

Name: _____

Partner: _____

Block: _____

Multiple Choice

Identify the choice that best completes the statement or answers the question.

1. Determine the range of the following test scores.

History Test 1 Scores (out of 100)

90	84	77	66
89	84	77	65
86	82	75	65
86	81	72	61
84	79	70	56

A. 90 B. 34 C. 56 D. 78

2. Determine the median of the following test scores.

History Test 1 Scores (out of 100)

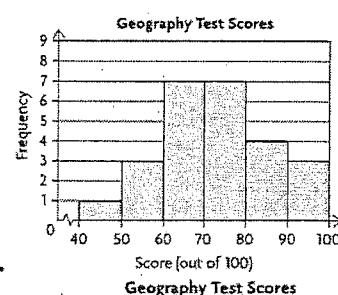
90	84	77	66
89	84	77	65
86	82	75	65
86	81	72	61
84	79	70	56

A. 56 B. 79 C. 78 D. 77

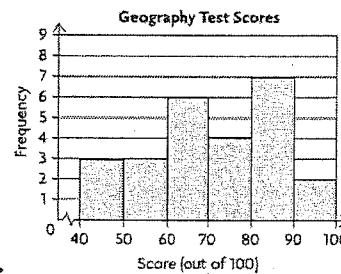
3. Which histogram represents the following test scores?

Geography Test 1 Scores (out of 100)

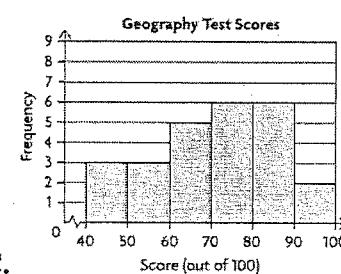
98	83	81	74	62
94	83	78	72	61
92	82	77	72	55
89	82	75	66	53
84	82	75	62	44



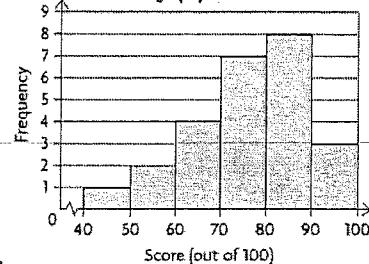
A.



B.



C.



D.

4. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

0.42	0.04	0.81	0.40	0.03	0.74
0.28	0.03	0.70	0.23	0.03	0.66
0.13	0.02	0.61	0.12	0.01	0.58
0.10	0.00	0.49	0.07	1.08	0.43
0.05	0.91	0.42	0.04	0.88	

Which range of data occurs most frequently?

A. 0.20–0.29 B. 0.10–0.19 C. 0.00–0.09 D. 0.30–0.39

5. At the end of a bowling tournament, three friends analyzed their scores.

Lada's mean bowling score is 125 with a standard deviation of 27.

Quinn's mean bowling score is 182 with a standard deviation of 28.

Kamal's mean bowling score is 170 with a standard deviation of 20.

Who is the more consistent bowler?

A. Impossible to tell. B. Quinn C. Kamal D. Lada

6. A pear orchard has 20 trees with these heights, given in inches.

110	83	104	95
88	80	115	106
97	100	98	93
92	117	75	83
122	115	89	105

Determine the mean, to one decimal place.

A. 99.4 in. B. 101.4 in. C. 98.4 in. D. 100.4 in.

7. Chinedu recorded the time it takes him to get to school using three different routes.

Hour	1	2	3	4	5
Route 1 (min)	13	15	12	12	16
Route 2 (min)	20	18	20	12	17
Route 3 (min)	16	17	15	17	22

On which route does Chinedu have a more consistent travel time?

A. Route 1 B. Route 2 C. Route 3

8. A set of data is normally distributed. What percent of the data is within one standard deviation of the mean?

A. about 95% B. about 50% C. about 68% D. 100%

9. A set of data is normally distributed. What percent of the data is greater than the mean?

A. about 95% B. 100% C. about 68% D. about 50%

10. A teacher is analyzing the class results for a physics test. The marks are normally distributed with a mean (μ) of 76 and a standard deviation (σ) of 4. Determine Guy's mark if he scored $\mu + 2\sigma$.

A. 80 B. 72 C. 84 D. 68

11. Determine the z -score for the given value.
 $\mu = 120, \sigma = 10, x = 125$

A. -2 B. 0.5 C. -0.5 D. 2

12. Determine the percent of data to the left of the z -score: $z = 1.44$.

A. 94.95% B. 95.91% C. 93.82% D. 92.51%

13. Determine the percent of data between the following z -scores:
 $z = -1.50$ and $z = 1.50$.

A. 47.20% B. 100% C. 94.41% D. 86.64%

Short Answer

14. Environment Canada compiled data on the number of lightning strikes per square kilometre in Saskatchewan and Manitoba towns from 1999 to 2008.

