

Because payroll is frequently a company's largest operating expense, efficient payroll preparation and record keeping are extremely important functions in any business operation. Although today most businesses computerize their payroll functions, it is important for businesspeople to understand the processes and procedures involved.

Employers are responsible for paying employees for services rendered to the company over a period of time. In addition, the company is responsible for withholding certain taxes and other deductions from an employee's paycheck and depositing those taxes with the Internal Revenue Service (IRS) through authorized financial institutions. Other deductions, such as insurance premiums and charitable contributions, are also disbursed by the employer to the appropriate place.

In business, the term **gross pay** or **gross earnings** means the *total* amount of earnings due an employee for work performed before payroll deductions are withheld. The **net pay**, **net earnings**, or **take-home pay** is the actual amount of the employee's paycheck after all payroll deductions have been withheld. This concept is easily visualized by the formula

gross pay or **gross earnings** Total amount of earnings due an employee for work performed before payroll deductions are withheld.

net pay, **net earnings**, or **take-home pay** The actual amount of the employee's paycheck after all payroll deductions have been withheld.

$$\text{Net pay} = \text{Gross pay} - \text{Total deductions}$$

This chapter deals with the business math involved in payroll management: the computation of employee gross earnings; the calculation of withholding taxes and other deductions; and the associated governmental deposits, regulations, and record keeping requirements.

9-1

PRORATING ANNUAL SALARY ON THE BASIS OF WEEKLY, BIWEEKLY, SEMIMONTHLY, AND MONTHLY PAY PERIODS

salary A fixed gross amount of pay equally distributed over periodic payments without regard to the number of hours worked.

Employee compensation takes on many forms in the business world. Employees who hold managerial, administrative, or professional positions are paid a salary. A **salary** is a fixed gross amount of pay equally distributed over periodic payments without regard to the number of hours worked. Salaries are usually expressed as an annual, or yearly, amount. For example, a corporate accountant might receive an annual salary of \$50,000.

Although salaries may be stated as annual amounts, they are usually distributed to employees on a more timely basis. A once-a-year paycheck would be a real trick to manage! Employees are most commonly paid in one of the following ways:

Weekly	52 paychecks per year	Annual salary \div 52
Biweekly	26 paychecks per year	Annual salary \div 26
Semimonthly	24 paychecks per year	Annual salary \div 24
Monthly	12 paychecks per year	Annual salary \div 12

EXAMPLE 1 PRORATING ANNUAL SALARY

What is the weekly, biweekly, semimonthly, and monthly amount of gross pay for a corporate accountant with an annual salary of \$50,000?

SOLUTION STRATEGY

The amount of gross pay per period is determined by dividing the annual salary by the number of pay periods per year.

$$\text{Weekly pay} = \frac{50,000}{52} = \$961.54$$

$$\text{Biweekly pay} = \frac{50,000}{26} = \$1,923.08$$

$$\text{Semimonthly pay} = \frac{50,000}{24} = \$2,083.33$$

$$\text{Monthly pay} = \frac{50,000}{12} = \$4,166.67$$



"In lieu of a bonus, here are some Instant Winner lottery scratch-off cards."

An executive of a large manufacturing company earns a gross annual salary of \$43,500. What is the weekly, biweekly, semimonthly, and monthly pay for this employee?

CHECK YOUR ANSWERS WITH THE SOLUTIONS ON PAGE 298.

