CHAPTER 11

Insurance

Before YOU READ

What You'll Learn

Section 11-1 Compute health insurance premiums.

Section 11-2 Calculate the amount the patient pays for health care.

Section 11-3 Utilize tables to compute the annual premium for term life insurance.

Section 11-4 Apply tables to data to compute the annual premiums for three types of life insurance.

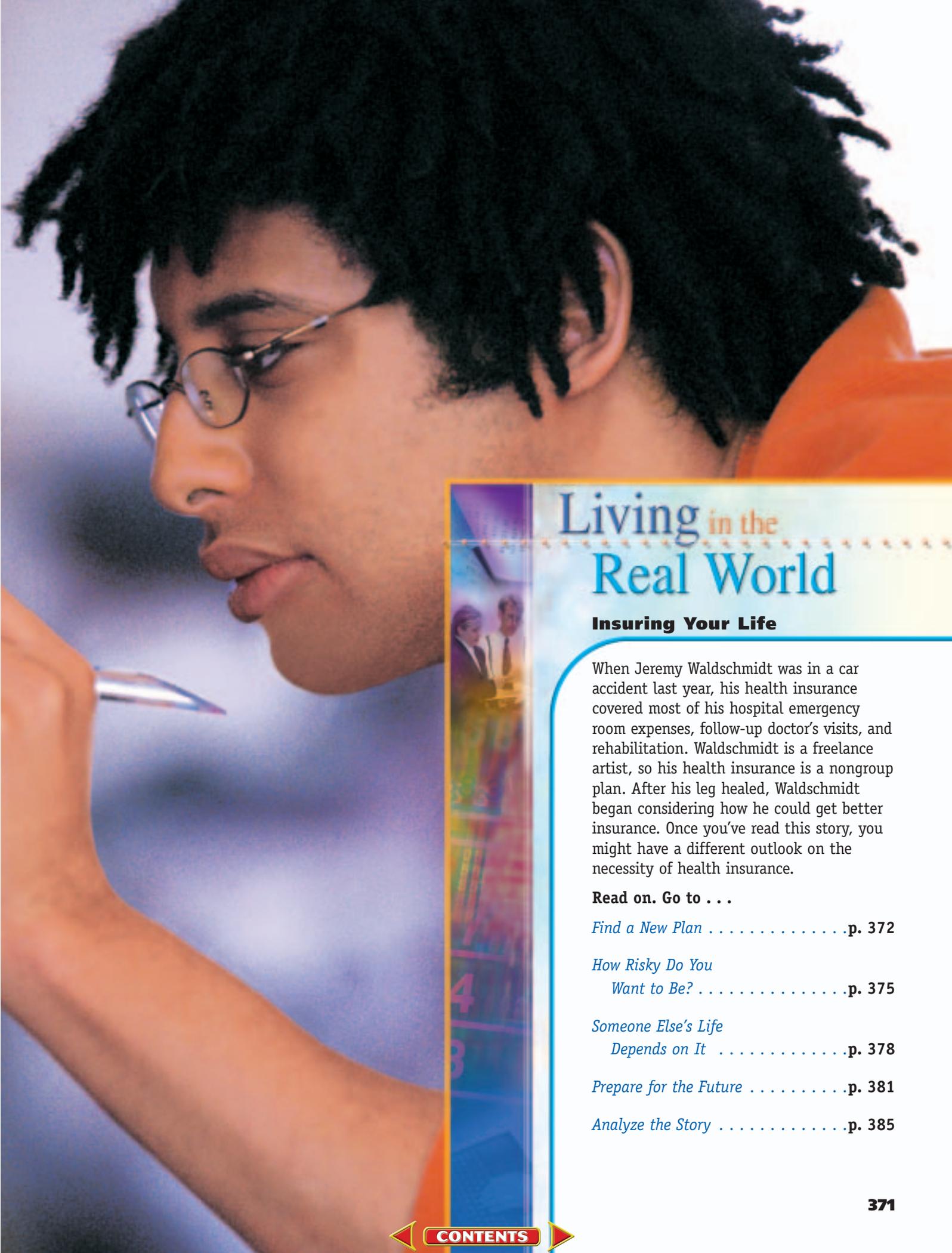### When Will You Ever Use This?

When tragedy strikes, who's there to comfort you? Hopefully you can lean on your friends and family. Although emotional support is needed, so is financial support. Having insurance is a way to financially protect you and your loved ones when you're faced with illness and death and dying.

Key Words to Know

- health insurance
- preferred provider organization (PPO)
- health maintenance organization (HMO)
- deductible
- co-insurance
- co-payment
- life insurance
- term life insurance
- beneficiary
- whole life insurance
- cash value
- limited payment policy
- universal life insurance

Mathematics Online

To learn more about insurance, visit **busmath.glencoe.com**.

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Living in the Real World

Insuring Your Life

When Jeremy Waldschmidt was in a car accident last year, his health insurance covered most of his hospital emergency room expenses, follow-up doctor's visits, and rehabilitation. Waldschmidt is a freelance artist, so his health insurance is a nongroup plan. After his leg healed, Waldschmidt began considering how he could get better insurance. Once you've read this story, you might have a different outlook on the necessity of health insurance.

Read on. Go to . . .

Health Insurance Premiums

An accident or illness could cut off your income, wipe out your savings, and leave you in debt. Just as important as vehicle insurance is **health insurance**. It protects *you* against overwhelming medical expenses.

