

# Cost is the key in managerial accounting

- There are many types of costs, and these costs are classified differently according to the immediate needs of management.
- For example, managers may want cost data to prepare external financial reports (historical cost), to prepare planning budgets, or to make decisions (future cost).
- Each different use of cost data demands a different classification and definition of costs.

# Summary of the Types of Cost Classifications

**Assigning Costs to Cost Objects**

**Predicting Cost Behavior**

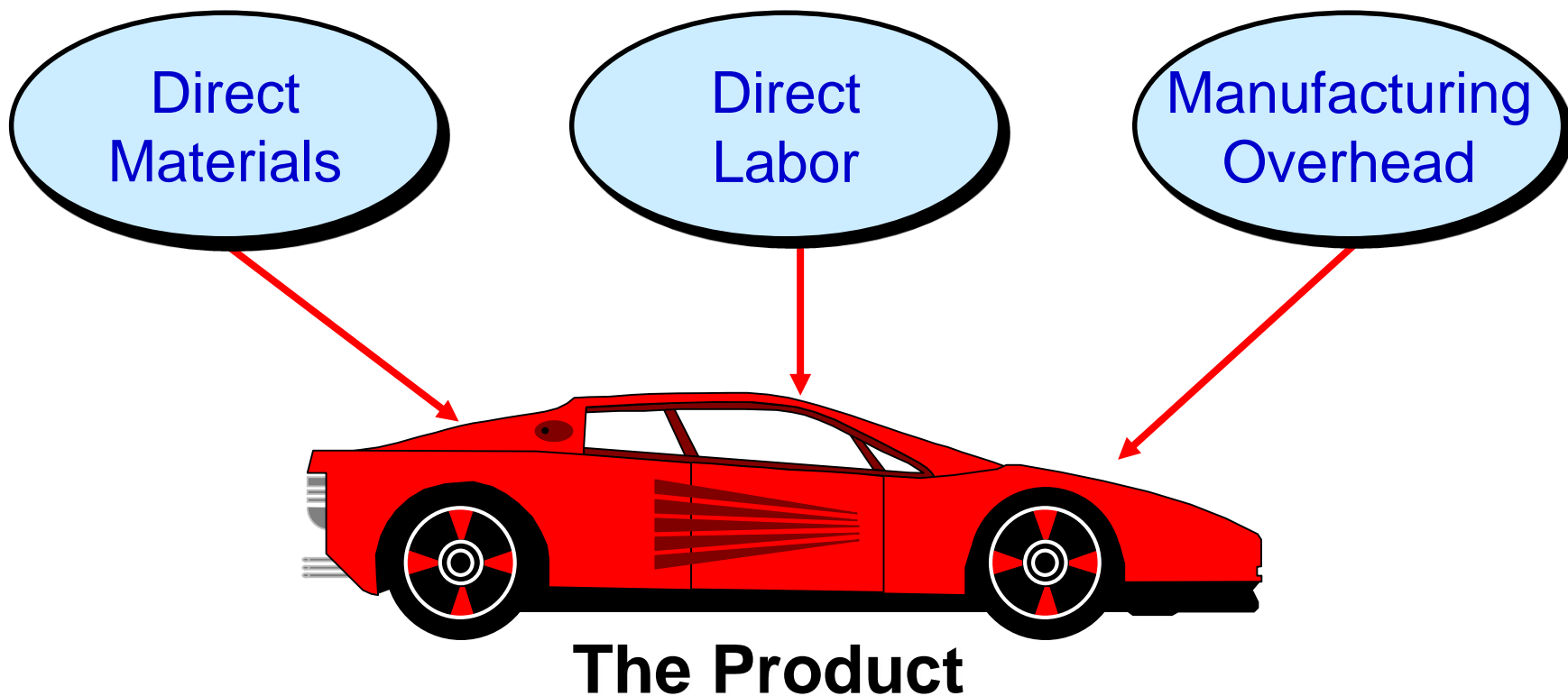
**Financial Reporting**

**Making Business Decisions**

# Learning Objective 1-2

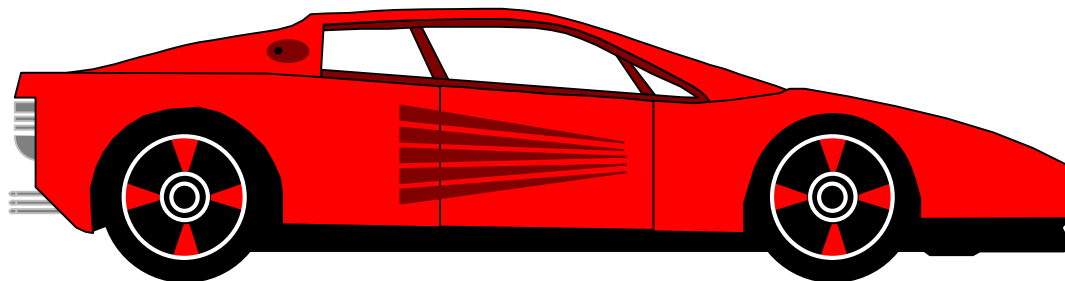
**Identify and give examples of each of the three basic manufacturing cost categories.**

# Classifications of Manufacturing Costs



# Direct Materials

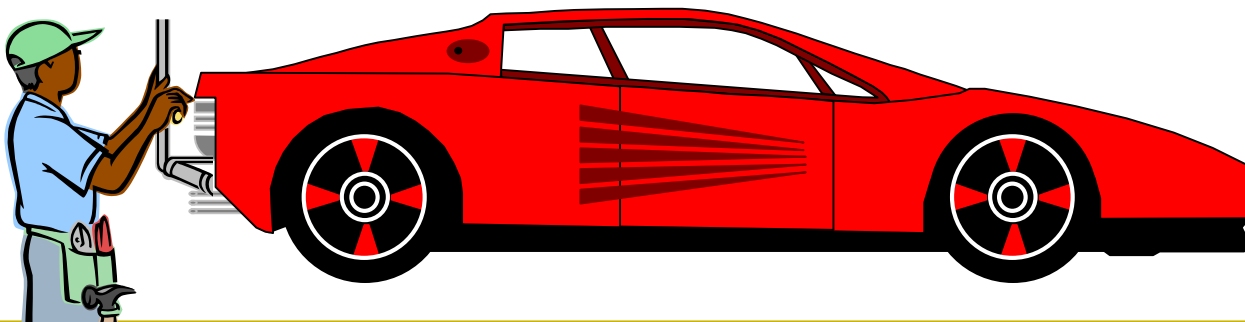
Raw materials that become an integral part of the product and that can be conveniently traced directly to it.



**Example: A radio installed in an automobile**

# Direct Labor

Those labor costs that can be easily traced to individual units of product.



**Example: Wages paid to automobile assembly workers**

# Manufacturing Overhead

Manufacturing costs that **cannot** be easily traced directly to specific units produced.

**Examples: Indirect materials and indirect labor**

Materials used to support the production process.

