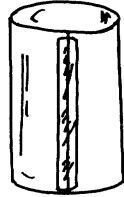
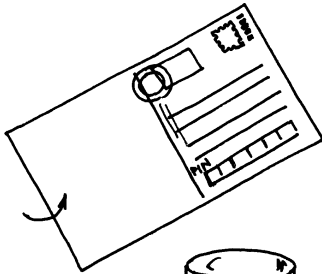
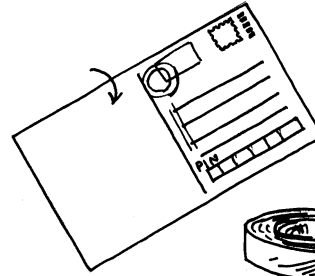


WHICH HOLDS MORE?

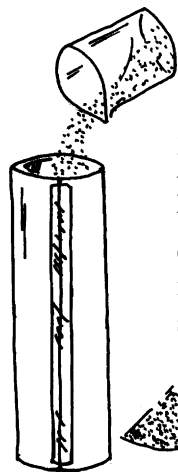
A number of elegant science experiments can be done with postcards. This fundamental experiment is essential to understand the relationship between area and volume.



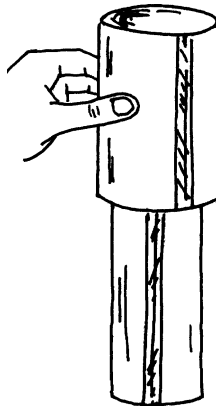
1. A postcard is always 14-cm x 9-cm. This is a standard. Fold a postcard and bring its two short edges together. Tape the edges to make a 9-cm high cylinder.



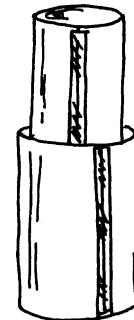
2. Fold another postcard and bring both its long edges together. Tape the edges to make a 14-cm high cylinder. Which of these two cylinders will hold more sand?



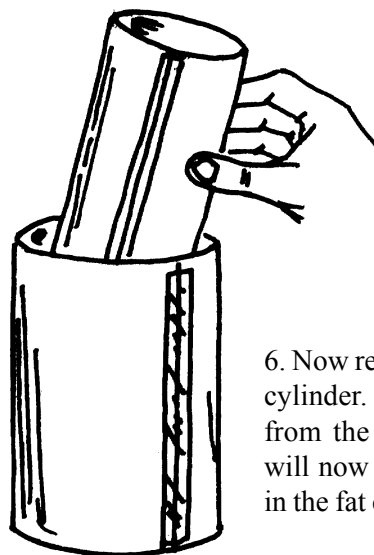
3. Here is how you test. Take the 14-cm tall cylinder and fill it to the top with sand.



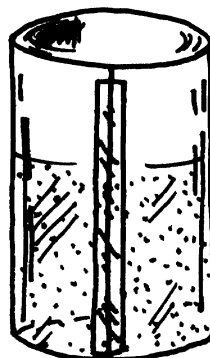
4. Then slip the fat / short 9-cm high cylinder on the tall / thin cylinder.



5. The thin cylinder will now be inside the fat cylinder.



6. Now remove the tall cylinder. All the sand from the tall cylinder will now be contained in the fat cylinder.



7. You will be surprised to find that the fat cylinder is only two-thirds full. Why?

The volume of a cylinder depends on its area of cross-section and its height. The area of the circle varies as the square of its radius. The fat cylinder has a larger radius. So, the square of the radius really makes a lot of difference and makes its volume larger.