Many types of health care coverage plans exist. Let's focus on just three group health insurance plans—a *traditional* plan, a **preferred provider organization** (PPO), and a **health maintenance organization** (HMO). A traditional plan offers health care coverage when the health care provider is paid a predetermined dollar amount for the service given. You may use any health care provider. A PPO is a group of selected health care providers who offer comprehensive services at preset reimbursement levels. You are required to use these "network" providers (that is, a selected group of doctors) unless you are willing to pay additional costs to non-network providers. An HMO is a prepaid health plan in which the care providers either contract with or are employees of the HMO to provide you with services. You may select a "primary care" physician and agree to receive all non-emergency services from the physician. This physician may refer you to a specialist (such as an obstetrician, a psychiatrist, a cardiologist, and so on).

Often times the selected employer's health insurance group pays for 75 to 80 percent of the costs and you, the policyholder, pay for the remaining 20 or 25 percent. Given this, how do you budget for health insurance?

Important Questions to Ask Yourself	What Formula Do I Use?
How do you calculate the **percent** that you'll be paying?	Employee's Percent = 100% − Employer's Percent
How do you calculate how much you'll **contribute** each paycheck to health insurance?	Employee's Contribution = Total Premium × Employee's Percent

Living in the Real World

Insuring Your Life

Find a New Plan   Waldschmidt needs new health insurance and asks his older sister Louise for some advice. She suggests that he join a professional organization of artists who are part of a group plan. This way the organization will pay part of his premium or at least offer a reduced premium.

Draw Conclusions   What's the purpose of an insurance premium?

Example 1

Need Help? Go to...

➤ **Workshop 7:**
Dividing Decimals,
page 16

➤ **Skill 11: Dividing**
Decimals, page 738

➤ **Skill 30: Finding**
the Percentage,
page 757

➤ **Application K:**
Chronological
Expressions,
page 766

Sean Derricotte has a family membership in a group medical insurance program. The annual premium is $6,180. Derricotte's employer pays 80 percent of the total cost. His contribution is deducted monthly from his paycheck. What is Derricotte's annual contribution? What is his monthly deduction?

STEP 1: **Find the employee's percent.**
100% − 80% = 20% employee's percent

STEP 2: **Find the employee's annual contribution.**

Total Premium × Employee's Percent

$6,180.00 × 20% = **$1,236.00 employee's annual contribution**

STEP 3: **Find the employee's monthly deduction.**
Employee's Contribution ÷ 12

$1,236.00 ÷ 12 = **$103.00 employee's monthly deduction**

100 − 80 = 20

6180 × 20 % = 1236 ÷ 12 = 103

CONCEPT CHECK

SELF-CHECK

Complete the problems, then check your answers at the end of the chapter. Find the employee's total annual contribution and the employee's monthly deduction.

1. Dorsey Williams, single plan.
PPO annual premium is $4,325.
Employer pays 65 percent.

2. Rubina Shaw, family plan.
HMO annual premium is $11,473.
Employer pays 73 percent.

SECTION 11-1 PRACTICE

	Insurance Plan	Annual Premium	Employer's Percent	Employee's Percent	Employee's Contribution	Monthly Premium
3.	Single PPO	$ 2,980	60%	a.	b.	c.
4.	Single HMO	2,368	80%	a.	b.	c.
5.	Family Trad.	6,066	75%	a.	b.	c.
6.	Family HMO	12,540	90%	a.	b.	c.
7.	Family PPO	14,600	85%	a.	b.	c.

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8. Sing-Chi Chow, single plan.
   PPO premium is $5,436.
   Employer pays 85 percent of cost.
   a. How much does Chow pay annually?
   b. How much is deducted from his weekly paycheck?

9. Kelli Lenz, family plan.
   HMO premium is $8,500.
   Employer pays 65 percent of cost.
   a. How much does Lenz pay annually?
   b. How much is deducted from her semimonthly paycheck?

10. Luisa Hernandez has a family membership in her company's traditional group medical insurance program. The total cost is $6,288 annually and the employer pays 75 percent of the total cost. She also pays for the optional annual dental premium of $880 and the optional vision premium of $324. Her contribution is deducted biweekly from her paycheck. How much is her total annual contribution? How much is her biweekly deduction?

11. Boris Heban is single and pays into an HMO. The total cost is $8,190 annually, and the employer pays 90 percent of the total cost. He also pays 50 percent of the optional annual dental premium of $662 and 50 percent of the optional vision premium of $188. How much is deducted each week from his paycheck?

12. Rachel and Dustin Lutts are self-employed photographers. They pay 100 percent of the PPO insurance premium of $7,640 annually. They also have a dental plan that costs $566 annually and a vision plan that costs $244 annually. The premiums are paid quarterly (every three months). How much do they pay each quarter?

13. Placido Lucero is retired and covered by Medicare Part A & B. His retirement plan covers 67 percent of his Medicare HMO annual premium of $4,200. His retirement plan covers 50 percent of his wife's Medicare HMO annual premium of $4,200. Also, Lucero has a dependent grandchild who has an HMO annual premium of $1,600, of which 40 percent is covered by his retirement plan. What is the monthly amount deducted from his retirement check for health care?

MAINTAINING YOUR SKILLS

Find the percent.

