



Wonderful Waterlock – Extension Activity

Name: _____

Disposable diapers can only hold so much water before they begin to leak. In this exercise, we will see how much water a disposable diaper containing sodium polyacrylate (Waterlock) can absorb before it begins to leak.

Procedure:

(1.) Predict how many milliliters of water you think a diaper can hold before it starts to drip. To aid your prediction, consider that a can of soda is about 350 milliliters in volume. Record your prediction below.

My Prediction: _____ ml

(2.) We will now begin slowly adding water to the diaper in measured amounts and find the point at which it cannot hold any additional liquid. Measure out 100 milliliters of water and pour it *very slowly* into the inside of the diaper, being sure to spread it out over the whole surface. Wait 10 seconds and examine the outside of the diaper for leaks. Record your observations in the table on the next page and repeat the procedure for an additional 100 milliliters. When you are nearing the point at which you think the diaper is becoming saturated, add only 20 milliliters at a time. Stop when you first feel liquid water on the outside of the diaper.

(3.) Calculate the difference between your prediction and the result of your experiment and enter it below.

Difference: _____ ml

(a.) Did you overestimate or underestimate how much liquid the diaper could hold?

(b.) Are you surprised by the amount of liquid the diaper could absorb? Explain why or why not.

Table 1. Observations of liquid absorption by a disposable diaper and volume added.

Water Addition	Volume Added (ml)	Observations
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

(4.) Obtain the results from the other groups in the class and calculate the class mean (average).

Mean: _____ ml

(a.) What was the difference between your value and the class mean?

Difference: _____ ml

(b.) Explain why you think the values differed for each group when you all used the same type of diaper.