Cleveland Clinic

OFFICE OF CIVIC EDUCATION INITIATIVES

healthCARE™

(**C**ultivating **A**cceptance and **R**espect through **E**ducation)

Unit 2: Managing Asthma

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For information on the Cleveland Clinic Office of Civic Education Initiatives, please visit: http://www.clevelandclinic.org/CivicEducation

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Program Overview

healthCARE™ (**C**ultivating **A**cceptance and **R**espect through **E**ducation) is a dynamic educational program designed to teach children ages 5 through 10 about diversity and individual differences. Developed by the Cleveland Clinic Theatre Company and the Office of Civic Education Initiatives, the program provides free educational resources, including the script and the video of the award-winning children's play *Tall Tale*, as well as an accompanying lesson plan that meets state and national standards in a variety of subjects. healthCARE™ also offers disease-specific lessons so teachers can address diversity and individual differences as they relate to specific medical conditions.

The **Cleveland Clinic Theatre Company** is an award-winning theatre troupe devoted to educating and entertaining audiences of all ages through the use of the performing arts. Since it was established as a program of the Community Relations Department in the spring of 2004, the Company has written, performed and produced an impressive body of work, including interactive educational plays, radio and TV public service announcements, children's theatre programs, improvisational performances, and an educational CD. As a part of Cleveland Clinic's new Office of Civic Education Initiatives, the group has taken on even larger, more ambitious projects, including the video production of *Tall Tale.*

The **Office of Civic Education Initiatives** was established to fulfill the Cleveland Clinic's commitment to promote education throughout Northeast Ohio. In partnership with area schools, local businesses, and fellow nonprofit organizations, the Office creates innovative programs designed to enhance children's learning in the areas of math, science, health and wellness, the arts, and innovation.

Cleveland Clinic, located in Cleveland, Ohio, is a not-for-profit multispecialty academic medical center that integrates clinical and hospital care with research and education. Cleveland Clinic was founded in 1921 by four renowned physicians with a vision of providing outstanding patient care based upon the principles of cooperation, compassion and innovation. U.S. News & World Report consistently names Cleveland Clinic as one of the nation's best hospitals in its annual "America's Best Hospitals" survey. Approximately 1,500 full-time salaried physicians at Cleveland Clinic and Cleveland Clinic Florida represent more than 100 medical specialties and subspecialties. In 2005, 2.7 million patients came for treatment from every state and 100 countries. Cleveland Clinic's website address is www.clevelandclinic.org.

MANAGING ASTHMA

It is estimated that asthma affects one of every fifteen people, so a teacher can expect to have two children with this condition in a classroom of thirty students. In many areas of the country, such as the inner city, the percentage of children with asthma is much higher. Asthma affects different children in different ways and to varying degrees, but many commonalities exist and whether the student with asthma experiences symptoms daily, weekly or only occasionally, other students will want to know what is happening and how they can help their classmate. This series of lessons will teach students about how asthma affects respiration and how people with asthma cope with their disease. Students will also learn how to respond appropriately and compassionately to a classmate suffering from the effects of their disease. In addition, through the course of these activities, students will develop skills in reading, writing, computation, problem solving and abstract thinking.

Unit Objectives: *Students will*

- *Learn about air and respiration*
- *Learn about asthma triggers*
- *Understand how asthma can be controlled*
- *Become more compassionate, learning to help those with the disease*

Students will also meet many state and national standards in science, social studies, math, language arts and fine arts as listed at then end of this unit.

Pre-Assessment:

Read students the following short story. Then ask students to ponder the questions at the end of the story. Rather than address each student's response individually, write the responses on the board. After you have recorded several responses, ask students to discuss which ones sound most likely to be the true motivation for Alicia's behavior. This will help you assess the students' knowledge of asthma, its triggers and its symptoms. Consult the resources below for accurate and up-to-date information about asthma.

Alicia's Difficult Day

Tuesday morning did not start out well for nine-year-old Alicia. She stubbed her toe on the edge of the bed, she couldn't find her favorite sweater, and her mother made oatmeal for breakfast, which she *hated*. But worst of all, on her way to school, she ran into the Gonzales twins. She didn't really mind the Gonzales twins so much, but they always wore coats covered with cat hair, which made Alicia cough.

