General Construction
Lesson One: Measurement and Dimensions

Facilitator Guide

Building Basics was paid for under an EL Civics grant from the U. S. Department of Education administered by the Virginia Department of Education. It was paid for under the Adult Education and Family Literacy Act of 1998; however, the opinions expressed herein do not necessarily represent the position or policy of the U. S. Department of Education, and no official endorsement by the U. S. Department of Education should be inferred. This document was designed and created by the Virginia Adult Learning Resource Center at Virginia Commonwealth University, 817 West Franklin Street, Suite 221, P.O. Box 842037, Richmond, VA 23284-2020. It may be reproduced for nonprofit, educational purposes only.
Building Plan / Blueprints / Specs (Getting Ready to Teach)

Lifeskill Objective: Learners will identify common U.S. measurements and their abbreviations.

EFF Skills: Speak So Others Can Understand, Listen Actively, Use Math to Solve Problems and Communicate, Cooperative with Others

SCANS Skills: Interpersonal (work with others; work with diversity) Information (interpret and acquire information)

Lesson Length: 2 hours

Tools

Realia: Tape Measure
Yardstick
Ruler
Scale
Brick, board or other building material that can be measured, e.g. tile, large nail; or, classroom items that can be measured, e.g. window, door, floor tile, power cord

Laying the Foundation: Measurement Vocabulary Cards

Activity #1: Measurement Pictures
Picture Cards

Activity #2: Vocabulary Handout A
Vocabulary Handout B

Activity #3: Dictation Handout A--cut in half for use in pair activity
Dictation Handout B Student #1
Dictation Handout B Student #2
Target Vocabulary

Noun
Board, door, gallon, measurement, power cord, window, caulk, feet, height, ounce, quart, yard, centimeter, fluid ounce, inch, padlock, roof patch, concrete, foot, ladder, paint, steel padlock, dimension, fraction, length, pound, width

Abbreviation
x., ft., oz., fl oz., qt., gal., yd., in., lb.

Verb
Measure

Preposition
by
Laying the Foundation
Warm-Up / Presentation

<table>
<thead>
<tr>
<th>Actions</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Review numbers with students. Write a number on the board and ask</td>
<td>Tape Measure</td>
</tr>
<tr>
<td>students to call out its name; or, show students a calendar, point to</td>
<td>Scale</td>
</tr>
<tr>
<td>various numbers, and ask them to tell you the name.</td>
<td></td>
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<tr>
<td>2. Tell students that today they are going to learn about measurement.</td>
<td></td>
</tr>
<tr>
<td>Show tape measure and ask students questions such as:</td>
<td></td>
</tr>
<tr>
<td>- What is this? (tape measure)</td>
<td></td>
</tr>
<tr>
<td>- When do you use it? (on a jobsite, to measure)</td>
<td></td>
</tr>
<tr>
<td>- Why do you use it? (to measure, to get the right size or amount of</td>
<td></td>
</tr>
<tr>
<td>something)</td>
<td></td>
</tr>
<tr>
<td>- How does it measure? (inches, feet, yards, centimeters)</td>
<td></td>
</tr>
<tr>
<td>- Is it important to know how to measure at work? (yes)</td>
<td></td>
</tr>
<tr>
<td>- Why?</td>
<td></td>
</tr>
<tr>
<td>Write key vocabulary elicited from students on the board.</td>
<td></td>
</tr>
<tr>
<td>Note: If a scale is available, you can repeat the above elicitation</td>
<td></td>
</tr>
<tr>
<td>using the scale and measurements of weight.</td>
<td></td>
</tr>
<tr>
<td>3. Introduces dimension vocabulary by demonstrating with a real item,</td>
<td>Tape Measure</td>
</tr>
<tr>
<td>e.g., brick or object in classroom. Measure the height, width, length.</td>
<td>Brick and/or</td>
</tr>
<tr>
<td>Make a table on the board or overhead and fill it in as you measure</td>
<td>Other Objects</td>
</tr>
<tr>
<td>the items. Explain the correct way to write a measurement and say it.</td>
<td></td>
</tr>
<tr>
<td>Be sure to explain by. Sample table:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Height</th>
<th>by</th>
<th>Width</th>
<th>by</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board</td>
<td>2''</td>
<td>x</td>
<td>4''</td>
<td>x</td>
<td>2'</td>
</tr>
<tr>
<td>Tile</td>
<td>4''</td>
<td></td>
<td></td>
<td>x</td>
<td>4''</td>
</tr>
<tr>
<td>Eraser</td>
<td>1''</td>
<td>x</td>
<td>2''</td>
<td>x</td>
<td>5''</td>
</tr>
</tbody>
</table>
**Actions**

4. Discuss various ways to measure and show various ways to note the size by making a chart on the board. For example:

   - 1 foot = 12 inches
   - 1 yard = 3 feet or 36 inches
   - 1 pound = 16 ounces
   - 1 quart = 32 fluid ounces
   - 1 gallon = 4 quarts
   - 1 centimeter = 1 cm

Include abbreviations and common symbols used to represent the words for inches and feet. You should also explain singular and plural formation.

