17-1 Computing the Rate of a Particular Response in an Opinion Survey

To predict how well your product will sell, you can conduct a **product test** by trying it out on a group of people. You can also hire an **opinion research firm** to conduct the test for you. Volunteers try your product and respond to questions in an **opinion survey.** The opinion research firm tabulates the answers to these questions and submits tables of results to you.

Example

Find the rate of response.

Taco King conducted a survey to see how well customers liked its new chicken chimichangas. Of those polled, 91 rated the chimichangas excellent, 146 rated them good, 59 rated them fair, and 36 rated them poor. What percentage of those polled rated the chimichangas fair?

1. Find the total number of responses.
   91 + 146 + 59 + 36 = 332

2. Find the percentage that rated them fair.
   Percentage of Particular Response = Number of Times Particular Response Occurs ÷ Total Number of Responses
   59 ÷ 332 = **17.77% rated fair**

Practice

Find the percentage of "excellent" responses, rounded to the nearest hundredth percent.

	Product	"Excellent" Responses	Total Responses
1.	Cola	72	200
2.	Root Beer	99	250
3.	Dish Detergent	214	975
4.	TV Game Show	857	2,500

5. A television network is trying to identify the viewing audience for a new TV series so it can target its advertising toward the right age group. A poll of viewers showed the results below.

Age Group			
Under 25	25 to 34	35 to 49	50 and older
4,381	8,542	7,663	3,127

   What is the total number of viewers polled?
6. What is the percentage of viewers in the 25 to 34 age group?
7. **Standardized Test Practice** Food Corporation did a survey to determine how much consumers liked its new Lemon Pepper Marinade. Of those polled, 321 rated the marinade excellent, 454 rated it good, 272 rated it fair, and 116 rated it poor. How much greater is the percentage of those who rated the product good than those who rated the product excellent?

   A. 27.6%   **B.** 39.04%   **C.** 11.44%   **D.** 133

17-2 Determining the Annual Sales Potential of a New Product

Before you make a new product you should determine its **sales potential,** an estimate of its sales volume during a specified period of time. You may manufacture a small number of the product for a select group of people, known as the **sample,** to try. The sales potential of your new product is based on the percentage of people in the sample, an estimate of the total number of people who might buy your product, called the **market,** and the average number of times someone might buy your product during a specified period of time.

Example

Find the annual sales potential.

Easy Shave has come out with a new line of men's razors. It chose a sample of 2,500 men to try the new razors and 920 of them said they would buy the razors. Easy Shaves estimates that 5,000,000 men buy razors and its survey indicates that most men buy 40 razors per year. What is the sales potential for Easy Shave for 1 year?

1. Find the percentage of potential purchasers.
   $920 \div 2{,}500 = 36.8\%$

2. Find the annual sales potential.
   Annual Sales Potential = Estimated Market Size × Individual Rate of Purchase × Percentage of Potential Purchasers
   $5{,}000{,}000 \times 40 \times 36.8\% = \textbf{73{,}600{,}000}$

Practice

Find the percentage of potential purchasers (rounded to the nearest hundredth percent) and the annual sales potential (rounded to the nearest whole number).

	Number in Sample	Number of Potential Purchasers	Percentage of Potential Purchasers	Estimated Market Size	Individual Rate of Purchase per Year	Annual Sales Potential
1.	800	140	a.	250,000	10 bottles	b.
2.	1,200	618	a.	500,000	2 boxes	b.
3.	2,750	921	a.	1,250,000	4 containers	b.
4.	3,550	1,039	a.	2,645,500	8 tubes	b.

5. A new toothbrush was test marketed to 250,000 consumers and 87,620 said they would buy the brush. The estimated market size is 5,284,175. The company estimates that each person buys 5 new toothbrushes a year. What is the percentage of potential purchasers?

6. What is the annual sales potential of the toothbrush, rounded to the nearest whole number?

7. **Standardized Test Practice** Food Corporation conducted a survey to determine how much consumers liked its new Lemon Pepper Marinade. Out of 50,000 people surveyed, 23,572 responded favorably. The estimated market is 1,115,000 and the average person would buy 3 bottles per year. What is the annual sales potential of the Lemon Pepper Marinade?
   A. 1,115,000   **B.** 47.14%   **C.** 525,611   **D.** 1,576,833

17-3 Calculating the Market Share of a New Product

The **market share** of your product tells you how well it is selling. The market share is the percentage of the total market that buys your product instead of a competitor's product. You can calculate your percentage of the total market share by using either the number of units sold or the dollar value of sales.

Example

Find the market share.