This morning, the air was especially cold for early fall. "Come on! Hurry up!" yelled one of the twins. "Can't you run any faster?" As Alicia

tried to keep up, she began to cough and strain to catch her breath. "What a slowpoke!" yelled the other twin. "We'll see you at school."

As Alicia sat down to catch her breath, she realized she had forgotten something very important, something she needed to help her breathe. She would have to turn around to go get it. This was turning out to be a difficult day indeed.

Questions:

1. Why was Alicia coughing?
2. Why couldn't she keep up with the Gonzales twins?
3. What important item had Alicia forgotten to bring with her?
4. In the "Tall Tale" play, Frankie gets teased for being tall. What advice would Frankie give to Alicia to help her get along with the Gonzales twins?

Resources: Websites

- **www.clevelandclinic.org/health/health-info/docs/1500/1525.asp?index=6424**
  Basic asthma information – an overview
- **www.clevelandclinic.org/health/health-info/docs/2500/2504.asp?index=9569**
  Managing asthma at school
- **www.clevelandclinic.org/health/health-info/docs/2100/2186.asp?index=8959**
  A glossary of asthma terms
- **www.clevelandclinic.org/health/health-info/docs/1500/1545.asp?index=4298**
  Information on how to use a peak flow meter
- **www.nhlbi.nih.gov/health/public/lung/asthma/phy_asth.pdf**
  Downloadable booklet for teachers discussing asthma care in schools with particular reference to exercise and physical activity for asthmatic students
- **http://www.clevelandclinic.org/health/wordofmouth/**
  Online program teaching about the perils of tobacco use

Books

- **www.aaaai.org/patients/publicedmat/bulkorderform.pdf**
  An online order form for asthma and allergy related books and materials. A children's story about asthma is available for $2/copy, coloring book $1/copy.
- **www.nche.org/2001AsthmaBooks.pdf**
  Extensive list of asthma-related books for children, parents and educators

Introducing Asthma:

After determining the students' level of awareness of asthma symptoms and treatments, introduce the students to a few basic facts about the disease. The facts listed below should be taught to students at all grade levels. You may add to this list for older students.

Asthma Facts

- Asthma is a chronic lung disease affecting approximately 1 in every 15 people.
- Asthma is not contagious. The condition often runs in families and is closely associated with allergies.
- Common asthma triggers are pollen, animal dander, cold weather and exercise.
- Asthma can be treated with daily medication and use of an inhaler.

- People with asthma cannot always control their disease and may sometimes need help catching their breath. Always tell a teacher when you see someone who is having trouble breathing.

Extension:
After educating the students about the basics of the disease, perhaps reading a book about asthma (see websites listed above) or simply discussing symptoms and treatments, you could ask students to write an ending to "Alicia's Difficult Day". Have students consider the following questions:

- ❖ Should Alicia tell the Gonzales twins about her asthma? How might they change their behavior if they knew about her condition?
- ❖ What should Alicia tell the teacher when she arrives late to school?
- ❖ How can Alicia make sure she remembers to bring her inhaler with her in the morning?

Students could read their story endings and the class could vote on their favorite ending. Alternatively, the class could combine elements from several story endings to create a unique ending combining many of their ideas.

Lesson 1: Language Arts

Objectives: *Students will*

- ➢ *Learn how it feels to have asthma through reading and discussing poetry*
- ➢ *Use poetry to express feelings about something that is difficult to cope with*
- ➢ *Develop language skills through thinking critically about a poem*
- ➢ *Develop compassion through hearing about others difficulties*

Activity:
The poem "Breathe In, Breathe Out" by Joan Fleitas, RN, deals with the every day experiences of people with asthma. This poem, reprinted in handout 1, can be accessed at www.lehman.cuny.edu/faculty/jfleitas/bandaides/asthmapo.html. Read the poem aloud to the students or distribute copies of the poem and ask for student volunteers to read stanzas of the poem. Ask them to think about how it would be to live with asthma everyday. Then have students write a poem about something that they find difficult in their everyday lives.