Key vocabulary to include: *inch, centimeter, foot, gallon, ounce, pound.*

5. Assist students to use the tape measure and/or scale to measure various objects around the room, including the height of teacher and students. (Include fractions such as 1/2, 3/4, 5/8, etc., if applicable.) Add these items and measurements to the table created earlier on the board, or create a new table.

Demonstrates how to ask the size of something and the appropriate way to respond. For example:

- What's the _____________? (width, height, length, weight, size)
- How _____________ (long, wide, high, tall) is the _____________?
- How many _____________ (inches, pounds, feet) is _____________?
- It's _____________________________.

Write the questions and responses on the board.

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**Materials**

- **Tape Measure and/or Scale**
- **Brick and/or Other Objects**

**6. Assess the comprehension of students with a teacher-led, whole-group activity.** Hold up the Measurement Vocabulary Cards and ask the whole class to repeat the full word. Higher level students can create a list on the board of the vocabulary word practiced, the abbreviation, and other ways to write the word.
Building on the Foundation  
Practicing the New Language

<table>
<thead>
<tr>
<th>Actions</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity #1: Line Dialogue</strong></td>
<td><strong>Measurement Pictures</strong></td>
</tr>
<tr>
<td>Students practice a short conversation using the <strong>Measurement Pictures</strong> in a <em>line dialogue</em>. First, hold up one of the <strong>Measurement Pictures</strong> and say the name of the object and/or elicits the name of it from the higher level students. Show the dimensions on the <strong>Measurement Picture</strong>, and either asks higher level students to read it or read it yourself. Since the <strong>Measurement Pictures</strong> are not to scale, you should indicate the actual dimensions with hand motions. Introduces all of the other <strong>Measurement Pictures</strong> in the same way. Then, review each item by holding the <strong>Measurement Picture</strong> up and asking the size of the item, using the questions already practiced in <em>Laying the Foundation: Step 5</em> above.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Measurement Picture Cards</strong></td>
</tr>
<tr>
<td>Tell students that they are going to practice asking each other the size of the items in the <strong>Measurement Pictures</strong>, using the questions practiced in <em>Laying the Foundation: Step 5</em> above:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ What's the width?</td>
<td></td>
</tr>
<tr>
<td>➢ What's the length?</td>
<td></td>
</tr>
<tr>
<td>➢ What's the size?, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>To set up the line dialogue, ask students to form one line using their height as a guide, standing in a single file line from shortest to tallest. Then, fold the line in half, so that the tallest person is facing the shortest person. Label one side <strong>Team A</strong> and the other side <strong>Team B</strong>. Give each person in Team A a <strong>Picture Card</strong>. Team A members ask the Team B members facing them one (or more) of the questions presented in <em>Laying the Foundation: Step 5</em> above. Team B members respond, based on the pictures their Team A partners are holding. (Each Team A member is asking a question to their Team B partner at the same time.)</td>
<td></td>
</tr>
</tbody>
</table>
Then, each person in Team B takes one step to the left to face a new person in Team A. Team A members again ask the question to Team B members facing them, and Team B members respond. Repeat until all Team B members have responded to all Team A members, moving down the line. Students at the end of the line walk around to the other side so that the line is continuously moving.

Repeat the activity by switching roles: Team B members get **Measurement Pictures** and ask the questions to Team A members who move down the line.

If there is an odd number of students, you can participate in one of the lines to even out the teams. Otherwise, circulate or stand at one end of the line as students do the activity to check comprehension, assist with pronunciation, etc.

Note: The teacher may substitute real items for the **Measurement Pictures**.
### Actions

**Activity #2: Understanding Abbreviations/Vocabulary Review**

Students practice recognizing the measurement words and abbreviations. Hand out the **Vocabulary Handout** and explain that students will either match the measurement word with the abbreviation or write the abbreviation. Ask students to read the first word, write it on the board, and then ask, "What's the abbreviation?" and "What's the symbol?" Ask a higher level student to write them on the board. Draw a line from the word to the abbreviation to model for **Vocabulary Handout A**.

