

General Construction

Lesson One: Measurement and Dimensions

Facilitator Guide

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General Construction Measurement and Dimensions



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

Nouns:

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

Abbreviations

ft.	fl. oz.	gal.	in.	lb.
oz.	qt.	yd.		

Verb:

measure

Preposition:

by

Abbreviation

x

Laying the Foundation Warm-Up / Presentation



Actions	Materials
<p>1. Review numbers with students. Write a number on the board and ask students to call out its name; or, show students a calendar, point to various numbers, and ask them to tell you the name.</p>	
<p>2. Tell students that today they are going to learn about measurement. Show tape measure and ask students questions such as:</p> <ul style="list-style-type: none"> ➤ What is this? (tape measure) ➤ When do you use it? (on a jobsite, to measure) ➤ Why do you use it? (to measure, to get the right size or amount of something) ➤ How does it measure? (inches, feet, yards, centimeters) ➤ Is it important to know how to measure at work? (yes) ➤ Why? <p>Write key vocabulary elicited from students on the board.</p> <p>Note: If a scale is available, you can repeat the above elicitation using the scale and measurements of weight.</p>	<p>Tape Measure</p> <p>Scale</p>
<p>3. Introduces dimension vocabulary by demonstrating with a real item, e.g., brick or object in classroom. Measure the height, width, length. Make a table on the board or overhead and fill it in as you measure the items. Explain the correct way to write a measurement and say it. Be sure to explain <i>by</i>. Sample table:</p>	<p>Tape Measure</p> <p>Brick and/or Other Objects</p>

Item	Height	by	Width	by	Length
Board	2"	x	4"	x	2'
Tile	4"			x	4"
Eraser	1"	x	2"	x	5"

Actions	Materials
<p>4. Discuss various ways to measure and show various ways to note the size by making a chart on the board. For example:</p> <p style="padding-left: 40px;">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</p> <p>Include abbreviations and common symbols used to represent the words for inches and feet. You should also explain singular and plural formation.</p> <p>Key vocabulary to include: <i>inch, centimeter, foot, gallon, ounce, pound.</i></p>	
<p>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.</p> <p>Demonstrates how to ask the size of something and the appropriate way to respond. For example:</p> <ul style="list-style-type: none"> ➤ What's the _____? (width, height, length, weight, size) ➤ How _____ (long, wide, high, tall) is the _____? ➤ How many _____ (inches, pounds, feet) is _____? ➤ It's _____. <p>Write the questions and responses on the board.</p>	<p>Tape Measure and/or Scale</p> <p>Brick and/or Other Objects</p>
<p>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.</p>	<p>Measurement Vocabulary Cards</p>

Building on the Foundation Practicing the New Language



Actions	Materials
<p>Activity #1: Line Dialogue</p> <p>Students practice a short conversation using the Measurement Pictures in a <i>line dialogue</i>. First, holdsup one of the Measurement Pictures and say the name of the object and/or elicits the name of it from the higher level students. Show the dimensions on the Measurement Picture, and either asks higher level students to read it or read it yourself. Since the Measurement Pictures are not to scale, you should indicate the actual dimensions with hand motions. Introduces all of the other Measurement Pictures in the same way. Then, review each item by holding the Measurement Picture up and asking the size of the item, using the questions already practiced in <i>Laying the Foundation: Step 5</i> above.</p> <p>Tell students that they are going to practice asking each other the size of the items in the Measurement Pictures, using the questions practiced in <i>Laying the Foundation: Step 5</i> above:</p> <ul style="list-style-type: none">➤ What's the width?➤ What's the length?➤ What's the size?, etc. <p>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 <i>Team A</i> and the other side <i>Team B</i>. Give each person in Team A a Picture Card. Team A members ask the Team B members facing them one (or more) of the questions presented in <i>Laying the Foundation: Step 5</i> 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.)</p>	<p>Measurement Pictures</p> <p>Measurement Picture Cards</p>

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**.

Measurement Pictures

Measurement Picture Cards

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**

Actions**Activity #3: Student to Student Dictation**

In this activity, students practice writing the measurement words in context by dictating measurements to each other. Demonstrate how to do this activity by modeling with a higher level student. Sit back-to-back with the student. Dictate a statement and have the student write it down. You should say the statement approximately three times. Then, the student dictates a statement (approximately 3 times) and you write it down. Compare your responses with the student's. Explain that students should write statements in the style they typically see a measurement written; e.g., when they hear **2 inches by 4 inches by 8 feet** or **two by four by eight**, they write **2" x 4" x 8'**.

Pair students in like-ability pairs and assign one role (Student #1 or Student #2) to each person in the pair. Be sure to tell students that they should not show their paper to their partners!

Easy: 

Students dictate phrases to each other using **Dictation Handout A**. Student #1 gets the top half of the worksheet and Student #2 gets the bottom half of the worksheet.

Difficult: 

Students dictate sentences to each other using **Dictation Handout B**. Student #1 gets the handout for **Student #1** and Student #2 gets the handout for **Student #2**.