Things to consider when composing a poem:

- Choose a topic about which you feel passionate
- Write about something that touches you personally
- Poems do not have to rhyme
- Choose your words carefully – every word counts in a poem
- Structure the poem to enhance the meaning of the words

This assignment could be used as a part of a larger unit on poetry. Work with the students to help them understand the power of a well-constructed poem. If time allows, it would be helpful to expose children many different types of poetry before asking them to write a poem themselves. The website referenced in the first two links below contains many examples of poems written about children

with a variety of medical conditions. Some are written by the children themselves, while others are written by the nurse who designed the website. Choose several of these poems to read aloud.

After the students have finished writing their own poems, ask for volunteers to read their poems aloud. Poems could be bound into a classroom poetry anthology or displayed on the walls of the classroom. See the art activity below for a display idea.

Resource: Website

- http://www.lehman.cuny.edu/faculty/jfleitas/bandaides/sitemap.html
  A goldmine of information for teachers and students dealing with medical issues in the classroom. Contains many poems and stories.
- http://www.lehman.cuny.edu/faculty/jfleitas/bandaides/hidden2.html
  Kids speaking about how it is to have an "invisible" disease.
- http://42explore.com/poetry.htm
  Anthology of poetry sites designed to introduce poetry to young children
- http://gardenofsong.com/kidzpage/
  Have students read a few of these poems before attempting to write their own.

Lesson 2: Art Activity – Making Bubble Prints

Objectives: *Students will*

- *Observe how air and a liquid solution combine to create bubbles*
- *Experiment with varying techniques to create bubbles of different sizes*
- *Learn how varying the amounts of the ingredients affects the resulting bubbles*
- *Consider how asthma symptoms can affect everyday activities*

Materials: Tempera paint, dish soap, drinking straws, shallow bowls, cardstock

Procedure:

1. Create the bubble solution using approximately 1/2 cup water, 1 to 2 tablespoons tempera paint and 1 tablespoon dish soap in a shallow bowl.
2. Using a plastic straw, have students blow gently into the colored solution to form many large bubbles.
3. Direct students to lay a piece of cardstock paper gently on top of the bubbles and hold in place for a moment.
4. When students lift the paper, they should see a print of their bubbles.
5. Students may overlay bubble prints using different color solutions for a multicolored effect. Students may use their straw in solutions of different colors by rinsing it briefly in a cup of water between solutions.

Questions to consider:

1. Does the strength of your breath affect the size of the bubbles?
2. How does varying the amount of paint or dish soap affect the solution?
3. Why might this activity be difficult for someone with asthma?

The bubble prints could make a nice background for the students' poems. Have students choose their best print and glue a cropped copy of the poem into the center of it. Hang these around the classroom for a colorful display!

Handout 1

Breathe In, Breathe Out

Joan Fleitas, **Ed.D., R.N.**

Today I wheezed, today I sneezed,
Today I learned a lesson.
That breathing in and out each day
Is really quite a blessing.

Some tubes connect my mouth to my lungs,
And at times they swell up like balloons.
And when they do, the air squeaks through,
So my breathing appears out of tune.

This swelling occurs when I pat the dog,
Or run out in the cold.
When the grass is cut, or leaves are raked,
Or when there's lots of mold.

I'm absent when the tubes swell tight.
Some say I'm playing hooky,
But when breathing is really a struggle,
I can't even eat a cookie.

I've learned what I've got is called asthma.
It's a good thing for me that I'm bright.
I test my breathing at the start of each day,
And avoid things that make the tubes tight.

The dog sleeps in the basement.
I keep my stuffed toys clean.
No one's allowed to smoke inside,
Hope you don't think that's mean.

Sometimes no matter what I do
The tubes swell anyhow,
But I have a few tricks tucked up my sleeve.
I'll share some with you now.

I puff special medicine into my mouth
With a nebulizer gadget.
It works to open up the tubes.
It really is like magic.

Before I play some basketball
Or run out in the rain,
I puff a different medicine.
Then I can join the game.

I don't eat many junk foods,
And I try hard not to whine.
These tricks help me stay healthy,
So most times I'm just fine.