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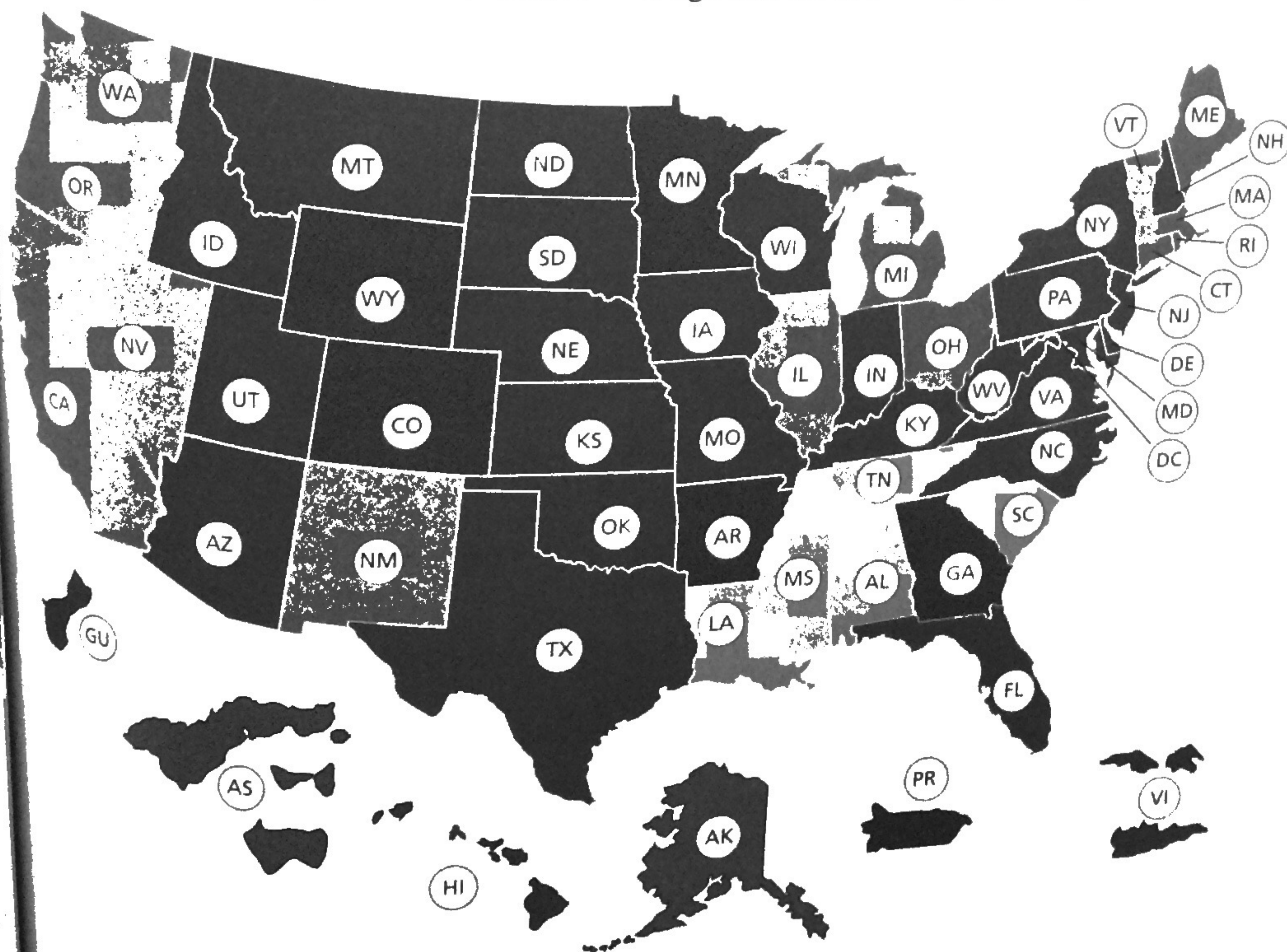
wages Earnings for routine or manual work, usually based on the number of hours worked.

hourly wage or hourly rate The amount an employee is paid for each hour worked.

overtime According to federal law, the amount an employee is paid for each hour worked over 40 hours per week

Many companies have taken overtime a step farther than required by compensating employees at time-and-a-half for all hours over 8 hours per day instead of 40 hours per week. Another common payroll benefit is when companies pay double time, twice the hourly rate, for holidays, midnight shifts, and weekend hours.

U. S. Department of Labor – Wage and Hour Division (WHD)



- ☐ States with minimum wage rates higher than the federal
- ☐ States with minimum wage rates same as the federal
- ☐ American Samoa has special minimum wage rates
- ☐ States with no minimum wage law
- ☐ States with minimum rates lower than the federal

Department of Labor, www.dol.gov/whd/minwage/america.htm

In May 2007, an amendment to the Fair Labor Standards Act became law. The amendment provided for a three-stage increase to the federal minimum wage for the first time in a decade. The \$5.15 an-hour minimum wage was mandated to rise in three \$0.70 increments to \$7.25 an hour in July 2009.