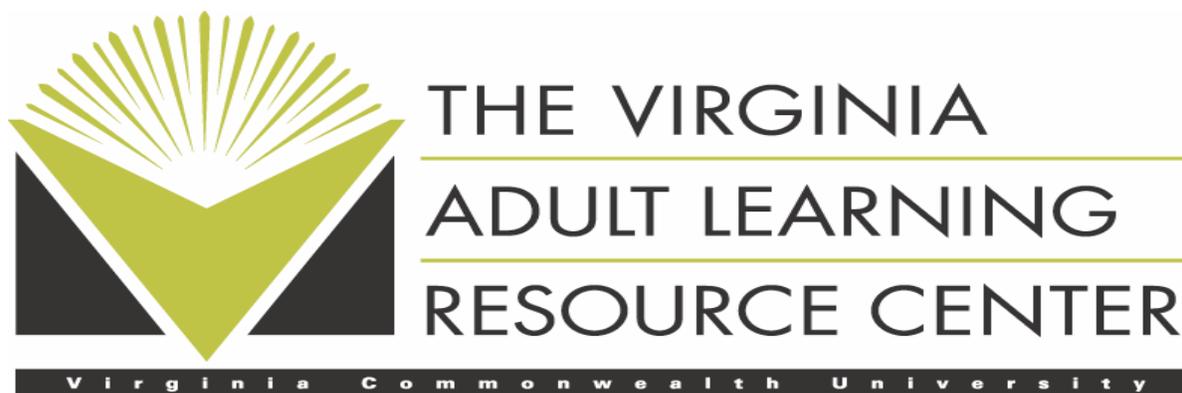
Circulates to assess comprehension, minimize students helping each other or sharing handouts, and assist as necessary.

Materials**Dictation Handout A****Dictation Handout B
Student #1****Dictation Handout B
Student #2**

**Finishing Work
Extension or Out-of-Class Practice**



Actions	Materials
<ol style="list-style-type: none">1. Students who do not complete the word search can do this at home.2. Ask students to measure items at home or at their worksite and to bring in the name of the item and its measurements.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.4. Follow a recipe and discuss measurements used in baking.	



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Measurement Vocabulary Cards