14. What percent of $60 is $3?

15. What percent of $150 is $60?

16. What percent of $475 is $95?

17. What percent of $210.00 is $73.50?

Find the percentage.

18. $367 \times 55\%$

19. $940 \times 14.2\%$

20. $4,200 \times 13.65\%$

21. $3,500 \times 4.81\%$

Health Insurance Benefits

Just because you have health insurance doesn't mean all procedures are covered. In fact, the insurance plan and the state you live in determine the services provided. For example, you might have difficulty securing health insurance to cover infertility treatment and pre-existing conditions (for example, congenital heart disease).

Health insurance policies have an annual **deductible**, which is the amount of money you must pay each year before your insurance company starts paying. Some health care services also have a **co-insurance** clause. This requires you to pay a certain percent of medical expenses after a deductible has been paid. For example, an 80 percent co-insurance clause means your insurance company pays 80 percent of the cost and you pay 20 percent of the cost. You might also hear about a **co-payment**. This is usually a predetermined flat fee you pay for health care services. (This is usually *not* specified by a percent like a co-insurance clause.) For example, you might have a $10 co-payment for visiting the doctor regardless of the type of service provided.

You'll need to remember that:

$$\text{Amount Paid by Patient} = \text{Deductible} + \text{Co-payments} + \text{Co-insurance Amount} + \text{Hospital Charges}$$

Living in the Real World

Insuring Your Life

How Risky Do You Want to Be? Waldschmidt knows that health insurance doesn't cover all the costs of medical care. In fact, he thought his part of the bill for his broken leg was pretty high. He is now exploring insurance policy options that might reduce his costs in the future.

Draw Conclusions What are some ways for Waldschmidt to reduce his costs?

Example 1

Brooke Kolodie is single and has a health insurance plan with the benefits shown in Figure 11.1 on page 376. Her recent network health care costs include co-payments for 8 physician visits and 9 specialist visits. Following hospital surgery, she made co-payments for 12 physical therapy visits, and she had 75 home visits from a nurse at $55 each. Her hospital admission charge was $200 and her hospital bill was $14,560. What amount did she pay?

Figure 11.1

Health Care Benefits Schedule

		Network	Non-Network*
Annual Deductible	Single	$300	$ 600
	Family	$900	$1,800
Hospital Charges	—	90% **	70% **
Home Health Care	First 50 visits	100% **	80% **
	Over 50 visits	80% **	80% **
Co-insurance/ Co-payments	Physician visit	$ 10	$ 12
	Specialist visit	$ 20	$ 25
	Physical Therapy		
	First 15 visits	$ 15	70% **
	Over 15 visits	80% **	70% **
	Emergency Room	$ 50	$ 50
	Ambulance	$ 25	$ 25

*Non-Network refers to a health care provider that doesn't have a contract with the health plan administrator.
**Percent of total cost that is covered by the health care company.

STEP 1: Find the deductible.
The deductible is $300.

STEP 2: Find the cost of the co-payments.
Physician + Specialist + Physical Therapy
($10 × 8) + ($20 × 9) + ($15 × 12) =
$80 + $180 + $180 = $440

STEP 3: Find the co-insurance amount for home health care.
(Note: Co-insurance requires the insurance company to pay
80 percent of the costs and the patient pays 20 percent of the costs.)
$55 × (75 − 50) × 20% =
$55 × 25 × 0.20 = $275

STEP 4: Find the hospital charges. (Note: The patient pays a small
percent of the hospital charge, such as 10 percent.)
$14,560 × (100% − 90%) =
$14,560 × 10% = $1,456

STEP 5: Find the total amount paid by patient.

Deductible + Co-payments + Co-insurance Amount + Hospital Charges
$300 + $440 + $275 + ($1,456 + $200)
= $2,671 total paid

CONCEPT CHECK

SELF-CHECK

**Complete the problem, then check your answers at the end of the chapter.
Determine the total health care charges using Figure 11.1.**

1. Determine a family's network plan costs, with the following co-payments:
22 physician visits, 12 specialist visits, 15 physical therapy appointments, and
1 emergency room visit. There is also a hospital charge of $1,260 to consider.

	Deductible Amount	Number of Co-payments at $10.00 Each	Amount of the Co-payments	Amount Subject to Co-insurance	Insured Co-insurance Rate	Amount of Co-insurance	Total Paid by Insured
2.	$300	25	a.	$12,000	20%	b.	c.
3.	200	40	a.	24,000	20%	b.	c.
4.	350	52	a.	16,000	30%	b.	c.
5.	600	32	a.	54,000	40%	b.	c.

For Problems 6 and 7, find the deductible, co-payment amount, co-insurance amount, hospital charges, and total paid by the insured. (Use Figure 11.1 on page 376 for the following problems.)

6. Sofia Carbondale
   Single plan, Network
   Co-payments: 18 physician visits
                  15 specialist visits
                  15 physical therapy appointments
                  1 ER visit
                  Hospital charge of $6,560

7. Jacobi Duarte
   Family, Non-network
   Co-payments: 22 physician visits
                  12 specialist visits
                  25 physical therapy appointments at $55 each
                  1 ER visit
                  Hospital charge of $15,600

8. Wanda Orsini broke her leg playing basketball, which resulted in numerous medical bills. She is covered by the family network insurance plan with the benefits shown in Figure 11.1 on page 376. Her recent health care costs include co-payments for 4 physician visits, 9 orthopedic bone specialist visits, and hospital costs of $12,940. She had 40 physical therapy visits at $60 each. She had 12 home visits from a nurse at $55 each. Orsini's hospital admission charge was $200 and she had an ER charge of $950. She also had 8 generic drug pre-scriptions with a co-payment of $10.00 each. Find the deductible, co-payment amount, co-insurance amount, hospital charges, and total paid by the insured.

