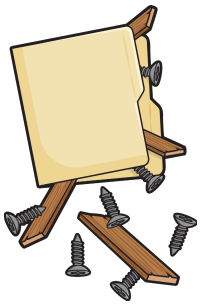
TOPIC: MEASURING COST BEHAVIOR

Cost Behavior Analysis

- Businesses must determine how their _____ behave.
  - Need to estimate cost structure, and the components of any _____ costs.

Account Analysis	Scatter Plot	High-Low Method	Regression Analysis

- Managers use experience or _____ to determine the cost behavior of an account.



EXAMPLE

The manager of Tylor's Tickets is estimating the cost behavior of the costs of the theater's concession stand. Use the account analysis approach to assign each cost as fixed, mixed or variable.

Cost	Type
Manager's monthly salary	
Popcorn kernels	
Electricity	
Butter	

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PRACTICE

Which of the following is most likely a variable cost for a business that makes teddy bears?

a) Management at the factory.

b) Industrial Sewing Machine.

c) Cotton fluff.

d) Janitorial Staff.

PRACTICE

The table below represents the maintenance cost of a factory at various levels of output. How would you classify this cost?

Production Volume	Total Cost
0 Units	$300,000
1,000,000 Units	$500,000
2,000,000 Units	$700,000
3,000,000 Units	$900,000
4,000,000 Units	$1,100,000

a) Fixed.

b) Variable.

c) Mixed.

d) There is not enough information to determine the cost behavior.

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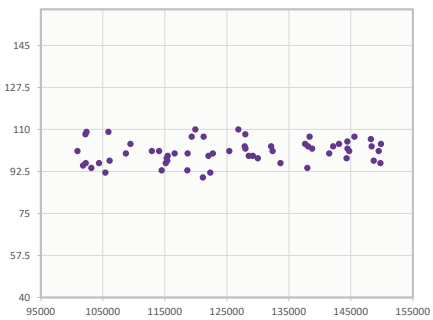
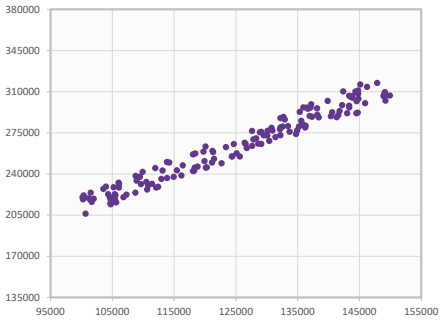
Scatter Plot

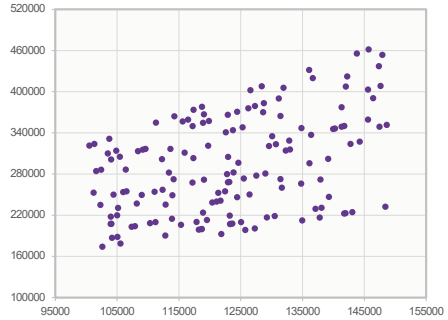
- Businesses use scatter _____ (plots) to determine the cost behavior of accounts.
  - Scatter plots display the cost and quantity produced on the same _____.



Fixed | Variable | Mixed



Fixed | Variable | Mixed



Fixed | Variable | Mixed

- The shape of the data (flat vs sloped) helps identify if the cost is fixed or variable.
- Pay attention to how tightly grouped the data is.

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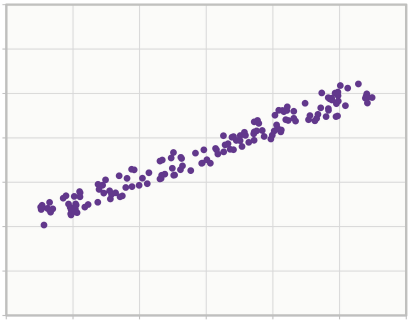
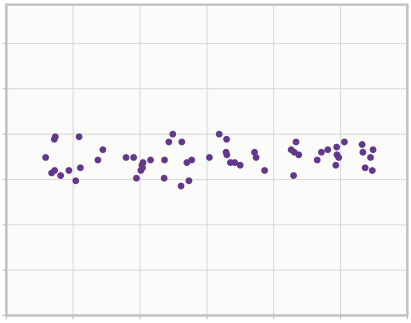
EXAMPLE

Which of the following graphs most likely represents a fixed cost?