If breathing in and breathing out
A zillion times a day,
Is something you do without thinking a thought,
Thank God for this gift when you pray.

Lesson 3: Social Studies Activity - Tracking Pollen Counts

Objectives: *Students will*

- *Record pollen and mold spore counts given in the Cleveland Clinic Pollen and Mold Spore Report hotline*
- *Listen to and report on additional information about asthma and allergies reported on the hotline*
- *Develop graphing skills by graphing pollen and mold spore counts over a period of four to six weeks*
- *Look for connections between increased pollen and mold spore counts and increased asthma symptoms in susceptible classmates*
- *Draw conclusions about how airborne irritants such as pollen and mold spores may affect lung function in susceptible individuals*

Many students with asthma are also allergic to pollen or mold spores. The Cleveland Clinic Department of Allergy and Immunology maintains a Pollen and Mold Spore reporting service that gives updates on the pollen and mold spore count three times a week. Having students call the hotline to track the levels of these irritants over a period of four to six weeks will give them a good idea of how these counts fluctuate, increase awareness of what is in the air we breathe and allow them to practice their graphing skills. In addition, each report is accompanied by a brief message about asthma or allergies that varies from day-to-day, giving students one more way to learn about asthma and allergies.

Materials: telephone, large chart paper to record date and pollen/mold spore count, graph paper for each student

Procedure:

1. Assign a different student to call the Cleveland Clinic Pollen and Mold Spore hotline at 1-866-Ohio-Air (1-866-644-6247). Counts are updated each Monday, Wednesday and Friday.
2. Have the student record the day's pollen count and the mold spore count on a large piece of chart paper prepared for this purpose. You may have the student record whether the number is high, moderate or low as well.
3. Have the student summarize for the class the day's special message about asthma or allergies. If the student can't remember the whole message, he or she can redial the number to hear the message repeated.
4. Have students add a point to their graph for that day's counts. The graph can be created to record both counts on the same axes, using different colored pencils. See below for an example of the chart and graph set-ups.

Questions to consider:

1. What is a typical value for the pollen count and the mold spore counts?
2. What factors contribute to particularly high pollen or mold spore counts?

3. Is there anyone in the classroom who seems to react to high levels of pollen or mold spores in the air?
4. What will help prevent asthma/allergy symptoms when counts are high?

