

Interpreting Scatter Plots Using FODS

Statistics Worksheet · Grade 9–12

Name: _____

Date: _____

Learning Objectives

- Identify and describe the form, outlier, direction, and strength (FODS) of a scatter plot
- Distinguish between positive and negative associations and linear versus nonlinear patterns
- Write a complete paragraph interpretation of a scatter plot using the FODS acronym

Problems

1. Match each FODS term with its correct description. Write the letter of the description next to each term: Form, Outlier, Direction, Strength.

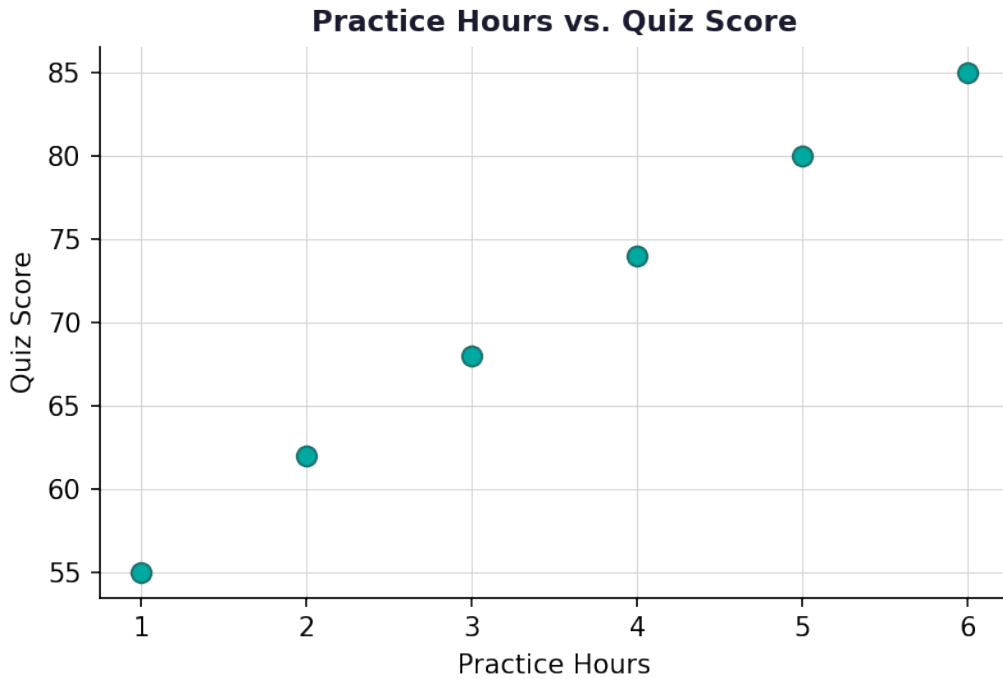
FODS Term	Description
Form	A. How closely the dots cluster around the pattern
Outlier	B. Whether the association goes up or down
Direction	C. A data point that deviates far from the overall pattern
Strength	D. Whether the pattern is linear or nonlinear

2. A scatter plot shows points that go from the lower-left to the upper-right of the graph. What direction does this scatter plot have?

3. Look at the scatter plot below showing the number of hours students spent practicing and their quiz scores. Identify the direction and form of the relationship.

