

**Solve the following problems in two ways, (a) pictorially, and (b) algebraically. Provide an explanation/justification.**

1. Emily receives her paycheck for the month. She spends  $\frac{1}{6}$  of it on food. She then spends  $\frac{3}{5}$  of what remains on her house payment. She spends  $\frac{1}{3}$  of what is now left for her other bills. Finally she spends  $\frac{1}{4}$  of the remaining money for entertainment. This activity leaves her with \$150. What was her original take-home pay?
2. Greg spends one-fifth of his take-home pay on his mortgage and property taxes. Out of the remaining money he again spends one-fourth on food and clothes. From the money left over after these expenses, he puts one-sixth into savings. What fractional part of his take-home pay does he have left?
3. Some people got on a bus. At the first stop  $\frac{1}{5}$  of the people got off and  $\frac{2}{5}$  of the original number got on. At the second stop,  $\frac{1}{2}$  of the people got off and  $\frac{1}{4}$  of the number that was left on the bus got on. At the last stop,  $\frac{2}{3}$  of the people got off, leaving 10 people on the bus. How many people were on the bus before the bus reached the first stop?
4. In a vegetable garden,  $\frac{2}{5}$  of the garden was lettuce. Of the remaining,  $\frac{5}{9}$  was used for carrots.  $\frac{3}{8}$  of the remaining was for tomatoes. The rest of the garden was used for potatoes.
  - A. What fraction of the garden was used for carrots?
  - B. What fraction of the garden was used for tomatoes?
5. Last Saturday, I spent all day baking cookies. I took  $\frac{3}{4}$  of the cookies to work. Of the cookies I took to work,  $\frac{1}{3}$  of them went to the math department faculty and  $\frac{1}{6}$  went to the computer department faculty. After distributing the cookies to those two departments, I gave  $\frac{1}{2}$  of the remaining cookies to students. I ate the rest of the cookies I brought to work. When I got home from work I found that my family had eaten all the cookies I had left at home.
  - A. What fraction of the cookies did I eat?
  - B. What fraction of the cookies did I give to students and leave at home?
  - C. The amount of cookies given to the math department is what fraction of the amount given to the computer department?