

Lab 7: Spirometry

Name: _____

1. Measuring Respiratory Volumes

Subject	TV	IRV	ERV	VC	TV+IRV+ERV

2. Estimating Vital Capacity

Subject	VC estimate method 1	VC estimate method 2	VC measured

3. Why do the values of VC from the different methods not match precisely?

4. Lung Ventilation

Subject	Breathing Rate[breath / min]	TV[L / breath]	RMV[L / min]	PV[L / min]

5. How much air does a person approximately expire per hour? per day? per week? per year?

6. Absorption and excretion of gases: You are locked in an airtight room that is 8 ft by 8 ft by 8 ft, i.e. has a volume of about 14,500 liters.

- How many **liters** of oxygen are in the room?
- Severe symptoms of low oxygen begin when air has about 10.5% oxygen (it's actually higher than that, but we'll simplify for this). How long would it take you to consume enough oxygen to bring the room air down to that 10.5%? Assume that with each normal breath your blood absorbs 25 mL of oxygen.

7. Per breath you also **produce** about 25mL of CO₂. Given an average life expectancy of 78 years, how many **tons** of carbon dioxide do you exhale over your life time?