inch

quart

centimeter

fraction

foot

inches

feet

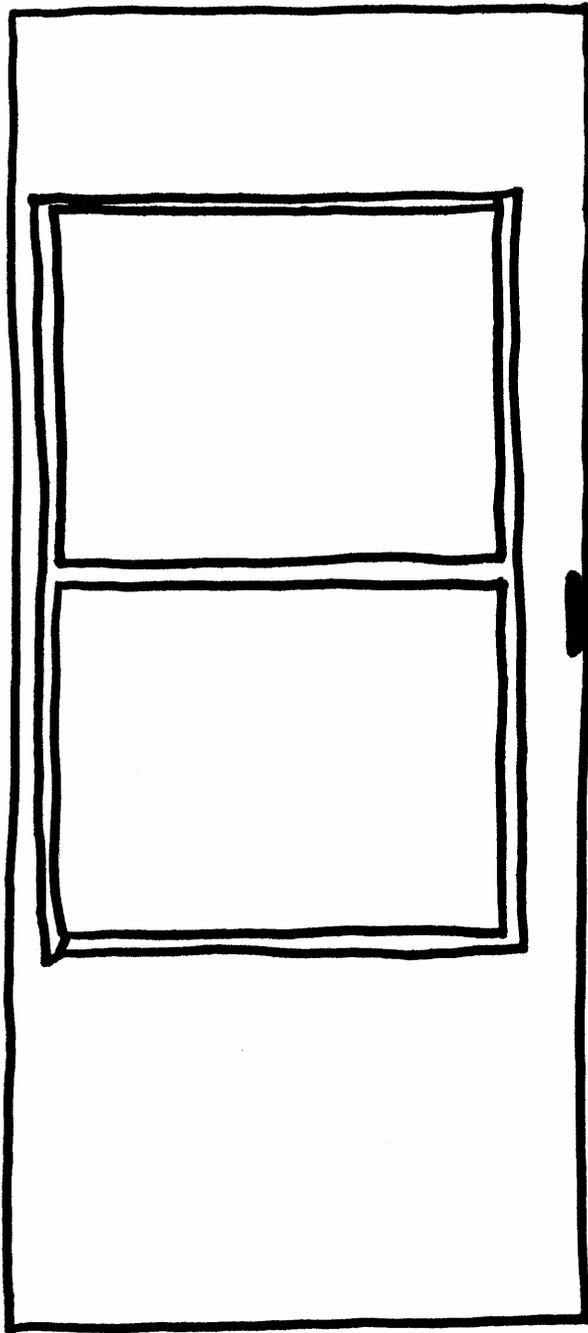
ounce

yard

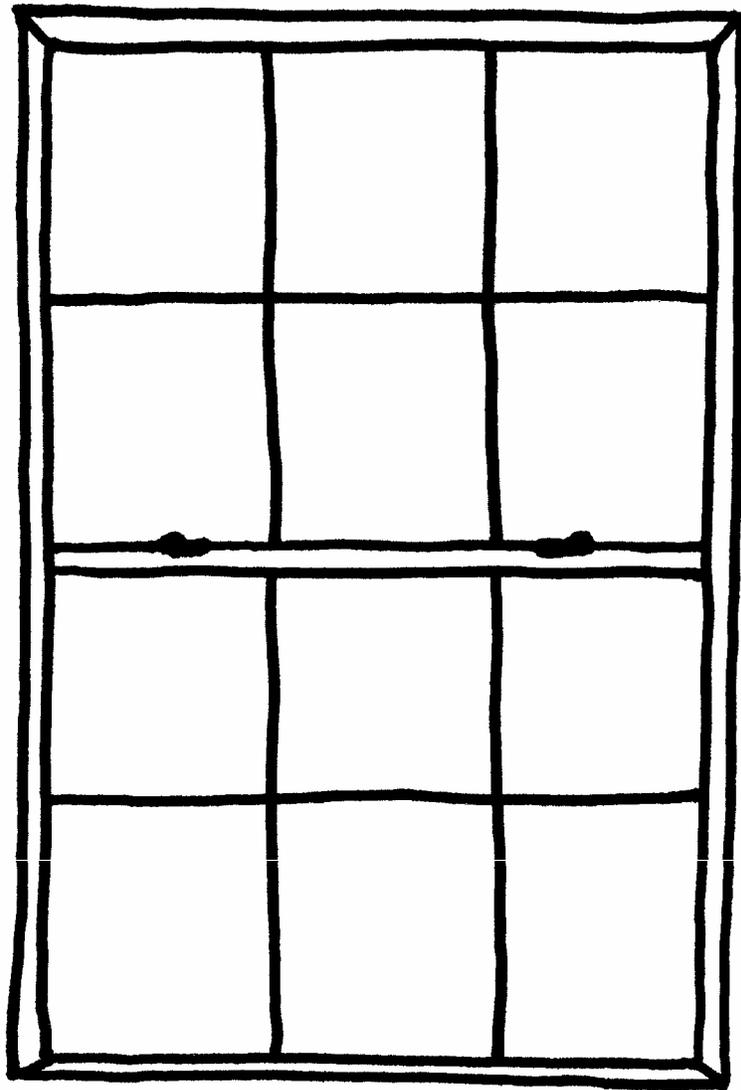
fluid ounce

gallon

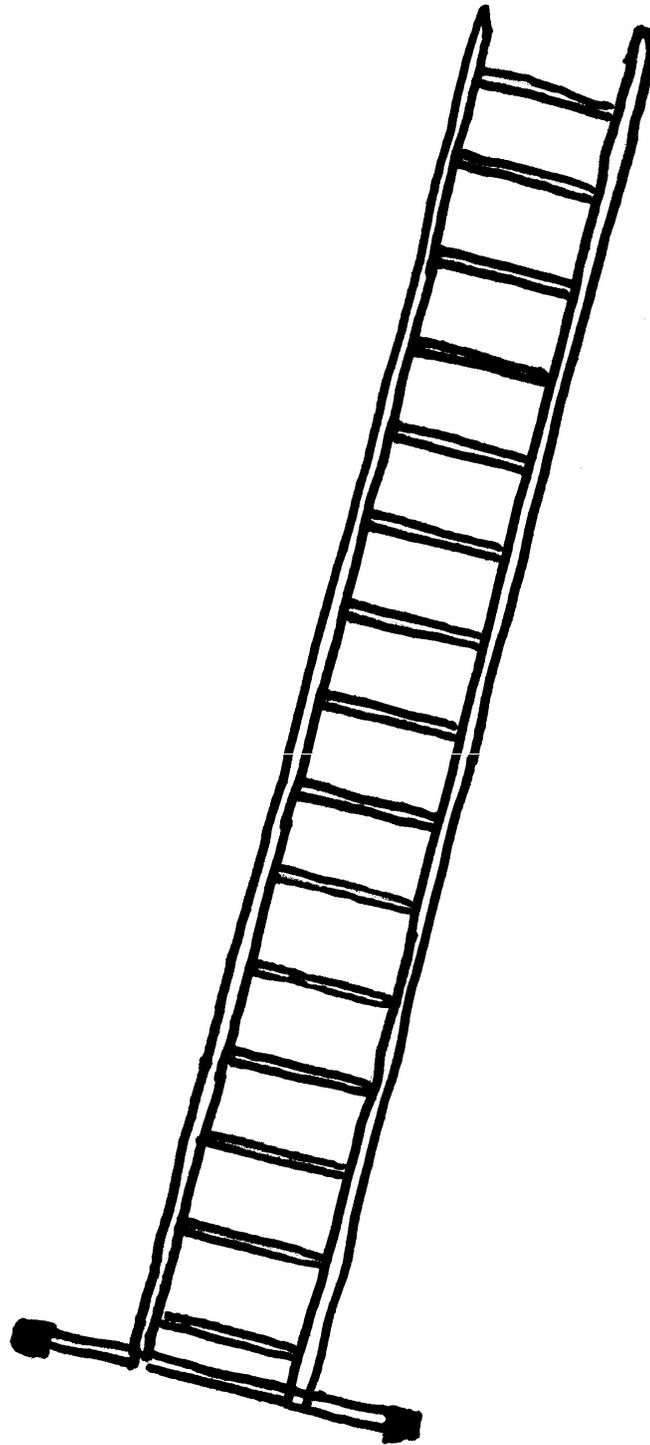
pound



Door
32" x 81"