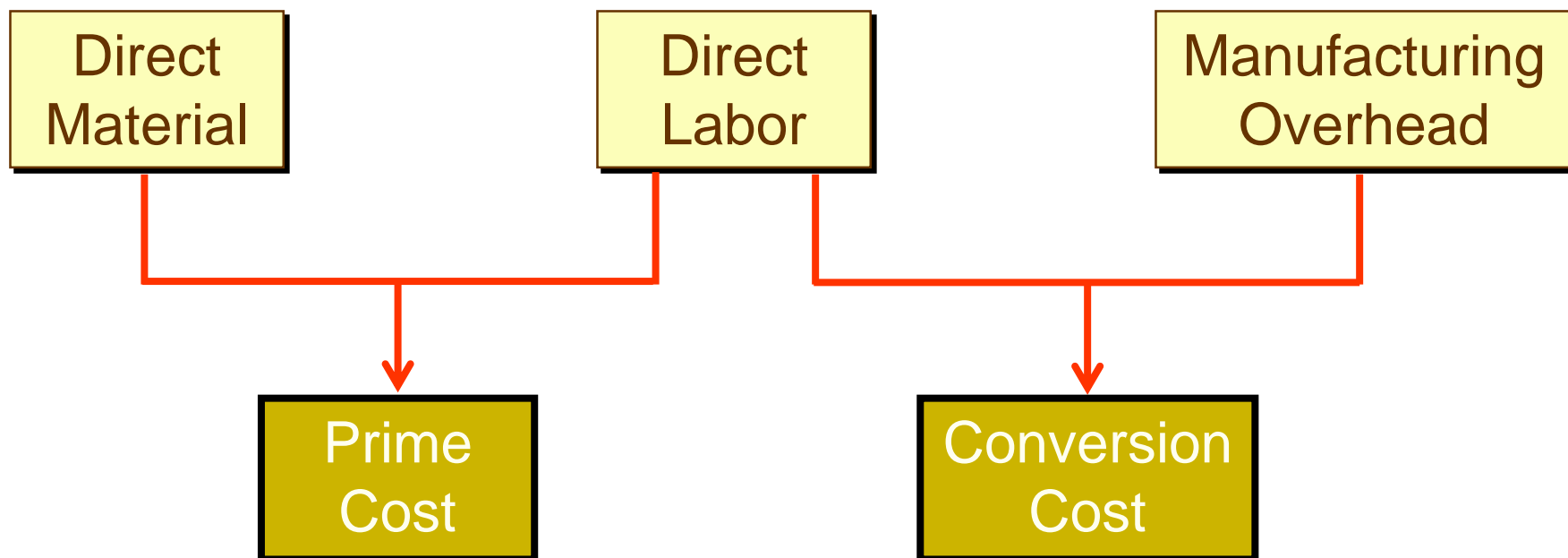
Examples: lubricants and cleaning supplies used in the automobile assembly plant.

Wages paid to employees who are not directly involved in production work.

Examples: maintenance workers, janitors, and security guards.

# Prime Costs and Conversion Costs

**Manufacturing costs are often classified as follows:**





# Nonmanufacturing Costs

## Selling Costs



**Costs necessary to secure the order and deliver the product. Selling costs can be either direct or indirect costs.**

## Administrative Costs



**All executive, organizational, and clerical costs. Administrative costs can be either direct or indirect costs.**



## Learning Objective 1-1

**Understand cost classifications used for assigning costs to cost objects: direct costs and indirect costs.**

A **cost object** is anything for which cost data are desired—including products, customers, jobs, and organizational subunits.

# Assigning Costs to Cost Objects

## Direct costs

- Costs that can be easily and conveniently traced to a unit of product or other cost object.
- Examples:

## Indirect costs

- Costs that cannot be easily and conveniently traced to a unit of product or other cost object.
- Example:



## Common costs

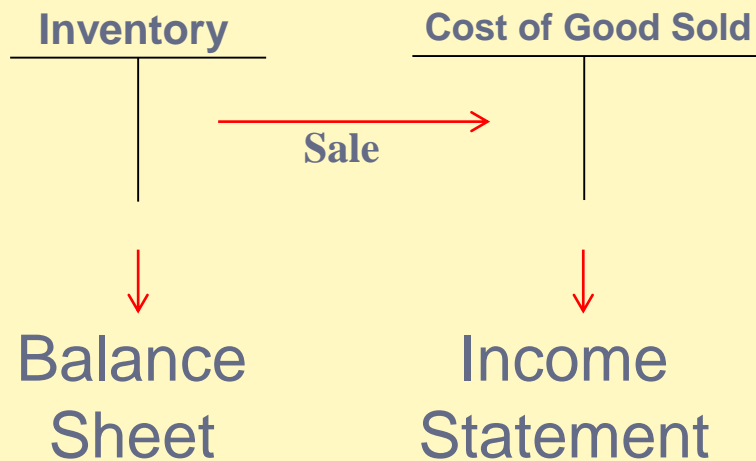
Indirect costs incurred to support a number of cost objects. These costs cannot be traced to any individual cost object.

# Learning Objective 1-3

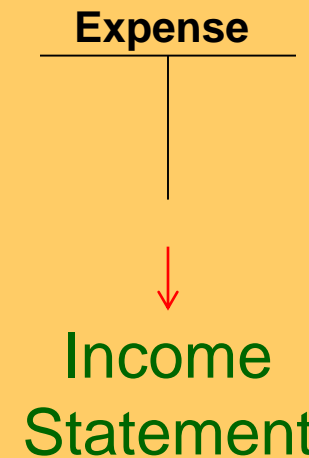
**Understand cost classifications used to prepare financial statements: product costs and period costs.**

# Cost Classifications for Preparing Financial Statements

**Product costs** include direct materials, direct labor, and manufacturing overhead.



**Period costs** include all selling costs and administrative costs.



## Quick Check ✓

Which of the following costs would be considered a period rather than a product cost in a manufacturing company?

- A. Manufacturing equipment depreciation.
- B. Property taxes on corporate headquarters.
- C. Direct materials costs.
- D. Electrical costs to light the production facility.
- E. Sales commissions.

## Learning Objective 1-4

**Understand cost classifications used to predict cost behavior: variable costs, fixed costs, and mixed costs.**

# Cost Classifications for Predicting Cost Behavior



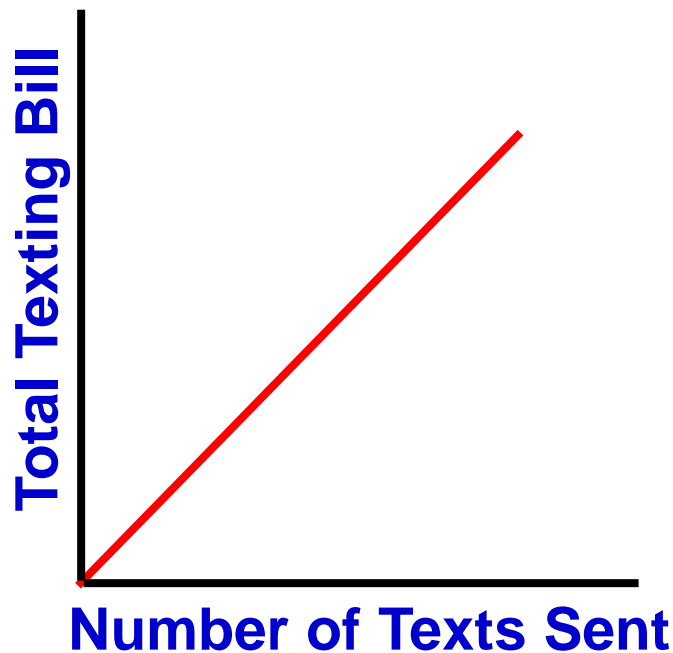
Cost behavior refers to how a cost will react to changes in the level of activity. The most common classifications are:

