

# Multiplying and Dividing Fractions and Mixed Numbers

## JUAN'S BOOKCASE

Write your answers on notebook paper. Show your work.

Juan plans to build a bookcase to store his paperback books, DVDs, and CDs. He has lumber that he will use for the sides and back of the bookcase. The bookcase will have five shelves, and each shelf will be  $2\frac{1}{2}$  feet long.

1. Juan bought a piece of lumber that is 18 feet long.
  - a. Does he have enough lumber to make the five shelves? If not, how much more does he need? If so, how much will be left over?
  - b. Describe two ways you could find the answer to Part a.
2. DVD cases are  $\frac{9}{16}$  inch wide.
  - a. If Juan has 60 DVDs, how many of them will fit on one shelf?
  - b. How wide would a DVD case have to be in order for 60 of them to fit on one shelf? Give the answer in feet.
3. Juan has 28 paperback books. Each book is  $1\frac{1}{4}$  inches wide. Will all his books fit on one shelf? If not, how many will fit and how many will have to go on another shelf? If yes, how many more paperback books, if any, will fit on the same shelf? Explain.
4. Juan measured the location for the bookcase and realized that his shelves can be no more than  $1\frac{3}{4}$  feet wide.
  - a. What is the maximum number of shelves Juan could build for this new bookcase using the lumber he bought?
  - b. How many DVD cases will he be able to store on each of the shorter shelves?
  - c. How many paperback books will he be able to store on each of the shorter shelves?