Easy Shave sold 71,532,000 razors last year. During that same period, a total of 250,000,000 razors were bought by the entire market. What was Easy Shave's market share for the year?

Find the market share.
Market Share = Total Product Sales ÷ Total Market Sales
71,532,000 ÷ 250,000,000 = **28.61% market share**

Practice

Find the market share. Round to the nearest hundredth percent.

	Company	Total Sales	Total Market	Market Share
1.	Phone	$ 3,500,000	$ 15,750,000	
2.	Motorcycle	36,375,000	127,280,000	
3.	Candy	1,267,182	4,972,136	
4.	Car	300,500,000	1,275,000,000	

5. Extend Toothbrush sells approximately 1,276,000 toothbrushes per year. There are approximately 9,284,175 toothbrushes sold each year. What is Extend's market share?

6. Last year, Funky Music Corporation sold 3,538,254 CDs. During that same period, 32,189,572 CDs were sold. What is Funky Music's market share?

7. Last year Big Burger introduced its Chicken Select Nuggets. It sold 3,531,900 boxes. During that same period, 22,478,944 boxes of chicken nuggets were sold nationwide. What is Big Burger's market share for its Select Nuggets?

8. Standardized Test Practice Last year, Cola Inc.'s annual sales of soft drinks totaled $23,578,599, while its main competitor's annual sales totaled $21,589,745. Total soft drink sales for that same period were $67,923,388. How much greater was Cola Inc.'s market share than its main competitor's?

A. 34.7%   **B.** 31.8%   **C.** $1,988,854   **D.** 2.9%

Computing Projected Sales from a Graph

17-4

An estimate of how well a product will sell in the future is called a **sales projection.** You can project sales by constructing a graph of past sales, drawing a line through the middle of the data to the year for which the projection is being made, and reading the number or dollar value.

Example

Estimate projected sales using a graph.

The marketing department of Easy Shave wants to project sales for 2010. Its sales history is as follows:

Year	2002	2003	2004	2005	2006
Sales (in millions)	$8.5	$9.0	$10.5	$10.1	$11.2

Using a graph, what sales projection might the marketing department make for 2010?

1. Construct a graph of past sales with years running horizontally and sales (in millions) running vertically.
2. Draw a straight line approximately through the middle of the data.
3. Read the sales dollar amount that corresponds to the year 2010.
   Projected sales is approximately **$13.5 million.**

Practice

Construct a graph for each problem and draw a straight line through the middle of the data to project sales.

Previous Sales: 2003—$10,000; 2004—$12,000; 2005—$20,000; 2006—$15,000; 2007—$25,000.

	Year	Sales Projection
1.	2008	
2.	2009	
3.	2010	
4.	2011	

5. The sales history for Extend Toothbrush shows the following data:

Year	2003	2004	2005	2006	2007	2008
Sales (in millions)	$3.5	$4.2	$3.9	$4.5	$5.5	$5.1

   What sales might be projected for 2012?
6. What sales might be projected for 2015?
7. **Standardized Test Practice** The sales history for Cola Inc. is as follows:

Year	2003	2004	2005	2006	2007	2008
Sales (in billions)	$6.0	$6.5	$6.2	$6.5	$7.1	$7.5

   What is Cola Inc.'s projected sales for 2011?
   A. $8 billion   **B.** $8.2 billion   **C.** $8.6 billion   **D.** $9 billion

17-5 Computing Projected Sales from the Factor Method

Another method used to project sales is called the **factor method.** The **factor** is your company's present market share. Using federal government publications or other sources, you can find the total sales projected for the entire market for the coming year.

Example

Estimate projected sales using the factor method.

Easy Shave has a 12 percent share of the razor market. Razor sales for next year are projected to be $6,794,500. What is the projected sales figure for Easy Shave for next year?

Find the projected sales.
Projected Sales = Projected Market Sales × Market-Share Factor
$6,794,500 × 12% = **$815,340 projected sales**

Practice

Find the projected sales figure for each company. Round to the nearest whole number.

	Type of Company	Projected Market Sales	Market-Share Factor	Projected Sales
1.	Phone	$ 7,500,000	10%	
2.	Candy	10,375,000	7%	
3.	Dishwashers	12,167,500	8.25%	
4.	Tools	19,527,628	4.6%	

5. Extend Toothbrush has a 6.75 percent share of the toothbrush market. Each year, sales for toothbrushes total $4,137,000. What is Extend's projected sales volume?

6. It is estimated that $17,000,000,000 worth of CDs will be sold next year. Funky Music Corporation has an 8.5 percent market share of CD sales. What is Funky Music's projected sales for next year?

