

REG-DISP-2324-ASM-SET 2-MATH

Suggested solutions

Multiple Choice Questions

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. B | 2. B | 3. B | 4. D | 5. C |
| 6. C | 7. B | 8. B | 9. C | 10. B |
| 11. B | 12. D | 13. C | 14. A | 15. D |
| 16. A | 17. B | 18. C | 19. A | 20. A |
| 21. D | 22. B | 23. A | 24. A | 25. D |

1. ☐ B

Inter-quartile range = $36 - 26 = 10$.

2. ☐ B

The numbers are distributed near the minimum side. So, the minimum, lower quartile and median should be closed to each other.

The most probable answer is B.

3. ☐ B

50% of the data lies between lower quartile and upper quartile.

4. ☐ D

In the cumulative frequency curve, steeper \Rightarrow more data in the corresponding class.

So, the data is more concentrated in the lower part.

Minimum, lower quartile, median and upper quartile will be closed to each other.

5. ☐ C

The data is concentrated near larger weights.

The maximum, upper quartile and median should appear closed to each other.

The answer is C.

6. ☐ C

A. ✓. Range = $21 - 16 = 5$

B. ✓. I.Q.R. = $20 - 18 = 2$

C. ✗. Percentage of members aged under 18 $\approx 25\%$.

D. ✓ or ✗.

✗: total number of people is not a multiple of 4

Then the percentage can never be 25%.

✓: total 8 people with ages 16, 18, 18, 19, 19, 19, 21, 21

This example matches all info given in the question.

7. B

I. ✓.

II. ✗.

III. ✓. Range = maximum – minimum

8. B

Median, upper quartile and maximum are closed to each other.

So, the data should concentrate at higher values.

The answer is B.

9. C

Median = 90

Range = $100 - 40 = 60$

Inter-quartile range = $100 - 60 = 40$

10. B

Lower quartile = 15

11. B

I. ✓. Range = max – min, which can be obtained from the diagram.

II. ✗.

III. ✓. IQR = upper quartile – lower quartile

12. D

Each section consists of approximately 25% data.

	<u>Score range</u>	<u>Proportion of data</u>
A.	10 – 60	25%
B.	50 – 80	25% – 50%
C.	70 – 90	25% – 50%
D.	80 – 100	50%

13. C

I. ✓. Upper quartile of Class A > maximum of Class B.

II. ✓.

III. ✗.

14. ☐ A

I. ✓.

II. ✓.

III. ✗. Number of data cannot be obtained in box-and-whisker diagrams. It could happen that the total number of boys is 9 999 999 999 while there are only 5 girls.

15. ☐ D

No steps involved.

16. ☐ A

I. ✗. Mean is not obtainable through box-and-whisker diagram.

II. ✓.

III. ✗. Range = $90 - 45 = 45$ kg

17. ☐ B

Inter-quartile range = $25 - 10$
= 15

18. ☐ C

A. ✗. 25% of the passengers wait for more than 12 min.

B. ✗. 75% of the passengers wait for 2 to 12 min.

C. ✓.

D. ✗. 25% of the passengers wait for 8 to 12 min.

19. ☐ A

Interquartile range = $45 - 25 = 20$

20. ☐ A

Upper quartile is the 4th datum (counted from the highest score).

Required probability = $\frac{3}{15}$
= $\frac{1}{5}$

21. ☐ D

I. ✓.

II. ✓.

III. ✓.

22. B

$$\begin{aligned}\text{Inter-quartile range} &= 31 - 26 \\ &= 5\end{aligned}$$

23. A

- I. ✗. It may happen that the 58 kg person gains weight after training.
- II. ✓. The new maximum is 3 kg less than the original upper quartile.
At least 25% of the members have lost 3 kg or more.
- III. ✗. It may happen that the 90 kg person becomes 53 kg after training.

24. A

- I. ✓.
- II. ✓. Interquartile range = $26 - 20 = 6^{\circ}\text{C}$
- III. ✗. Range = $30 - 16 = 14^{\circ}\text{C}$

25. D

The numbers are concentrated at the lower end

⇒ minimum, lower quartile and median will be closed to each other

⇒ options A or D

The numbers at the upper end are widely dispersed

⇒ upper quartile and maximum will not be closed to each other

⇒ option D