58 ✓

East Los Angeles College
Department of Mathematics
Math 227
Test 1

~~58~~ ✓
Solutions

Show work for credit.

How many absences do you have in your Statistics class?

The following data was collected in days.

4, 2, 0, 1, 1, 0, 2, 4, 6

1. Determine the mean of this data approximated to the nearest tenths.

$$\bar{x} = \frac{\Sigma x}{n}$$

$$\bar{x} = \frac{22}{9}$$

$$\boxed{\bar{x} \approx 2.4}$$ ✓

2. Determine the median of this data. ✓

0, 0, 1, 1, **2**, 2, 4, 4, 6

3. Determine the mode for this data. $\boxed{0, 1, 2, 4}$ ✓ ✓ ✓ ✓

4. Determine the variance for this data approximated to the nearest tenths.

$$\text{var} = \frac{n\,\Sigma x^2 - (\Sigma x)^2}{n(n-1)}$$

$$\text{var} = \frac{9 \cdot 90 - 22^2}{9 \cdot 8}$$

$$\boxed{\text{var} \approx 4.5}$$ ✓

5. Determine the standard deviation for this data approximated to the nearest tenths.

$$SD = \sqrt{\text{var}}$$

$$SD \approx \sqrt{4.5}$$ ✓

$$\boxed{SD \approx 2.1}$$

~~7~~ ✓
8

How long did you wait in line (minutes) to buy your Statistics Textbook?

The following data was gathered and organized into a frequency table. Fill in the table below and approximate the **relative frequency** to the nearest **thousandths**.

Min	f	rf	percent	mid
0 to 4	8	0.182	18.2%	2
5 to 9	12	0.273	27.3%	7
10 to 14	14	0.318	31.8%	12
15 to 19	6	0.136	13.6%	17
20 to 24	4	0.091	9.1%	22

15

Answer the following questions regarding your frequency table above.

6. What percent of statistics students waited at least 5 minutes?

$27.3 + 31.8 + 13.6 + 9.1$ | 81.8% | ✓

7. What percent of statistics students waited less than 15 minutes?

$18.2 + 27.3 + 31.8$ | 77.3% | ✓

8. What percent of statistics students waited between 5 and 14 minutes?

$27.3 + 31.8$ | 59.1% | ✓

9. What percent of statistics students waited at no more than 19 minutes?

$18.2 + 27.3 + 31.8 + 13.6$ | 90.9% | ✓

8 ✓

10. What percent of statics students waited more than 9 minutes?

$31.8 + 13.6 + 9.1$ | 54.5% | ✓

11. What is the mean wait time for textbooks? Approximate your answer to the nearest tenths.

$\bar{x} = \frac{\Sigma fm}{n}$

$\bar{x} = \frac{458}{44}$

| $\bar{x} \approx 10.4$ | ✓

12. What is the standard deviation for the wait time for textbooks? Approximate your answer to the nearest tenths.

$Var = \frac{n \Sigma fm^2 - (\Sigma fm)^2}{n(n-1)}$

$= \frac{44 \cdot 6306 - 458^2}{44 \cdot 43}$

$= 35.78$ ✓

$SD = \sqrt{var}$

$SD = \sqrt{35.78}$

| $SD \approx 6.0$ | ✓

13. Compute the GPA for the following report card. Approximate your answer to the nearest hundredths.

Cousre	Units	Grade
Statistics	4	B
English	3	C
PE	1	A
Chemistry	5	D
Health	2	F

$$\bar{w} = \frac{\Sigma wx}{\Sigma w}$$

$$\bar{w} = \frac{27}{15} \quad ; \quad \bar{w} \approx 1.8$$

Grading on a curve?

14. Test scores were gathered and a mean was determined to be 108.6 with a standard deviation of 18.9.

	Score	Z-Score	Curved Grade
Joe	130	1.13	B
Mary	110	0.07	C
Blanton	85	-1.25	D
Marcel	118	0.50	C
Angel	150	2.19	A
Alexis	50	-3.10	F

15

How much sleep did you get last night?

The following data was collected in hours.

8, 0, 4, 6, 6, 8, 7, 4, 6, 7,8 ,4, 5, 5, 5, 8, 3, 5, 7, 8

Determine the following.

15. $Q_1 = P_{25} = \frac{4+5}{2}$

$L = \frac{k}{100} \cdot n$ | $P_{25} = 4.5$ ✓

$L = \frac{25}{100} \cdot 20$

$L = \frac{1}{4} \cdot 20$ ✓

$L = 5$

16. $Q_2 = P_{50} = \frac{6+6}{2}$

$L = \frac{k}{100} \cdot n$ | $P_{50} = 6$ ✓

$L = \frac{50}{100} \cdot 20$

$L = \frac{1}{2} \cdot 20$ ✓

$L = 10$

17. $Q_3 = P_{75} = \frac{7+8}{2}$ ✓

$L = \frac{k}{100} \cdot n$ | $P_{75} = 7.5$

$L = \frac{75}{100} \cdot 20$

$L = \frac{3}{4} \cdot 20$ ✓

$L = 15$

18. $D_1 = P_{10} = \frac{3+4}{2}$

$L = \frac{k}{100} \cdot n$ | $P_{10} = 3.5$ ✓

$L = \frac{10}{100} \cdot 20$

$L = \frac{1}{10} \cdot 20$ ✓

$L = 2$

19. $D_9 = P_{90} = \frac{8+8}{2}$

$L = \frac{k}{100} \cdot n$ | $P_{90} = 8$ ✓

$L = \frac{90}{100} \cdot 20$

$L = 0.9 \cdot 20$ ✓

$L = 18$

20. $P_{65} = \frac{7+7}{2}$

$L = \frac{k}{100} \cdot n$ | $P_{65} = 7$ ✓

$L = \frac{65}{100} \cdot 20$ ✓

$L = 0.65 \cdot 20$

$L = 13$

12

Data
8
0
4
6
6
8
7
4
6
7
8
4
5
5
5
8
3
5
7
8

L	Sorted Data
1	0
2	3
3	4
4	4
5	4
6	5
7	5
8	5
9	5
10	6
11	6
12	6
13	7
14	7
15	7
16	8
17	8
18	8
19	8
20	8

x	x^2
4	16
4	16
0	0
1	1
1	1
0	0
2	4
4	16
6	36

Sum 22 90

Min	f	rf	Perent	Mid	fm	fm^2
0 to 4	8	0.182	18.2	2	16	32
5 to 9	12	0.273	27.3	7	84	588
10 to 14	14	0.318	31.8	12	168	2016
15 to 19	6	0.136	13.6	17	102	1734
20 to 24	4	0.091	9.1	22	88	1936

Sum 44 458 6306

	w		x	
Course	Units	Grade	Points	wx
Statistics	4	B	3	12
English	3	C	2	6
PE	1	A	4	4
Chemistry	5	D	1	5
Health	2	F	0	0

Sum 15 27

Person	Score	z-Score	Curved Grade
Joe	130	1.13	B
Mary	110	0.07	C
Blanton	85	-1.25	D
Marcel	118	0.50	C
Angel	150	2.19	A
Alexis	50	-3.10	F