- **Variable costs.**
- **Fixed costs.**
- **Mixed costs.**



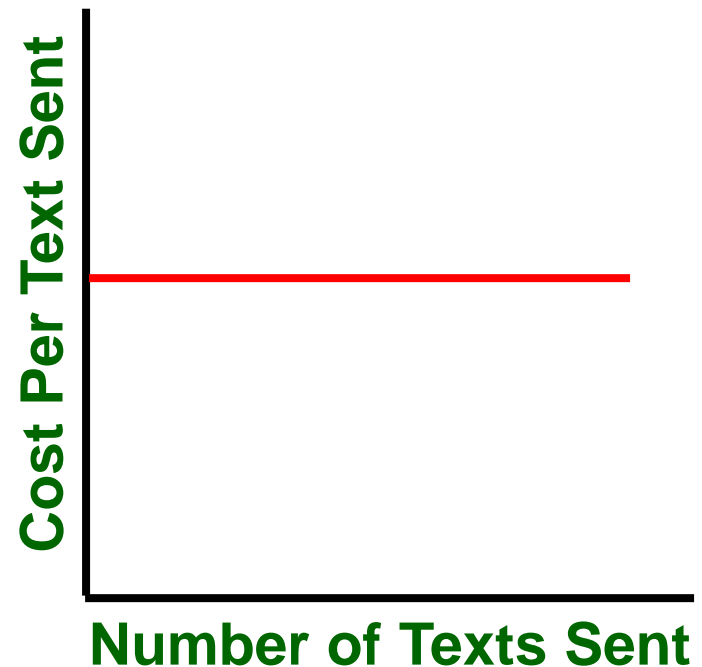
# Variable Cost

A cost that varies, in total, in direct proportion to changes in the level of activity. Your **total texting bill** may be based on how many texts you send.

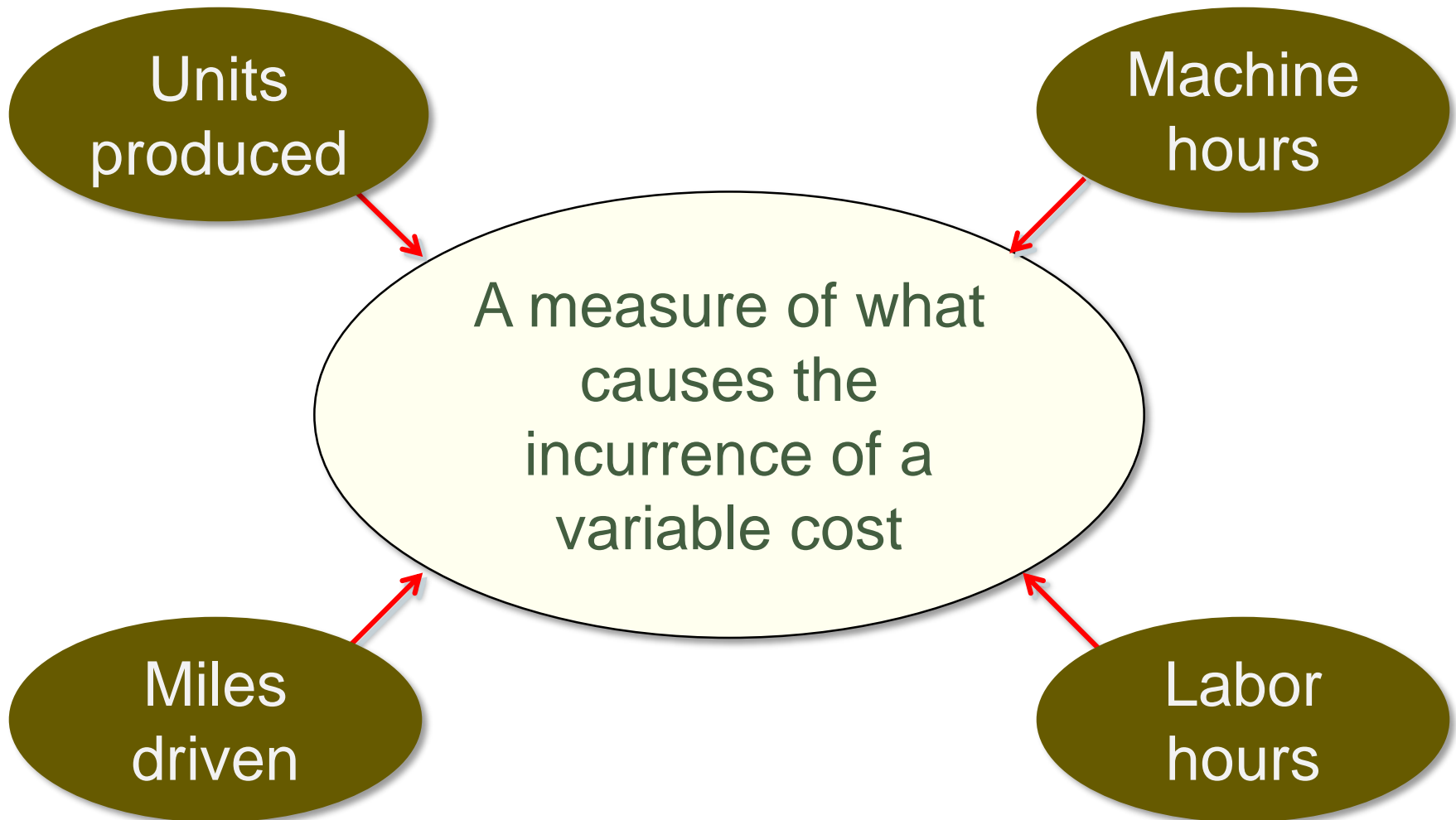


# Variable Cost Per Unit

However, variable cost per unit is constant. The **cost per text** sent may be constant at 5 cents per text message.

