Measuring Ingredients
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This unit will introduce the student to measuring dry and wet ingredients. They will learn how to measure cups and the standard cup fractions (half, one third, two thirds, one quarter, three quarters) that are used in most recipes. They will also learn teaspoon and tablespoon measurement, using the standard spoon set. They will learn to estimate the capacity of a bowl so that they can choose the appropriate bowl based on the quantities used in a recipe. Since many recipes use Metric measurement, this too will be presented.

Measuring by weight, both by guess work and by using a standard kitchen scale (Imperial and Metric) will be taught. While both systems of measurement will be used, conversion between the systems will not: students will be using standard measuring tools, and recognizing which numbers to use based on the recipe. This unit has a lot of complex skills: each instructor should choose the learning activities that are appropriate for the individual student. However, Level 1 does cover the full range of measuring; level 2 moves into multiplying measurements.

Vocabulary should be taught as it arises. There is a lot of “recipe” language.

This unit is a good practical way to teach or reinforce fraction skills. It is also a good place to teach the Imperial and Metric measurement systems.

PREREQUISITE OR ADDITIONAL SKILLS NOT TAUGHT IN THIS UNIT

- Read numbers: whole and simple fractions (½,¼,⅓,⅔)
- Basic understanding of concept of fractions
- Previous experience using a number line
- Some experience or understanding of Metric system (units of volume and weight)
- Some experience or understanding of Imperial measurement (ounces and pounds, fluid ounces, pints, quarts)
- Concepts of before and after, more and less, adding and subtracting
- Ability to count by ones, to remember the number previously counted, and to keep track of counting while doing something else (filling a cup then adding to a mixture)
- Hand-eye coordination
OBJECTIVES

Students will

- Measure up to one cup of both wet and dry ingredients accurately, choosing the correct measuring cup.
- Measure up to 1 Litre using graduated measuring cups of 1 Litre and 500 mL size.
- Measure teaspoons and tablespoons, choosing the appropriate spoon.
- Estimate bowl capacity, choosing the correct bowl for the recipe based on total quantity of ingredients.
- Read a simple recipe.
- Name objects which are heavy and light.
- Guess the weight of an object.
- Weigh objects using a kitchen scale to nearest ounce or gram (no fractions here).
- Recognize whether given measures are Imperial or Metric and choose the appropriate numbers on the cup or scale.

MATERIALS

- Glass measuring cups with both Imperial and Metric measurements, for liquids: 1 cup, 2 cups, 4 cups. (250 mL, 500 mL, 1 L)
- Set of dry ingredient measuring cups: $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$. (Some students may be able to use only the $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$.)
- Bowls of varying sizes
- Set of kitchen scales with both Metric and Imperial measurements
- Flour, sugar, etc.
- Access to water and kitchen facilities (for baking)
- Rice or other dry ingredient for multiple measuring practice
- Variety of foods for weighing
- Plastic bags, labeled with weights: 4 oz., 5 oz., 100 gm., etc.
- Chart paper and markers
- Cookie sheets
- Plastic bags filled with varying weights of rice or flour (unlabeled)
- Prepared vocabulary cards
VOCABULARY

- Add
- Arrange
- Bake
- Baking powder
- Batch
- Blender
- Bowl
- Combine
- Cook
- Cookie sheet
- Cup
- Cut
- Flour
- Fluid ounce
- Full / empty
- Grams
- Half (½)
- Half-empty
- Half-full
- Heavy / heavier
- Kilogram
- Light / lighter
- Lines
- Litre (L)
- Margarine
- Measure / measuring / Measurement
- Metric
- Milk
- Millilitre (ml)
- Mix
- Object
- One cup
- Ounce
- Pastry
- Pound
- Quarter (¼)
- Recipe
- Salt
- Scale
- Shortening
- Subtract
- Sugar
- Tablespoon / tbsp
- Teaspoon / tsp
- Third (⅓)
- Water
- Weight / weigh / weighs
- Wet / dry

RESOURCES

- Some larger grocery stores have fully equipped kitchens and teaching areas which can be made available at no cost to community or educational groups. This could be a good place to have a field trip to put into practice what is learned in this unit and in this entire manual.
- Local restaurants and fast food restaurants could be approached for samples of condiments in individual sized portions: cream, sugar, sweetener, ketchup, mustard, relish, mayonnaise, salt, pepper, etc.
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<tr>
<th></th>
<th>Activity Description</th>
<th>ESSENTIAL SKILLS</th>
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<tbody>
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<td>RT</td>
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<td></td>
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<td>MM</td>
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<tr>
<td>1</td>
<td>Why measure?</td>
<td>1</td>
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<tr>
<td>2</td>
<td>What is a measuring cup?</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Full to empty</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>How to measure dry ingredients</td>
<td>1</td>
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<tr>
<td>5</td>
<td>Measuring a half-cup, etc.</td>
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<td>6</td>
<td>How to measure liquids</td>
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<td>Different styles of measuring cups</td>
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<td>Teaspoons and tablespoons</td>
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<tr>
<td>10</td>
<td>Bowl size</td>
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<td>11</td>
<td>Heavy and light</td>
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<tr>
<td>12</td>
<td>Weight</td>
<td>1</td>
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<tr>
<td>13</td>
<td>Check your guess</td>
<td>1</td>
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<tr>
<td>14</td>
<td>Units of weight</td>
<td>1</td>
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<tr>
<td>15</td>
<td>Markings on a scale</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Putting on weight; taking off weight</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Making cookies</td>
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<tr>
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<td>ESSENTIAL SKILLS</td>
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<tr>
<td>D</td>
<td>Measure it up and weigh it out</td>
<td>RT 1, DU 1, W 1</td>
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Notes: MM, SBA, MC, DA, NE, OC, PS, DM, JTPO, SUM, FI, WWO, CU, CL
**LEARNING ACTIVITIES**

