

## AP Statistics Unit 2.4, Video 2

### Sentence Frame Worksheet: Bivariate Data & Scatter Plots

*Mr. Youngsaver - College Board*

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

### Learning Targets

*Fill in as you watch the video introduction (00:00–00:28)*

- I can distinguish between \_\_\_\_\_ and \_\_\_\_\_ variables
- I can determine which variable is plotted on the \_\_\_\_\_-axis and which on the \_\_\_\_\_-axis
- I can construct a \_\_\_\_\_ with proper title, labels, and scale

### Key Vocabulary

*Complete definitions as terms are introduced in the video*

1. **Explanatory variable:** \_\_\_\_\_ (also called the \_\_\_\_\_ variable)  
\_\_\_\_\_ (also called the \_\_\_\_\_ variable)
2. **Response variable:** \_\_\_\_\_
3. **Bivariate data:** \_\_\_\_\_
4. **Scatter plot:** \_\_\_\_\_

### Video Notes by Section

#### Part 1: Context & Critical Thinking (00:31–01:19)

##### The Income Achievement Gap

- a) In the U.S., \_\_\_\_\_ and \_\_\_\_\_-income students tend to perform \_\_\_\_\_ on math exams than \_\_\_\_\_-income students **on average**.
- b) **CRITICAL NOTE:** This data says \_\_\_\_\_ about individual performance or intelligence. It only shows trends of \_\_\_\_\_ for full groups.

#### Part 2: The Attendance Connection (01:53–03:05)

- a) There's also an "income \_\_\_\_\_ gap" where higher-income areas have \_\_\_\_\_ chronically absent students.
- b) Two possible reasons mentioned:
- (1) \_\_\_\_\_
  - (2) \_\_\_\_\_
- c) The key question: If we improve \_\_\_\_\_ for lower-income students, will their \_\_\_\_\_ also improve?

**Part 3: Identifying Variables (03:11–03:58)****The Example Data**

Sample size: \_\_\_\_\_ students

Two variables measured:

- Variable 1: \_\_\_\_\_
- Variable 2: \_\_\_\_\_

**Complete this reasoning:**

"We think \_\_\_\_\_ might help explain or predict \_\_\_\_\_."

Therefore:

- The **explanatory** variable (X) is: \_\_\_\_\_
- The **response** variable (Y) is: \_\_\_\_\_

**Memory Trick**e**X**planatory = \_\_\_\_\_ variable

Response = \_\_\_\_\_ variable

**Part 4: Creating the Scatter Plot (04:08–05:11)****When to use a scatter plot:**

- Number of variables: \_\_\_\_\_
- Type of variables: Both must be \_\_\_\_\_ (not categorical)

**Essential components of a quality scatter plot:**

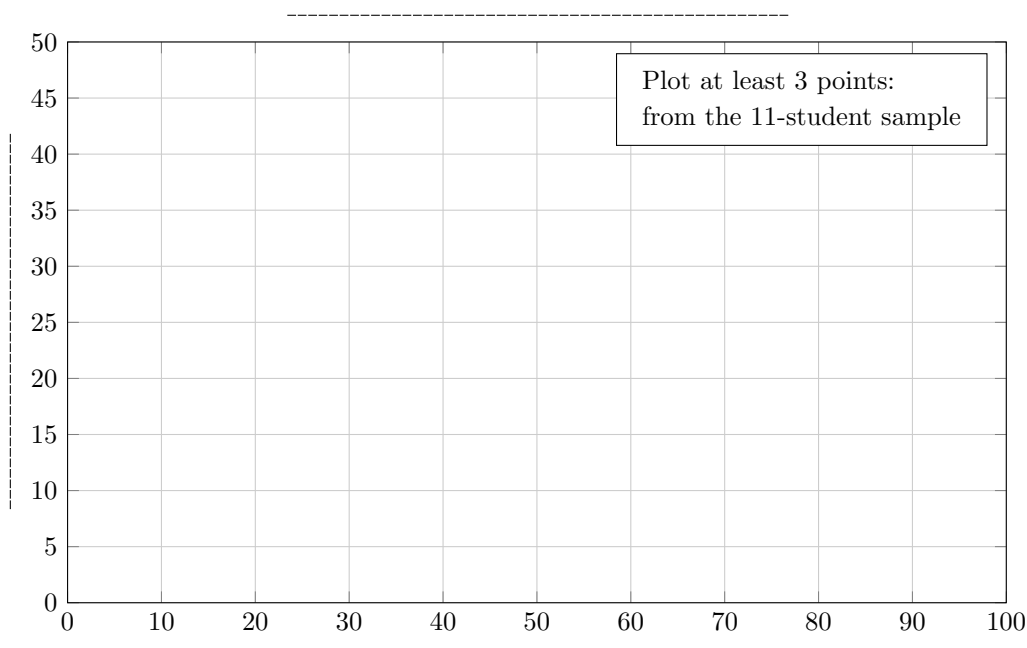
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**Variable Analysis Table***Complete for the video's example*

Characteristic	Variable 1	Variable 2
Name	_____	_____
Units	_____	_____
Type (categorical/quantitative)	_____	_____
Role (explanatory/response)	_____	_____
Axis placement (X or Y)	_____	_____
<b>Reasoning:</b> Why does Variable 1 explain Variable 2?		
_____		

**Construct Your Scatter Plot****Planning:**

- Title: \_\_\_\_\_
- X-axis range: from \_\_\_\_\_ to \_\_\_\_\_, tick marks every \_\_\_\_\_
- Y-axis range: from \_\_\_\_\_ to \_\_\_\_\_, tick marks every \_\_\_\_\_



### Quality Self-Check

*Check off each item when your scatter plot is complete:*

- ☐ My graph has a descriptive \_\_\_\_\_ that includes context
- ☐ Both axes are clearly \_\_\_\_\_ with variable names and units
- ☐ The scale has appropriate \_\_\_\_\_ marks that aren't misleading
- ☐ Each point represents one \_\_\_\_\_ with (x,y) coordinates
- ☐ The explanatory variable is on the \_\_\_\_\_-axis
- ☐ The response variable is on the \_\_\_\_\_-axis

### Looking Ahead (05:14–05:30)

*Without using technical terms yet, describe patterns you notice:*

1. Overall trend I see: \_\_\_\_\_
2. Unusual features: \_\_\_\_\_
3. Words to describe the pattern: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

### The Statistician's Code (05:50–05:59)

According to Mr. Youngsaver, statisticians should:

- Be \_\_\_\_\_
- Be \_\_\_\_\_
- Be \_\_\_\_\_
- Avoid \_\_\_\_\_ (which stands for \_\_\_\_\_)

**Exit Ticket**

*Complete before leaving class:*

1. In your own words: The \_\_\_\_\_ variable helps explain or predict the \_\_\_\_\_ variable. We place the first on the \_\_\_\_\_-axis and the second on the \_\_\_\_\_-axis.
2. Three essential elements every scatter plot needs:
  - 1) \_\_\_\_\_
  - 2) \_\_\_\_\_
  - 3) \_\_\_\_\_
3. Why is it important to identify which variable is explanatory vs. response before creating a scatter plot?

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**Challenge Extension**

*Optional: Create your own example*

Think of two quantitative variables from your life where one might explain the other:

- My explanatory variable: \_\_\_\_\_
  - My response variable: \_\_\_\_\_
  - Why this relationship makes sense: \_\_\_\_\_
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*Note:* Fill each blank with precise language from the video. Use specific context (variable names, units) whenever possible. This worksheet covers Video 2 of Unit 2.4 presented by Mr. Youngsaver from the College Board AP Statistics team.