1. 3, 7, 10, 24

2. 43, 49, 52, 56

3. 123, 128, 131, 138

4. 54, 55, 58, 59, 69

5. 33, 46, 54, 68, 79



Silver Questions

Calculate the standard deviation for the following data sets...

1. 6, 9, 10, 12, 14, 15

2. 33, 35, 36, 37, 40, 47

3. 111, 115, 117, 118, 120, 127

4. 24, 25, 28, 29, 29, 30, 31

5. 51, 52, 52, 56, 57, 59, 65



Gold Questions

Calculate the standard deviation for the following data sets...

1. 3, 8, 9, 12, 15, 17, 20, 28

2. 72, 78, 79, 73, 71, 80, 75, 72

3. 123, 125, 129, 121, 126, 120, 127, 129

4. 35, 31, 39, 38, 34, 35, 36, 30, 46

5. 59, 52, 57, 56, 51, 50, 56, 62, 52



mean

"sum of"

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

number of numbers

Bronze Answers

1. Mean = 11, S.D. = 9.13
2. Mean = 50, S.D. = 5.48
3. Mean = 130, S.D. = 6.27
4. Mean = 59, S.D. = 5.96
5. Mean = 56, S.D. = 18.07

Silver Answers

1. Mean = 11, S.D. = 5.10
2. Mean = 38, S.D. = 4.98
3. Mean = 118, S.D. = 5.37
4. Mean = 28, S.D. = 2.58
5. Mean = 56, S.D. = 4.97

Gold Answers

1. Mean = 14, S.D. = 7.82
2. Mean = 75, S.D. = 3.55
3. Mean = 125, S.D. = 3.42
4. Mean = 36, S.D. = 4.74
5. Mean = 55, S.D. = 4.03