7. **Standardized Test Practice** Cola Inc. has a 34.5 percent market share of the soft drink industry, while its main competitor's market share is 32 percent. Soft drink sales are projected to total $67,923,388 next year. How much greater will Cola Inc.'s projected sales volume be next year than its main competitor's?

   A. $23,433,568   **B.** $21,735,484   **C.** $1,698,085   **D.** 2.5%

17-6 Determining Newspaper Advertising Costs

Advertising your products or services in newspapers can increase your business. The cost of a newspaper advertisement depends on the circulation of the newspaper, what day of the week you run the ad, whether the ad is in color or black and white, and the amount of space the ad takes up. Use the *Daily News* Advertising Rates table on page 182 to solve the problems in this section.

Example

Find the advertising cost.

Easy Shave contracts with the *Daily News* for 10,000 inches per year. The company plans to place a $\frac{1}{4}$-page ad, 33.25 column inches, in the Sunday paper. What is the cost for this advertisement?

1. Find the rate per column inch from the table: $32.33

2. Find the advertisement cost.
   Advertisement Cost = Number of Column Inches × Rate per Column Inch
   33.25 × $32.33 = **$1,074.97**

Practice

Using the *Daily News* Advertising Rates table on page 182, find the rate per column inch and the advertisement cost.

	Annual Contract	Edition	Number of Column Inches	Rate per Column Inch	Advertisement Cost
1.	50 inches	Daily	12	a.	b.
2.	500 inches	Saturday	35	a.	b.
3.	30,000 inches	Sunday	40	a.	b.
4.	20,000 inches	Daily	66.5	a.	b.

5. Funky Music Corporation has a contract with the *Daily News* for 30,000 inches of advertising space per year. It wants to run a full-size, 133-column inch ad in the Saturday edition. What is Funky Music's advertisement cost?

6. Big Burger has a 50,000-inch advertising contract with the *Daily News*. It wants to run the same 60-column inch ad consecutively, Wednesday through Friday. What is Big Burger's total advertisement cost for the three days?

7. **Standardized Test Practice** Cola Inc. has an annual contract with the *Daily News* for 20,000 inches of advertising space. How much more does it cost Cola Inc. to run a $\frac{1}{3}$-page ad, 44.33 column inches, in the Sunday paper than it would in the Saturday paper?

   A. $1,072.34   **B.** $1,348.52   **C.** $276.18   **D.** $6.23

17-7 Determining Television Advertising Costs

You can also advertise your products or services on television. The cost of a television advertisement depends on the time of day, program ratings, and the length of the advertisement. Television commercials are usually 10, 30, or 60 seconds in length.

Example

Find the total advertising cost.

Easy Shave wants to advertise its new razors on television. It plans on running a 60-second daytime commercial and a 10-second prime-time commercial. A 30-second daytime commercial costs $10,000 and a 30-second prime-time commercial costs $275,000. What is the total cost for Easy Shave's advertising campaign?

1. Find the cost of the 10-second ad.
   Cost of 10-Second Ad = $\frac{1}{2}$ × Cost of 30-Second Ad
   $\frac{1}{2}$ × $275,000 = $137,500

2. Find the cost of the 60-second ad.
   Cost of 60-Second Ad = 2 × Cost of 30-Second Ad
   2 × $10,000 = $20,000

3. Find the total advertising cost.
   $137,500 + $20,000 = **$157,500 total advertising cost**

Practice

Find the total advertising cost.

	Rate per 30-Second Ad	Number of 10-Second Ads	Number of 30-Second Ads	Number of 60-Second Ads	Total Cost
1.	$ 5,000	2	1	0	
2.	1,500	4	2	1	
3.	27,500	2	2	2	
4.	87,750	1	3	1	

5. Extend Toothbrush wants to run two 60-second prime-time TV ads. The price for a 30-second ad is $105,000. What is the total advertising cost?

6. **Standardized Test Practice** Cola Inc. has planned the television advertising campaign shown below. A 30-second daytime ad costs $15,000 and a 30-second prime-time ad costs $200,000. What is Cola Inc.'s total advertising cost for the campaign?

Number	Length	Time
1	30 seconds	Daytime
3	10 seconds	Daytime
1	30 seconds	Prime-time
2	60 seconds	Prime-time

A. $637,500   **B.** $1,037,500   **C.** $1,030,000   **D.** $660,000

17-8 Calculating the Selling Price That Will Yield the Highest Net Profit

The selling price of your products must be high enough to cover your expenses and earn you a profit. To determine that selling price, estimate the net profit for each of several possible selling prices, then choose the selling price that will result in the highest profit.

