

Chapter 2

1. According to Stevens (1946, p. 677) *measurement* is:
 - a. The application of scientific methods to obtain data
 - b. The use of scientific instruments to measure objects
 - c. The scientific assessment of objects
 - d. The assignment of numbers to objects**
2. Data at the highest level of measurement:
 - a. Has all qualities shared by the lower levels of measurement.
 - b. Possesses an absolute zero point.
 - c. Can be doubled without causing problems.
 - d. All of the above.**
3. The process of defining a variable in a way that allows a researcher to collect numerical data about is called
 - a. Operationalization**
 - b. Objectivism
 - c. Reductionism
 - d. Quantitative defining
4. Data at Stevens's highest level of measurement:
 - a. Has all qualities shared by the lower levels of measurement.
 - b. Possesses an absolute zero point.
 - c. Can be doubled without causing problems.
 - d. All of the above.**
5. Which option lists the four levels of data in ascending order (i.e., from lowest to highest)?
 - a. Nominal, ordinal, ratio, interval
 - b. Ratio, interval, ordinal, nominal
 - c. Nominal, ordinal, interval, ratio**
 - d. Ratio, ordinal, interval, nominal
6. According to Stevens (1946, p. 677) *measurement* is:
 - a. The application of scientific methods to obtain data
 - b. The use of carefully designed scientific instruments to measure objects
 - c. The scientific assessment of objects using formal methods
 - d. The assignment of numbers to objects or events according to rules**
7. Nominal data must be
 - a. Able to preserve the ranking of subjects
 - b. Mutually exclusive and exhaustive**
 - c. Different for different group members within the same group
 - d. All of the above
8. In nominal data, the numbers assigned to the categories

- a. Must be assigned in order so that larger groups receive larger numbers
 - b. Are arbitrary**
 - c. Can never be negative
 - d. Must reflect the rank order of the subjects
9. Which of the following is not an acceptable mathematical function for nominal data?
- a. Counting
 - b. Classification
 - c. Calculating proportions
 - d. Calculating averages**
10. In addition to the characteristics of nominal data, ordinal data must also have
- a. Rank order in the numbers**
 - b. Proportional representation of group members in the population
 - c. Absolute zero
 - d. Proportions calculated from scores
11. Why is it always better to collect data at the highest level possible?
- a. Higher levels of data are easier to collect than lower levels of data.
 - b. Lower levels of data require more preparation of the data before the statistical analysis can begin.
 - c. Higher levels of data can always be converted down to lower levels.**
 - d. All of the above.
12. Which mathematical procedures are acceptable for interval-level data, but not ordinal or ratio data?
- a. Calculating proportions
 - b. Dividing to form averages**
 - c. Ranking subjects
 - d. Dividing to form ratios
13. What is the property that interval data have that ordinal data do not?
- a. Equal spacing between scale points**
 - b. Absolute zero
 - c. Consistent data application rules
 - d. Arbitrary numbers assigned to categories
14. An absolute zero
- a. Is not present unless it is possible for a person in the sample to obtain a score of zero.
 - b. Is required to calculate averages.
 - c. Indicates the total absence of the quality being measured.**
 - d. All of the above.
15. The number of movies that a person has seen in the past month is what type of data?
- a. Interval

- b. Nominal
 - c. Ratio**
 - d. Ordinal
16. Why is it that the Celsius temperature scale *not* a ratio-level scale?
- a. Negative numbers are possible (and meaningful) in the Celsius scale
 - b. Because it lacks an absolute zero point
 - c. The ratios that are formed with its numbers do not represent true ratios between temperatures of the amount of heat
 - d. All of the above**
17. The level of data of _____ is ambiguous.
- a. Rating scales**
 - b. Mental health variables
 - c. Reaction time
 - d. Group-level variables (e.g., a nation's average education level)
18. A(n) _____ variable permits a wide range of scores that form a constant scale with no gaps at any point along the scale.
- a. Ratio
 - b. Interval
 - c. Dependent
 - d. Continuous**
19. A(n) _____ variable has a limited number of possible values and do not form a constant, uninterrupted scale of scores.
- a. Operationalized
 - b. Discrete**
 - c. Ordinal
 - d. Limited
20. A sociologist asks her subjects their religious affiliation. What type of variable would this be?
- a. Continuous
 - b. Interval
 - c. Nominal**
 - d. Ordinal
21. A researcher collects data on the length of individuals' commute to their job. What type of variable is this?
- a. Ordinal
 - b. Ratio**
 - c. Discrete
 - d. Nominal

22. Individuals learning a second language were labeled as “not proficient” (group 1), “basic proficiency” (group 2) “high proficiency” (group 3), and “fully proficient” (group 4). What type of data is this?

- a. **Ordinal**
- b. Nominal
- c. Continuous
- d. Ratio

23. The Fahrenheit temperature scale is an example of a(n) _____ variable.

- a. Ordinal
- b. Independent
- c. **Interval**
- d. Discrete

24. What is the *minimum* level of data required to calculate proportions?

- a. Ratio
- b. Ordinal
- c. **Nominal**
- d. Interval

25. What level of data can be used to rank order scores?

- a. Ratio
- b. Ordinal
- c. Interval
- d. **All of the above**

26. Give an example of an operationalization.

Answers will vary, but the response should be a method of defining a construct in a way that allows numerical data to be collected about it.

27. What does it mean that categories in the data must be “mutually exclusive and exhaustive”?

The categories are non-overlapping (mutually exclusive) and every sample member belongs to a category (exhaustive)

28. Explain why test scores can be ordinal-, interval-, or ratio-level data, depending on the interpretation.

If the score is the number of questions correctly, then the variable is ratio-level data. If the score is interpreted as the amount of a trait that the subject possesses, then the variable is interval-level data. If it is possible that there are not equal spaces or intervals between scores on a test, then the variable would be ordinal-level data.

29. Explain what reductionism is and why it is a shortcoming of quantitative research.

Reductionism is a philosophy that redefines variables so that they are a shallower version of the construct of interest. It is a problem of quantitative

research because it means researchers don't really study their constructs, but rather the operationalizations of the constructs.

30. Why is it acceptable (and sometimes necessary) to create a "miscellaneous" or "other" category for data?

Because categories must be exhaustive, which means that every sample member must belong to a category. Creating this "miscellaneous" category ensures that individuals who would otherwise not have a category can belong to one.