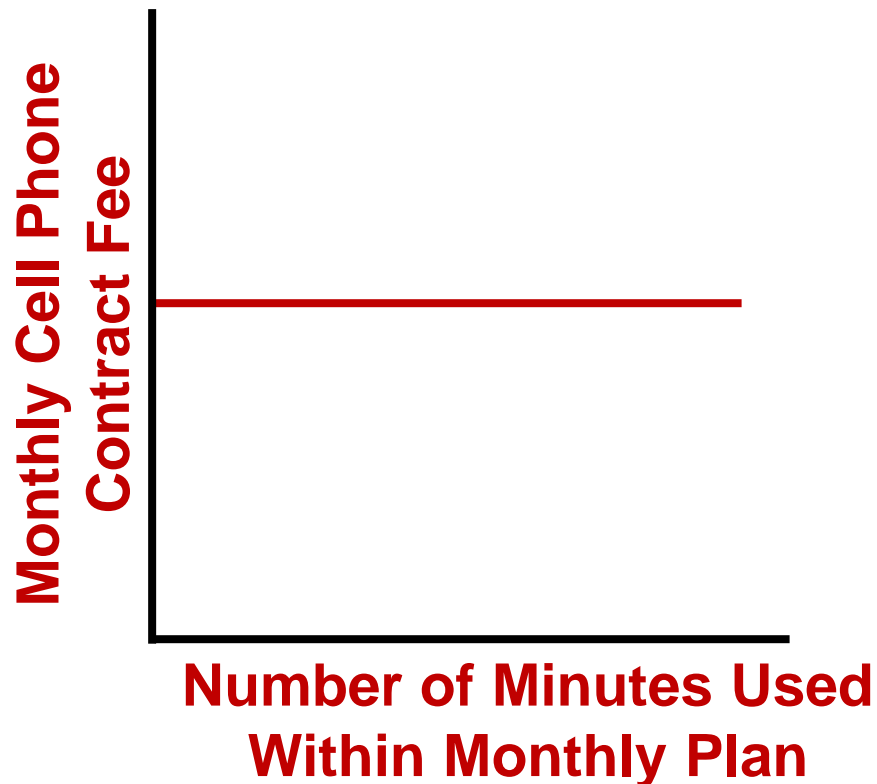


# The Activity Base (Cost Driver)



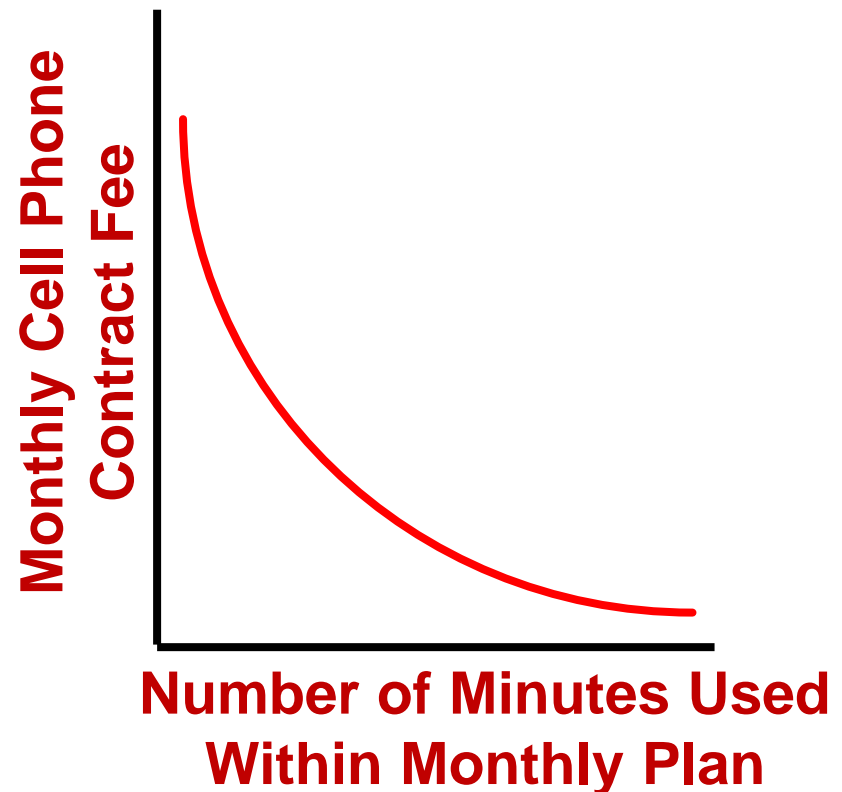
# Fixed Cost

A cost that remains constant, in total, regardless of changes in the level of the activity. Your monthly contract fee for your cell phone may be fixed for the number of monthly minutes in your contract.



# Fixed Cost Per Unit

However, if expressed on a per unit basis, the average fixed cost per unit varies inversely with changes in activity. The average fixed cost **per cell phone call made** decreases as more calls are made.



# Types of Fixed Costs

## Committed

Long-term, cannot be significantly reduced in the short term.



## Examples

- Depreciation on Buildings Equipment
- Real Estate Taxes

## Discretionary

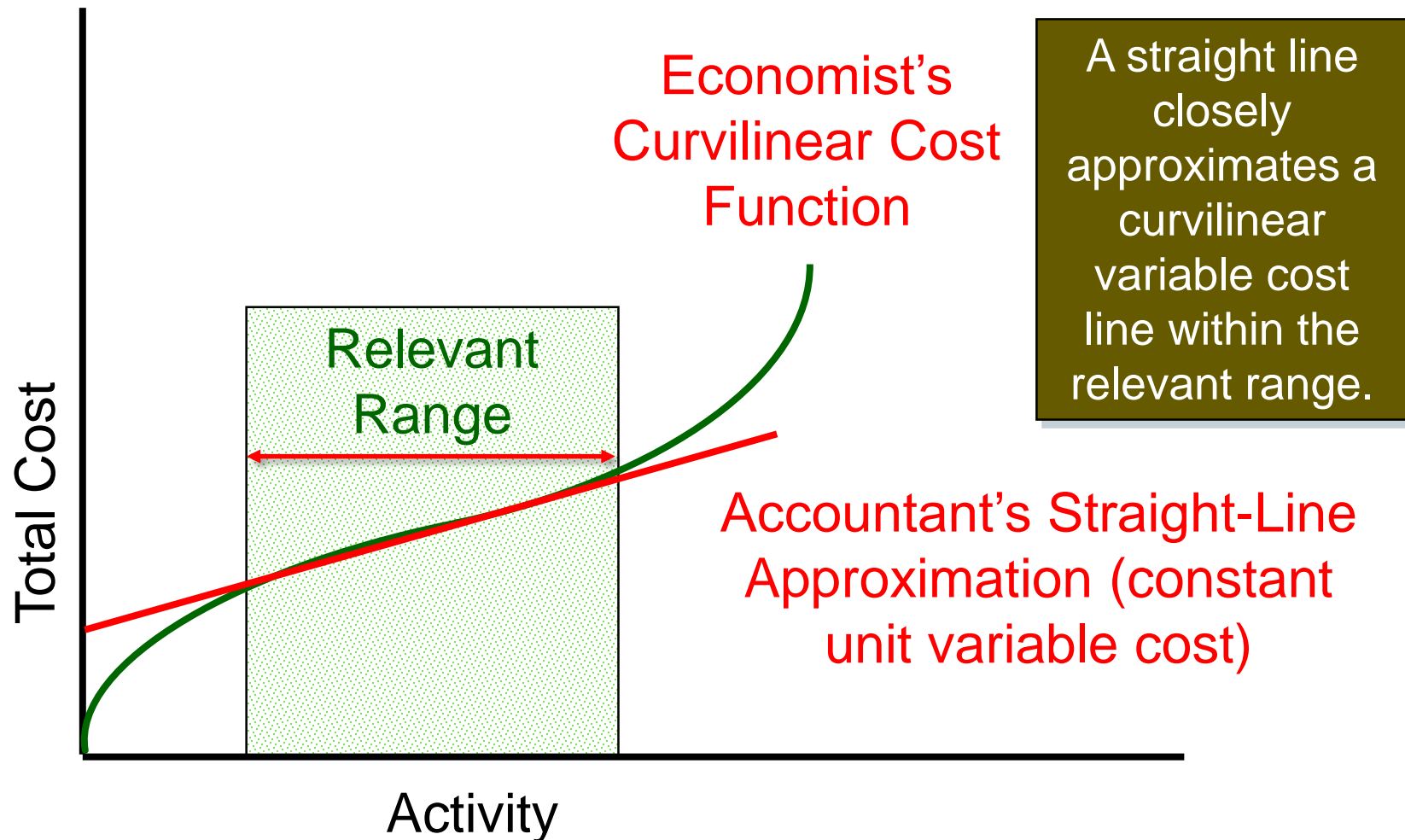
May be altered in the short term by current managerial decisions



