

Name: _____

**Ex 37B: Respiratory System Mechanics:
Computer Simulation**

**Data Sheet
Bio 2402 Lab: PhysioEx**

Ziser, 2001

Activity: Measuring Respiratory Volumes:

Record the respiratory volumes in the table below:

Tidal volume: TV	
Expiratory Reserve Vol : ERV	
Forced Vital Capacity: FVC	
Inspiratory Reserve Vol: IRV	
Residual Volume	
Minute Respiratory Vol (ml/min)	

Does expiratory reserve volume include tidal volume? Explain.

Activity: Examining the Effect of Changing Airway Resistance on Respiratory Volumes:

Record your data on the table below:

FEV₁ as Percent of Vital Capacity			
Radius	FEV₁	Vital Capacity	FEV₁ (%)
5.00			
4.50			
4.00			
3.50			
3.00			

What happened to the FEV₁ (%) as the radius of the airways was decreased? Explain.

Activity: Examining the Effect of Surfactant:

How did the airflow change compared to the baseline run?

Explain why premature infants often have difficulty breathing.

Activity: Investigating Intrapleural Pressure:

What happened to the lung on the left side of the bell jar?

How did the pressure in the left lung differ from that in the right lung? Explain.

How did the total air flow in this trial compare with that in the previous trial in which the pleural cavities were intact?

What do you think would happen if the two lungs were in a single large cavity instead of separate cavities?

After closing the valve you opened earlier did the deflated lung inflate? Explain.

Why did lung function in the deflated (left) lung return to normal after you clicked reset?

Activity: Exploring Various Breathing Patterns:

What happened to PCO_2 during hyperventilation? Explain.

What happened to PCO_2 during the entire time of the rebreathing activity?

Did the depth of the breathing pattern change during rebreathing? (Carefully examine the tracing for rate and depth changes: the changes can be subtle.) Explain.

What happened to PCO_2 during breath holding?

What happened to the breathing pattern when normal respirations resume?

Printing your Data: When you have finished, print your data for at least one activity and attach it to this report.