Find the percentage. Round answers to the nearest hundredth.

9. 20% of $2,490

10. 31.4% of 952

Subtract.

11. 978 − 865

12. 77,521 − 66,842

13. 997,341 − 942,876

14. 955 − 827

15. 82,321 − 32,966

16. 793,450 − 89,890

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Term Life Insurance

Utilize tables to compute the annual premium for term life insurance.

When the breadwinner of the family dies, what do you do financially? If this happens to a family with children, then it's the classic case of financial setback. Life insurance, however, can soften the financial blow. This is financial protection for the family in case the breadwinner dies.

There are a couple of different insurance policies you need to know about. First, **term life insurance** is the least expensive form of life insurance that you can buy. You buy term life insurance for a specified term, such as five years, or to a specified age. Unless you renew your policy at the end of each term, the insurance coverage ends. The annual premium depends on your age at the time you buy the policy and the number of *units*. (One unit of insurance has a face value of $1,000.) The annual premium for term life insurance usually increases with each new term.

The person whose name is on the policy chooses the **beneficiary**. The beneficiary will receive the *face value* of the policy. The face value is the amount of insurance coverage that you buy.

Annual Premium = Number of Units Purchased × Premium per $1,000

Living in the Real World

Insuring Your Life

Someone Else's Life Depends on It   Talking to her brother about health insurance has reminded Louise that she wants to purchase life insurance. She has two young children whom she wants to protect financially in case she dies. Today, Louise is talking to an insurance agent.

Draw Conclusions   What is the difference between term and life insurance?

Example 1

Kenny Calloway is 30 years old. He wants to purchase a $50,000, 5-year term life insurance policy. What is his annual premium?

STEP 1: Find the number of units purchased.
$50,000 ÷ $1,000 = 50 units purchased

STEP 2: Find the premium per $1,000.
Refer to **Figure 11.2** on page 379. Read the table.
Male, age 30 = $2.47

STEP 3: Find the annual premium.
Number of Units Purchased × Premium per $1,000
50   × $2.47
= **$123.50 annual premium**

Figure 11.2

Age	Male	Female
Annual Premiums per $1,000 of Life Insurance: 5-Year Term*		
18–30	$ 2.47	$2.13
35	2.70	2.29
40	3.27	2.67
45	4.17	3.54
50	5.84	4.82
55	8.81	6.60
60	13.22	9.71
*Minimum amount is $50,000		

50000 ÷ 1000 = 50 × 2.47 = 123.5

CONCEPT CHECK

SELF-CHECK ✓

Complete the problems, then check your answers at the end of the chapter. Use Figure 11.2 above to find the annual premium for a 5-year term policy.

1. A $50,000, 5-year term policy, female, age 18.

2. A $60,000, 5-year term policy, male, age 45.

Example 2

Maria Rita Gomez took out an $80,000, 5-year term policy at age 30. She will be 35 years old this year. What will the annual premium be at age 35? What was the annual premium at age 30? How much is the increase? What is the percent increase?

STEP 1: Find premium at age 35.

$$\frac{\$80,000}{\$1,000} \times \$2.29 = \textbf{\$183.20 annual premium at 35}$$

STEP 2: Find premium at age 30.

$$\frac{\$80,000}{\$1,000} \times \$2.13 = \textbf{\$170.40 annual premium at 30}$$

STEP 3: Find the annual increase.

$$\$183.20 - \$170.40 = \textbf{\$12.80 annual increase}$$

STEP 4: Find the percent increase.

$$\frac{\text{Increase}}{\text{Original Amount}}$$

$$\frac{\$12.80}{\$170.40} = \textbf{0.075 or 7.5\% increase}$$

CONCEPT CHECK

SELF-CHECK ✓

Complete the problems, then check your answers at the end of the chapter. What is the percent increase in premiums for a 5-year term policy?

3. A $60,000, 5-year term policy, female, age 40. Now age 45.

4. A $100,000, 5-year term policy, male, age 55. Now age 60.

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Use Figure 11.2 on page 379 to answer the following:

	Insured	Age	Coverage	Number of Units	×	Annual Premium per $1,000	=	Annual Premium
5.	Lianna Torrez	20	$ 60,000	60	×	a.	=	b.
6.	John O'Neill	45	85,000	a.	×	b.	=	c.
7.	Kate Owens	35	95,000	a.	×	b.	=	c.
8.	Debra Green	50	200,000	a.	×	b.	=	c.

For Problems 9 and 10, what is the percent increase in the premium?

9. Phil Davis purchased a $75,000, 5-year term life insurance policy when he was 40. Now he is 45.

10. Marica Deerfoot purchased a $120,000, 5-year term life insurance policy when she was 55. Now she is 60.

11. Joni Hauck wants to purchase a $65,000, 5-year term life insurance policy. She is 25 years old. What is her annual premium?

12. Peter and Edith Lichtner have a child. Peter is a career counselor, and Edith is a child psychologist. Peter is 30 years old, and Edith is 25 years old. Both want to purchase $80,000, 5-year term life insurance policies. What is Edith's annual premium? What is Peter's annual premium?