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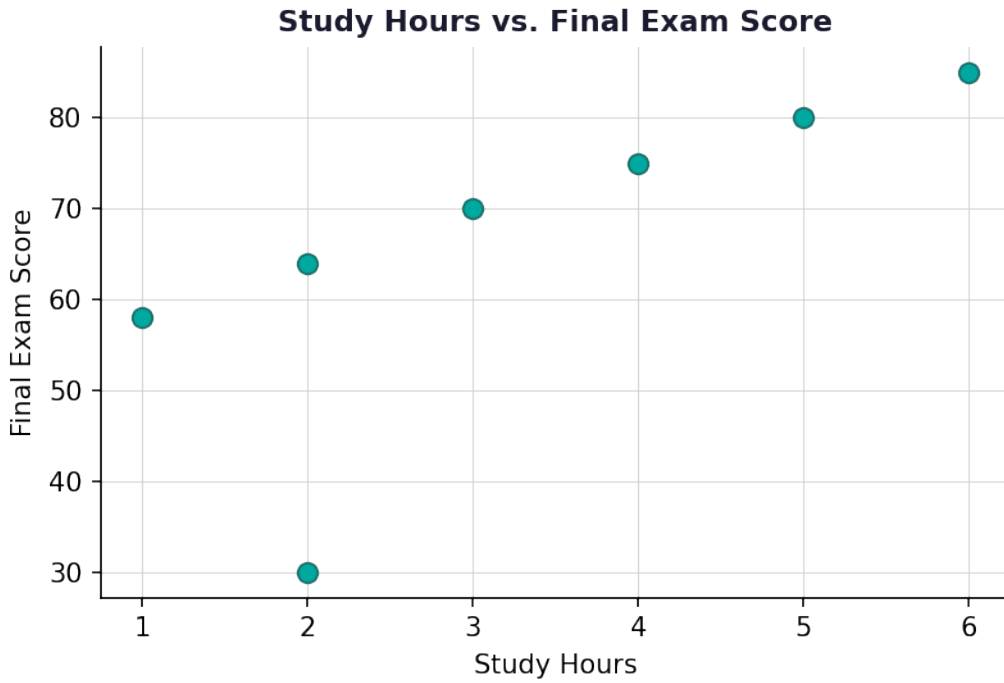




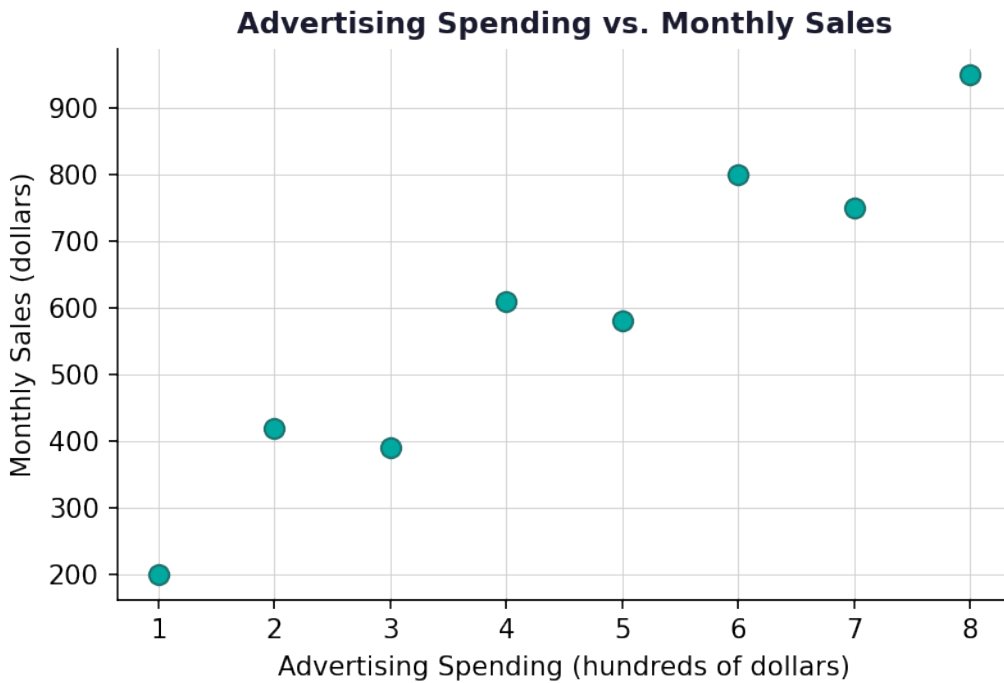
4. In a scatter plot of daily temperature (in degrees Fahrenheit) versus hot chocolate sales, the points go from the upper-left to the lower-right. What direction is this relationship? Explain what this means in context.

