

### Solution 1.28

Use economic equivalence to determine the amount of money or value of  $i$  that makes the following statements correct.

- (a) \$5000 today is equivalent to \$4275 exactly 1 year ago at  $i = \underline{\hspace{1cm}}$ % per year.
- (b) A car that costs \$28,000 today will cost \$       a year from now at  $i = 4\%$  per year.
- (c) At  $i = 4\%$  per year, a car that costs \$28,000 now, would have cost \$       one year ago.
- (d) Last year, Jackson borrowed \$20,000 to buy a preowned boat. He repaid the principal of the loan plus \$2750 interest after only 1 year. This year, his brother Henri borrowed \$15,000 to buy a car and expects to pay it off in only 1 year plus interest of \$2295. The rate that each brother paid for his loan is        % for Jackson and        % per year for Henri.
- (e) Last year, Sheila turned down a job that paid \$75,000 per year. This year, she accepted one that pays \$81,000 per year. The salaries are equivalent at  $i = \underline{\hspace{1cm}}$ % per year.

*Solution:*

(a)  $i = (5000 - 4275) / 4275 = 0.17 \quad (17\%)$

(c) Price one year later =  $28,000 * 1.04 = \$29,120$

(d) Price one year earlier =  $28,000 / 1.04 = \$26,923$

(e) Jackson: Interest rate =  $(2750 / 20,000) * 100$   
 $= 13.75\%$

Henri: Interest rate =  $(2295 / 15,000) * 100$   
 $= 15.30\%$

(f)  $81,000 = 75,000 + 75,000(i)$   
 $i = 6,000 / 75,000$   
 $= 0.08 \quad (8\%)$