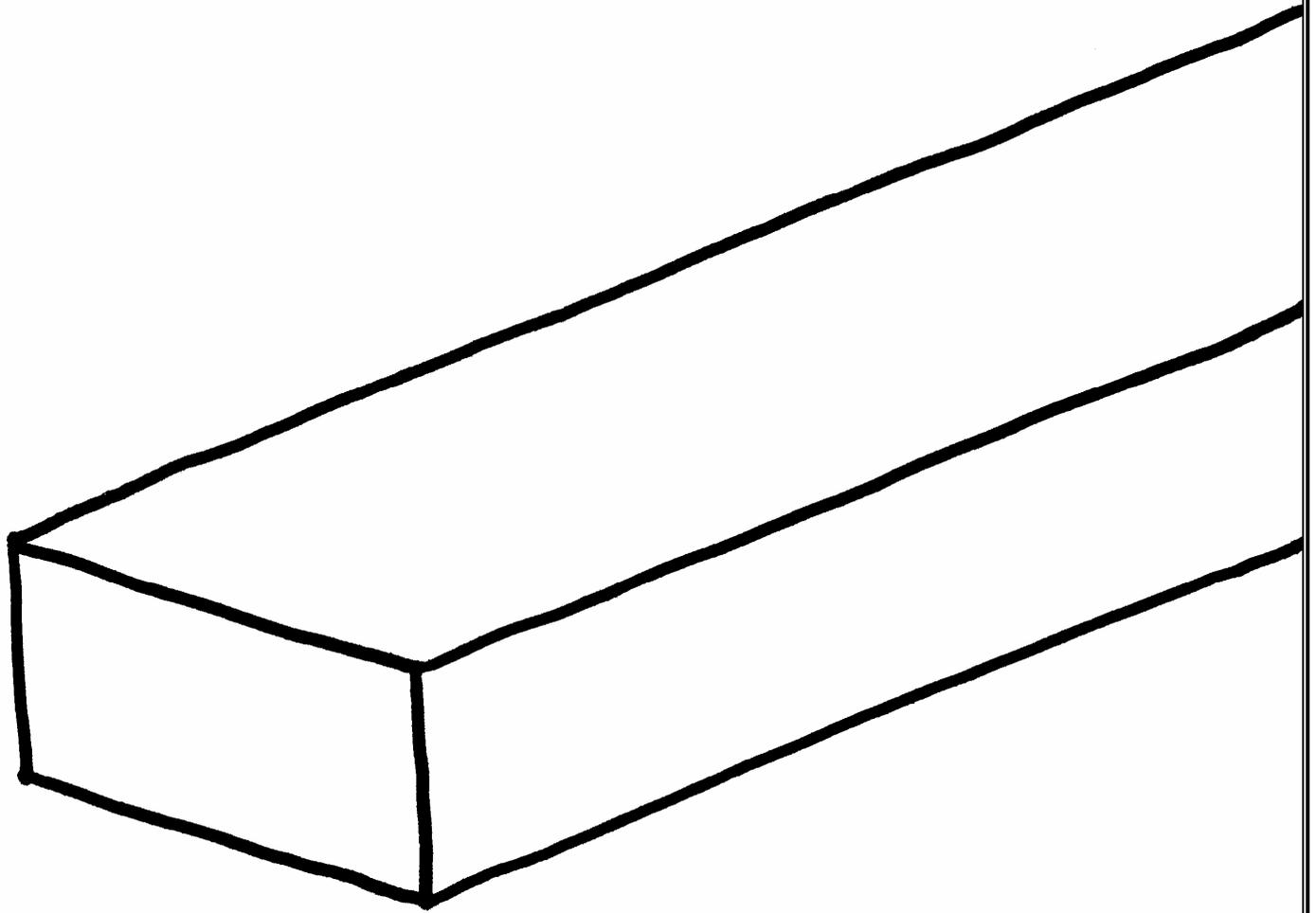


Window
24" x 38"

