## TOPIC: LEVELS OF MEASUREMENT

### Levels of Measurement

◆ Recall: Data can be classified as qualitative or quantitative.

► You can also classify data by **Levels of Measurement**, which tell us what _____ make sense.

| Levels of Measurement | | | |
|---|---|---|---|
| **Level** | **Description** | **Qualitative or Quantitative** | **Example** |
| Nominal | Categories, _____, or labels;<br>No clear order; No calculations | **[ QUAL \| QUANT \| EITHER ]** | Hair color |
| Ordinal | Data can be arranged in _____;<br>Differences can't be found or are meaningless | **[ QUAL \| QUANT \| EITHER ]** | Letter Grades,<br>Jersey #s |
| Interval | _____ are meaningful; No clear starting point (or 0); Ratios are meaningless | **[ QUAL \| QUANT \| EITHER ]** | Daily Temperature |
| Ratio | There IS a clear _____ point (or 0);<br>_____ are meaningful | **[ QUAL \| QUANT \| EITHER ]** | Heights, distances |

**EXAMPLE** Identify the level of measurement of each of the following data sets.

$(A)$ Participants give their favorite music genre from: Rock, Pop, Hip-hop, Jazz.

**[ NOM | ORD | INT | RAT ]**

$(B)$ Participants' total working hours are recorded.

**[ NOM | ORD | INT | RAT ]**

$(C)$ The birth years of participants are recorded (e.g., 1990, 1985, 2001, etc).

**[ NOM | ORD | INT | RAT ]**

$(D)$ Participants rate their satisfaction on a scale from 1 to 5.

**[ NOM | ORD | INT | RAT ]**

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**PRACTICE** Which level of measurement could describe both quantitative or qualitative data?

**A)** Nominal

**B)** Ordinal

**C)** Interval

**D)** Ratio

**PRACTICE** For each data set determine if it is quantitative or qualitative & which level of measurement best applies.

| $(A)$ | $(B)$ | $(C)$ | $(D)$ |
|---|---|---|---|
| A hospital records the birth weights of newborns. | Survey responses on participants' favorite menu item at a diner. | Participants rate their symptoms as mild, moderate, or severe. | The dates of establishment for different businesses are recorded. |
| **[ QUAL \| QUANT ]** | **[ QUAL \| QUANT ]** | **[ QUAL \| QUANT ]** | **[ QUAL \| QUANT ]** |
| **[ NOM \| ORD \| INT \| RAT ]** | **[ NOM \| ORD \| INT \| RAT ]** | **[ NOM \| ORD \| INT \| RAT ]** | **[ NOM \| ORD \| INT \| RAT ]** |

**EXAMPLE**

A student records the temperature of water at multiple points throughout a science experiment. They notice the water was 40°F at the start of the experiment and 80°F at the end, so they say the water became twice as hot.

$(A)$ What is the level of measurement of the data?

$(B)$ Why does the calculation not make sense?

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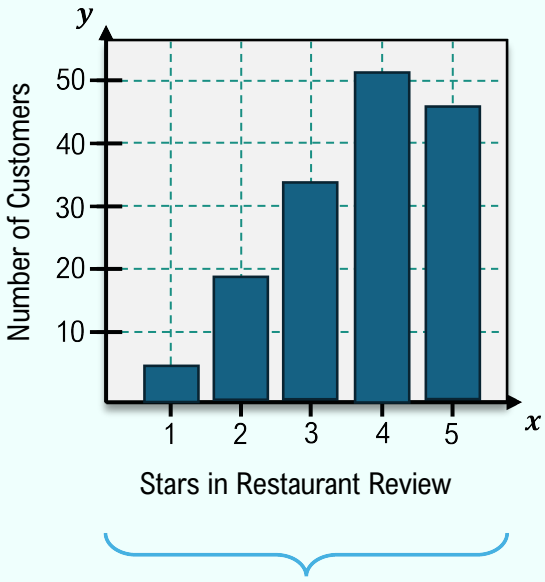
**EXAMPLE** Identify which level of measurement best describes the data on the $x$ & $y$ axes.

**[ NOM | ORD | INT | RAT ]**




**[ NOM | ORD | INT | RAT ]**