Possible Net Profit = (Selling Price per Unit − Total Cost per Unit) × Estimated Unit Sales

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Example

Find the best selling price.

Easy Shave makes razors. It has annual fixed overhead costs of $100,000. The variable costs are $0.75 per razor. Easy Shave estimates the number of razors that can be sold at various prices.

Selling Price per Unit:	$2.50	$3.00	$3.50
Estimated Unit Sales:	500,000	350,000	300,000

What selling price will maximize Easy Shave's profits?

1. Find the fixed costs per item.
   $100,000 ÷ 500,000 = $0.20
   $100,000 ÷ 350,000 = $0.29
   $100,000 ÷ 300,000 = $0.33

2. Find the total costs per item.
   $0.75 + $0.20 = $0.95
   $0.75 + $0.29 = $1.04
   $0.75 + $0.33 = $1.08

3. Find the possible net profits.
   ($2.50 − $0.95) × 500,000 = $775,000
   ($2.50 − $1.04) × 350,000 = $511,000
   ($2.50 − $1.08) × 300,000 = $426,000

4. Find the greatest possible profit and the best selling price. The greatest profit is $775,000, so the best selling price is **$2.50.**

Practice

Find the fixed costs per unit, the total cost per unit, and the possible net profit.

	Selling Price per Unit	Estimated Unit Sales	Fixed Costs	Fixed Costs per Unit	Variable Costs per Unit	Total Costs per Unit	Possible Net Unit
1.	$10.00	150,000	$150,000	a.	$1.50	b.	c.
2.	25.00	80,000	125,000	a.	2.15	b.	c.
3.	32.00	55,000	175,000	a.	0.09	b.	c.

4. **Standardized Test Practice** Cola Inc. conducted the sales analysis shown below to determine the price for a case of soda that will yield the greatest profit. Which is the best selling price?

Selling Price per Unit	Estimated Unit Sales	Fixed Costs	Variable Costs per Unit	Possible Net Profit
$4.50	975,000	$300,000	$0.95	
5.00	900,000	300,000	0.95	
5.50	750,000	300,000	0.95	
6.00	600,000	300,000	0.95	

A. $4.50   **B.** $5.00   **C.** $5.50   **D.** $6.00

17 Chapter Review

A Victorious Riddle

Look for the answers to the questions below in the right-hand column of the table. Use the corresponding letters to find the answer to the riddle.

What is required to win the net profit war?

A good __ __ __ __ __ __ __ __ __   __ __ __ __ __ __ __ __

ING	34,375
IER	710,227
EST	7,102
SK	500,000
NT	105,250
RK	210,500
TR	$112.40
ST	$3,737.30
TE	$85,000
TA	$170,000
TY	$51.29
GY	$45.00
RA	$105,000
LA	$52,500
MA	38.27%
DE	26.18%
LK	20.26%
LE	5.90%
ER	589.78%
ET	16.96%

1. Gadgets Galore did a survey to determine how well its customers liked the new "gizmatic." Of those who responded, 327 rated the product "excellent," 478 said it was "good," 253 said it was "fair," and 191 called it "poor." What percentage of respondents rated the gizmatic "good?"

2. Gadgets Galore chose a sample of 1,000 consumers to try its new gizmatic. Of those surveyed, 421 said they would buy the product. Gadgets Galore estimates the market size to be 250,000 and that each consumer would buy two gizmatics per year. What is the sales potential for Gadgets Galore for 1 year?

3. Gadgets Galore sold 225,000 gizmatics last year. During that same year, 1,327,000 similar gizmos were sold. What was Gadgets Galore's market share?

4. Gadgets Galore has a 22 percent share of the market. Total gizmo sales are projected to be 156,250 next year. What is the projected sales figure for Gadgets Galore next year?

5. Gadgets Galore is going to run a ¼-page (33.25 column inches) newspaper ad in both the Saturday and Sunday editions. Based on the table below, what is the cost for the ads?

Rates per Column Inch		
Daily	**Saturday**	**Sunday**
$49.50	$50.40	$62.00

6. Gadgets Galore is also going to advertise its gizmatic on television. The price of a 30-second daytime ad is $5,250 and a 30-second prime-time ad costs $8,500. What is the cost of running ten 60-second daytime ads?

7. What is the cost of running twenty 10-second prime-time ads?

8. Gadgets Galore's annual fixed overhead costs total $400,000. The variable costs to produce gizmatics are $2.19 each. Gadgets Galore estimates it can sell 275,000 gizmatics at $39.99 each, 250,000 at $45.00 each, and 200,000 at $51.29 each. Which is the best selling price?