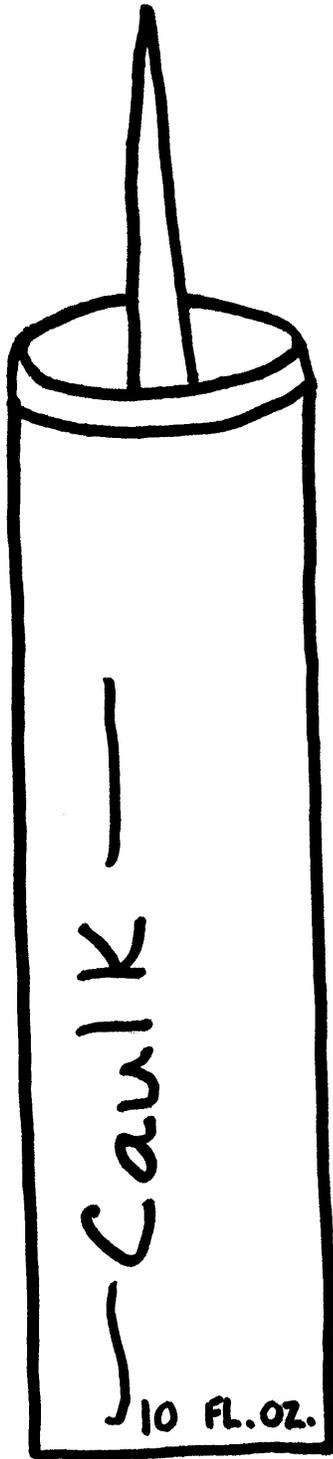


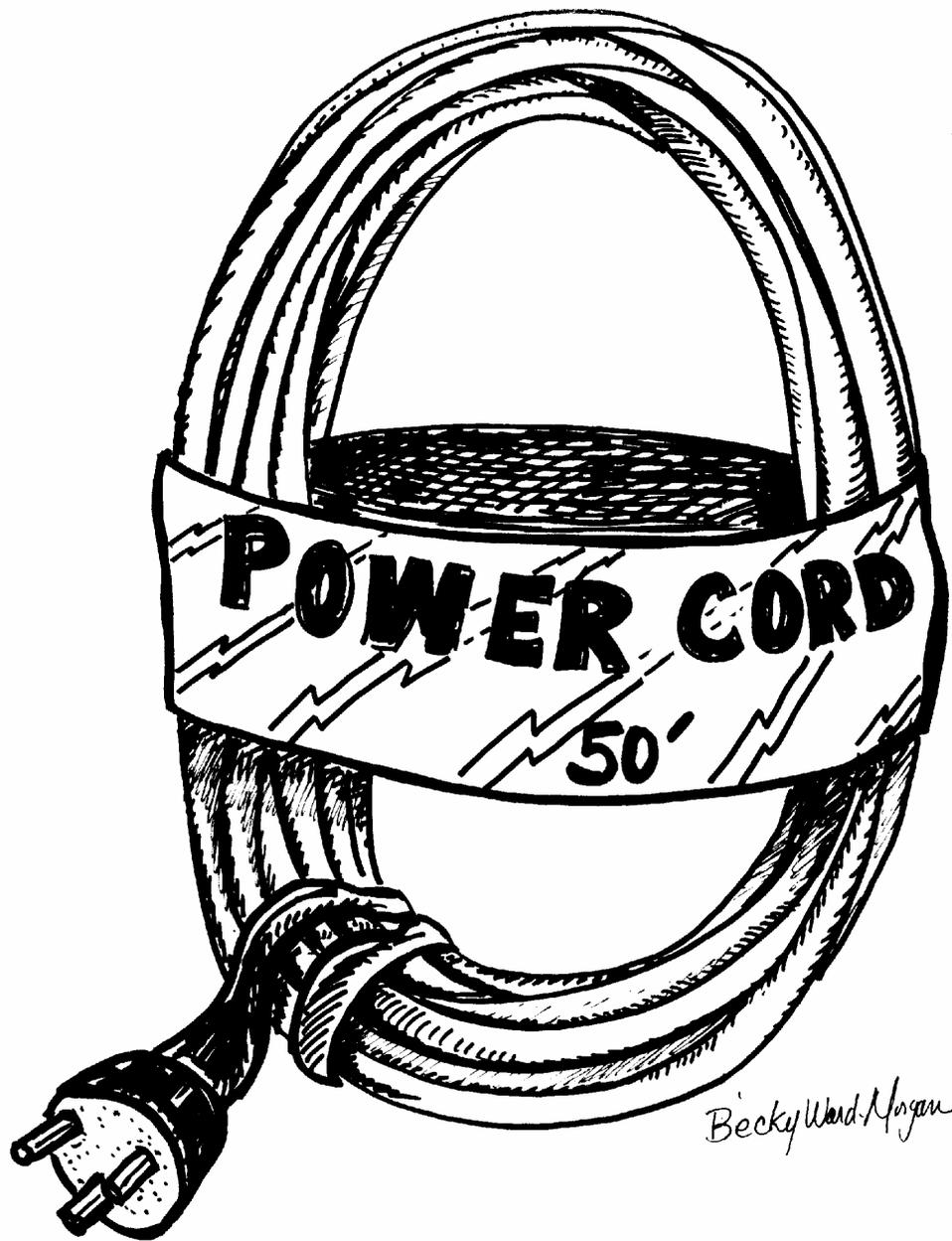