5. The scatter plot below displays data on student study hours and final exam scores. One point appears far away from the rest of the cluster. Identify whether there is an outlier and describe its effect on the interpretation.





6. Describe the strength of the relationship shown in the scatter plot below. Explain how you determined the strength.



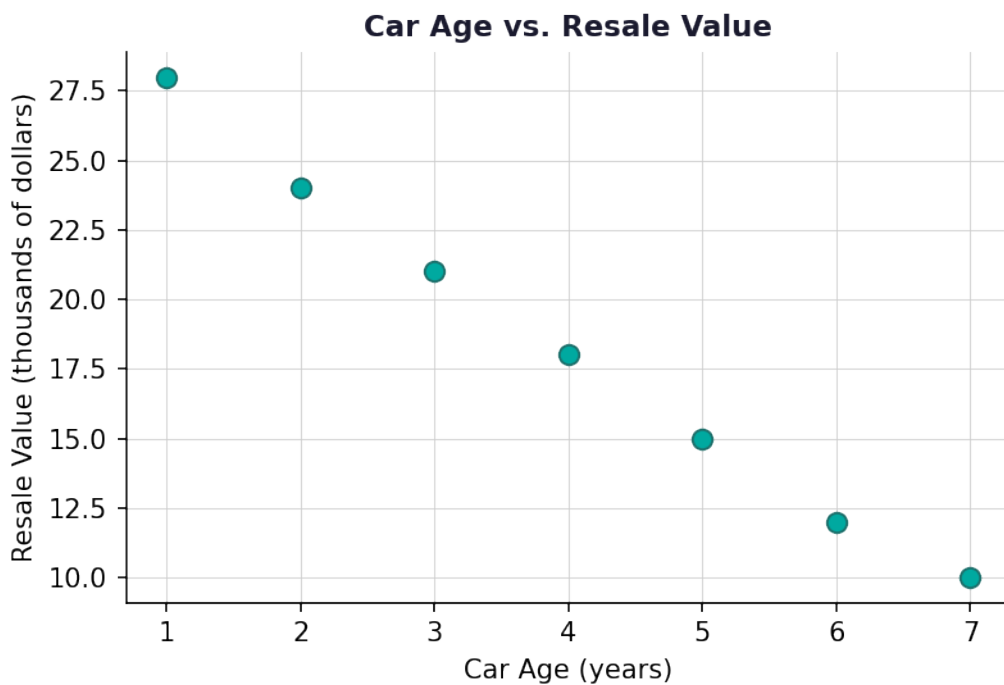
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7. Use the data table below to plot the points on a scatter plot. Let the number of absences be the explanatory variable and the final grade be the response variable. Then identify the FODS of the scatter plot.

