

Solution and Answer Guide

MODERN BUSINESS STATISTICS WITH MICROSOFT® EXCEL® 8TH EDITION BY 2025 Y JEFFREY D. CAMM,
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CHAPTER 1: DATA AND STATISTICS

TABLE OF CONTENTS

Supplementary Exercises	1
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SUPPLEMENTARY EXERCISES

1. **Wall Street Journal Subscriber Characteristics.** A *Wall Street Journal* subscriber survey asked 46 questions about subscriber characteristics and interests. State whether each of the following questions provides categorical or quantitative data. **LO 2**
 - a. What is your age?
 - b. Are you married?
 - c. When did you first start reading the *WSJ*? High school, college, early career, midcareer, late career, or retirement?
 - d. How long have you been in your present job or position?
 - e. What type of vehicle are you considering for your next purchase? Nine response categories include sedan, sports car, SUV, minivan, and so on.

Solutions:

- a. Quantitative
 - b. Categorical
 - c. Categorical
 - d. Quantitative
 - e. Categorical
2. **Comparing Tablet Computers.** Tablet PC Comparison provides a wide variety of information about tablet computers. Their website enables consumers to easily compare different tablets using factors such as cost, type of operating system, display size, battery life, and CPU manufacturer. A sample of 10 tablet computers is shown in Table 1.6 (Tablet PC Comparison website). **LO 1, 2**

Table 1.6 Product Information for 10 Tablet Computers

Tablet	Cost (\$)	Operating System	Display Size (inches)	Battery Life (hours)	CPU Manufacturer
Acer Iconia W510	599	Windows	10.1	8.5	Intel

Amazon Kindle Fire HD	299	Android	8.9	9.0	TI OMAP
Apple iPad 4	499	iOS	9.7	11.0	Apple
HP Envy X2	860	Windows	11.6	8.0	Intel
Lenovo ThinkPad Tablet	668	Windows	10.1	10.5	Intel
Microsoft Surface Pro	899	Windows	10.6	4.0	Intel
Motorola Droid XYboard	530	Android	10.1	9.0	TI OMAP
Samsung Ativ Smart PC	590	Windows	11.6	7.0	Intel
Samsung Galaxy Tab	525	Android	10.1	10.0	Nvidia
Sony Tablet S	360	Android	9.4	8.0	Nvidia

- How many elements are in this data set?
- How many variables are in this data set?
- Which variables are categorical and which variables are quantitative?
- What type of measurement scale is used for each of the variables?

Solutions:

- The 10 elements are the 10 tablet computers.
- Five variables: Cost (\$), Operating System, Display Size (inches), Battery Life (hours), CPU Manufacturer
- Categorical variables: Operating System and CPU Manufacturer
Quantitative variables: Cost (\$), Display Size (inches), and Battery Life (hours)
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Variable	Measurement Scale
Cost (\$)	Ratio
Operating System	Nominal
Display Size (inches)	Ratio
Battery Life (hours)	Ratio
CPU Manufacturer	Nominal

3. **Tablet PCs: Cost, CPU, and Operating System.** Refer to Table 1.6. **LO 3**

- What is the average cost for the tablets?
- Compare the average cost of tablets with a Windows operating system to the average cost of tablets with an Android operating system.
- What percentage of tablets use a CPU manufactured by TI OMAP?
- What percentage of tablets use an Android operating system?

Solutions:

- Average cost = $5,829/10 = \$582.90$

- b. Average cost with a Windows operating system = $3,616/5 = \$723.20$
Average cost with an Android operating system = $1,714/4 = \$428.5$
The average cost with a Windows operating system is much higher.
 - c. 2 of 10 or 20% use a CPU manufactured by TI OMAP.
 - d. 4 of 10 or 40% use an Android operating system.
 4. **Comparing Phones.** Table 1.7 shows data for eight phones (*Consumer Reports*). The Overall Score, a measure of the overall quality for the phone, ranges from 0 to 100. Voice Quality has possible ratings of poor, fair, good, very good, and excellent. Talk Time is the manufacturer's claim of how long the phone can be used when it is fully charged. **LO 1, 2**

Table 1.7 Data for Eight Phones

Brand	Model	Price (\$)	Overall Score	Voice Quality	Talk Time (hours)
AT&T	CL84100	60	73	Excellent	7
AT&T	TL92271	80	70	Very Good	7
Panasonic	4773B	100	78	Very Good	13
Panasonic	6592T	70	72	Very Good	13
Uniden	D2997	45	70	Very Good	10
Uniden	D1788	80	73	Very Good	7
Vtech	DS6521	60	72	Excellent	7
Vtech	CS6649	50	72	Very Good	7

- a. How many elements are in this data set?
 - b. For the variables Price, Overall Score, Voice Quality, and Talk Time, which variables are categorical and which variables are quantitative?
 - c. What scale of measurement is used for each variable?

Solutions:

- a. There are eight elements in this data set; each element corresponds to one of the eight models of cordless telephones.
 - b. Categorical variables: Voice Quality and Handset on Base
Quantitative variables: Price, Overall Score, and Talk Time
 - c. Price – ratio measurement
Overall Score – interval measurement
Voice Quality – ordinal measurement
Handset on Base – nominal measurement
Talk Time – ratio measurement
5. **Summarizing Phone Data.** Refer to the data set in Table 1.7. **LO 3**
 - a. What is the average price for the phones?
 - b. What is the average talk time for the phones?
 - c. What percentage of the phones have a voice quality of excellent?

Solutions:

- a. Average Price = $545/8 = \$68.13$
 - b. Average Talk Time = $71/8 = 8.875$ hours
 - c. Percentage rated Excellent: $2 \text{ of } 8 \frac{2}{8} = 0.25$, or 25%
6. **New Automobile Owners Survey.** J.D. Power and Associates surveys new automobile owners to learn about the quality of recently purchased vehicles. The following questions were asked in the J.D. Power Initial Quality Survey. Comment on whether each of the following questions provides categorical or quantitative data. **LO 2**
- a. Did you purchase or lease the vehicle?
 - b. What price did you pay?
 - c. What is the overall attractiveness of your vehicle's exterior? (Unacceptable, Average, Outstanding, or Truly Exceptional)
 - d. What is your average number of miles per gallon?
 - e. What is your overall rating of your new vehicle? (1- to 10-point scale with 1 Unacceptable and 10 Truly Exceptional)

Solutions:

- a. Categorical
 - b. Quantitative
 - c. Categorical
 - d. Quantitative
 - e. Quantitative
7. **Airline Customer Satisfaction.** Many service companies collect data via a follow-up survey of their customers. For example, to ascertain customer sentiment, Delta Air Lines sends an e-mail to customers immediately following a flight. Among other questions, Delta asks:

How likely are you to recommend Delta Air Lines to others?

The possible responses are:

Definitely Will	Probably Will	May or May Not	Probably Will Not	Definitely Will Not
☐	☐	☐	☐	☐

Use this information to answer the following questions. **LO 2, 4**

- a. Are the data collected by Delta in this example quantitative or categorical?
 - b. What measurement scale is used?
- Solutions:**
- a. Since there are five choices, the response is a categorical response.
 - b. The five responses are the labels for the customer responses. A nominal scale is being used.
8. **Readership Poll.** *The Tennessean*, an online newspaper located in Nashville, Tennessee, conducts a daily poll to obtain reader opinions on a variety of current issues. In a recent poll, 762 readers responded to the following