12' Ladder

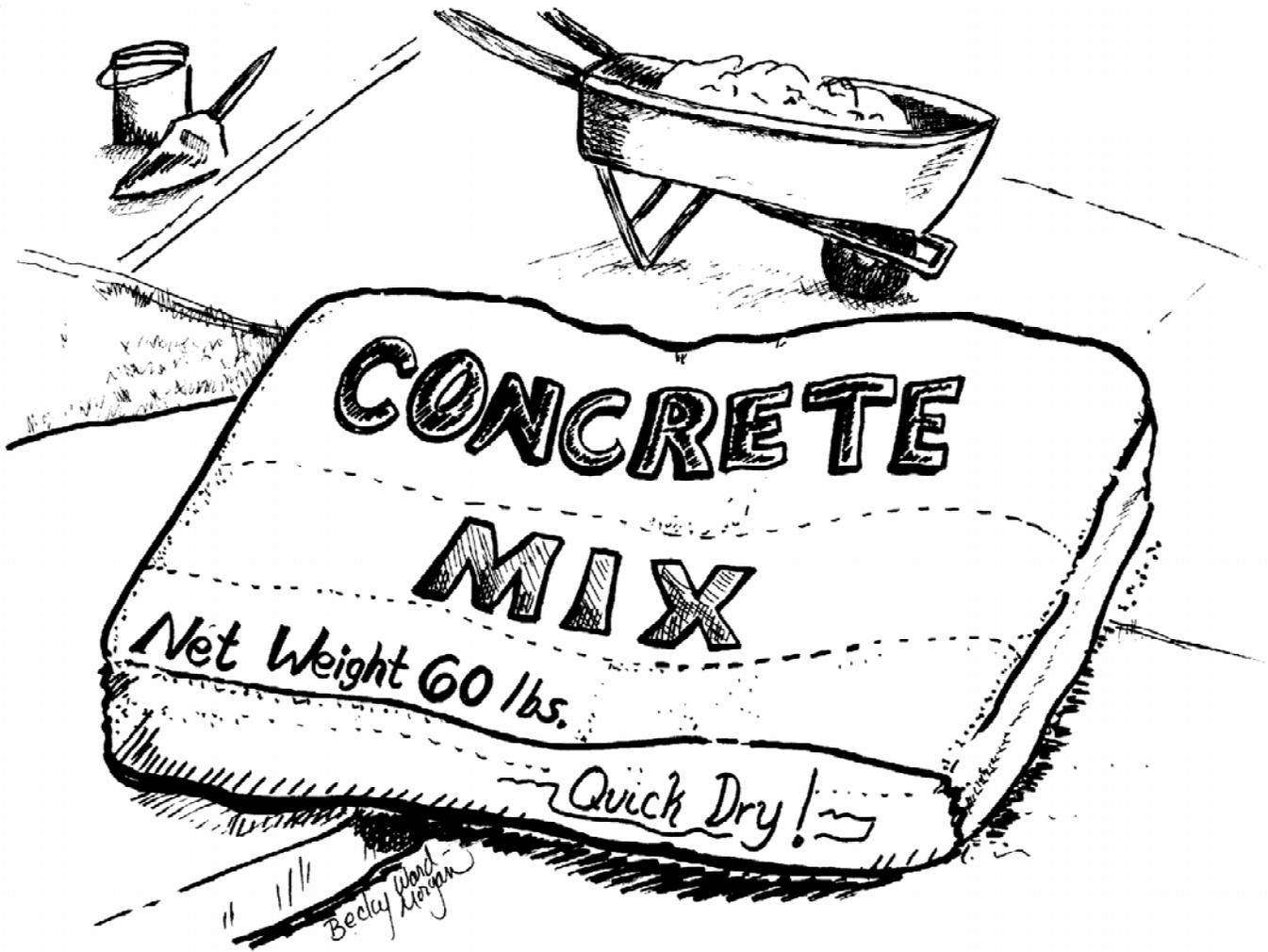


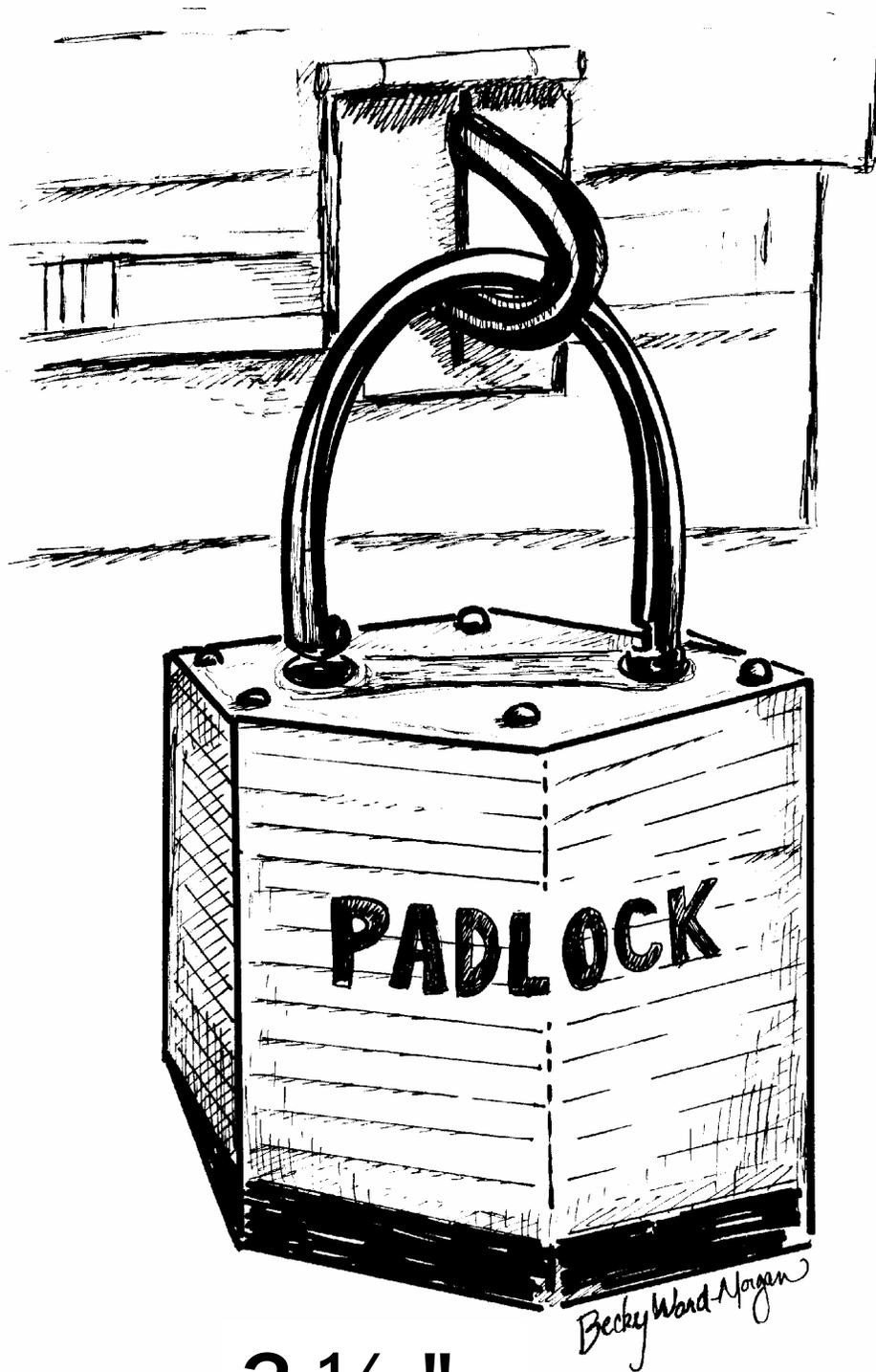