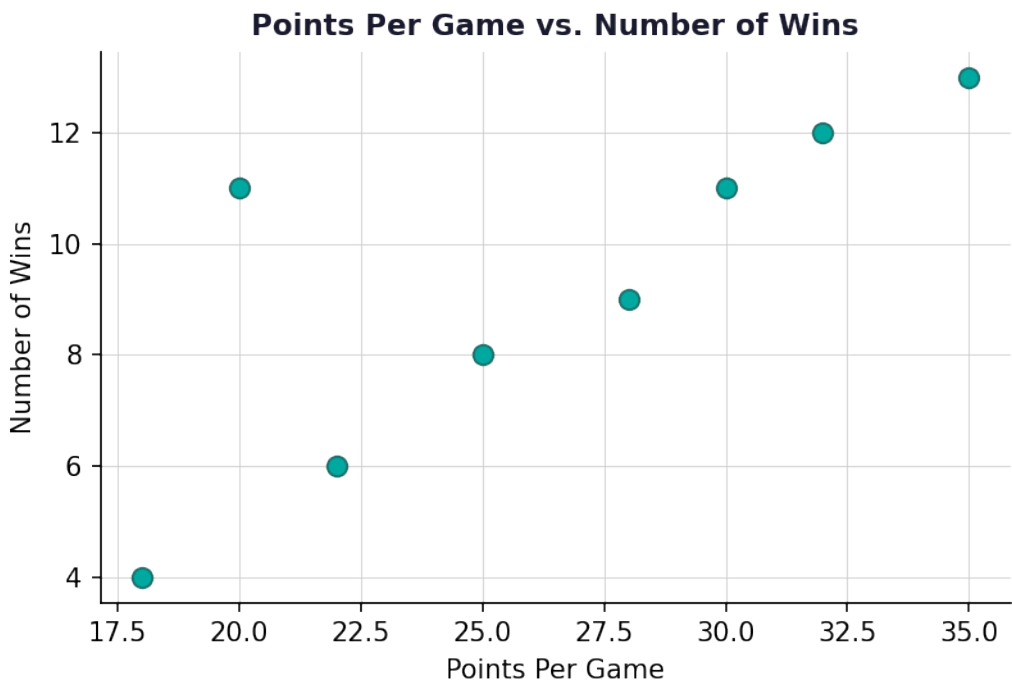
Number of Absences	Final Grade (%)
0	95
1	90
3	82
4	78
6	70
8	61
10	55

8. A scatter plot shows the age of a car (in years) and its resale value (in thousands of dollars). Using the scatter plot below, write a full FODS interpretation in paragraph form. Be sure to include context (mention the variables by name).



9. Two scatter plots are described below. Scatter Plot A shows points very tightly clustered around a line going upward. Scatter Plot B shows points loosely scattered in an upward pattern. Compare the two scatter plots using FODS and explain which shows a stronger relationship and why.

10. The scatter plot below shows data for 8 high school basketball players: their average points per game and the number of wins their team recorded. Using all four elements of FODS, write a complete paragraph interpretation. Then identify the explanatory and response variables and explain why you assigned them that way.



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Interpreting Scatter Plots Using FODS — Answer Key

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Answer Key

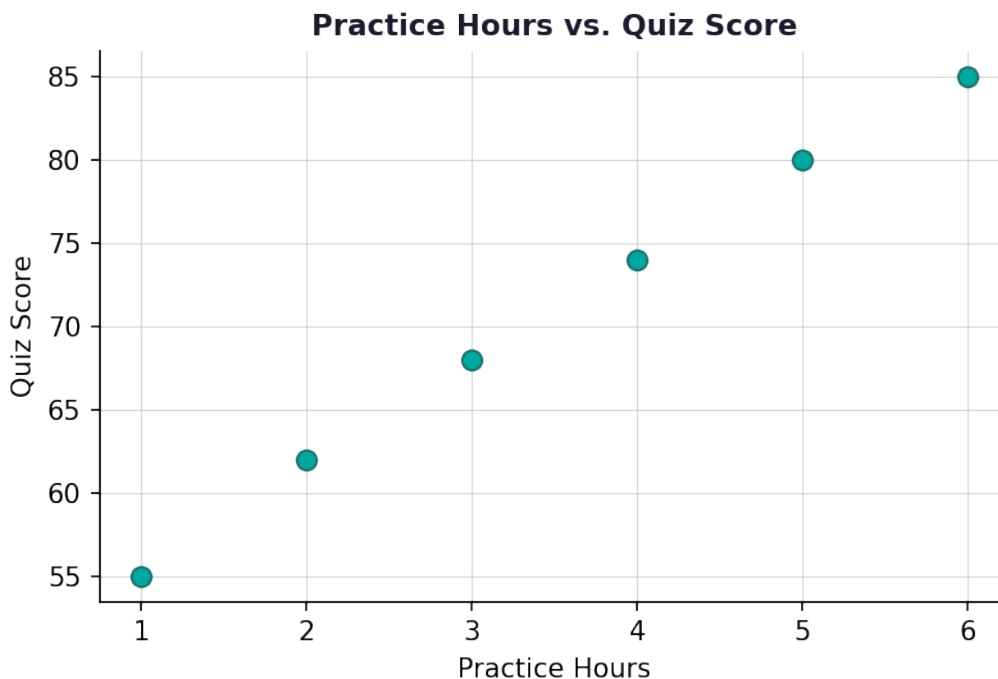
1. Answer: Form → D, Outlier → C, Direction → B, Strength → A

