Cycle 3 Science Script
Week 4 # 76 Lung Capacity

Song to the tune of Pop Goes the Weasel
The Scientific Method is Purpose Hypothesis Materials Procedure (pop!) Results Conclusion

Purpose – To measure the amount of air that can be forced out of the lungs.

Introduce Experiment

(Questions)
Can anybody tell me how long Jesus fasted in the wilderness after he was baptized? 40 days. Wow, that's a long time to go without food isn't it? How about water…anybody know how long we can survive on average (nice weather-no exercise) without water? We can live without water only a few days at most. Can anybody think of the thing we need even more than food or water? If they need help give the hint….we breathe it in and plants give it off at night….Oxygen!

(Purpose)
The air we breathe contains the oxygen we need in order to live. In fact, the more oxygen you have circulating around your body the better you will feel so today we are going to measure the air capacity (or how much air we can breathe in and out) of our lungs.

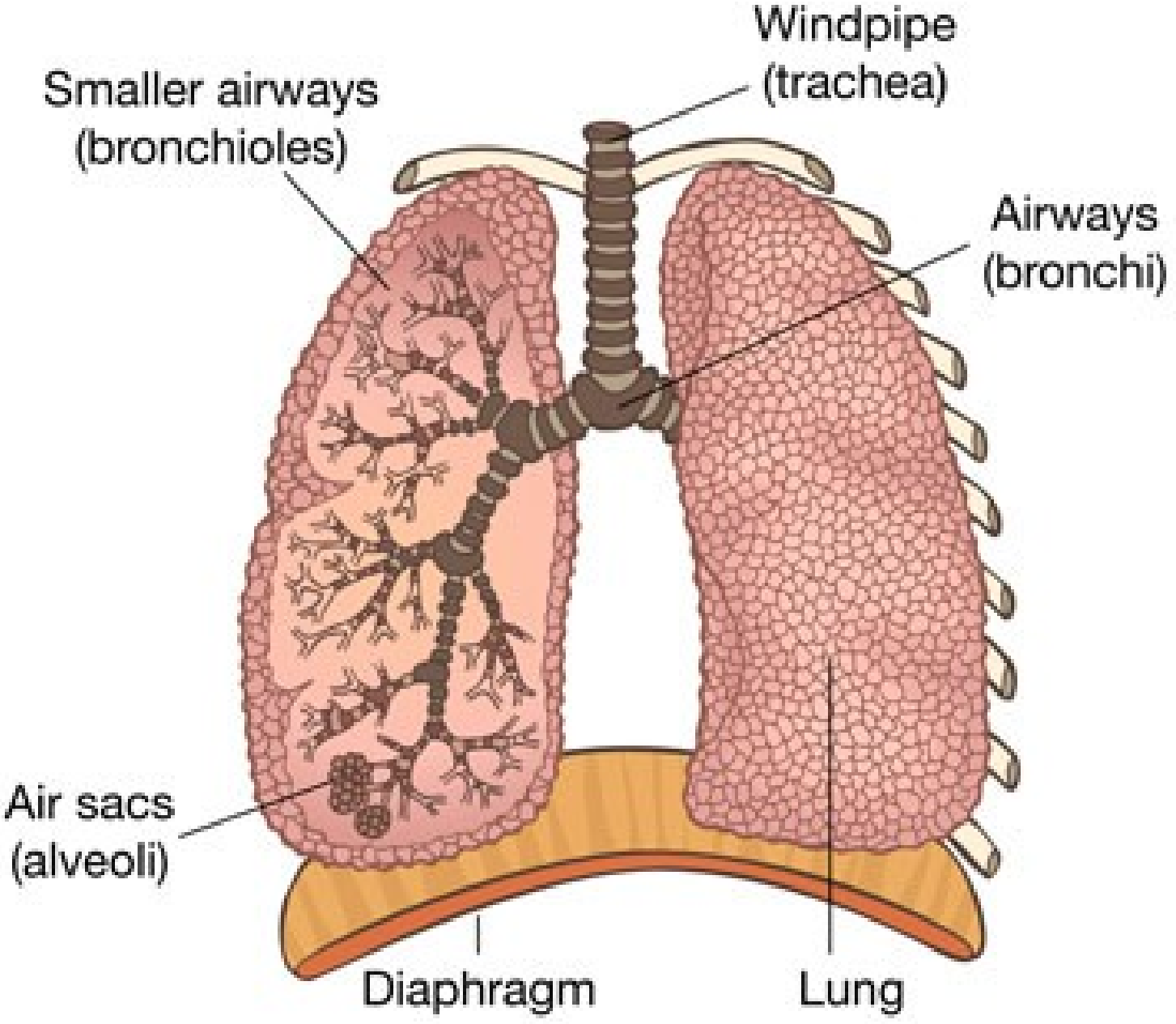
(Materials)
For materials we have gallon water jugs, plastic dishpans, aquarium tubing, a straw for each of you, a permanent marker, a pitcher, and lots of water.

(Hypotheses)
Note to tutor - show picture on next page
This is a diagram of a person's lungs. Do you notice how your lungs are made up of a series of smaller and smaller hollow tubes? If we don't count your nose, this tube system starts with your Trachea (point to diagram) which is connected to the bronchi which are connected to the bronchioles until they end in the alveoli or air sacs.
In a few moments we are going to use the materials you see to measure your lung capacities by blowing water out of these jugs. Point to various areas on the jugs and ask for a show of hands of how empty they think they will make the jugs.

(Procedure-results)
1. Fill the bottle to the top with water and seal with hand or lid
2. Turn the bottle upside down and submerse the opening in the dishpan of water. A little water will go out of the jug but not much
3. Remove hand and insert aquarium tubing into the mouth of the jug.
4. Attach a straw to the tubing and take the deepest breath possible and blow out for the longest time possible
5. Mark the new water level on the bottle with a line and the person's name…may need masking tape
6. Repeat for each member of the class
7. Observe the results

(Conclusion)
Does your lung capacity matter? Yes! When Emma was in the hospital last year the nurses gave her little items to blow into several times a day. She was so sick that she wasn't moving around so the nurses were afraid that her lungs would develop pneumonia or collapse due to the lack of exercise her lungs were getting. When she got home, I gave her balloons to blow up as that was more satisfying to her than blowing into what looked like a little plastic toy.
Do you think you can increase your lung capacity? **Yes/no** Can any of you think of ways we could help our bodies to increase lung capacity? **Play an instrument, sing, exercise, regular deep breathing, blowing up balloons.**

2nd optional bonus – If you have extra time give each child a balloon and explain that they should blow once into it as hard and long as they can. They can compare balloon sized for an additional visual of their lung's air capacity. After they are done comparing, they can measure the balloon's air capacity by blowing the balloon up until it pops!


Windpipe
(trachea)
Smaller airways
(bronchioles)
Airways
(bronchi)
Air sacs
(alveoli)
Diaphragm
Lung