Dollar Bills

Instructor Notes

Instructor: give students one or two simple examples computing volume of a rectangular box. Note that they do not need to know or understand the volume formula yet. The goal is to give them background information to do the activity.
Give each group of students a one-dollar bill.

1. Give a rough estimate for the volume of the bill. Describe your thought process.

   Instructor Notes

   Answer is varied. One suggestion: fold the bill several times to create a thickness. Estimate the dimensions of the "box".

   Instructor Notes

   Background: one dollar bills have width of 2.61 inches, length of 6.14 inches, and thickness of 0.0043 inch. Note to instructor: do not give students these measures until they finish the first activity above.

2. Find the height of a stack of 500 brand new one-dollar bills. Mark the height of the stack on the ruler.

   Instructor Notes

   Answer $500 \times 0.0043 = 2.15$ inches. If students give reasonable and logical estimations, that is OK, too.

3. How about a stack of 5000 brand new bills.
4. Which would you choose: a 2 in stack of one dollar bills or 5 one-hundred dollar bills? Why?
5. Give an estimate of the number of bills needed to be as long as the whiteboard when laid out lengthwise end-to-end.
6. Measure the length of the whiteboard. Use this to compute the number of bills needed. How close was your estimate?

Name:_____

Homework

The length of a briefcase is 17.6 inches, the width is 12.9 inches and the height is 5.9 inches. Feel free to use your calculators in this activity.The bottom of the briefcase has the shape of the following rectangle:

1. How many dollar bills would you need to cover as much of the bottom of the briefcase as possible? The dollar bills can't overlap. Recall that the dimensions of a dollar bill are 2.61 inches by 6.14 inches by 0.0043 inches Draw the dollar bills in the rectangle above as best you can to scale. Show any computations you used here.
2. Can you find a way to use more dollar bills to cover the bottom if the bills don't overlap? (Hint: Is there another way to arrange the bills on the bottom?)
3. You decide to stack dollar bills on each of your dollar bills you drew in the bottom of the briefcases? How many dollar bills will fit in each of your stacks?
4. How much money fits in the briefcase? Use your drawing, and assume you stack the bills as high as possible to fit in the briefcase.
5. If instead of one $1 bills you had $100 bills, how much money would fit in the briefcase?