- Form describes the shape of the pattern — linear or nonlinear (D).
- Outlier is a point that does not follow the overall pattern (C).
- Direction tells whether the association is positive or negative (B).
- Strength describes how closely the points cluster together (A).

2. Answer: Positive direction

- Points moving from lower-left to upper-right indicate that as the explanatory variable increases, the response variable also increases.
- An increasing pattern corresponds to a positive direction (positive slope).

3. Answer: Positive direction; Linear form



- As practice hours increase, quiz scores also increase — this is a positive direction.
- The points follow a roughly straight-line pattern, so the form is linear.

4. Answer: Negative direction — as temperature increases, hot chocolate sales decrease.

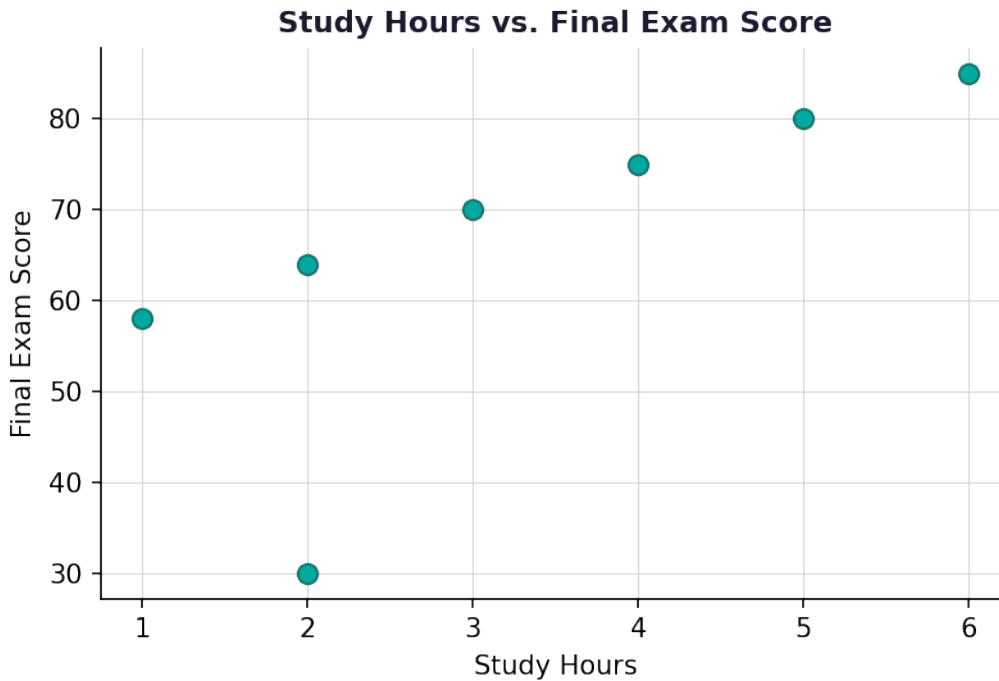
- Points moving from upper-left to lower-right mean as one variable increases, the other decreases.

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- In context: higher temperatures lead to fewer hot chocolate sales, which is a negative (inverse) association.