#### Easy:

Students match measurement word to abbreviation or symbol on **Vocabulary Handout A**. If time allows, students complete the word search. If not, then they can complete it as homework.

#### Difficult:

Students write the abbreviation for each word on **Vocabulary Handout B**. Students complete the word search.

Circulate to assess comprehension and assist as necessary.

To correct the exercise, match a student with **Handout A** with a partner who has **Handout B**. Students work in pairs to correct their work.

### Materials

- **Vocabulary Handout A**
- **Vocabulary Handout B**
**Activity #3 Student to Student Dictation**

**Dictation Handout A**

<table>
<thead>
<tr>
<th>Actions</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this activity, students practice writing the measurement words</td>
<td>Dictation Handout B Student #1</td>
</tr>
<tr>
<td>in context by dictating measurements to each other.</td>
<td></td>
</tr>
<tr>
<td>Demonstrate how to do this activity by modeling with a higher</td>
<td>Dictation Handout B Student #2</td>
</tr>
<tr>
<td>level student. Sit back-to-back with the student. Dictate a</td>
<td></td>
</tr>
<tr>
<td>statement and have the student write it down. You should say the</td>
<td></td>
</tr>
<tr>
<td>statement approximately three times. Then, the student</td>
<td></td>
</tr>
<tr>
<td>dictates a statement (approximately 3 times) and you write it</td>
<td></td>
</tr>
<tr>
<td>down. Compare your responses with the student's. Explains that</td>
<td></td>
</tr>
<tr>
<td>students should write statements in the style they typically see a</td>
<td></td>
</tr>
<tr>
<td>measurement written; e.g., when they hear <em>2 inches by 4 inches</em></td>
<td></td>
</tr>
<tr>
<td><em>by 8 feet</em> or <em>two by four by eight</em>, they write <em>2&quot; x 4&quot; x 8'</em>.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair students in like-ability pairs and assign one role (Student #1</td>
<td></td>
</tr>
<tr>
<td>or Student #2) to each person in the pair. Be sure to tell students</td>
<td></td>
</tr>
<tr>
<td>that they should not show their paper to their partners!</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy:</td>
<td></td>
</tr>
<tr>
<td>Students dictate phrases to each other using Dictation Handout A.</td>
<td></td>
</tr>
<tr>
<td>Student #1 gets the top half of the worksheet and Student #2 gets the</td>
<td></td>
</tr>
<tr>
<td>bottom half of the worksheet.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult:</td>
<td></td>
</tr>
<tr>
<td>Students dictate sentences to each other using Dictation Handout B.</td>
<td></td>
</tr>
<tr>
<td>Student #1 gets the handout for Student #1 and Student #2 gets the</td>
<td></td>
</tr>
<tr>
<td>handout for Student #2.</td>
<td></td>
</tr>
<tr>
<td>Circulates to assess comprehension, minimize students helping each</td>
<td></td>
</tr>
<tr>
<td>other or sharing handouts, and assist as necessary.</td>
<td></td>
</tr>
</tbody>
</table>
## Finishing Work

### Extension or Out-of-Class Practice

<table>
<thead>
<tr>
<th>Actions</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students who do not complete the word search can do this at home.</td>
<td></td>
</tr>
<tr>
<td>2. Ask students to measure items at home or at their worksite and to bring in the name of the item and its measurements.</td>
<td></td>
</tr>
<tr>
<td>3. Take a field trip to a hardware or building supplies store, e.g., Lowe's or Home Depot. Find the measurements of various items and practice saying them as a class.</td>
<td></td>
</tr>
<tr>
<td>4. Follow a recipe and discuss measurements used in baking.</td>
<td></td>
</tr>
</tbody>
</table>
General Construction
Lesson One: Measurement and Dimensions

Facilitator Materials

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Measurement Vocabulary Cards

inch          quart
centimeter    fraction
foot          inches
feet          ounce
yard          fluid ounce
gallon        pound
Door
32" x 81"
Window
24" x 38"
12' Ladder
BEST PAINT

1 gallon White
2" x 4" x 10"

board
General Construction
Measurement and Dimensions
Virginia Adult Learning Resource Center
Lesson One Facilitator Materials
3 ½ "

PADLOCK

Becky Ward Morgan
Measurement Picture Cards

Door
32" x 81"

12' Ladder

3 ½"

Padlock

Roof Patch
5 Gallons

Caulk
BEST PAINT
1 gallon White

2" x 4" x 10" board

Window
24" x 38"

CONCRETE MIX
Net Weight 60 lbs. Quick Dry
Activity #2: Measurement Vocabulary/ Understanding Abbreviations

Handout A

Match the word with the abbreviation. Some words may have more than one possible answer.