## Examples

- Advertising
- Research and Development

# The Linearity Assumption and the Relevant Range



# Fixed Costs and the Relevant Range

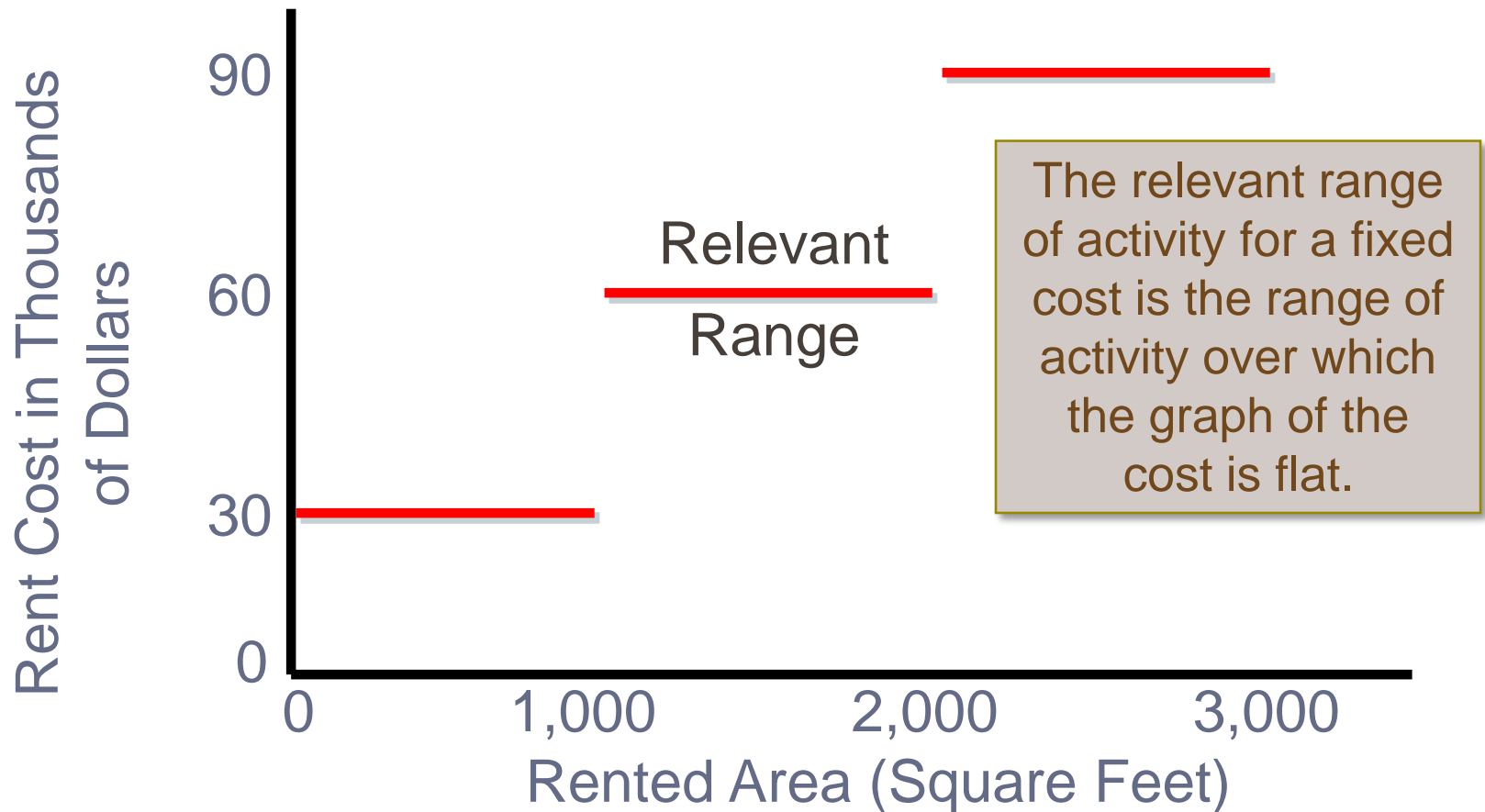
The relevant range of activity pertains to fixed cost as well as variable costs. For example, assume office space is available at a rental rate of \$30,000 per year in increments of 1,000 square feet.

Fixed costs would increase in a step fashion at a rate of \$30,000 for each additional 1,000 square feet.





# Fixed Costs and the Relevant Range



# Cost Classifications for Predicting Cost Behavior

<b>Behavior of Cost (within the relevant range)</b>		
<b>Cost</b>	<b>In Total</b>	<b>Per Unit</b>
<b>Variable</b>	<b>Total variable cost Increase and decrease in proportion to changes in the activity level.</b>	<b>Variable cost per unit remains constant.</b>
<b>Fixed</b>	<b>Total fixed cost is not affected by changes in the activity level within the relevant range.</b>	<b>Fixed cost per unit decreases as the activity level rises and increases as the activity level falls.</b>

