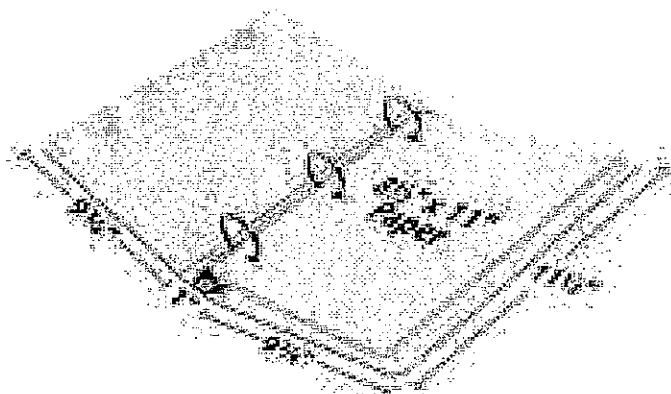


STUDENT MATERIALS

In a Bind for Boxes

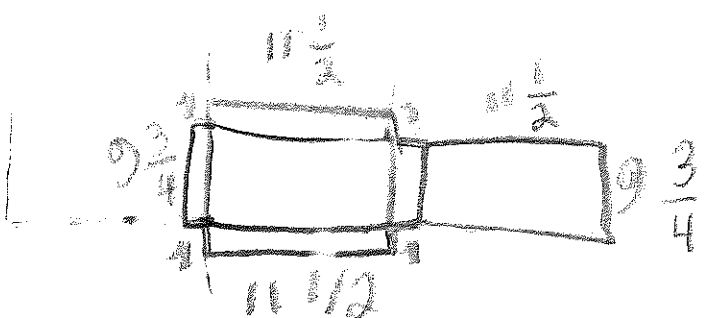
School supplies are in high demand right now, but not all the packaging has been designed. As a packaging engineer, you have been hired to create a box to ship individual binders. The dimensions for the binders are below.



Dimensions of binder: $9\frac{3}{4}$ inches by 1 inch by $11\frac{1}{2}$ inches

Task 1

Draw a net for a rectangular prism that will fit the binder. The dimensions for the binder are above, so be sure to label the sides. Remember a net must be in one piece and be able to fold into a three-dimensional figure.



THE NET IS SHOWN
LIKE THIS BECAUSE
A BINDER'S SIDES
ARE THIN. THIS
MEANS THAT THE
SIDES WOULD HAVE
TO APPEAR
SMALLER THAN THE
BOTTOM AND THE
TOP OF THE FIGURE.

#

Task 2

Draw the 3-dimensional diagram of the box you created above. Be sure to label side lengths.



As explained in the first tasks, the glue has to be spreader with that net drawn. We have a perfect shape for the binder.

Task 3

Determine how much cardboard would be needed for the box you designed in square inches.

$$224 \frac{1}{2} \times 112 \frac{1}{2} = 25000$$

$$23 \times 11 = 253$$

$$19 \frac{1}{2} \times 9 = 175.5$$

$$133 \frac{3}{8} \text{ in}^2$$

$$266 \frac{3}{4}$$

This is five because after measuring, you need to add the components up which lead to

Task 4

Now, design another box using a different 3-dimensional shape. Be sure to create the box for the same binder pictured in Task 1. Draw and label the diagram.

The shape

shown only has

2 triangular

sides, which means

that the rect is rectangular and can be used that way.



$$9 \frac{3}{4}$$

$$112 \frac{1}{2}$$

$$112 \frac{1}{2}$$

$$9 \frac{3}{4}$$

$$235 \text{ in}^2$$

Task 5

How many square inches of cardboard would be needed for the Task 4 design? Show your work.

My work is shown in task 4. As you can see, the components are up to 23 5th in.

23 5th in

Task 6

Which of your two boxes should the company choose to send the binders? Why? Explain your reasoning.

The second one, this is because it uses less cardboard than the first one.

$$\begin{array}{r} 1 \quad 34 \quad 2 \\ 266 > 235 \end{array}$$

Less cardboard is better and lighter.