According to the Department of Labor, as of January 2010, 14 states and Washington, D.C., had minimum wage rates higher than the federal minimum wage. Five states had minimum wage rates lower than the federal standard.

STEPS TO CALCULATE AN EMPLOYEE'S GROSS PAY BY HOURLY WAGES

STEP 1. Calculate an employee's regular gross pay for working 40 hours or less.

$$\text{Regular pay} = \text{Hourly rate} \times \text{Regular hours worked}$$

STEP 2. Calculate an employee's overtime pay by chain multiplying the hourly rate by the overtime factor by the number of overtime hours.

$$\text{Overtime pay} = \text{Hourly rate} \times \text{Overtime factor} \times \text{Overtime hours worked}$$

STEP 3. Calculate total gross pay.

$$\text{Total gross pay} = \text{Regular pay} + \text{Overtime pay}$$

IN THE BUSINESS WORLD

Payroll is a very important business responsibility. Employees must be paid on a regular basis, and accurate records must be kept for government reporting.

Payroll is usually one of the largest expense categories of a company.

The department responsible for the payroll function may be called Payroll, Personnel, or Human Resources.

In recent years, companies have evolved that specialize in doing payroll. When a business hires an outside firm to perform a function such as payroll, this is known as outsourcing.

EXAMPLE 2 CALCULATING HOURLY PAY

Karen Sullivan earns \$8 per hour as a checker on an assembly line. If her overtime rate is time-and-a-half, what is her total gross pay for working 46 hours last week?

SOLUTION STRATEGY

To find Karen's total gross pay, compute her regular pay plus overtime pay.

$$\text{Regular pay} = \text{Hourly rate} \times \text{Regular hours worked}$$

$$\text{Regular pay} = 8 \times 40 = \$320$$

$$\text{Overtime pay} = \text{Hourly rate} \times \text{Overtime factor} \times \text{Overtime hours worked}$$

$$\text{Overtime pay} = 8 \times 1.5 \times 6 = \$72$$

$$\text{Total gross pay} = \text{Regular pay} + \text{Overtime pay}$$

$$\text{Total gross pay} = 320 + 72 = \$392$$

TRY IT EXERCISE 2

Rick Morton works as a delivery truck driver for \$10.50 per hour with time-and-a-half for overtime and double time on Sundays. What was his total gross pay last week if he worked 45 hours on Monday through Saturday in addition to a four-hour shift on Sunday?

CHECK YOUR ANSWER WITH THE SOLUTION ON PAGE 298.

9-3

CALCULATING GROSS PAY BY STRAIGHT AND DIFFERENTIAL PIECEWORK SCHEDULES

piecework Pay rate schedule based on an employee's production output, not hours worked.

A **piecework** pay rate schedule is based not on time but on production output. The incentive is that the more units the worker produces, the more money he or she makes.

straight piecework plan is when the worker receives a certain amount of pay per unit of output regardless of output quantity. A **differential piecework plan** gives workers a greater incentive to increase output because the rate per unit increases as output goes up. For example, a straight piecework plan might pay \$3.15 per unit, whereas a differential plan might pay \$3.05 for the first 50 units produced, \$3.45 for units 51–100, and \$3.90 for any units over 100.

straight piecework plan Pay per unit regardless of output quantity.
differential piecework plan Greater incentive method of compensation than straight piecework, where pay per unit increases as output goes up.

STEPS TO CALCULATE GROSS PAY BY PIECEWORK

Straight Piecework:

STEP 1. Multiply the number of pieces or output units by the rate per unit.

$$\text{Total gross pay} = \text{Output quantity} \times \text{Rate per unit}$$

Differential Piecework:

STEP 1. Multiply the number of output units at each level by the rate per unit at that level.

STEP 2. Find the total gross pay by adding the total from each level.