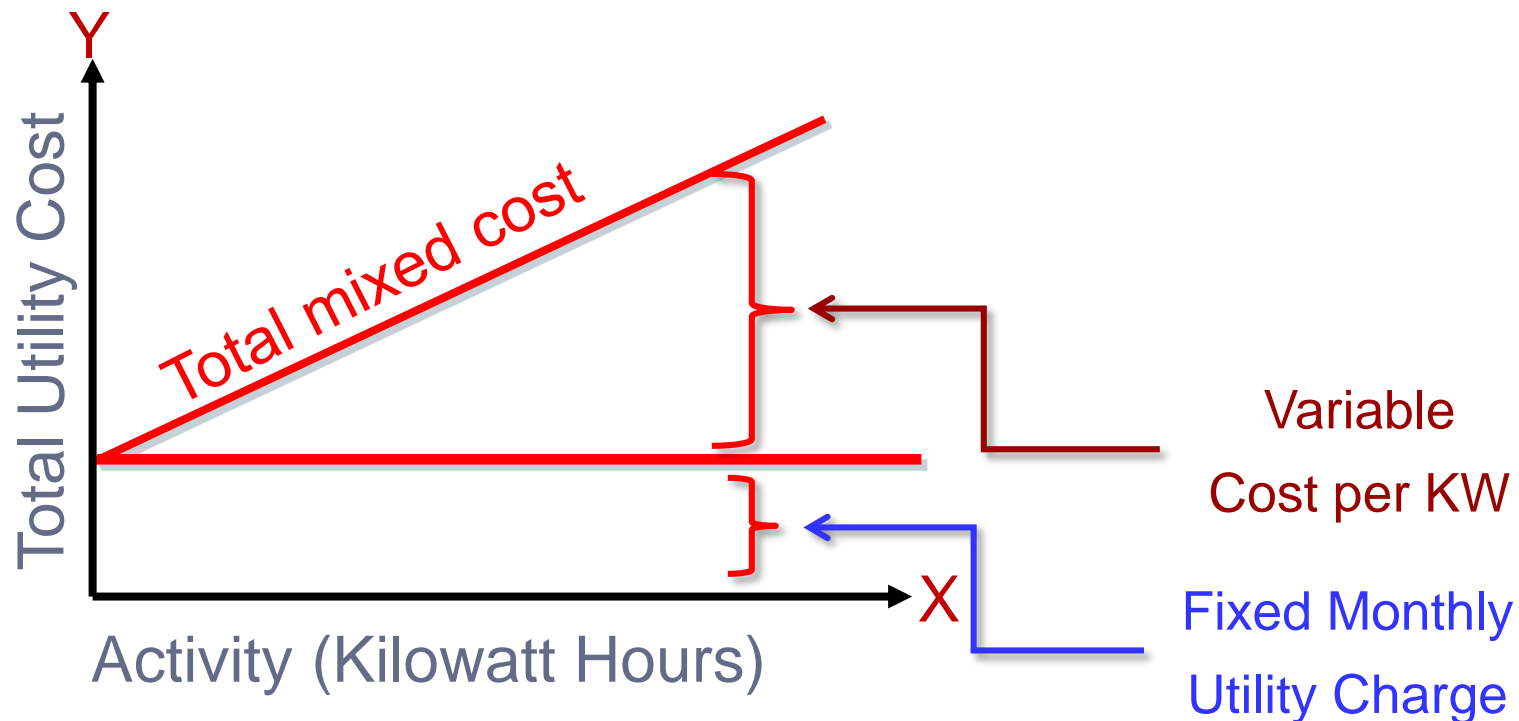
## Quick Check ✓

Which of the following costs would be variable with respect to the number of cones sold at a Baskins & Robbins shop? (There may be more than one correct answer.)

- A. The cost of lighting the store.
- B. The wages of the store manager.
- C. The cost of ice cream.
- D. The cost of napkins for customers.

# Mixed Costs

A mixed cost contains both variable and fixed elements. Consider the example of utility cost.

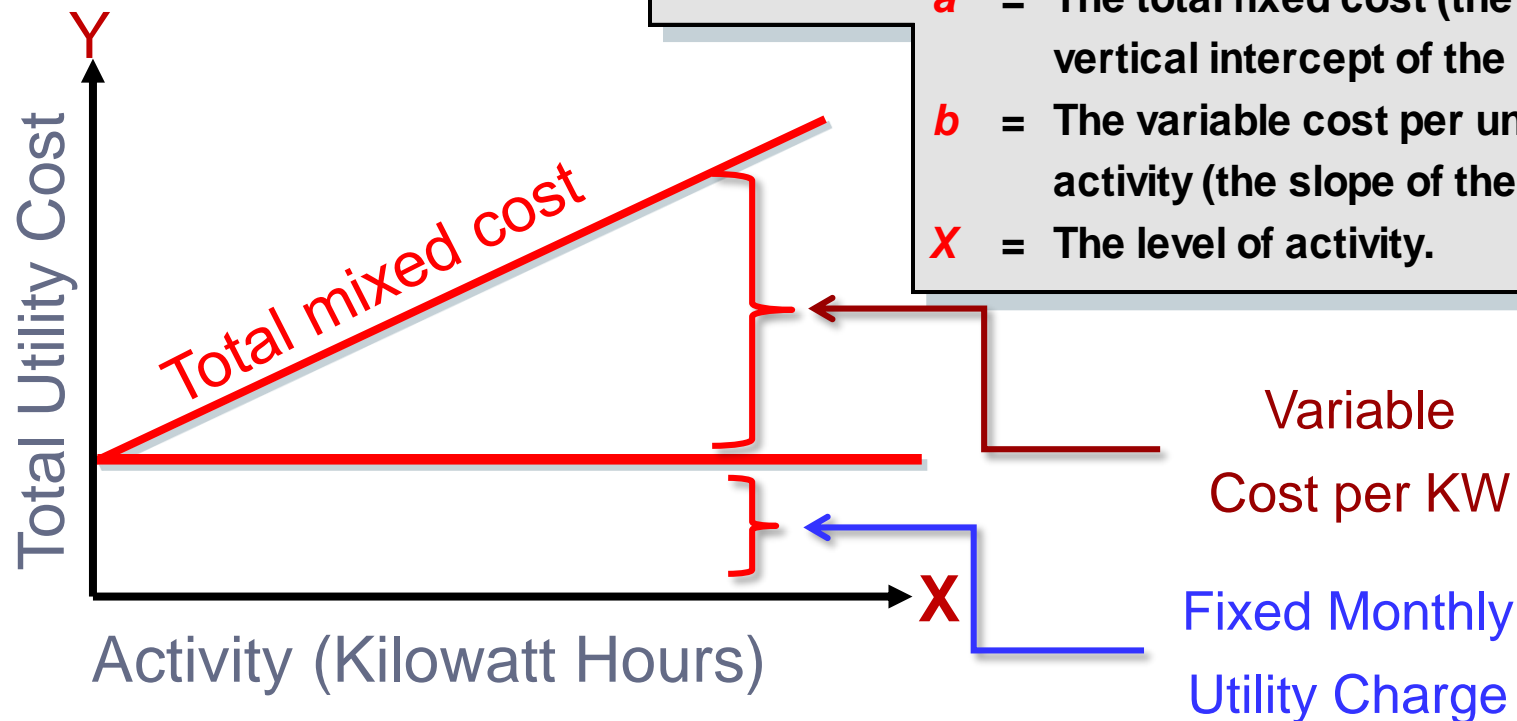


# Mixed Costs

The total mixed cost line can be expressed as an equation:  $Y = a + bX$

Where:

- $Y$  = The total mixed cost.
- $a$  = The total fixed cost (the vertical intercept of the line).
- $b$  = The variable cost per unit of activity (the slope of the line).
- $X$  = The level of activity.



# Mixed Costs – An Example

If your fixed monthly utility charge is \$40, your variable cost is \$0.03 per kilowatt hour, and your monthly activity level is 2,000 kilowatt hours, what is the amount of your utility bill?

$$Y = a + bX$$

$$Y = \$40 + (\$0.03 \times 2,000)$$

$$Y = \mathbf{\$100}$$

# Analysis of Mixed Costs

## Account Analysis and the Engineering Approach



In **account analysis**, each account is classified as either variable or fixed based on the analyst's knowledge of how the account behaves.



The **engineering approach** classifies costs based upon an industrial engineer's evaluation of production methods, and material, labor, and overhead requirements.