13. Sam and Kolleen Hastings have two children. Sam was 30 years old when he first purchased a $125,000, 5-year term life insurance policy. He will be 35 years old this year.
   a. What will his annual premium be if he increases the policy to $200,000?
   b. What is his monthly premium?
   c. What total amount did he pay during the previous 5-year term?
   d. What total amount will he pay for the next 5-year term?

Divide. Round answers to the nearest thousandth.

14. $8.216 \div 6.12$

15. $76.26 \div 0.14$

16. $1.025 \div 0.05$

17. $21,624 \div 1,000$

18. $93.40 \div 100.00$

19. $18,400 \div 1,000$

Multiply. Round answers to the nearest hundredth.

20. 34.362×100

21. 0.95×0.16

22. 3.49×0.035

23. 42.6×32.914

24. $0.052 \times 1,000$

25. $3.481 \times 1,000$

Other Types of Life Insurance

Whole life insurance, also known as permanent insurance, offers financial protection for your entire life. You pay a specific premium for the entire duration that you hold the policy. When you die, the insurance company pays your beneficiary a declared sum. The amount of the premium depends on your age at the time you purchased the policy.

Not only does whole life provide your dependents financial coverage, but it can also be used as an investment. In addition to the face value that your beneficiary will receive, whole life insurance has a **cash value** and *loan value*. The cash value is the amount of money you'll receive if you cancel your policy. Think of whole life insurance as both a death benefit and a savings account. You can borrow money on the policy and then pay interest on the loan. The insurance company will lend you the same amount as the cash value if you request it.

Insurance companies have your needs in mind. That's why there are different kinds of whole life insurance policies available to you—**limited payment policy** and **universal life insurance**. Limited payment policy offers lifetime protection. You pay premiums only for a specified number of years or until you reach a certain age. Universal life insurance is a combination of a life insurance policy and a savings plan. The policy covers you for your entire life. You pay a minimum premium, but anything over the minimum goes into an investment account that earns interest.

When you calculate annual premiums, remember that:

Annual Premium = Number of Units Purchased × Premium per $1,000

Living in the Real World

Insuring Your Life

Prepare for the Future   When it comes to life insurance, Louise has options. She knows that at the end of each month she wants extra money to help Jeremy pay off his medical bills for that broken leg.

Draw Conclusions   What are the two other forms of insurance where you get back some of the money you spent on premiums?

Example 1

Phyllis Saul is 25 years old. She wants to purchase a whole life policy valued at $125,000. What is her annual premium?

Figure 11.3

Annual Premiums per $1,000 of Life Insurance					Monthly Premium
Age	Paid Up at Age 65		Whole Life		$50,000 Universal Life
	Male	Female	Male	Female	Male or Female
20	$11.75	$ 9.75	$ 8.00	$ 6.25	$ 19.00
25	13.75	11.50	9.50	7.50	24.00
30	17.00	14.50	11.75	9.25	29.00
35	21.50	18.00	15.00	11.50	37.50
40	29.75	25.00	19.50	14.50	52.00
45	39.50	32.50	25.50	18.75	69.50
50	56.25	45.75	34.00	24.25	93.50
55			46.50	32.25	126.00

Need Help? Go to...

➤ **Skill 11: Dividing Decimals,** page 738

➤ **Skill 8: Multiplying Decimals,** page 735

➤ **Application C: Tables and Charts,** page 762

STEP 1: **Find the number of units purchased.**
$125,000 ÷ $1,000 = 125 units purchased

STEP 2: **Find the premium per $1,000.** (Refer to **Figure 11.3.**)
Female, age 25 = $7.50

STEP 3: **Find the annual premium.**

Number of Units Purchased × Premium per $1,000
125 × $7.50 = **$937.50 annual premium**

125000 ÷ 1000 = 125 × 7.5 = 937.5

CONCEPT CHECK

SELF-CHECK ✓

Complete the problems, then check your answers at the end of the chapter.
Find the annual premium.

1. Thirty-year-old male, with a $70,000 whole life policy.

2. Forty-year-old female, with a limited payment policy until age 65 of $90,000.

Figure 11.4

Optional Payment Plans		
Percent of Annual Premium		
Semi-annual Premiums	=	50.5%
Quarterly Premiums	=	25.5%
Monthly Premiums	=	8.5%

Rather than make one annual payment, many insurance companies will allow you to make smaller payments. Because of the additional expense of collecting and handling the payments several times a year, a small fee is charged. Many companies use the guidelines shown in **Figure 11.4.**

Example 2

Suppose Phyllis Saul (from Example 1), wants to pay the $937.50 annual premium monthly. What are her monthly payments? How much can she save in one year by paying the premium annually?

STEP 1: Find the monthly premium. (Note: Refer to Figure 11.4 on page 382 for percent of monthly premium.)

Annual Premium × 8.5%

$937.50 × 0.085 = $79.6875 = **$79.69 pays premium per month**

STEP 2: Find how much she can save.

$(12 \times \$79.69) - \$937.50 =$

$956.28 − $937.50 = **$18.78 amount saved**

CONCEPT CHECK

Complete the problems, then check your answers at the end of the chapter. Determine how much can be saved by paying annually. (Refer to Figure 11.4 on page 382 for optional premium plans.)

