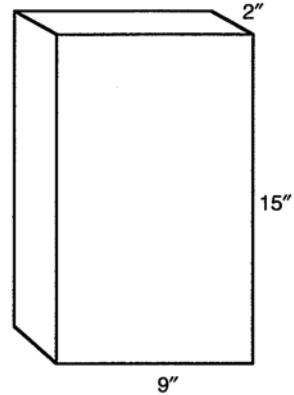


Geometry – Wrap Battle

The *surface area* of a box is the sum of the areas of every rectangle of the box: two sides, front and back, and top and bottom. These rectangles are called *faces*. Whenever you wrap a gift, or cover a box, you are using the concept of surface area.

The dimensions of a gift box, wrapping paper, ribbon, and bows are provided below. Also included are the costs. Use the information to answer the questions that follow.

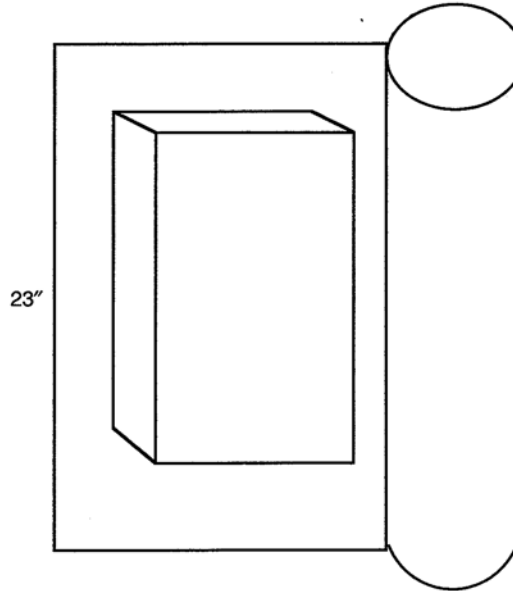
- ▲ 1 gift box measuring 9 inches by 15 inches by 2 inches
- ▲ 1 jumbo roll of wrapping paper, 23 inches by 45 feet that costs \$7.99
- ▲ 1 roll of ribbon, 66 feet per roll that costs \$1.49
- ▲ 1 package of 12 bows that costs \$2.49



1. What is the area of the wrapping paper? _____
2. What is the surface area of the gift box? _____

3. If a box is placed on the wrapping paper as illustrated on the right and a two-inch strip of paper overlaps, find the dimensions of the sheet of wrapping paper required to wrap the entire box. (Do not cut the roll above or below the box. Only cut to the right of it.)

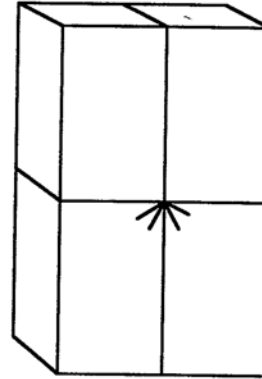
Record the dimensions and find the area.



4. How many gift boxes could be wrapped using the jumbo roll? _____ Explain why this answer differs from dividing the area of the roll by the surface area of the box.

5. To wrap the package with ribbon, two pieces are required per box. One piece is tied horizontally and one extra foot is required to tie a knot. Another piece is tied vertically, and one extra foot is required to tie a knot. The finished wrapped box is pictured at the right.

Find the length of each piece of ribbon. _____



6. How many packages can be tied using one roll of ribbon? _____
7. Refer to the answer to problem 4. How many rolls of ribbon are required to wrap this number of boxes? _____ How many packages of bows are required? (Assume one bow is placed on every package.) _____
8. Find the cost of wrapping the number of packages found in problem 4. _____