EXAMPLE 3 CALCULATING PIECEWORK PAY

Barb Nelson works on a hat assembly line. Barb gets paid at a straight piecework rate of \$0.35 per hat. What was Barb's total gross pay last week if she produced 1,655 hats?

SOLUTION STRATEGY

$$\text{Total gross pay} = \text{Output quantity} \times \text{Rate per unit}$$

$$\text{Total gross pay} = 1,655 \times .35 = \underline{\$579.25}$$

TRY IT EXERCISE 3

George Lopez works at a tire manufacturing plant. He is on a straight piecework rate of \$0.41 per tire. What was George's total gross pay last week if he produced 950 tires?

CHECK YOUR ANSWER WITH THE SOLUTION ON PAGE 298.

EXAMPLE 4 CALCULATING DIFFERENTIAL PIECEWORK PAY

Paula Duke assembled 190 watches last week. Calculate her total gross pay based on the following differential piecework schedule.

Pay Level	Watches Assembled	Rate per Watch
1	1–100	\$2.45
2	101–150	\$2.75
3	Over 150	\$3.10

SOLUTION STRATEGY

To find Paula's total gross earnings, we calculate her earnings at each level of the pay schedule and add the totals. In this case, she will be paid for all of level 1, 100 watches; for all of level 2, 50 watches; and for 40 watches at level 3 (190 – 150 = 40).

IN THE BUSINESS WORLD

Federal employees earn higher average salaries than private-sector workers in more than 80 percent of occupations that exist in both sectors. Overall, federal workers earned an average salary of \$67,691 in 2008 compared with \$60,046 in the private sector.

Source: *The Week*, March 19, 2010. Noted, page 18.

Level pay = Output \times Rate per piece

Level 1 = $100 \times 2.45 = \$245$

Level 2 = $50 \times 2.75 = \$137.50$

Level 3 = $40 \times 3.10 = \$124$

Total gross pay = Level 1 + Level 2 + Level 3

Total gross pay = $245 + 137.50 + 124 = \$506.50$

TRY IT EXERCISE 4

You are the payroll manager for Trendy Toys, Inc., a manufacturer of small plastic toys. Your production workers are on a differential piecework schedule as follows.

Pay Level	Toys Produced	Rate per Toy
1	1–300	\$0.68
2	301–500	\$0.79
3	501–750	\$0.86
4	Over 750	\$0.94

Calculate last week's total gross pay for the following employees.

Name	Toys Produced	Total Gross Pay
C. Gomez	515	_____
L. Clifford	199	_____
M. Maken	448	_____
B. Nathan	804	_____

CHECK YOUR ANSWERS WITH THE SOLUTIONS ON PAGE 298.

9-4

CALCULATING GROSS PAY BY STRAIGHT AND INCREMENTAL COMMISSION, SALARY PLUS COMMISSION, AND DRAWING ACCOUNTS

STRAIGHT AND INCREMENTAL COMMISSION

commission Percentage method of compensation primarily used to pay employees who sell a company's goods and services.

straight commission Commission based on a specified percentage of the sales volume attained by an employee.

incremental commission Greater incentive method of compensation than straight commission whereby higher levels of sales earn increasing rates of commission.

Commission is a method of compensation primarily used to pay employees who sell a company's goods or services. **Straight commission** is based on a single specified percentage of the sales volume attained. For example, Delta Distributors pays its sales staff a commission of 8% on all sales. **Incremental commission** is much like the differential piecework rate whereby higher levels of sales earn increasing rates of commission. An example would be 5% commission on all sales up to \$70,000, 6% on sales greater than \$70,000 and up to \$120,000, and 7% commission on any sales greater than \$120,000.

STEPS TO CALCULATE GROSS PAY BY COMMISSION

Straight Commission:

STEP 1. Multiply the total sales by the commission rate.

Total gross pay = Total sales \times Commission rate

Incremental Commission:

STEP 1. Multiply the total sales at each level by the commission rate for that level.

STEP 2. Find the total gross pay by adding the total from each level.