3. An annual premium of $1,700 paid monthly.

4. An annual premium of $1,080 paid quarterly.

SECTION 11-4 PRACTICE

Use Figure 11.3 on page 382 to solve the following.

	Type	Gender	Age	Face Value	Number of Units	Cost per $1,000	Annual Premium	Monthly Premium
5.	Whole Life	Female	20	$ 50,000	a.	b.	c.	d.
6.	Paid at 65	Male	30	120,000	a.	b.	c.	d.
7.	Paid at 65	Female	40	200,000	a.	b.	c.	d.
8.	Whole Life	Male	45	200,000	a.	b.	c.	d.

9. Ann Gosik's insurance policy. Whole life, $50,000. She is 40 years old.
   a. What is her annual premium?
   b. What is her semi-annual premium?

10. James Dolby's insurance policy. Paid up at age 65, $50,000. He is 20 years old.
   a. What is his annual premium?
   b. What is his quarterly premium?

11. Terrance Gonzales is 30 years old and wants to purchase a $50,000 life insurance policy. He is considering a universal life insurance policy. What is his monthly premium? What is his annual premium?

12. Robert and Lucy Dubbs each purchase a $100,000 whole life insurance policy. Both are 25 years of age. What are their total annual premiums? How much more is Robert Dubbs's annual premium than his wife's?

13. Leona Sowinski purchased a $50,000 universal life insurance policy at the age of 20. What is her annual premium? If Leona pays $150 a month, how much is she saving annually?

MAINTAINING YOUR SKILLS

Divide. Round answers to the nearest hundredth.

14. 18.4 ÷ 0.032   **15.** 47.614 ÷ 15.62   **16.** 0.098 ÷ 1.9

Multiply. Round answers to the nearest hundredth.

17. 0.31 × 0.84   **18.** 7.81 × 8.1   **19.** 6.511 × 0.05

SECTION 11-1 **CONCEPT CHECK** (p. 373)

1. $100\% - 65\% = 35\%$
$\$4,325 \times 35\% = \mathbf{\$1,513.75}$
$\$1,513.75 \div 12 = \mathbf{\$126.15}$

2. $100\% - 73\% = 27\%$
$\$11,473 \times 27\% = \mathbf{\$3,097.71}$
$\$3,097.71 \div 12 = \mathbf{\$258.14}$

SECTION 11-2 **CONCEPT CHECK** (p. 376)

1. The deductible is $900.
Find the cost of the co-payments.
$(\$10.00 \times 22) + (\$20 \times 12) + (\$15 \times 15) + \$50 =$
$\quad \$220 \quad + \quad \$240 \quad + \quad \$225 \quad + \$50 = \$735$
Find the hospital charges.
$\$1,260 \times (100\% - 90\%) =$
$\$1,260 \times \quad 10\% \quad = \$126$
Find the total amount paid by the patient.
$\$900 + \$735 + \$126 = \mathbf{\$1,761}$

SECTION 11-3 **CONCEPT CHECK** (p. 379)

1. $50 \times \$2.13 = \mathbf{\$106.50}$

2. $60 \times \$4.17 = \mathbf{\$250.20}$

3. Premium at age 40. $60 \times \$2.67 = \$160.20$
Premium at age 45. $60 \times \$3.54 = \$212.40$
Percent increase in premium. $\dfrac{\$212.40 - \$160.20}{\$160.20} = \dfrac{\$52.20}{\$160.20} = 0.3258 = \mathbf{32.6\%}$

4. Premium at age 55. $100 \times \$8.81 = \$881$
Premium at age 60. $100 \times \$13.22 = \$1,322.00$
Percent increase in premium. $\dfrac{\$1,322 - \$881}{\$881} = \dfrac{\$441}{\$881} = 0.501 = \mathbf{50.1\%}$

SECTION 11-4 **CONCEPT CHECK** (p. 382, 383)

1. Units: $\$70,000 \div \$1,000 = 70$
Premium per $1,000: $11.75
Annual premium: $70 \times \$11.75 = \mathbf{\$822.50}$

2. Units: $\$90,000 \div \$1,000 = 90$
Premium per $1,000: $25.00
Annual premium: $90 \times \$25.00 = \mathbf{\$2,250}$

3. Monthly premium: $\$1,700 \times 0.085 = \$144.50$
Saves: $(12 \times \$144.50) - \$1,700 = \$1,734 - \$1,700 = \mathbf{\$34}$

4. Quarterly premium: $\$1,080 \times 0.255 = \$275.40$
Saves: $(4 \times \$275.40) - \$1,080 = \$1,101.60 - \$1,080 = \mathbf{\$21.60}$

◄ **CONTENTS** ►

Living in the Real World

Insuring Your Life

Analyze the Story   Insurance may not be a big issue for you now, but once you're no longer covered under your parents' or guardian's policies or you start full-time employment, you'll need to know your options. Here's an opportunity to test your knowledge. Write your answers to the following questions on a separate piece of paper.