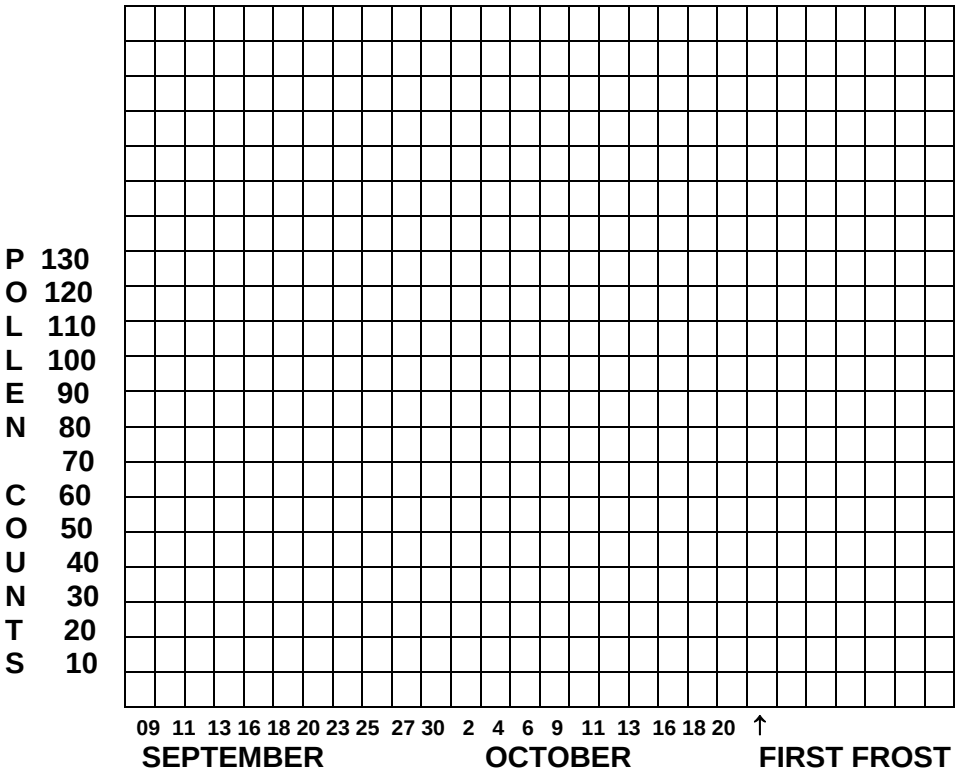
Resources: <u>Websites</u>

- http://airnow.gov/index.cfm?action=airnow.local
  Gives current air quality data for all areas of the U.S.
- http://airnow.gov/index.cfm?action=aqikids.main
  Kids page explaining all about air pollution and its health effects.
- http://www.airinfonow.org/html/ed_ozone.html
  Explains ozone formation with animation of how ozone affects the lungs. Also includes activities for students in grades 4 and up.
- http://www.epa.gov/o3healthtraining/effects.html
  Study of adverse effects of ozone on people with asthma.
- http://www.sciencedaily.com/releases/2003/10/031009063057.htm
  Study linking ozone levels to asthma symptoms in children.
- http://www.niehs.nih.gov/kids/baylor/riff1.htm
  Interview with a lung doctor suitable for students in grades 3-6.

Example of a Pollen and Mold Spore Chart for the Classroom

DATE	9/09	9/11	9/13	9/16	9/18	9/20	9/23	9/25	9/27	9/30
WEED COUNT	52 High									
RAGWEED COUNT	20 Mod.									
MOLD SPORE COUNT	6771 Mod.									

Example of a Graph Set-up for Tracking Pollen Counts



Geography Extension:

Have students track pollen and mold spore counts around the U.S. using the "Airnow" website, listed in the above resource section. This site allows students to get information about air quality in every state. After tracking air quality around the U.S. for several weeks, discuss the following questions:

- Why do some states have more problems with air quality than others?
- Which state has the highest number of air quality alerts?
- How does the geography of the surrounding area affect air quality?
- How does population density affect air quality?
- What can people do to improve air quality?
- What can the government do to improve air quality?

Lesson 4: Using Technology to Learn about Asthma

Objectives: *Students will*

- *Learn how asthma affects respiration*
- *Develop analytical thinking and judgment skills evaluating educational websites*
- *Learn to think critically about media*
- *Practice using technology to obtain information*

The following websites contain accurate, captivating information, animation and video that will teach students about lung function and how asthma affects the lungs. Take time to familiarize yourself with these sites, and then ask students to

rate the sites using the evaluation form provided in handout 2. If students do not have computer access in your classroom, a computer with a large monitor or video hook-up can be used. Note that the websites listed below are just a few of the many educational websites available online. Feel free to add or substitute your own favorite websites or have the students search for their own websites.

Resources: Websites

- http://www.kidshealth.org/kid/asthma_basics/what/asthma.html
  A very nice overview of asthma and lung function.
- http://www.whatsasthma.org/
  Site containing a movie about respiration and asthma. Very helpful!
- http://www.aaaai.org/patients/just4kids/brainpop/
  Short video and interactive quiz on asthma. Very kid-friendly.
- https://www.lung.ca/children/grades4_6/respiratory/index.html
  Excellent site containing downloadable worksheets, games, etc.

WEBSITE EVALUATION **HANDOUT 2**

Complete the following table with the information gathered from every website you use in your research:

Website Address	Author(s) or Organization	Date site was last updated	Useful features of the site	Rating

Website Address: Carefully copy the address listed above the webpage.

Author(s) or Organization: Sometimes it can be difficult to find the author or authors of a website. If the site is sponsored by a well-known organization such as the American Heart Association or the Cleveland Clinic, you be pretty sure all the information on the site will be correct. If the author is someone you know, such as a teacher in your school, you will know the site is reliable. However, if you have never heard of the author or organization, ask your teacher or your parents to help you figure out if the source is reliable.

