Title: Cell Size name_________________

Introduction: Why are cells small? Could they be larger and still get their jobs done? In this activity you will make some calculations and see what advantage there is to being small.

Materials: “boxes”, metric ruler, masking tape, 25 and 100 ml graduated cylinder,

Procedure:
1. Cut out the box outlines given to you.
2. Fold them up into "cells" that look like boxes. Tape the edges and corners. Assume there is a lid, even though there is not.
3. Measure the dimensions of the boxes in cm. and record. Calculate the surface area and volume.
4. Fill the box with sand. Pour sand into the graduate and record volume.
5. Calculate surface area and volume ratio.

Prediction: Which box will have the greatest surface area to volume ratio?

Data:

box	dimensions	surface area	volume in cc	volume in ml	s.a./volume
A					
B					
C					

Analysis:
1. What do you notice about the volume in cc and in ml?

2. What does that tell you about cc's and ml's?

3. When would you use ml's? cc's?

4. Which model had the largest surface area?

5. Which had the largest volume?

6. Which had the highest ratio?

7. What do cells need, a large ratio or a small one? Why?

8. What is the relationship between size and surface area to volume ratio?

9. If you have a large, fat bear and a little, skinny one, which will get cold more easily?

10. Why?

Conclusion: 2 things you learned.