

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