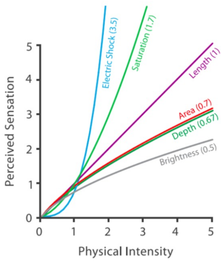
1 point

1. Which of the following relationships between *physical intensity* and *perceived sensation* leads to higher accuracy in a visual channel?

- Changes in physical intensity are the same as changes in perceived sensation.
- Changes in physical intensity are smaller than changes in perceived sensation.
- Changes in physical intensity are larger than changes in perceived sensation.

1 point

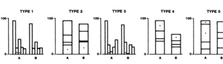
2. Observing the relationships between physical intensity and perceived sensation of "brightness" in Steven's power law, which of the following statements is true?




- Humans tend to underestimate the physical intensity of brightness.
- Humans have an accurate perception of the physical intensity of brightness values.
- Humans tend to overestimate the physical intensity of brightness.

1 point

3. Cleveland and McGill's study shown in the figure below shows how accurately people can compare quantities using different graphical encoding strategies. Which of the following statements regarding the results of the experiment is true?




- Position is less accurate than length.
- Position is more accurate than length.
- Position and length have the same level of accuracy.

1 point

4. One of the studies developed by Cleveland and McGill compares the effectiveness of pie graphs vs. bar charts. Which of the graphs performs better in terms of comparison of quantitative values?

- Bar graphs performs better.
- Pie charts performs better.
- They are equally effective.

1 point

5. Which of the following statements regarding the relative accuracy of *position, length, angle and area* as channels to represent *quantitative* information are true?

- Area is better than length.
- Length is better than position.
- Length and angle perform similarly.
- Position is better than area.

1 point

6. Which of the following statements defines the *discriminability* of a visual channel?

- Discriminability defines how many distinct values can be detected and distinguished in a channel.
- Discriminability defines how accurately a channel can encode quantitative information.
- Discriminability defines the degree of interaction between two separate channels.

1 point

7. Which of the following factors have an influence on how many distinct values of a visual channel can be discerned with minimal effort (that is, they have an effect on discriminability)?

- The spatial arrangement of the symbols/markers.
- Size of the symbol/marker.
- The number of individual symbols/markers present in the visualization.
- Intrinsic properties of the channel.

1 point

8. You are designing a visualization of a data set containing a categorical attribute with 50 different distinct values and you want to represent these values with color. Which of the following is an effective solution to the problem?

- Map each of the 50 values to a distinct color.
- Reuse the same color for multiple values.
- Group or filter the values to reduce them to a number that can be effectively represented with color.

1 point

9. Which of the following visual tasks requires a serial scan of the set of symbols (that is, it is not *pre-attentive*)?

- Verify whether a red symbol is present among a set of blue colored symbols.
- Verify whether a square is present among a set of circles.
- Verify whether a red square is present among a set of blue and red squares and circles.

1 point

10. Which of the following statements about channel separability is true?

- Separability is a property of pairs of channels.
- Separability is a property of individual channels.
- Two channels are highly separable when it is easy to attend to the values encoded by one channel irrespective of the values encoded by the other channel.

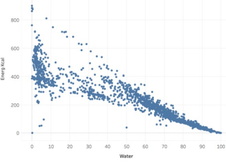
1 point

11. You are designing a map of a group of countries and your intent is to represent, for each country, the relationship between how much the government spends for public services (government spending) and the taxation (tax rate). Your intent is to visualize, regardless the amount, which of the countries have a similar rate of spending and taxation. For this purpose you decided you will be using a symbol centered on each country and now you have to decide which visual channels to use to represent the two quantities. Which of the following combinations works best for your intent?

- Symbol color intensity for government spending and symbol size for tax rate.
- Symbol color intensity for government spending and symbol orientation for tax rate.
- Symbol width for government spending and symbol height for tax rate.

1 point

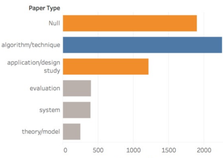
12. Which of the following "gestalt laws" of pattern formation play a role in the perception of clusters (groupings) in a scatter plot?




- Connection
- Similarity
- Proximity

1 point

13. In this bar chart, the bars colored in orange are clearly perceived as belonging to one category or group. Which of the "gestalt laws" of pattern formation play a role in the perception of this group?




- Similarity
- Connection
- Continuity

1 point

14. Which of the following "gestalt laws" of pattern formation play a role in the perception of clusters (groupings) in the bubble sets visualization?

- Proximity
- Similarity
- Enclosure

1 point

15. Which of the following statements about the relative strength of *similarity, proximity, enclosure, and connection* are true?

- Similarity is stronger than proximity
- Enclosure is stronger than similarity
- Proximity is stronger than connection

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