1. gallon a. lb.
2. pound b. '
3. inch c. cm
4. foot d. GAL
5. fluid ounce e. in.
6. feet f. oz.
7. ounce g. "
8. centimeter h. fl. oz.
9. inches i. ft.

Answers:

1. d 5. h
2. a 6. b or i
3. e or g 7. f
4. b or i 9. e or g

Word Search Puzzle: Find and circle the words below.

CENTIMETER INCHES
DIMENSION LENGTH
FEET MEASURE
FOOT OUNCE
GALLON POUND
HEIGHT WIDTH

Created by Puzzlemaker at DiscoverySchool.com
Activity #2: Measurement Vocabulary/Understanding Abbreviations

Handout B

Write the abbreviation.

gallon \textit{gal.} or \textit{GAL}

pound \textit{lb.}

inch \textit{in.} or "

foot \textit{ft.} or '

centimeter \textit{cm.}

feet \textit{ft.} or '

ounce \textit{oz.}

fluid ounce \textit{fl. oz.}

Word Search Puzzle: Find and circle the words below.

\textbf{N D H F S S W M N C}

\textbf{F O O T E Q E R E N}

\textbf{P O I H D A R N H O}

\textbf{C E N I T T L L}

\textbf{L N U U N I W O G L}

\textbf{I E R N M E U T N A}

\textbf{T E A E D N M E E G}

\textbf{P X T W C X Y I L P}

\textbf{T E N E T E E F D N}

\textbf{R T H G I E H T V F}

\textbf{C E N T I M E T E R  I N C H E S}

\textbf{D I M E N S I O N  L E N G T H}

\textbf{F E E T  M E A S U R E}

\textbf{F O O T  O U N C E}

\textbf{G A L L O N  P O U N D}

\textbf{H E I G H T  W I D T H}

Created by Puzzlemaker at DiscoverySchool.com
Activity #3: Student to Student Dictation

Handout A

Student #1 says:  
1. 1 pound of nails  
2. 5 gallons of roof patch  
3. 50' power cord  
4. 12' ladder  
5. 2-1/2" steel padlock  
6. 80 lb. bag of concrete mix  
7. 34" x 81" door  
8. 29" x 35" window

Student #1 listens and writes:  
1. 16' ladder  
2. 60 lb. bag of concrete  
3. 3-1/2" steel padlock  
4. 32" x 81" door  
5. 24" x 38" window  
6. 100' power cord  
7. 1/2 lb. of nails  
8. 5 gal. of paint

Student #2 listens and writes:  
1. 1 lb. of nails  
2. 5 gal. of roof patch  
3. 50' power cord  
4. 12' ladder  
5. 2-1/2" steel padlock  
6. 80 lb. bag of concrete mix  
7. 34" x 81" door  
8. 29" x 35" window

Student #2 says:  
1. 16' ladder  
2. 60 lb. bag of concrete  
3. 3 1/2" steel padlock  
4. 32" x 81" door  
5. 24" x 38" window  
6. 100' power cord  
7. 1/2 pound of nails  
8. 5 gallons of paint
Student #1 says:
1. I need three gallons of roof patch.
2. Buy 100 bags of 40 lb. concrete mix.
3. The door measures 32" x 81".
4. I need to replace a 29" x 35" double hung window.
5. I need a five gallon can of white paint.
6. I need an 11 ounce tube of rubber flash cement.
7. Where's the 50' power cord?
8. Buy a box of 55 gallon drum liners.

Student #1 listens and writes:
2. I need three gallons of paint.
3. Where's the 25' power cord?
4. Please buy six boxes of 50 gallon drum liners.
5. I need a five gallon can of blue paint.
6. I need two 11 ounce tubes of rubber flash cement.
7. The door measures 30" x 81".
8. I need to replace a 32" x 38" window.
Activity #3: Student to Student Dictation

Handout B

Student #2 listens and writes:

1. I need three gallons of roof patch.
2. Buy 100 bags of 40 lb. concrete mix.
3. The door measures 32" x 81".
4. I need to replace a 29" x 35" double hung window.
5. I need a five gallon can of white paint.
6. I need an 11 ounce tube of rubber flash cement.
7. Where's the 50' power cord?
8. Buy a box of 55 gallon drum liners.

Student #2 says:

2. I need three gallons of paint.
3. Where's the 25' power cord?
4. Please buy six boxes of 50 gallon drum liners.
5. I need a five gallon can of blue paint.
6. I need two 11 ounce tubes of rubber flash cement.
7. The door measures 30" x 81".
8. I need to replace a 32" x 38" window.