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 $_____.

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 $_____.

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) $32.75\% \times \$59\,729 =$ _____

4. Evaluate.

a) $1000 + (6% of $1000) = $1000 + _____

= _____

b) $7500 + (12% of $7500) = $7500 + _____

= _____

c) $3000 + (16.2\% \text{ of } \$3000) = \$3000 + \underline{\hspace{1.5cm}}$

$= \underline{\hspace{2.5cm}}$

Calculating with Exponents

5. Calculate. Round to the nearest hundredth.

a) $3.1^5 = \underline{\hspace{1.5cm}}$

b) $(1 + 0.3)^3 = \underline{\hspace{1.5cm}}$

c) $5(1 + 0.08)^4 = \underline{\hspace{1.5cm}}$

d) $3\left(1 + \dfrac{0.07}{12}\right)^{10} = \underline{\hspace{1.5cm}}$

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?

$I = Prt$

$= \$\underline{\hspace{2cm}} \times 0.018/\text{yr} \times 3 \text{ yr}$

$= \$\underline{\hspace{1.5cm}}$

Sophie will earn $\underline{\hspace{1.5cm}}$ 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?

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

$= \$1200 \,(\underline{\hspace{2cm}})^{36}$

$= \$\underline{\hspace{3cm}}$

Max's investment will be worth $\underline{\hspace{3cm}}$ in 3 yr.