

Week 2 Assignment solutions: Use of percentile anthropometric and biomechanical data for Product/facility design

1. Which is not the measurement of central tendency of data set.

Answer: Standard deviation.

2. What percentage of data exists above 60th percentile value of the data set?

Answer: 40%.

3. In normal distribution, 50th percentile is equal to _____.

Answer: Median.

4. Which diagram helps us to calculate percentile value?

Answer: Cumulative frequency diagram.

5. Anthropometry deals with_____.

Answer: Human body dimensions.

6. Which of the followings are the central tendencies of a data set?

Answer: Mean, Median and Mode.

7. Mean = $(\sum x)/n$, where 'x' is _____ and 'n' is total number of observations.

Answer: Individual value.

8. Thumb lengths (in inch) of 8 people are 2.2, 2.3, 2.4, 2.4, 2.5, 2.5, 2.4 and 2.6.

Find Mode value for the above data-set.

Answer: 2.4.

9. Low standard deviation (SD) value of a data set indicates that data are

_____.

Answer: Less scattered around the mean.

10. How much percentage of data is covered within 5th and 95th percentile values?

Answer: 90%.

11. If the 50th percentile value of a normally distributed data set is 5.3 and standard deviation is 0.2, calculate the 5th percentile value.

Answer: 4.97.

12. Which is not the characteristic of a normal distribution curve?

Answer: Asymmetric.

13. Which body-plane divides our body into left and right halves?

Answer: Sagittal plane (XZ plane).

14. For various design dimensions of a product, same percentile values of various anthropometric variables are required.

Answer: Statement is incorrect.

15. What are the two types of anthropometric measures?

Answer: Static and dynamic measures.

16. 'My stature is of 95th p value of the population, it does not mean that my other body segments are also 95th p value' - the statement is _____.

Answer: True.

17. Which of the following percentile data of the knee height is to be considered for achieving under table clearance dimension?

Answer: 95th p.

18. For reach dimensions, generally _____ percentile arm reach value is considered.

Answer: 5th p.

19. Which of the following facility design requires consideration of anthropometric dimensions of extreme population?

Answer: Door height and door latch position.

20. 5th p value of both hands torque strength for male is 36 Nm and lever arm length is 0.21 m. Calculate 30% of the both arm strength data.

Answer: 51 N.

21. Biomechanics is defined as the mechanical properties of _____ system

Answer: Biological.

22. 'Range of motion is same for most of the body joints' - the statement is

Answer: Incorrect.

23. Which percentile value of leg strength data is recommended for defining actuating force of brake pedal and gear operation?

Answer: 5th p.

24. Assume you have scored 72 marks in Science and your rank in the class is 90th percentile. How many students (in percentage) scored more than 72?

Answer: 10%.

25. Example of dynamic anthropometric measures include

Answer: All of the above.