EXAMPLE 5 CALCULATING COMMISSIONS

Diamond Industries pays its sales force a commission rate of 6% of all sales. What was the total gross pay for an employee who sold \$113,500 last month?

SOLUTION STRATEGY

$$\text{Total gross pay} = \text{Total sales} \times \text{Commission rate}$$

$$\text{Total gross pay} = 113,500 \times .06 = \underline{\underline{\$6,810}}$$

TRY IT EXERCISE 5

Alexa Walsh sells for Supreme Designs, a manufacturer of women's clothing. Alexa is paid a straight commission of 2.4%. If her sales volume last month was \$233,760, what was her total gross pay?

CHECK YOUR ANSWER WITH THE SOLUTION ON PAGE 298.

EXAMPLE 6 CALCULATING INCREMENTAL COMMISSION

Vista Electronics pays its sales representatives on the following incremental commission schedule.

Level	Sales Volume	Commission Rate (%)
1	\$1–\$50,000	4
2	\$50,001–\$150,000	5
3	Over \$150,000	6.5

What was the total gross pay for a sales rep who sold \$162,400 last month?

SOLUTION STRATEGY

Using an incremental commission schedule, we find the pay for each level and then add the totals from each level. In this problem, the sales rep will be paid for all of level 1, \$50,000; for all of level 2, \$100,00; and for \$12,400 of level 3 (\$162,400 – \$150,000 = \$12,400).

$$\text{Level pay} = \text{Sales per level} \times \text{Commission rate}$$

$$\text{Level 1 pay} = 50,000 \times .04 = \underline{\underline{\$2,000}}$$

$$\text{Level 2 pay} = 100,000 \times .05 = \underline{\underline{\$5,000}}$$

$$\text{Level 3 pay} = 12,400 \times .065 = \underline{\underline{\$806}}$$

$$\text{Total gross pay} = \text{Level 1} + \text{Level 2} + \text{Level 3}$$

$$\text{Total gross pay} = 2,000 + 5,000 + 806 = \underline{\underline{\$7,806}}$$

TRY IT EXERCISE 6

Mike Lamb sells copiers for Royal Business Products. He is on an incremental commission schedule of 1.7% of sales up to \$100,000 and 2.5% on sales greater than \$100,000. What was Mike's total gross pay last month if his sales volume was \$184,600?

CHECK YOUR ANSWER WITH THE SOLUTION ON PAGE 298.

IN THE BUSINESS WORLD

Companies often give sales managers override commissions. This is a small commission on the total sales of the manager's sales force.

Example: Jim and Diane sell for Apex Electronics. They each receive 15% commission on their sales. John, their sales manager, receives a 3% override on their total sales. If Jim sells \$20,000 and Diane sells \$30,000 in June, how much commission does each person receive?

$$\bullet \text{ Jim: } \$20,000 \times 15\% = \underline{\underline{\$3,000}}$$

$$\bullet \text{ Diane: } \$30,000 \times 15\% = \underline{\underline{\$4,500}}$$

$$\bullet \text{ John: } \$50,000 \times 3\% = \underline{\underline{\$1,500}}$$

salary plus commission A guaranteed salary plus a commission on sales over a specified amount.

SALARY PLUS COMMISSION

A variation of straight and incremental commission pay schedules is the **salary plus commission** whereby the employee is paid a guaranteed salary plus a commission on sales over a specified amount. To calculate the total gross pay, find the amount of commission and add it to the salary.

EXAMPLE 7 CALCULATING SALARY PLUS COMMISSION

Karie Jabe works on a pay schedule of \$1,500 per month salary plus a 3% commission on all sales greater than \$40,000. If she sold \$60,000 last month, what was her total gross pay?

SOLUTION STRATEGY

To solve for Karie's total gross pay, add her monthly salary to her commission for the month.

$$\text{Commission} = \text{Commission rate} \times \text{Sales subject to commission}$$

$$\text{Commission} = 3\%(60,000 - 40,000)$$

$$\text{Commission} = .03 \times 20,000 = \$600$$

$$\text{Total gross pay} = \text{Salary} + \text{Commission}$$

$$\text{Total gross pay} = 1,500 + 600 = \underline{\underline{\$2,100}}$$

TRY IT EXERCISE 7

Ed Diamond is a sales representative for Jersey Shore Supply, Inc. He is paid a salary of \$1,400 per month plus a commission of 4% on all sales greater than \$20,000. If he sold \$45,000 last month, what was his total gross earnings?

