

Chapter 7 Case Study

Tools

- scientific calculator

Furniture Upholsterer

- Lina Hu became interested in fabrics while working part-time in a textile factory with her uncle.
- Researching on the Internet, she discovered that she could take furniture upholstery courses at a college in Surrey, British Columbia.
- Lina stayed with family members in Surrey and took all five courses offered, so that she could become familiar with all the industrial standards for this trade.
- Upon returning to Toronto, Lina started her own furniture upholstery business. This occupation requires a high degree of manual dexterity, skills with tools, and great attention to detail. She charges \$20/h, plus the cost of the materials used.

Questions

A customer has brought in a couch and asked Lina to reupholster it with a fabric similar to the original. Lina also suggested replacing the seat cushions, which had lost their flexibility over the years.

1. The three seat cushions were made using a solid piece of foam rubber covered with fabric. Each was a rectangular prism, measuring 60 cm by 56 cm by 12 cm. What volume of foam rubber is needed for the three cushions?
2. To estimate the amount of fabric needed, Lina makes and records several measurements. Determine the minimum amount of fabric needed to cover the following sections of the couch:
 - a) the three cushions
 - b) the seat under the cushions and two very thin, rectangular flaps that hang down the front and back, just above the floor. The seat below the cushions is 170 cm by 60 cm. The front flap is 200 cm by 30 cm, and the rear one is 200 cm by 22 cm.
 - c) the back support, which is trapezoidal in shape. It is 165 cm long at the bottom and 185 cm long at the top, 60 cm tall, and 22 cm thick.
 - d) the two arms of the couch, which are cylindrical. They each have a diameter of 26 cm and a length of 90 cm.
 - e) the ends of the couch, which are rectangular and measure 90 cm by 45 cm
3. How much material does Lina need to complete the job?
4. Lina plans on buying 7% extra material to account for seams and wastage. If the material is only sold by the square metre, how much material should Lina order?