2" x 4" x 10"
board







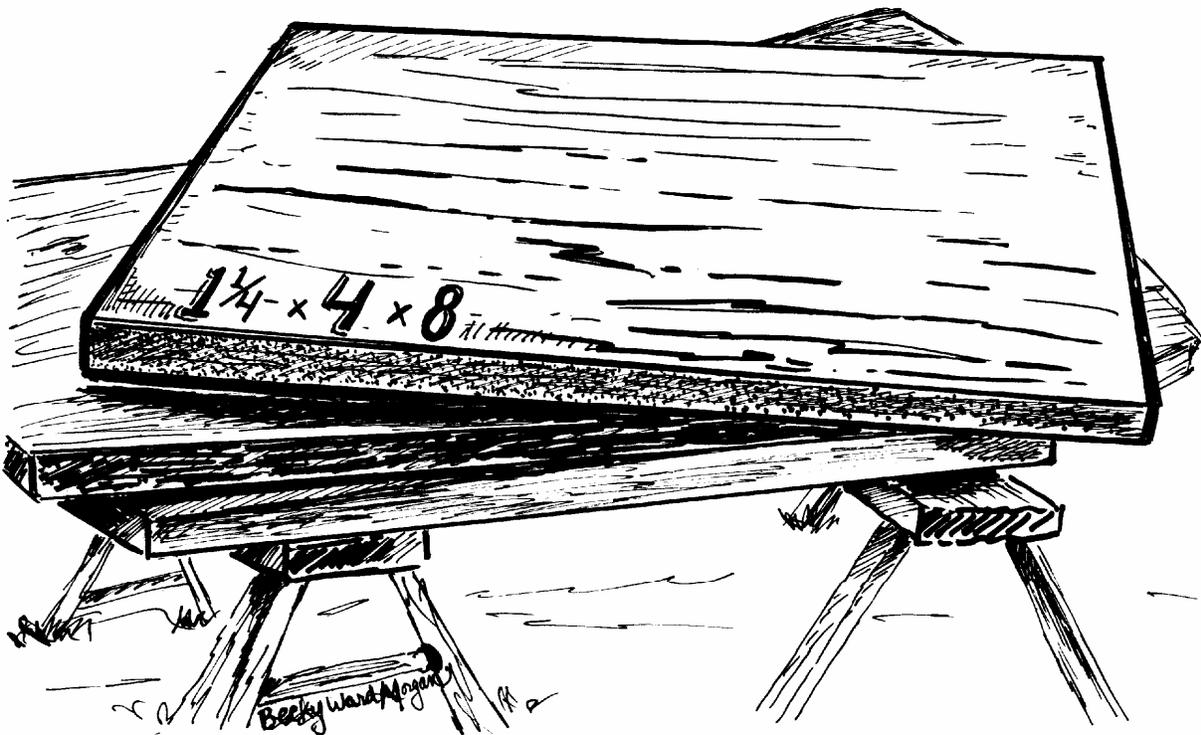


3 1/2 "