CHECK YOUR ANSWER WITH THE SOLUTION ON PAGE 298.

DRAW AGAINST COMMISSION

In certain industries and at certain times of the year, sales fluctuate significantly. To provide salespeople on commission with at least some income during slack periods of sales, a drawing account is used. A **drawing account**, or **draw against commission**, is a commission paid in advance of sales and later deducted from the commissions earned. If a period goes by when the salesperson does not earn enough commission to cover the draw, the unpaid balance carries over to the next period.

EXAMPLE 8 CALCULATING DRAW AGAINST COMMISSION

Bill Carpenter is a salesperson for Power Electronics. The company pays 8% commission on all sales and gives Bill a \$1,500 per month draw against commission. If he receives his draw at the beginning of the month and then sells \$58,000 during the month, how much commission is owed to Bill?

SOLUTION STRATEGY

To find the amount of commission owed to Bill, find the total amount of commission he earned and subtract \$1,500, the amount of his draw against commission.

$$\text{Commission} = \text{Total sales} \times \text{Commission rate}$$

$$\text{Commission} = 58,000 \times 8\% = \underline{\underline{\$4,640}}$$

$$\text{Commission owed} = \text{Commission} - \text{Amount of draw}$$

$$\text{Commission owed} = 4,640 - 1,500 = \underline{\underline{\$3,140}}$$

DOLLARS AND SENSE

Education Pays

The unemployment rate in February 2010 among people with a bachelor's degree or higher was 5 percent, according to the Bureau of Labor Statistics.

Among people whose education topped short of a high school diploma, the rate was 15.6 percent.

Source: The Week, March 26, 2010.

"The Bottom Line," page 5.

drawing account, or **draw against commission** Commission paid in advance of sales and later deducted from the commission earned.

IN THE BUSINESS WORLD

In 2009, nearly 26 percent of wives earned more than their husbands in households where both spouses worked, up from 17.8 percent in 1980.

Among all married couples, 33.5 percent of the women make more than their husbands.

Source: The Week, Oct. 30, 2009, News, page 18.

TRY IT EXERCISE 8

Howard Lockwood sells for Catalina Designs, Inc. He is on a 3.5% straight commission with a \$2,000 drawing account. If he is paid the draw at the beginning of the month and then sells \$120,000 during the month, how much commission is owed to Howard?

CHECK YOUR ANSWER WITH THE SOLUTION ON PAGE 298.

SECTION I

9

REVIEW EXERCISES

Calculate the gross earnings per pay period for the following pay schedules.

	Annual Salary	Monthly	Semimonthly	Biweekly	Weekly
1.	\$15,000	\$1,250.00	\$625.00	\$576.92	\$288.46
2.	\$44,200				
3.	\$100,000				
4.	\$21,600	\$1,800.00	\$900.00	\$830.77	\$415.38
5.			\$1,450.00		
6.				\$875.00	
7.					\$335.00

