

Chapter 2 Problems

1. *Determining the Future Value of Education.* Jenny Franklin estimates that as a result of completing her master's degree, she will earn \$7,000 a year more for the next 40 years.

- What would be the total amount of these additional earnings?
- What would be the future value of these additional earnings based on an annual interest rate of 6 percent? (Use Table 1–B in the Chapter 1 Appendix.)

Solution:

- $\$7,000 \times 40 = \$280,000$
- $\$7,000 \times 154.760 = \$1,083,320$

LO: 2-1

Topic: Future Value

LOD: Intermediate

Bloom tag: Apply

2. *Comparing Living Costs.* Brad Edwards is earning \$45,000 a year in a city located in the Midwest. He is interviewing for a position in a city with a cost of living 12 percent higher than where he currently lives. What is the minimum salary Brad would need at his new job to maintain the same standard of living?

Solution: $\$45,000 \times 1.12 = \$50,400$

LO: 2-2

Topic: Cost-of-living considerations and comparisons

LOD: Basic

Bloom tag: Apply

3. *Calculating Future Value of Salary.* During a job interview, Pam Thompson is offered a salary of \$28,000. The company gives annual raises of 4 percent. What would be Pam's salary during her fifth year on the job?

Solution:

Year 1: \$28,000

Year 2: $\$28,000 \times 1.04 = \$29,120$

Year 3: $\$29,120 \times 1.04 = \$30,284.80$

Year 4: $\$30,284.80 \times 1.04 = \$31,496.19$

Year 5: $\$31,496.19 \times 1.04 = \$32,756.04$

(Alternate solution: $\$28,000 \times 1.170$ (FV\$1 4%, 4 years) = \$32,760)

LO: 2-3

Topic: Future value

LOD: Intermediate

Bloom tag: Apply

4. *Computing Future Value.* Calculate the future value of a retirement account in which you deposit \$2,000 a year for 30 years with an annual interest rate of 6 percent. (Use the tables in the Chapter 1 appendix.)

Solution: $\$2,000 \times 79.058 = \$158,116$

LO: 2-4

Topic: Future Value

LOD: Basic

Bloom tag: Apply

5. *Comparing Taxes for Employee Benefits.* Which of the following employee benefits has the greater value? Use the formula given in the Financial Planning Calculations box on page 65 to compare these benefits. (Assume a 28 percent tax rate.)

a. A nontaxable pension contribution of \$4,300 or the use of a company car with a taxable value of \$6,325.

b. A life insurance policy with a taxable value of \$450 or a nontaxable increase in health insurance coverage valued at \$340.

Solution:

a. \$4,300 divided by .72 equals a tax-equivalent value of \$5,972.22 which would be less than the \$6,325 taxable item; the company car has a higher financial value to the employee.

b. \$450 times .72 equals an after-tax value of \$324 compared to the nontaxable health insurance of \$340; the health insurance coverage has a higher financial value.

LO: 2-4

Topic: Taxation and employee benefits

LOD: Advanced

Bloom tag: Apply, Analyze

6. *Comparing Employment Offers.* Bill Mason is considering two job offers. Job 1 pays a salary of \$36,500 with \$4,500 of nontaxable employee benefits. Job 2 pays a salary of \$34,700 and \$6,120 of nontaxable benefits. Which position would have the higher monetary value? Use a 28 percent tax rate.

Solution:

Job 1: $\$36,500 + [\$4,500 / (1 - 0.28)] = \$42,750.$

Job 2: $\$34,700 + [\$6,120 / (1 - 0.28)] = \$43,200.$

LO: 2-4

Topic: Job offer comparisons

LOD: Advanced

Bloom tag: Apply, Analyze

7. *Calculating the After-Tax Value of Employee Benefits.* Helen Meyer receives a travel allowance of \$180 each week from her company for time away from home. If this allowance is taxable and she has a 30 percent income tax rate, what amount will she have to pay in taxes for this employee benefit?

Solution: $\$180 \times 52 \text{ weeks} = \$9,360 \times 0.30 = \$2,808.$

LO: 2-4

Topic: Taxation and employee benefits

LOD: Basic

Bloom tag: Apply

8. *Future Value of Advanced Training.* Ken Braden estimates that taking some classes would result in earning \$3,500 more a year for the next 30 years. Based on an annual interest rate of 4 percent, calculate the future value of these classes.

Solution: $\$3,500 \times 56.085$ (future value of annuity) = \$196,297.50

LO: 2-5

Topic: Future value

LOD: Basic

Bloom tag: Apply

9. *Comparing the Value of a Career Change.* Marla Opper currently earns \$50,000 a year and is offered a job in another city for \$56,000. The city she would move to has 8 percent higher living expenses than her current city. What quantitative analysis should Marla consider before taking the new position?

Solution: $\$50,000 \times 1.08 = \$54,000$ is the amount required in the new city for comparable living expenses; a salary of \$56,000 exceeds that amount.

LO: 2-5

Topic: Cost-of-living considerations and comparisons

LOD: Intermediate

Bloom tag: Apply, Analyze