Date site was last updated: This is very important when gathering information about health care. Medical knowledge is constantly changing as research uncovers new information about diseases and the human body. Try to use a site that is no more than five years old.

Useful features of the site: This column is to help you remember what you especially liked about each site.

Rating: You may use the following rating or create one of your own:

TERRIFIC	❋❋❋❋❋❋
PRETTY GOOD	❋❋❋❋
SO-SO	❋❋❋
NOT SO GREAT	❋❋
AWFUL	❋

Lesson 5: Science/Math – Does Lung Capacity Correlate to Height?

Asthma affects some students' usable lung capacity. Lung capacity is also related to age, fitness level, and genetics. In this activity, students will discover their own lung capacity and compare it to their height to see if there is a connection. Be sensitive to students who may not easily be able to take a deep breath and blow into the bottle. Tell students who are experiencing asthma symptoms to do only as much as they are comfortable with.

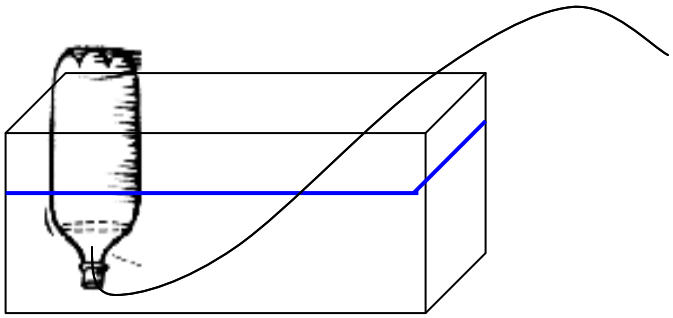
Objectives: *Students will*

- *Learn about lung capacity*
- *Practice taking accurate, scientific measurements*
- *Develop calculation skills by averaging three lung capacity measurements*
- *Learn how graphing is used to display scientific data*
- *Develop graphing skills*
- *Analyze data to look for correlations*
- *Draw conclusions that can be justified by their results*

Materials: clear two liter plastic soda bottle, plastic aquarium tubing, bendable drinking straws or flexible tubing, glass aquarium or sink with stopper, graduated cylinder or measuring cup with milliliter markings, permanent marker or grease pencil for marking bottle, meter stick

Preparation: The diagram below shows a spirometer set up for use. To prepare the spirometer, wash and remove the label from bottle. Using the measuring

cup, pour 50 milliliters of water at a time into the bottle and mark the level of the water with the marking pen. Write the markings upside down on the bottle so that they can be read when the bottle is inverted. Continue pouring and marking until you have a scale that goes to 1000 milliliters (half the capacity of the bottle).



Measuring Lung Capacity
Following the procedure below, have students measure their lung capacity. Have each student take three measurements, using the spaces provided in handout 3 to record the measurements. Explain to students that taking the average of the three lung measurements increases the accuracy of their results.

Procedure:

Measuring lung capacity:

1. Fill the spirometer (2 liter bottle) completely with water and invert it into the aquarium, sink or tub filled with water.
2. Insert a clean drinking straw or length of flexible tubing into the bottle so that the end extends up past the level of the water in the sink.
3. Have the student take a big breath and breathe as much air as possible through the straw or tubing into the bottle.
4. Help the student to read and record the measurement on the side of the bottle corresponding to the amount of air blown into the bottle. This is the student's expiratory lung capacity.
5. Refill the bottle with water and have the student measure their lung capacity two more times.
6. Repeat for each student using a clean straw or length of tubing.

Measuring height:

1. Tape a meter stick vertically to a blank wall at a level that is exactly one meter from the floor.
2. Have students stand in stocking feet, one at a time, against the meter stick to measure their height in centimeters.
3. Have students record their height on their activity sheet. Remember that since the meter stick is positioned one meter (100 centimeters) off the

ground, students will need to add 100 to their centimeter readings. This is a good time to talk about precision in measurement.

Constructing the graph:

1. Create a large graph on chart paper with height in centimeters on the x-axis and lung capacity in milliliters on the y-axis.
2. Help each student to mark the spot corresponding to their individual measurements on the graph. Have each student mark the spot on their own graph on their activity sheet. Younger students may need help with this.
3. When all students have added their results to the graph, look for a trend in the data. Show students how to draw the best line through the points on the graph.
4. Ask students to answer the following question: Does height correlate to lung capacity? The answer will be their conclusion for this experiment.