5. Answer: Yes, there is an outlier at approximately (2, 30). It deviates from the overall increasing pattern.

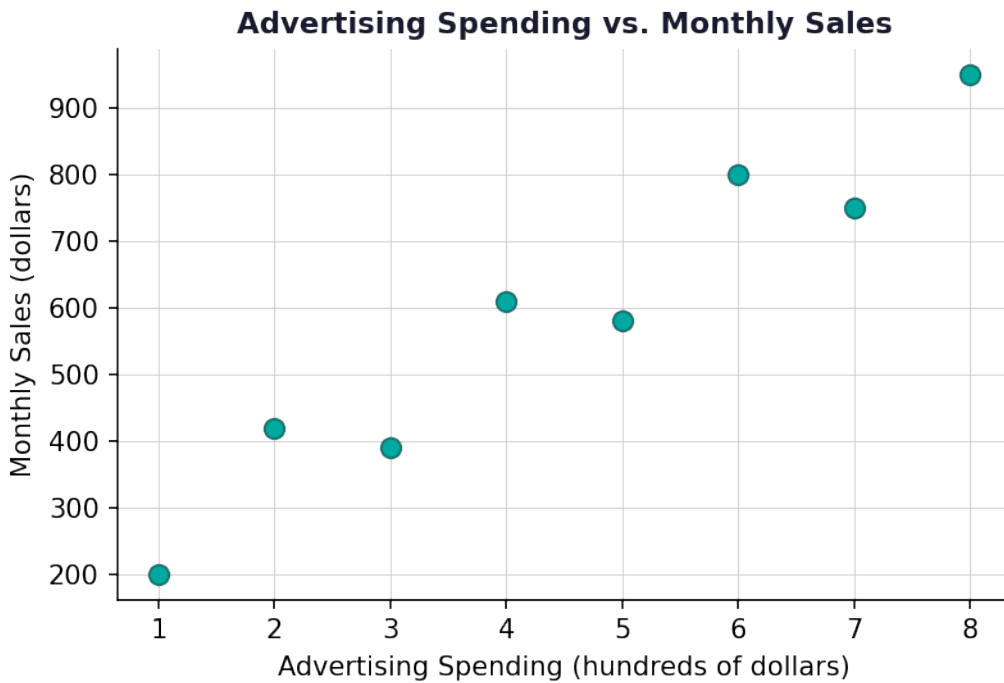


- Most points follow a positive linear trend from about 58 to 85 as study hours increase.
- The point at (2, 30) is far below the pattern of the other points and does not follow the trend.
- This point is an outlier because it deviates significantly from the overall formation.

6. Answer: Moderately strong positive relationship — points are fairly close to a linear trend but show some scatter.

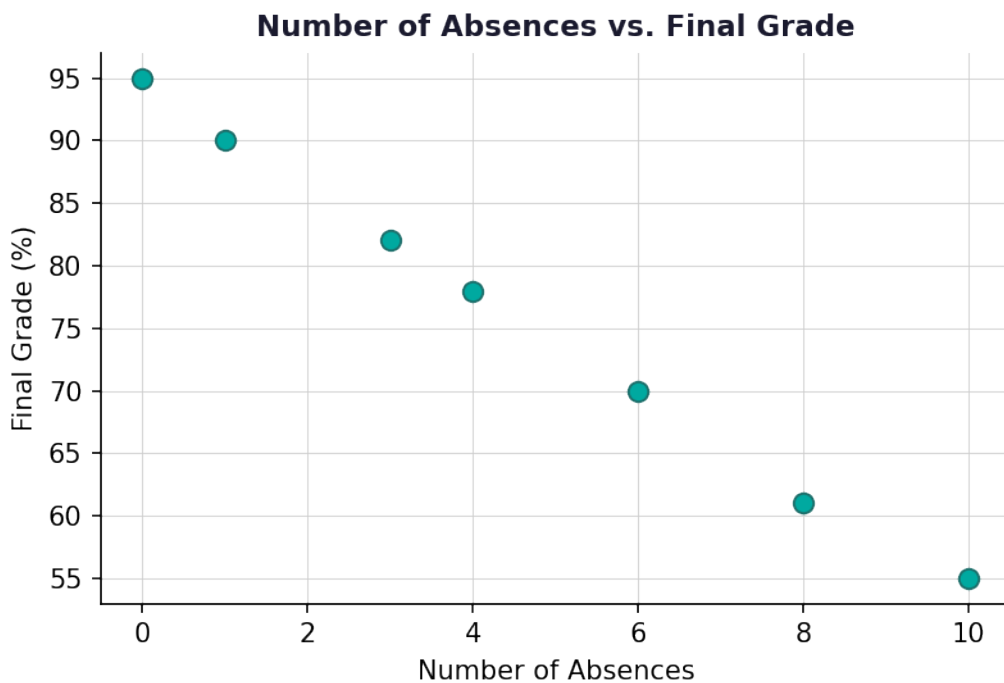
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- Strength is determined by how closely the points cluster around the overall pattern.
- The points generally increase but show some spread around the trend line.
- This indicates a moderately strong (fairly strong) positive linear relationship.

