

5

Interest: Borrowing Money

Working with Money

1. Use mental math to estimate each amount, to the nearest dollar.

- a) $\frac{1}{2}$ of \$19.99 is about \$_____.
- b) $\frac{1}{3}$ of \$30.25 is about \$_____.
- c) $\frac{2}{3}$ of \$30.25 is about \$_____.
- d) $\frac{1}{4}$ of \$99.50 is about \$_____.
- e) $\frac{3}{4}$ of \$99.50 is about \$_____.

Hint

To calculate $\frac{1}{4}$ of a number, divide by 4.
To calculate $\frac{3}{4}$ of a number, divide by 4 and multiply by 3.

2. Use mental math to estimate each amount, to the nearest dollar.

- a) 10% of \$69.99 is about \$_____.
- b) 25% of \$79.98 is about \$_____.
- c) 75% of \$79.98 is about \$_____.
- d) 33% of \$2100 is about \$_____.
- e) 20% of \$2510 is about \$_____.

Hint

10% = $\frac{10}{100}$ or $\frac{1}{10}$
20% = $\frac{20}{100}$ or $\frac{1}{5}$
25% = $\frac{25}{100}$ or $\frac{1}{4}$
33% = $\frac{33}{100}$ or about $\frac{1}{3}$
50% = $\frac{50}{100}$ or $\frac{1}{2}$
75% = $\frac{75}{100}$ or $\frac{3}{4}$

3. Evaluate to the nearest cent. Estimate to check that your answers make sense.

- a) $18.5\% \times \$2200 =$ _____
- b) $17.6\% \times \$20\,000 =$ _____
- c) $12.8\% \times \$11\,500 =$ _____
- d) $9.25\% \times \$42\,000 =$ _____
- e) $24.85\% \times \$10\,375 =$ _____
- f) $32.75\% \times \$59\,729 =$ _____

Tech Tip

Multiplying with Percents

To calculate 18.5% of \$2200, enter
18.5 % \times 2200
=,
or
0.185 \times 2200 =

4. Evaluate.

- a) $\$1000 + (6\% \text{ of } \$1000) = \$1000 +$ _____
= _____
- b) $\$7500 + (12\% \text{ of } \$7500) = \$7500 +$ _____
= _____

Hint

When working with money, round to the nearest cent after you have made the final calculation.

$$\text{c) } \$3000 + (16.2\% \text{ of } \$3000) = \$3000 + \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

Calculating with Exponents

5. Calculate. Round to the nearest hundredth.

$$\text{a) } 3.1^5 = \underline{\hspace{2cm}}$$

$$\text{c) } 5(1 + 0.08)^4 = \underline{\hspace{2cm}}$$

$$\text{b) } (1 + 0.3)^3 = \underline{\hspace{2cm}}$$

$$\text{d) } 3\left(1 + \frac{0.07}{12}\right)^{10} = \underline{\hspace{2cm}}$$

Using Interest Formulas

Simple interest: To calculate the amount of simple interest, I , earned on an investment, use

$$I = Prt$$

where P is the principal, r is the yearly interest rate, and t is the time in years.

6. Sophie invested \$1000 in a guaranteed investment certificate for 3 yr. The interest rate is 1.8% per year. How much interest will Sophie earn?

$$I = Prt$$

$$= \$\underline{\hspace{1cm}} \times 0.018/\text{yr} \times 3 \text{ yr}$$

$$= \$\underline{\hspace{1cm}}$$

Sophie will earn \$ in interest.

Compound interest: To calculate the value of an investment amount, A , earning compound interest, use

$$A = P(1 + i)^n$$

where A is the total value of the investment with interest, P is the principal, i is the interest per compounding period, and n is the number of compounding periods.

7. Max invested \$1200 in a savings account. The account earns 2.3%/yr, compounded monthly. How much will Max's investment be worth in 3 yr?

$$A = \$1200\left(1 + \frac{0.023}{12}\right)^{3 \times 12}$$

$$= \$1200 (\underline{\hspace{1cm}})^{36}$$

$$= \$\underline{\hspace{2cm}}$$

Max's investment will be worth \$ in 3 yr.

Tech Tip

Multiplying Expressions in Brackets

Use \times to multiply expressions in brackets. For example, for $5(1 + 0.08)^4$, enter

5 \times (1 + 0.08) y^x 4 =