LUNG CAPACITY AND HEIGHT **HANDOUT 3**

Learning About My Body

LUNG CAPACITY MEASUREMENTS:

1. _____ milliliters

2. _____ milliliters

3. _____ milliliters

TOTAL: _____ Divide the total by 3 to get the average

AVERAGE: _____ This is your lung capacity in milliliters!

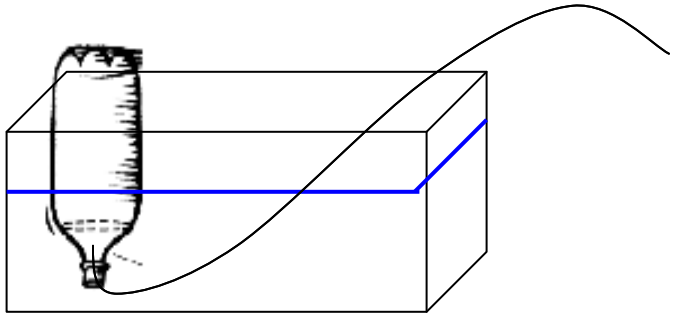
HEIGHT MEASUREMENT:

Measurement on meter stick: _____ centimeters

Add 100 centimeters

(The height from the bottom of the meter stick to ground) +100 .

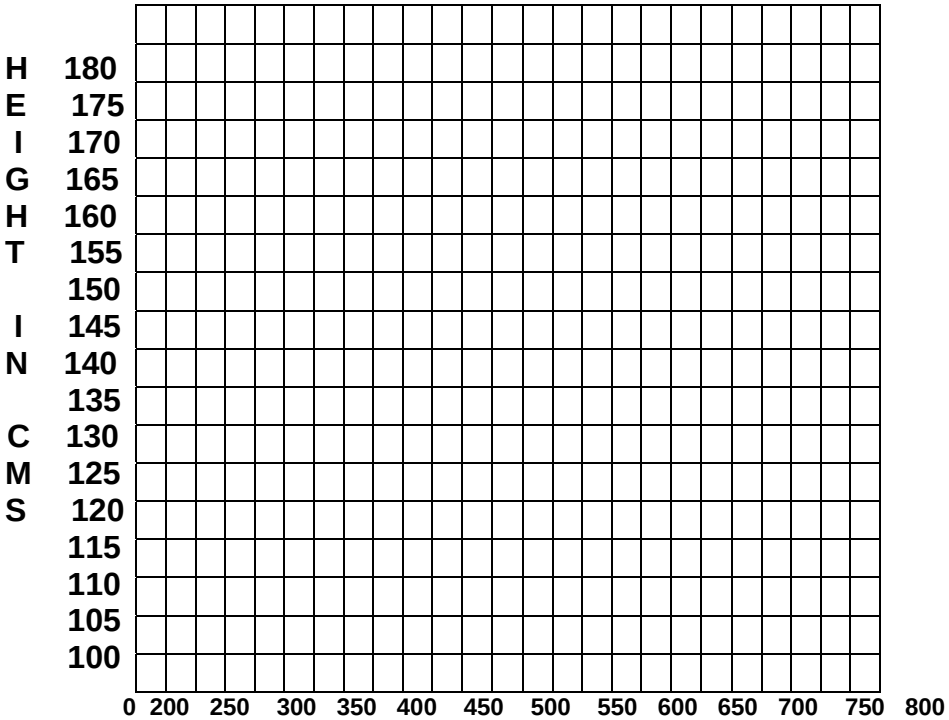
_____ This is your height in centimeters!



SPIROMETER

HANDOUT 3 - CONTINUED

GRAPHING THE RESULTS:



LUNG CAPACITY IN MILLILITERS

Conclusion: Does there seem to be a correlation (connection) between a person's height and their lung capacity? Write what you have learned from this experiment.