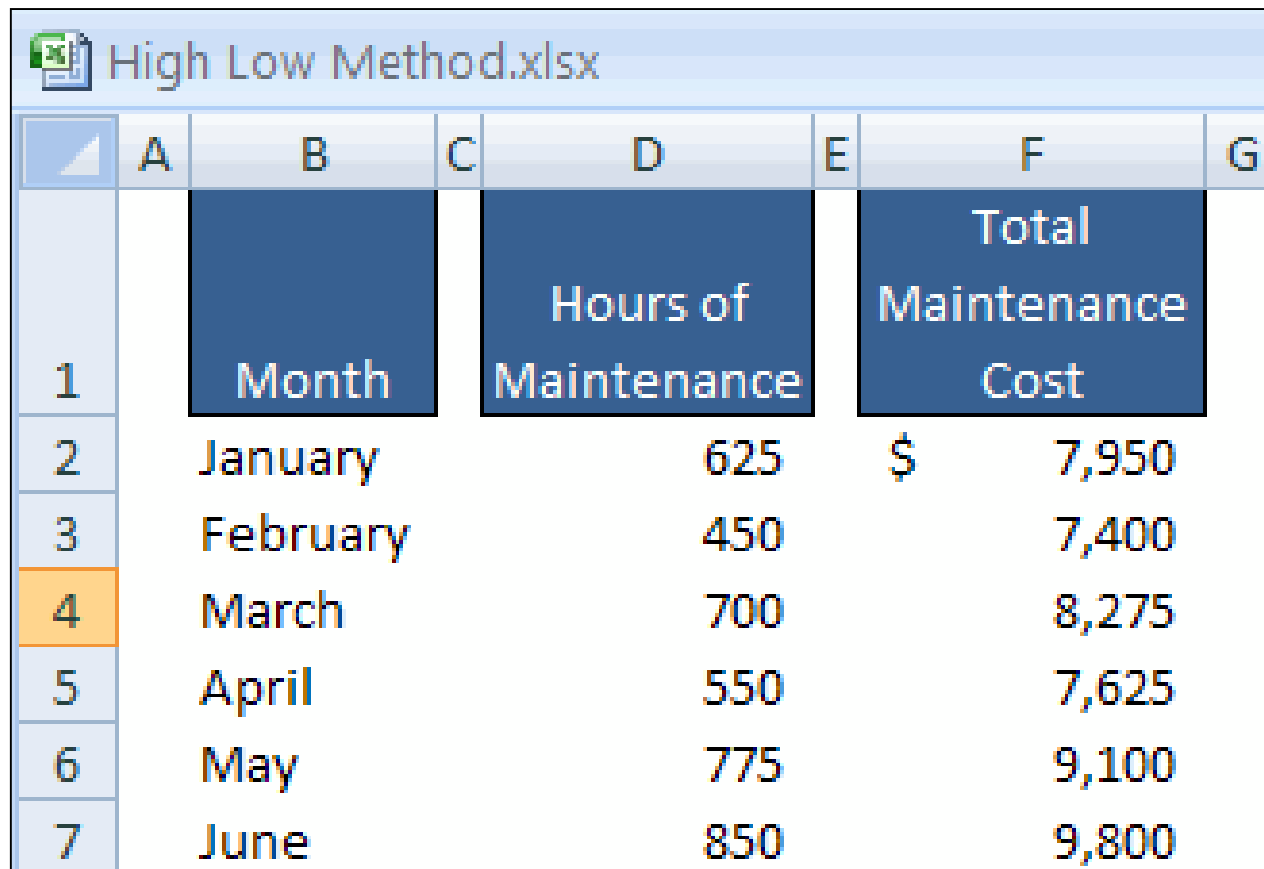
## Learning Objective 1-5

**Analyze a mixed cost using a scattergraph plot and the high-low method.**



# Scattergraph Plots – An Example

Assume the following hours of maintenance work and the total maintenance costs for six months.

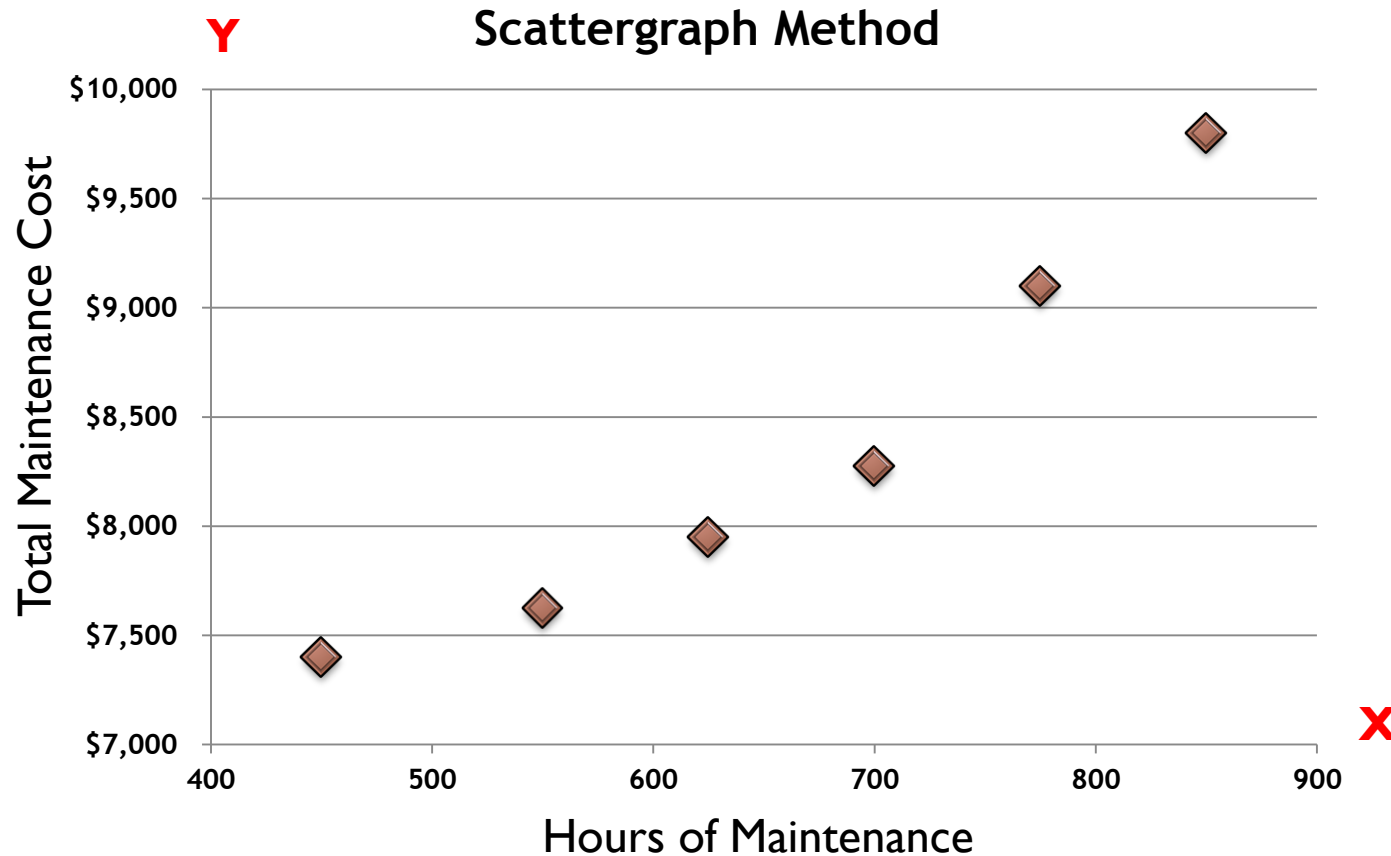


The image shows a screenshot of an Excel spreadsheet titled "High Low Method.xlsx". The spreadsheet contains a table with 7 rows and 7 columns (A-G). The first row (row 1) is a header row with the following labels: A: Month, B: Hours of Maintenance, C: Total Maintenance Cost. The subsequent rows (rows 2-7) contain data for the months of January through June. The data points are: January (625 hours, \$7,950), February (450 hours, \$7,400), March (700 hours, \$8,275), April (550 hours, \$7,625), May (775 hours, \$9,100), and June (850 hours, \$9,800). The cell for March (row 4, column B) is highlighted in orange.