1. Health insurance is only available as a benefit from an employer.   True   False

2. You can continue your health insurance even if you leave a job.   True   False

3. A co-payment is an amount you pay for a doctor's visit or prescription.   True   False

4. In general, the younger you are, the less expensive life insurance is.   True   False

5. Life insurance can also be used as an investment for retirement.   True   False

6. Life insurance companies can cancel policies if you develop a serious illness after you're insured.   True   False

7. You can collect life insurance benefits before you die.   True   False

After YOU READ

REVIEW OF KEY WORDS

health insurance (p. 372)
preferred provider organization (PPO) (p. 372)
health maintenance organization (HMO) (p. 372)
deductible (p. 375)
co-payment (p. 375)
co-insurance (p. 375)
life insurance (p. 378)

term life insurance (p. 378)
beneficiary (p. 378)
whole life insurance (p. 381)
cash value (p. 381)
limited payment policy (p. 381)
universal life insurance (p. 381)

For Problems 1–10, write your own definitions for 10 of the key words above.

CONTENTS

Skills and Concepts

Compute health insurance premiums.

Pedro Martinez is employed by the Wise and Wonderful Gift Corporation. He has a family membership in a traditional group medical insurance program. The annual premium is $8,540. Martinez's employer pays 90 percent of the total cost. His contribution is deducted monthly from his paycheck. What is Martinez's annual contribution? What is his monthly deduction?

STEP 1: Find the employee's percent.
100% − Employer's Percent
100% − 90% = 10% employee's percent

STEP 2: Find the employee's annual contribution.
Total Premium × Employee's Percent
$8,540 × 10% = $854 employee's contribution

STEP 3: Find the employee's monthly deduction.
Employee's Contribution ÷ 12
$854 ÷ 12 = $71.17 employee's monthly deduction

REVIEW EXERCISES
Complete the table below.

	Insurance Plan	Annual Premium	Employer's Percent	Employee's Percent	Employee's Contribution	Monthly Premium
11.	Single PPO	$ 3,006	65%	a.	b.	c.
12.	Family PPO	3,259	50%	a.	b.	c.
13.	Family Trad.	5,832	75%	a.	b.	c.
14.	Family PPO	15,600	90%	a.	b.	c.
15.	Single HMO	2,560	85%	a.	b.	c.
16.	Family HMO	13,650	70%	a.	b.	c.

Calculate the amount the patient pays for health care.

Use Figure 11.1 on page 376 to solve the example and problems.

Tawney Manuel is single and has a health insurance plan with the benefits shown in Figure 11.1. Her recent network health care costs include co-payments for 4 physician visits and 6 specialist visits. She also had 56 home visits from a nurse at $45 each. What was the total amount she paid?

STEP 1: Find the deductible.
The deductible is $300.

STEP 2: Find the cost of co-payments.
Physician + Specialist + Physical Therapy
($10 × 4) + ($20 × 6)   = $160 cost of co-payments

STEP 3: Find the co-insurance amount for home health care.
$45 × (56 − 50) × 20% = $54 co-insurance amount

STEP 4: Find the total amount paid by patient.

Deductible + Co-payments + Co-insurance Amount + Hospital Charges

$300   + $160   + $54
= **$514 total amount paid**

REVIEW EXERCISES
Complete the table below.

	Deductible Amount	Number of Co-payments at $10.00 Each	Amount of the Co-payments	Amount Subject to Co-insurance	Insured Co-insurance Rate	Amount of Co-insurance	Total Paid by Insured
17.	$500	15	a.	$15,000	20%	b.	c.
18.	300	25	a.	10,000	30%	b.	c.
19.	200	45	a.	25,000	40%	b.	c.
20.	100	56	a.	12,000	35%	b.	c.
21.	150	41	a.	35,000	45%	b.	c.
22.	550	35	a.	55,000	25%	b.	c.

SECTION OBJECTIVE 11-3 AND EXAMPLES

Utilize tables to compute the annual premium for term life insurance.

Yamid Haad purchased a 5-year term life insurance policy. It provides $100,000 coverage. He is 35 years old. What is his annual premium?

STEP 1: Find the number of units purchased.
$100,000 ÷ $1,000 = 100 units purchased

STEP 2: Find the premium per $1,000. (Refer to Figure 11.2 on page 379.)
Male, age 35 = $2.70 premium per $1,000

STEP 3: Find the annual premium.
Number of Units Purchased × Premium per $1,000
100   × $2.70   = **$270 annual premium**

◀ **CONTENTS** ▶

REVIEW EXERCISES

23. Paul Lopez has a 5-year term life insurance policy with $125,000 coverage. He is 50 years old. What is his annual premium?

24. Alexis Finley is 35 years old and has $150,000, 5-year term life insurance policy. What is her annual premium? What would it be if she increases the policy to $200,000? What is her monthly premium?

Use Figure 11.2 on page 379 to answer the following:

	Insured	Age	Coverage	Number of Units	Annual Premium per $1,000	Annual Premium
25.	Caesar Morales	25	$ 50,000	a.	b.	c.
26.	Rose McNerney	30	75,000	a.	b.	c.
27.	David Rotunno	45	80,000	a.	b.	c.
28.	Erin McCamie	55	100,000	a.	b.	c.
29.	Terrie Creek	60	200,000	a.	b.	c.
30.	John Kim	40	500,000	a.	b.	c.

SECTION OBJECTIVE 11-4 AND EXAMPLES

Apply tables to data to compute the annual premiums for three types of life insurance.

Gretchen Kuhn is 30 years old. She wants to purchase a whole life insurance policy valued at $150,000. What is her annual premium?