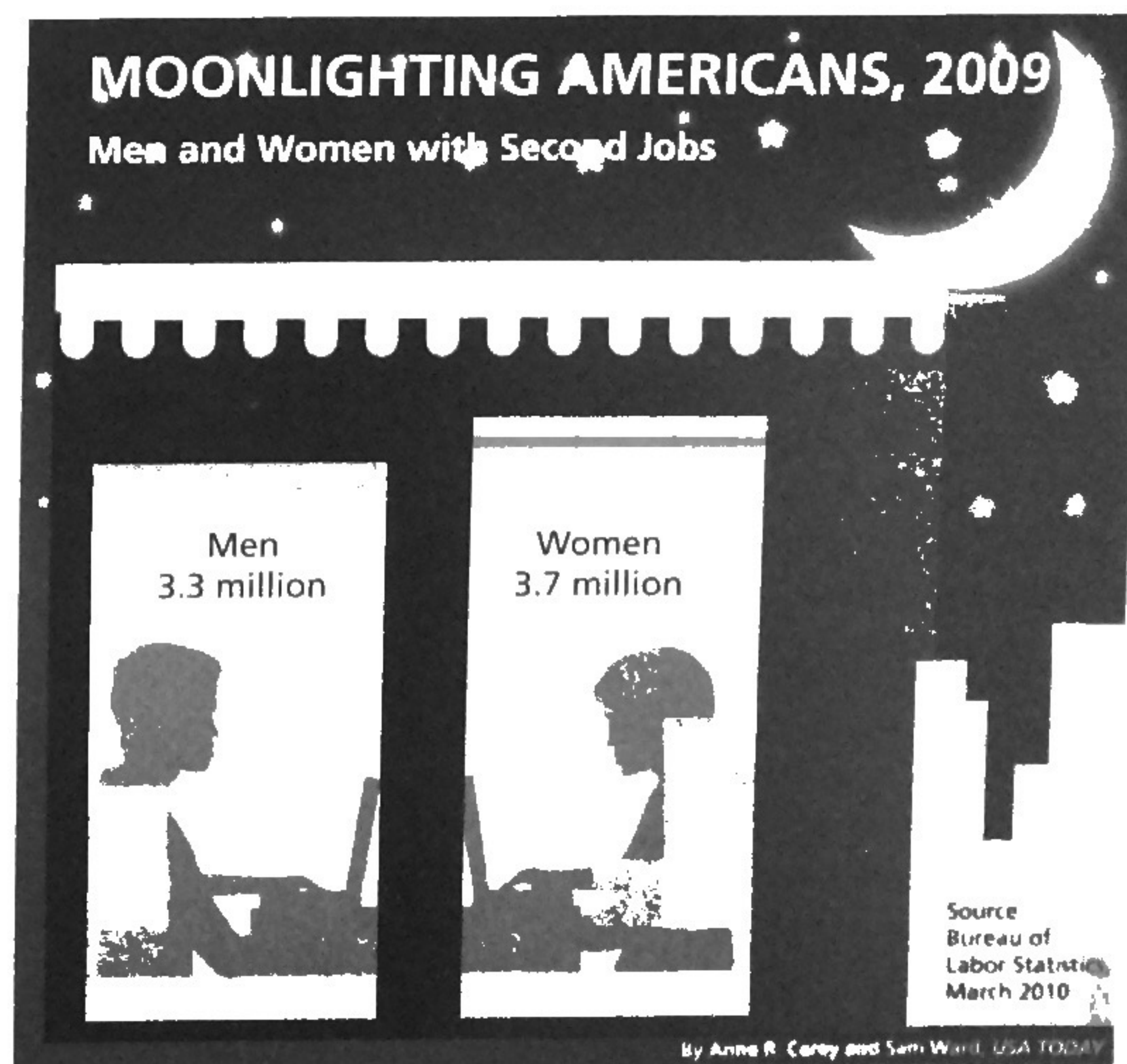
8. Mary Jo Prenaris is an office manager with gross earnings of \$1,600 semimonthly. If her company switches pay schedules from semimonthly to biweekly, what are Mary Jo's new gross earnings?

9. Deb O'Connell is an accounting professional earning a salary of \$58,000 at her firm. What is her equivalent weekly gross pay?

10. Jennifer Brunner works 40 hours per week as a chef's assistant. At the rate of \$7.60 per hour, what are her gross weekly earnings?

11. Alan Kimball earns \$22.34 per hour as a specialty chef at Le Bistro Restaurant. If he worked 53 hours last week and was paid time-and-a-half for weekly hours over 40, what was his gross pay?

12. Paul Curcio earns \$8.25 per hour for regular time up to 40 hours, time-and-a-half for over-time, and double time for the midnight shift. Last week Paul worked 58 hours, including 6 on the midnight shift. What are his gross earnings?



As the payroll manager for Stargate Industries, your task is to complete the following weekly payroll record. The company pays overtime for all hours worked over 40 at the rate of time-and-a-half. Round to the nearest cent when necessary.