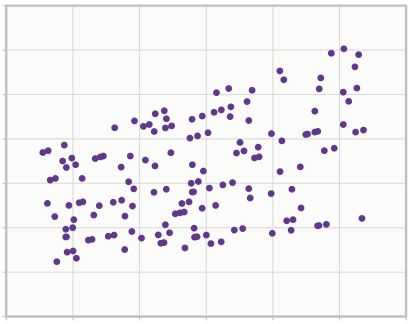
a)



c)



b)



d) None of the above.

PRACTICE

Fill in the blanks: Scatterplots are useful to identify _____, but more advanced methods are needed to _____.

a) which costs are fixed vs variable/mixed; analyze the components of mixed costs.

b) which costs are fixed vs variable/mixed; verify the cost behavior.

c) the slope and intercept of the cost; analyze the components of mixed costs.

d) the slope and intercept of the cost; verify the cost behavior.

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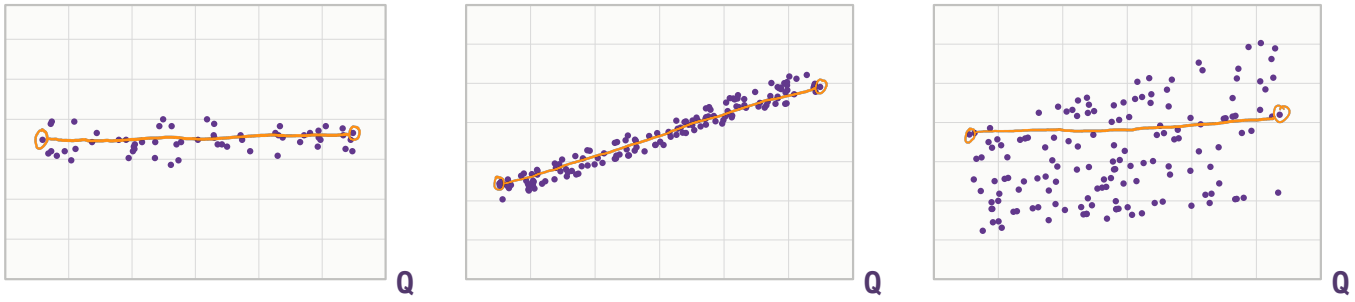
High-Low Method

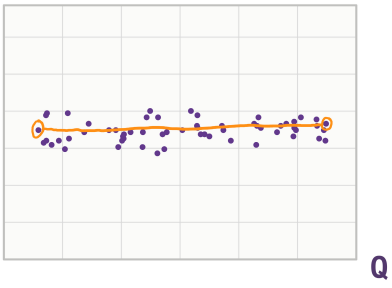
- Ideally, businesses could _____ the slope of their cost graph.
  - The **High-Low Method** uses the _____ and _____ quantity points to estimate the slope.

$$\text{Variable Cost} = \frac{\textit{Change in Cost}}{\textit{Change in Activity}}$$

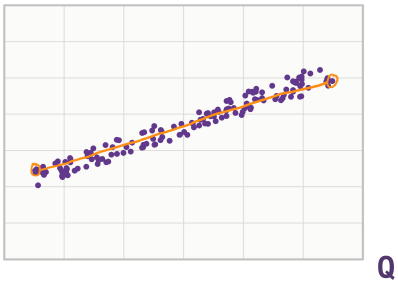


EXAMPLE

For each of the following scatterplots, calculate the average variable cost per unit.



Q	Total Cost
97,000	$102,500
152,000	$103,500



Q	Total Cost
97,000	$220,000
152,000	$330,000

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PRACTICE

The high-low method uses which of the following as its high point?

a) The point with the highest total cost.

b) The point with the highest average cost.

c) The point with the highest level of activity .

d) The point with the highest profit.

PRACTICE

Bill's Basketballs identifies the following as the following measurements of their rubber expenses at their highest-quantity and lowest-quantity production points. Calculate the variable cost per unit of rubber for Bill's Basketballs using the high-low method.

