

1. (b). \$865 2. (b). \$17,100 3. (b). \$87,000 (c). 7.08 years 4. (b). 118.045° (c). 12.31%
5. (b). \$287.50 (c). \$115 6. (b). \$145 (c). $6.67 \approx 7$ loan periods

Remember to clearly indicate what the variables (x and y) represent.

1. In an issue of Business Week, the president of a chain of franchised automobile tune-up shops said that people who buy a franchise and open a shop pay a weekly fee of \$235 plus 7% of the total amount of money taken in during the week by the tune-up center.

(a). Write a linear equation for the total fee as a function of the amount taken in by the shop.

(b). How much does the franchise owe if \$9000 is taken in during the week?

2. A company can make a total of 20 solar heaters for \$13,900, while 10 heaters cost \$7500.

(a). Write a linear equation for the total cost as a function of the number of heaters produced.

(b). What is the cost if 25 heaters are produced?

3. The sales of a small company were \$27,000 in its first year and \$63,000 in its fourth year.

(a). Write a linear equation for the sales as a function of the year.

(b). What will the sales be in the sixth year?

(c). How long before they reach \$100,000 in sales?

4. Due to humidity, the *perceived* temperature outside is different than the actual temperature. On a day when the actual temperature is 100° , if there is no humidity (0%), then the perceived temperature is 91.2° . If there is 40% relative humidity, then the perceived temperature is 107.72°

- (a). For a day with actual temperature of 100° , write a linear equation for the *perceived* temperature as a function of the relative humidity.
- (b). What is the perceived temperature with 65% relative humidity?
- (c). At what relative humidity will the perceived temperature be 100° ? [i.e. For what relative humidity will the perceived temperature be the same as the actual temperature of 100° ?

5. At the Rob-m-Blind Payday Advance, the lenders make loans for two-week periods and charge a fee that is 15% of the loan amount. The borrower leaves a postdated check that includes the loan amount and the fee. The lender gives the borrower cash for the loan amount and, after two weeks, deposits the check.

- (a). Write a linear equation for the check amount as a function of the loan amount.
- (b). If you borrow \$250 for a two-week period, how much will you write the check for?
- (c). If you borrow \$100 for a two-week period, how much will you write the check for?

6. Suppose you borrow \$100 and the fee charged is \$15 for the two-week loan period. If you cannot pay back the loan after the two weeks, you can extend your loan by paying the \$15 fee again for another two-week period.

- (a). Write a linear equation for the total amount (loan and fees) as a function of the number of loan periods.
- (b). How much is the total amount if you extend the initial loan two more times?
- (c). After how many loan periods will the fees charged be as much as the loan itself?