	A	B	C	D	E	F	G
1		Month		Hours of Maintenance		Total Maintenance Cost	
2		January		625		\$ 7,950	
3		February		450		7,400	
4		March		700		8,275	
5		April		550		7,625	
6		May		775		9,100	
7		June		850		9,800	

# The Scattergraph Method

Plot the data points on a graph (Total Cost  $Y$  “dependent variable” vs. Activity  $X$  “independent variable”).



# The High-Low Method – An Example

	A	B	C	D	E	F	G
						Total	
		Month		Hours of		Maintenance	
				Maintenance		Cost	
1							
2		January		625	\$	7,950	
3		February		450		7,400	
4		March		700		8,275	
5		April		550		7,625	
6		May		775		9,100	
7		June		850		9,800	
8		High		850	\$	9,800	
9		Low		450		7,400	
10		Change		400	\$	2,400	
11							

The *variable cost per hour* of maintenance is equal to the change in cost divided by the change in hours.

$$\frac{\$2,400}{400} = \$6.00/\text{hour}$$

# The High-Low Method – An Example

	A	B	C	D	E	F	G
				Hours of Maintenance		Total Maintenance Cost	
1		Month					
8		High		850		\$ 9,800	
9		Low		450		7,400	
10		Change		400		\$ 2,400	
11							

**Total Fixed Cost = Total Cost – Total Variable Cost**

**Total Fixed Cost = \$9,800 – (\$6/hour × 850 hours)**

**Total Fixed Cost = \$9,800 – \$5,100**

**Total Fixed Cost = \$4,700**

# The High-Low Method – An Example

High Low Method.xlsx							
	A	B	C	D	E	F	G
				Hours of Maintenance		Total Maintenance Cost	
1		Month					
8		High		850		\$ 9,800	
9		Low		450		7,400	
10		Change		400		\$ 2,400	
11							

The Cost Equation for Maintenance

$$Y = \$4,700 + \$6.00X$$

## Quick Check ✓

Sales salaries and commissions are \$10,000 when 80,000 units are sold, and \$14,000 when 120,000 units are sold. Using the high-low method, what is the **variable** portion of sales salaries and commission?

- a. \$0.08 per unit
- b. \$0.10 per unit
- c. \$0.12 per unit
- d. \$0.125 per unit

## Quick Check ✓

Sales salaries and commissions are \$10,000 when 80,000 units are sold, and \$14,000 when 120,000 units are sold. Using the high-low method, what is the **fixed** portion of sales salaries and commissions?

- a. \$ 2,000
- b. \$ 4,000
- c. \$10,000
- d. \$12,000

## Learning Objective 1-6

**Prepare income statements for a merchandising company using the traditional and contribution formats.**



# The Traditional and Contribution Formats

## Comparison of the Contribution Income Statement with the Traditional Income Statement

Traditional Format		Contribution Format	
Sales	\$ 100,000	Sales	\$ 100,000
Cost of goods sold	70,000	<b>Variable expenses</b>	60,000
Gross margin	\$ 30,000	Contribution margin	\$ 40,000
Selling & admin. expenses	20,000	<b>Fixed expenses</b>	30,000
Net operating income	\$ 10,000	Net operating income	\$ 10,000

Used primarily for  
external reporting.

Used primarily by  
management.

Example: Cherokee Inc. is a merchandiser that provided the following information:

- Number of units sold 10,000
- Selling price per unit \$ 40
- Variable selling expense per unit \$ 3
- Variable administrative expense per unit \$ 2
- Total fixed selling expense \$ 40,000
- Total fixed administrative expense \$ 30,000
- Beginning merchandise inventory \$ 22,000
- Ending merchandise inventory \$ 32,000
- Merchandise purchases \$ 180,000





# Uses of the Contribution Format

The contribution income statement format is used as an internal planning and decision-making tool.

We will use this approach for:

1. Cost-volume-profit analysis (Chapter 5).
2. Budgeting (Chapter 7).
3. Segmented reporting of profit data (Chapter 6).
4. Special decisions such as pricing and make-or-buy analysis (Chapter 10).

## Learning Objective 1-7

**Understand cost classifications used in making decisions: differential costs, opportunity costs, and sunk costs.**

# Differential Cost and Revenue

Costs and revenues that differ among alternatives.

**Example:** You have a job paying \$1,500 per month in your hometown. You have a job offer in a neighboring city that pays \$2,000 per month. The commuting cost to the city is \$300 per month.

**Differential revenue is:**

$$\text{\$2,000} - \text{\$1,500} = \text{\$500}$$

**Differential cost is:**

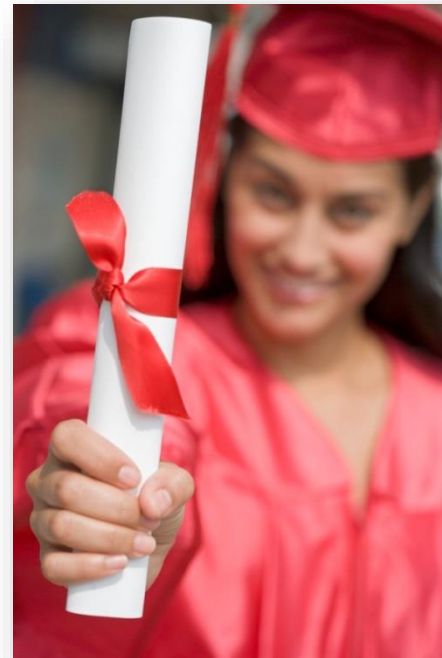
$$\text{\$300}$$

# Opportunity Cost

**The potential benefit that is given up when one alternative is selected over another.**

**These costs are not usually entered into the accounting records of an organization, but must be explicitly considered in all decisions.**

**What are the opportunity costs you incur to attend this class?**





# Sunk Costs

**Sunk costs have already been incurred and cannot be changed now or in the future. These costs should be ignored when making decisions.**

**Example:** Suppose you had purchased gold for \$1,100 an ounce, but now it is selling for \$950 an ounce. Should you wait for the gold to reach \$1,100 an ounce before selling it? You may say, “Yes” even though the \$1,100 purchase is a sunk cost.

## Quick Check ✓

Suppose you are trying to decide whether to drive or take the train to Portland to attend a concert. You have ample cash to do either, but you don't want to waste money needlessly. Is the cost of the train ticket relevant in this decision? In other words, should the cost of the train ticket affect the decision of whether you drive or take the train to Portland?

A. Yes, the cost of the train ticket is relevant.

B. No, the cost of the train ticket is not relevant.

## Quick Check ✓

Suppose you are trying to decide whether to drive or take the train to Portland to attend a concert. You have ample cash to do either, but you don't want to waste money needlessly. Is the annual cost of licensing your car relevant in this decision?

- A. Yes, the licensing cost is relevant.
- B. No, the licensing cost is not relevant.

## Quick Check ✓

Suppose that your car could be sold now for \$5,000. Is this a sunk cost?

A. Yes, it is a sunk cost.

B. No, it is not a sunk cost.