EDUCATIONAL STANDARDS MET

Ohio Language Arts Standards: Writing

CONTENT STANDARD	GRADES K – 2	GRADES 3 - 4
Writing Processes	A, D, E	A, D, E, G
Writing Applications	A	
Writing Conventions	A, B, C, D	A, B, C, D
Communication: Oral and Visual	A	A, D

National Language Arts Standards:

Standard 1: Reading for perspective
Standard 2: Understanding the human experience
Standard 4: Communication skills
Standard 5: Communication strategies
Standard 6: Applying knowledge
Standard 9: Multicultural understanding
Standard 12: Applying language skills

Ohio Fine Arts Standards: Visual Arts

CONTENT STANDARD	GRADES K – 4	GRADES 5 – 8
Creative Expression and Communication	A, B, C, D	A, B, C, D, E

Analyzing and Responding	A, B	B
Connections, Relationships and Applications	A, B, C	A, C

National Fine Arts Standards: Grades K-4 and 5-8
Standard 1: Understanding and applying media, techniques, and processes
Standard 3: Choosing and evaluating a range of subject matter, symbols, and ideas
Standard 6: Making connections between visual arts and other disciplines

Ohio Technology Standards: K-2 and 3-5
Standard 3: Technology for Productivity Applications
Standard 5: Technology and Information Literacy

National Technology Standards: K - 12
Standard 1: Basic Operations and Concepts
Standard 3: Technology Productivity Tools
Standard 5: Technology Research Tools

Ohio Science Standards:	**GRADES K – 2**	**GRADES 3 - 5**
Life Sciences	B, C	B
Scientific Inquiry	A, B, C	A, B, C
Scientific Ways of Knowing	A, C	A, B, C

National Science Standards:	**GRADES K – 4 and 5-8**
Unifying Concepts and Processes	Systems, order and organization Evidence, models and explanation Change, constancy and measurement Form and function
Science as Inquiry	Abilities to do necessary scientific inquiry Understanding about scientific inquiry
Life Science	Characteristics of organisms (K-4) Structure and function in living systems (5-8) Regulation and behavior (5-8)
Science in Personal & Social Perspectives	Personal health
History and Nature of Science	Science as a human endeavor

Ohio Math Standards:	**GRADES K – 2**	**GRADES 3 – 4**	**GRADES 5 - 8**
Measurement	A – E	A – D	A, B, D, E
Patterns, Functions and Algebra	D, E	G	B, D, E, F
Data Analysis and Probability	A, B, C	A, B, C, G, H	A - E
Mathematical Processes	H, I	C, F, H - K	G - L

National Math Standards: All grade levels

Numbers and Operations	*Understand numbers, ways of representing numbers, relationships among numbers and number systems *Understand meanings of operations and how they relate to each other
Algebra	*Understand patterns, relations and functions

	*Use mathematical models to represent and understand quantitative relationships
Measurement	*Understand attributes, units, and systems of measurement *Apply a variety of techniques, tools, and formulas for determining measurements
Data Analysis	*Collect, organize and display relevant data *Develop and evaluate inferences that are based on data
Problem Solving	*Build new mathematical knowledge through problem solving *Solve problems that arise in mathematics and in other contexts *Apply and adapt a variety of strategies to solve problems *Monitor and reflect on the process of problem solving
Reasoning and Proof	*Make and investigate mathematical conjectures *Develop and evaluate mathematical arguments and proofs *Select and use various types of reasoning and methods of proof
Communication	*Organize and consolidate their mathematical thinking through Communication *Communicate their mathematical thinking coherently and clearly to peers, teachers, and others *Analyze and evaluate the mathematical thinking and strategies of others *Use the language of mathematics to express mathematical ideas precisely
Connections	*Recognize and apply mathematics in contexts outside of Mathematics
Representation	*Create and use representations to organize, record, and communicate mathematical ideas *Use representations to model and interpret physical, social, and mathematical phenomena

Ohio Social Studies Standards:	**GRADES K - 2**	**GRADES 3 - 5**
History	A, D	
Geography	A, B, C	A, B, C, D
Citizenship Rights and Responsibilities	A, B	A

National Social Studies Standards:	
Civics	Standards 1 & 5
Geography	Standards 1, 2 & 5