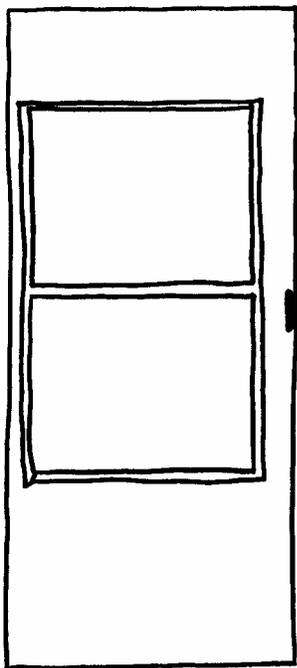
Becky Wood-Morgan



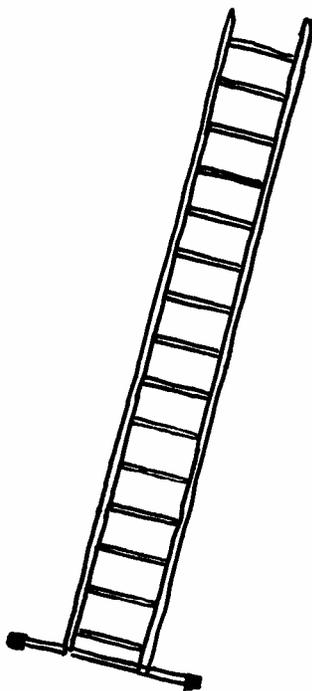
Becky Ward-Morgan



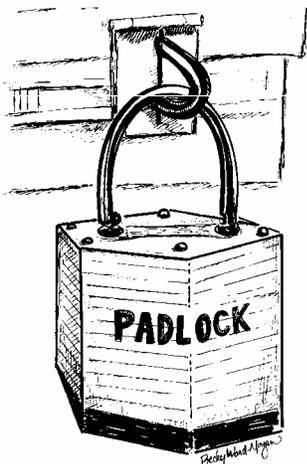
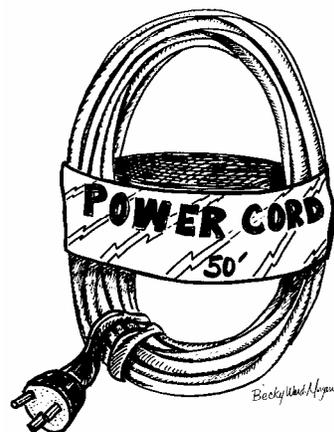
Measurement Picture Cards



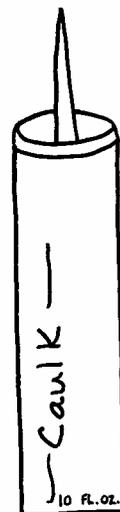
Door
32" x 81"

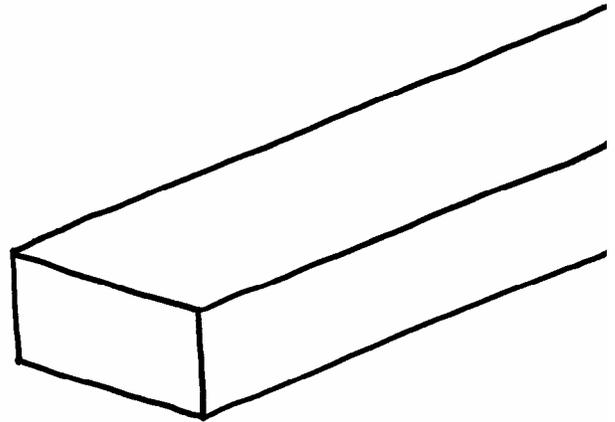


12' Ladder

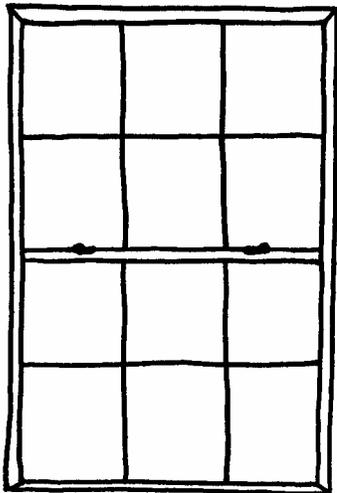


3 1/2"





2" x 4" x 10"
board



Window
24" x 38"



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.

N D H F S S W M N C
F O O T E Q E R E N
P O I H D A R N H O
T O C S S I T L T L
L N U U N I W O G L
I E R N M E U T N A
T E A E D N M E E G
P X T W C X Y I L P
T E N E T E E F D N
R T H G I E H T V F

CENTIMETER
 DIMENSION
 FEET
 FOOT
 GALLON
 HEIGHT

INCHES
 LENGTH
 MEASURE
 OUNCE
 POUND
 WIDTH

Created by Puzzlemaker at DiscoverySchool.com

Activity #2: Measurement Vocabulary/Understanding Abbreviations

Handout B

Write the abbreviation.

gallon gal. or GAL

pound lb.

inch in. or "

foot ft. or '

centimeter cm.

feet ft. or '

ounce oz.

fluid ounce fl. oz.

Word Search Puzzle: Find and circle the words below.

N D H F S S W M N C
F O O T E Q E R E N
P O I H D A R N H O
T O C S S I T L T L
L N U U N I W O G L
I E R N M E U T N A
T E A E D N M E E G
P X T W C X Y I L P
T E N E T E E F D N
R T H G I E H T V F

CENTIMETER

DIMENSION

FEET

FOOT

GALLON

HEIGHT

INCHES

LENGTH

MEASURE

OUNCE

POUND

WIDTH

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

Activity #3: Student to Student Dictation

Handout B



Student #1

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:

1. Buy 25 bags of 60 lb. concrete mix.
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

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:

1. Buy 25 bags of 60 lb. concrete mix.
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.