Basketballs produced	Total Variable Cost
21,250 basketballs	$37,187.50
33,250 basketballs	$58,187.50

a) $1.03 per unit

b) $0.63 per unit

c) $1.75 per unit

d) $3.50 per unit

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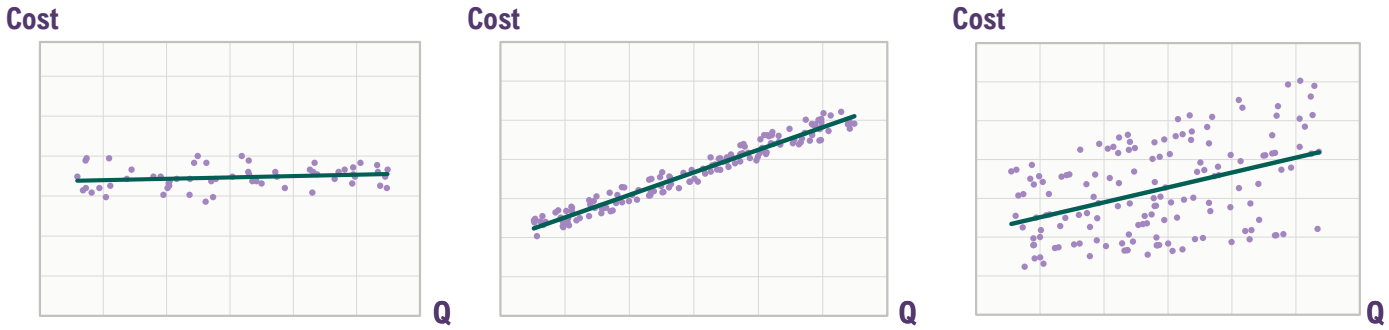
Regression Analysis

- **Regression Analysis** is a statistical technique to estimate the _____ that best fits data.

$$Y = bX + a$$

Regression models minimize the distance between the data-points and the estimated line.



- The results of a **Regression** include a measure of how well the equation fits the data: _____
  - R^2 ranges from 1 (perfect fit) to 0 (no fit).

EXAMPLE

The table below provides the results of a regression to estimate the cost behavior of one of Tylor's Tickets' costs. What is the cost equation for this cost, and what does the R-squared tell us about the results?

Regression Analysis	
Variable	**Coefficient**
Constant	11096
Cost	2.0182

$R^2 = 0.96$

PRACTICE

Which of the following R^2 values would indicate the best fitting equation? (ignore results that are impossible)

a) 0.23

b) 0.55

c) 0.89

d) 1.22

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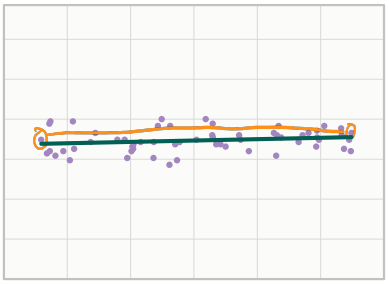
Comparing Cost Analysis Methods

- The **High-Low Method** is simpler and requires less _____ than **Regression Analysis,** but is less accurate when facing certain data concerns.



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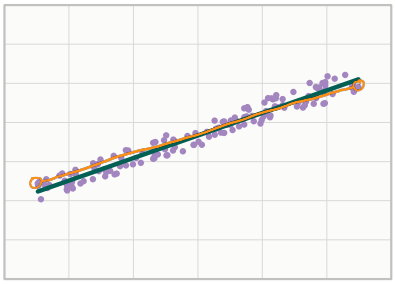

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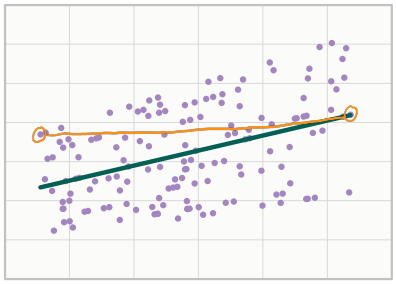

Q

- Outliers in the highest- or lowest-activity point can significantly skew the **High-Low Method**.
- **Regression Analysis** is generally _____ in situations where simplicity is not essential.

PRACTICE

Which of the following statements is correct?

a) Regressions require less data than the High-Low method.

b) Regressions are more likely to be skewed by an outlier than the High-Low method.

c) Regressions require less complex calculations than the High-Low method.

d) Regressions reduce the error of estimates compared to the High-Low method.