2.03	1.31	0.25	1.03	1.20	0.17
0.99	1.01	0.24	0.94	0.92	0.09
0.86	0.71	0.05	0.81	0.63	0.01
0.80	0.58	0.00	0.72	0.49	0.52
0.43	0.46	0.40			

Complete the frequency table.

Lightning Strikes (per square kilometre)	Frequency
0.00–0.49	
0.50–0.99	
1.00–1.49	
1.50–1.99	
2.00–2.49	

Problem

15. Joannie and Alex are trying to control the number of text messages they send. They record the number they send every day in April.

Joannie: 32, 14, 22, 33, 18, 25, 26, 20, 32, 16, 18, 25, 31, 34, 3, 8, 32, 28, 25, 18, 32, 21, 9, 10, 27, 18, 29, 22, 15, 20

Alex: 24, 0, 3, 14, 29, 24, 25, 30, 12, 18, 22, 30, 16, 19, 7, 12, 26, 21, 22, 27, 5, 19, 18, 8, 21, 25, 20, 18, 13, 15

a) Choose an interval width so you have seven intervals.

16. Sarena keeps track of the amount she spends, in dollars, on weekly lunches during one semester:

18	24	27	25	28	36
23	31	24	30	37	29
30	18	28	27	17	27

a) Determine the range, mean, and standard deviation, correct to two decimal places.

17. Yumi always waits until her gas tank is nearly empty before refuelling. She keeps track of the distance she drives on each tank of gas. The distance varies depending on the weather and the amount she drives on the highway. The distance has a mean of 520 km and a standard deviation of 14 km.

- What percent of the time does she drive between 534 km and 562 km on a tank of gas?
- Between what two values will she drive 95% of the time?

18. In a population, 80% of the adults are taller than 165 cm and 20% are taller than 187 cm. Determine the mean height and standard deviation for this population.

19. A manufacturer of computer screens has determined that the screens require servicing after a mean of 70 months, with a standard deviation of 8.8 months. What length of warranty should be offered, if the manufacturer wants to repair less than 0.5% of the screens under the warranty?

Answers

17.

1. B 4. C 7. A 10. C 13. D
 2. C 5. C 8. C 11. B
 3. D 6. C 9. D 12. D

14.

Lightning Strikes (per square kilometre)	Frequency
0.00-0.49	11
0.50-0.99	11
1.00-1.49	4
1.50-1.99	0
2.00-2.49	1

15. a) The maximum value is 34 and the minimum value is 0, so the range is 34.

If the interval width is 5 and starts at 0, then there will be seven intervals and all values are included.

b)

Interval	Frequency	Frequency (Alex)
0-4	1	2
5-9	2	3
10-14	2	4
15-19	6	7
20-24	5	7
25-29	7	5
30-34	7	2

16.

a) The maximum value is 37 and the minimum value is 17 so the range is 20.

Using technology, the mean is about 26.6 and the standard deviation is about 5.4.

b) The maximum value is now 36 and the minimum value is now 18 so the range is 18.

Using technology, the mean is about 26.6 and the standard deviation is about 4.5.

c) Removing the greatest and the least amounts of data **increases** the range and the standard deviation. The mean stayed about the same.

17.

$$\text{a)} 534 = 520 + 1(14)$$

$$562 = 520 + 3(14)$$

Since 534 km is one standard deviation above the mean and 562 is three standard deviations above the mean, the percent of the time Judy drives between these two distances is half of 99.7% - 68% of 15%.

b) She will drive 97% of the time between the two values two standard deviations from the mean.

$$520 + 2(14) = 548$$

$$520 + 2(14) = 542$$

The two distances are 492 km and 548 km.

18.

If 20% of the population is to the left of 165 cm and 20% of the population is to the right of 187 cm, then the mean of these heights is the mean height of the population.

$$\frac{165 + 187}{2} = 176$$

The mean height is 176 cm.

Then 20% of the population to the right of 187 cm is 80% or 0.80 of the population to the left of the 187 cm. Using the z-score table, 0.80 corresponds to a z-score of 0.84.

$$\text{z} = \frac{x - \mu}{\sigma}$$

$$0.84 = \frac{187 - 176}{\sigma}$$

$$\sigma = \frac{187 - 176}{0.84}$$

$$\sigma = 13.095\ldots$$

The standard deviation is 13.1 cm.

19.

$$\mu = 70 \text{ months}$$

$$\sigma = 8.8 \text{ months}$$

$$\text{Repair rate, } r = 0.5\%$$

Using the z-score table, 0.5% or 0.005 corresponds to a z-score of -2.58.

$$z = \frac{x - \mu}{\sigma}$$

$$-2.58 = \frac{x - 70}{8.8}$$

$$-22.704 = x - 70$$

$$x = 47.296$$

The warranty period should be 47 months.