7. Answer: Form: Linear; Outlier: None; Direction: Negative; Strength: Strong



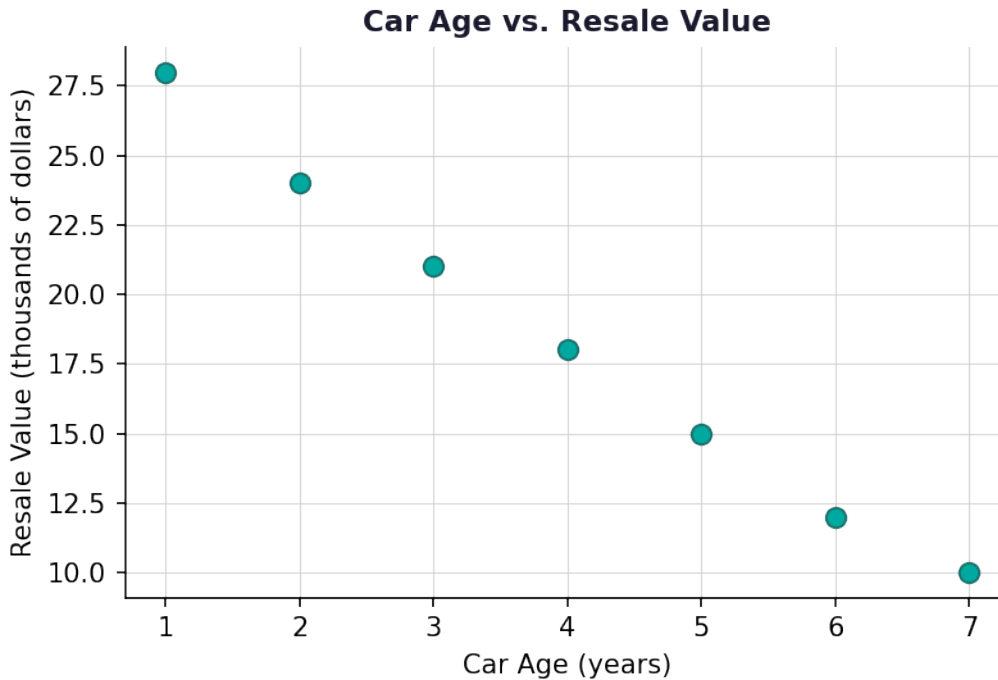
- Plot each ordered pair (absences, grade) on the scatter plot.

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- Form: The points follow a straight-line pattern — linear.
- Outlier: All points follow the trend closely — no outlier.
- Direction: As absences increase, grades decrease — negative direction.
- Strength: Points are tightly clustered around the trend — strong relationship.

8. Answer: The scatter plot shows a strong, negative, linear relationship between car age and resale value. As a car gets older, its resale value decreases. There are no apparent outliers in the data set.



- Form: Points follow a straight-line pattern — linear.
- Outlier: No points deviate from the overall trend — no apparent outlier.
- Direction: As car age increases, resale value decreases — negative direction.
- Strength: Points are tightly packed around the trend — strong relationship.
- Combine into a paragraph: 'The scatter plot shows a strong, negative, and linear relationship between a car's age and its resale value. There is no apparent outlier in this data set.'