Employee	M	T	W	T	F	S	S	Hourly Rate	Total Hours	Overtime Hours	Regular Pay	Overtime Pay	Total Pay
13. Peters	7	8	5	8	8	0	0	\$8.70	36	0	\$313.20	0	\$313.20
14. Sands	6	5	9	8	10	7	0	\$9.50					
15. Warner	8	6	11	7	12	0	4	\$7.25					
16. Lee	9	7	7	7	9	0	8	\$14.75					

17. Larry Jefferson gets paid a straight piecework rate of \$3.15 for each alternator he assembles for Allied Mechanical Corp. If he assembled 226 units last week, what was his gross pay?

You are the payroll manager for Euro Couture, a manufacturer of women's apparel. Your workers are paid per garment sewn on a differential piecework schedule as follows.

Pay Level	Garments Produced	Rate per Garment
1	1-50	\$3.60
2	51-100	\$4.25
3	101-150	\$4.50
4	Over 150	\$5.10

Calculate last week's total gross pay for each of the following employees.



Employee	Garments Produced	Total Gross Pay
18. Goodrich, P.	109	\$433.00
19. Walker, A.	83	
20. Fox, B.	174	

21. Katrina Byrd assembles motor mounts for C-207 executive planes. Her company has established a differential piecework scale as an incentive to increase production due to backlogged orders. The pay scale is \$11.50 for the first 40 mounts, \$12.35 for the next 30 mounts, \$13.00 for the next 20 mounts, and \$13.40 for all remaining mounts assembled during the week. Katrina assembled 96 mounts last week. What was her total gross pay?



22. Bob Farrell works for a company that manufactures small appliances. Bob is paid \$2.00 for each toaster, \$4.60 for each microwave oven, and \$1.55 for each food blender he assembles. If he produced 56 toasters, 31 microwave ovens, and 79 blenders, what were his total weekly gross earnings?

23. What is the total gross pay for a salesperson on a straight commission of 4.7% if his or her sales volume is \$123,200?

24. Pamela Mello is paid on an incremental commission schedule. She is paid 2.6% on the first \$60,000 and 3.4% on any sales over \$60,000. If her weekly sales volume was \$89,400, what was her total commission?
25. Dory Schrader is a buyer for Oceans of Notions. She is paid a weekly salary of \$885 plus a 4% commission on sales over \$45,000. If her sales were \$62,000 last week, what was her total gross pay?
26. Thomas Rendell's company pays him a straight 6% commission with a \$1,350 drawing account each month. If his sales last month totaled \$152,480, how much commission is owed to Thomas?
27. Katie Jergens works for Dynamic Designs selling clothing. She is on a salary of \$140 per week plus a commission of 7% of her sales. Last week she sold 19 dresses at \$79.95 each, 26 skirts at \$24.75 each, and 17 jackets at \$51.50 each. What were her total gross earnings for the week?
28. Jerry King is a server in a restaurant that pays a salary of \$22 per day. He also averages tips of 18% of his total gross food orders. Last week he worked 6 days and had total food orders of \$2,766.50. What was his total gross pay for the week?

BUSINESS DECISION: MINIMUM WAGE TIED TO INFLATION

29. In an effort to keep low-wage workers' salaries commensurate with the cost of living, a number of states have amended their constitutions to allow the minimum wage to be adjusted with inflation. As of October 2009, 10 states—Arizona, Colorado, Florida, Missouri, Montana, Nevada, Ohio, Oregon, Vermont, and Washington—had tied their minimum wage to inflation.

You are the accountant for Delicious, Inc., a company that owns a chain of 18 fast-food restaurants in Florida. Each restaurant employs 35 workers, each averaging 20 hours per week at the current federal minimum wage, \$7.25 per hour.

- How many hours at minimum wage are paid out each week by Delicious?
- At the current rate of \$7.25 per hour, what is the amount of the weekly "minimum wage" portion of the restaurant's payroll?



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"I think the best way for you to build the highest level of character is to work for me for the next 10 years at minimum wage."