STEP 1: **Find the number of units purchased.**
$150,000 ÷ $1,000 = 150 units purchased

STEP 2: **Find the premium per $1,000. (Refer to Figure 11.3 on page 382.)**
Female, age 30 = $9.25

STEP 3: **Find the annual premium.**
Number of Units Purchased × Premium per $1,000
150   × $9.25   = **$1,387.50 annual premium**

REVIEW EXERCISES
Use Figure 11.3 on page 382 to solve the following:

	Type	Gender	Age	Face Value	Number of Units	Cost per $1,000	Annual Premium	Monthly Premium
31.	Paid at 65	Male	20	$ 50,000	a.	b.	c.	d.
32.	Whole Life	Female	40	125,000	a.	b.	c.	d.
33.	Paid at 65	Male	25	150,000	a.	b.	c.	d.
34.	Universal	Male	35	50,000	a.	b.	c.	d.

No More House Calls   Health insurance is one of the largest and most important industries in the United States. The cost of researching and delivering high quality health care is growing every year, and insurance coverage must stretch even more each year.

Some insurance companies and physicians have worked to form preferred provider organizations (PPO) or health maintenance organizations (HMO) to try to make health care more affordable. The days of the family physician making house calls are long gone; the days of the family physician in solo practice are rapidly disappearing.

35. What are some of the financial advantages of group practice? In order to answer this question, you'll need to do a little research on the Internet or in the library to find out the benefits of a physician's group practice. You might also call your local hospital to see if you can talk with an administrator.

36. What other advantages benefit doctors who join such practices? You might interview a doctor or nurse to get his or her take on this.

37. Some patients prefer solo practice doctors. What are the advantages to patients of solo practitioners?

38. Why would the group practice and prepaid health plans of an HMO benefit insurance companies?

Thinking Critically

• How often do you take your health for granted? Find a story in the media about how *not* having health insurance affects families.
• Find out how many single people and families don't carry health insurance in your state.
  • Compare this to one other state.
  • What did you find? Explain your findings.

Portfolio

Select one of the assignments from this chapter that you found especially challenging and place it in your portfolio.

Math STUDIO
A Creative Lab

How Much Is Your Health Worth?

The Human Genome Project is the government-led project to "map" all the human genes' packages. Already, scientists have discovered the location of certain genes that cause health problems either at birth or later in life. With such knowledge, doctors may be able to treat or even prevent certain diseases.

The medical, social, and economic effects of this project will be profound. In addition, biotechnology companies are working to provide doctors with the tools to change the gene structure of humans.

> **QUICK FACTS ON THE HUMAN GENOME PROJECT**
> - The federal government and university and private researchers began this collaborative effort in the early '90s.
> - It identifies approximately 30,000 genes in human DNA.
> - Researchers used supercomputers to organize its 3 billion bits of research.
> - More than 1,100 scientists around the world worked on this project.

Purpose

Providing good health care involves collaboration between many different professionals, including medical professionals, hospitals, group insurance plans, and medical researchers. One problem can spark many different answers, depending on the person's perspective. In this Math Studio, you're asked to role-play with two other participants.

Supplies Needed

- Pen
- Paper
- Public library
- Internet
- Props and simple costumes, if desired

Your Activity

Step 1: In this role-play exercise, you and two other participants will write a brief script concerning three characters— a patient undergoing a standard annual physical, the patient's physician, and the patient's insurance agent. Decide now who you want to be for the purposes of this Math Studio.

Begin by researching the Human Genome Project and its effect on the health insurance industry. You should consult your local library and also the Internet. Several federal agencies that are funding the Project have excellent Web sites.

Step 2: In this role-play, the patient is undergoing a routine physical. Carefully read the following bulleted points. You will need to refer to these in order to complete Step 3.

- Since the Human Genome Project began, it has become easier to find genetic alterations associated with human disease. The physician recommends a simple blood test to determine the risk of disease and cancer.

- The patient wants the test, but doesn't want the results provided to the insurance company. Like every patient, this one has signed an information release form that says that personal medical information will be given to the insurance company in order for the patient to collect health insurance.

- The doctor thinks the genetic test is worthwhile. If it comes out positive, the patient will know that there is a greater risk of getting cancer and may be able to take steps now to avoid that problem. On the other hand, if the test results are negative, the patient will have peace of mind.

- The doctor knows that the insurance company needs information about patient's health in order to assess how much risk that person would be to insure. On the other hand, since this patient does not have cancer, the doctor is wondering whether the insurer should receive the genetic test results. The physician knows that insurance companies sometimes increase the premiums or even cancel policies of people who are high risk.

- The insurance company needs information about its clients' health and lifestyle. Companies generally do not want to insure high-risk individuals.

Step 3: As part of this role-play, you need to take the bulleted points listed in Step 2 and weigh them against your answers to the following questions:

- What are the ethical issues involved?

- Do those ethical issues or the perspective on them change depending on which role you are in?

- Who owes an ethical obligation to whom? Should an insurance company be ethically obliged to help anyone who can pay the premium? If so, could this policy conflict with any obligation they might have to shareholders in the company?

- If an insurance company agrees to insure everyone regardless of risk, could this affect the cost of a policy? If so, would it mean only the wealthy could afford insurance?

- Is there a difference between refusing to give information to insurers about a genetic test on a healthy person and giving information about a risky lifestyle?

Step 4: Finish the role-play. Among the participants

- discuss the issues you explored.

- explore how your views changed during the course of the skit.

- decide if you are better able to understand a view you do not share.

Critique It

How do all of you resolve your conflicting points of view in order to benefit all parties involved?