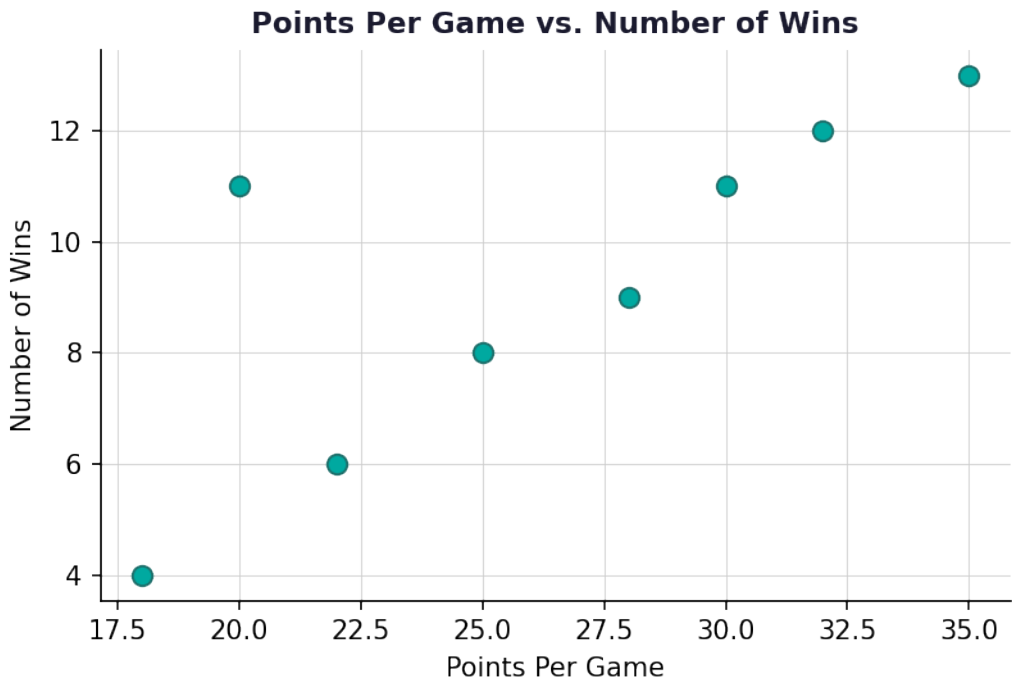
9. Answer: Both have a positive direction and linear form. Scatter Plot A has a strong relationship; Scatter Plot B has a weak relationship. Scatter Plot A is stronger because the points are closer together (less variability around the trend).

- For both plots: Form = Linear, Direction = Positive.
- Scatter Plot A: points are tightly clustered → Strong strength.
- Scatter Plot B: points are loosely scattered → Weak strength.
- Strength is determined by how close the dots are to each other relative to the overall pattern.
- Scatter Plot A shows the stronger relationship because its points deviate less from the trend line.

10. Answer: Explanatory variable: Points Per Game; Response variable: Number of Wins. The scatter plot shows a mostly strong, positive, linear relationship between points per game and number of wins. There is one potential outlier at approximately (20, 11), which deviates from the



overall pattern.



- Explanatory variable (x-axis): Points Per Game — this is the variable that may explain or influence wins.
- Response variable (y-axis): Number of Wins — this is the outcome we are trying to predict or explain.
- Form: Most points follow a straight-line pattern → Linear.
- Outlier: The point at approximately (20, 11) is above the general trend of the other points and may be considered an outlier.
- Direction: As points per game increase, number of wins generally increases → Positive direction.
- Strength: Most points cluster fairly closely around the trend (excluding the potential outlier) → Fairly strong relationship.
- Paragraph: 'The scatter plot shows a strong, positive, and linear relationship between a player's average points per game and the number of wins their team recorded. There is one potential outlier at approximately (20, 11) that deviates from the overall pattern of the data.'

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