1. WHY MEASURE?
   - Document Use 1
   - Oral Communication 1
   - Thinking Skills
     - Problem Solving 1
     - Decision Making 1
     - Significant Use of Memory
   - Continuous Learning

**Materials:**
- Simple recipes: from packaged foods like Macaroni and cheese, and from recipe book (like a cookie recipe)

**Activity:**
Ask students what their favourite foods are. Does someone special make them? Could someone else make them? Would they be the same? Why or why not? What do we do so that someone can make a food, like chocolate chip cookies, to be the same each time. (use a recipe)

Look at a couple of simple recipes.
- Note that the names of the ingredients are given.
- Also note that the quantities of each ingredient are given.

Explain that the most common way to measure ingredients in North America is using “cups”. (Some may notice teaspoons and tablespoons in the recipe: explain that they will examine those later.) Occasionally, ingredients are measured by weight; some recipes also use the Metric system, which they will look at later.

Point out that if a recipe calls for one cup, it will probably be written as 1 cup or 1 c. Write this on the board. Ask students why it would be important to measure the exact amount (the recipe might not taste like it should or it might not cook or set properly).
### 2. WHAT IS A MEASURING CUP?

- **Reading Text 1**
- **Document Use 1**
- **Numeracy**
  - Data Analysis 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

**Materials:**
- Glass measuring cup
- Set of measuring cups
- Teaching Aid: *What is a Measuring Cup?*

Show the students a glass measuring cup (for liquid) and ask what it is.

Show other types of cups (teacup, mug) and ask how a measuring cup differs (used for a different purpose, don't drink out of it, has a pouring spout, has markings on it, often glass or Pyrex, measures ingredients for a recipe).

Show a set of measuring cups (for dry ingredients) and ask what they are. (These are all called measuring cups, but only one is a 1-cup measure.)

- Notice how they are different sizes and fit into each other.
- Note that each is labeled with how much it will hold (¼, ⅓, ½, ⅔, ¾, 1 cup).
- Ask if they can tell which holds more than another just by looking? Give 2 of the cups and ask which holds more. How do they know (bigger cup can hold the smaller cup inside it.)
- Ask them to put the cups in order from smallest to largest.

Read with the students the Teaching Aid: *What is a Measuring Cup?*

Emphasize that regular cups cannot be used to measure "one cup" of something.

- A "cup" is a measurement that we often use when following a recipe.
- Ask students which cup at the bottom of the page that they would use to measure milk.
- Which would they use to measure sugar?

**If the student is able, this is a good time to work on fraction sense.** For example, the bigger the denominator, the smaller the measure: it is how many pieces the whole is cut into: when a pie is cut into more pieces, the pieces get smaller. The numerator tells how many pieces of a certain size are included.

Display a labeled set of measuring cup and a glass measuring cup for continued reference as unit is taught.
### 3. FULL TO EMPTY

- **Document Use 1**
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

<table>
<thead>
<tr>
<th>Materials:</th>
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</thead>
<tbody>
<tr>
<td>• Glass containers (clean jars)</td>
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<tr>
<td>• Labels</td>
</tr>
<tr>
<td>• Rice, macaroni, etc. to fill jars</td>
</tr>
<tr>
<td>• Teaching Aid: <em>Empty to Full</em></td>
</tr>
<tr>
<td>• Student Activity Sheet: <em>Match the Levels</em></td>
</tr>
</tbody>
</table>

At this point teach the concepts of full, empty, half-full and half-empty.

- Demonstrate each term and show label to match the level of the ingredient.
- Fill various glass containers and label appropriately. Display in the teaching area for future reference.
- As fractional amounts are learned, fill, label and display the quantity.

Use and post Teaching Aid: *Empty to Full*. Give Student Activity Sheet: *Match the Levels* for additional practice.
4. HOW TO MEASURE DRY INGREDIENTS

- Document Use 1
- Numeracy
  - Measurement & Calculation 1
- Oral Communication 1
- Thinking Skills
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- Continuous Learning

<table>
<thead>
<tr>
<th>Materials</th>
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</thead>
<tbody>
<tr>
<td>• 1 cup (dry)</td>
</tr>
<tr>
<td>• Rice, sugar (white &amp; brown), flour</td>
</tr>
<tr>
<td>• Bowls</td>
</tr>
<tr>
<td>• Sieve</td>
</tr>
<tr>
<td>• Spoons, table knife</td>
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</tbody>
</table>

Remind them that dry ingredients are often measured using a set of measuring cups. The largest one is the 1 cup size. Find the measurement on the cup. (usually on the handle)

Put a large container of rice or dried peas on the table and ask the students to measure 1 cup. They could scoop with the cup, or they could fill it with a spoon.

Show a cup that is not quite full and one that is rounded above the top. Ask if either of these is 1 cup. (No) What should they do to make them correct? (Add more or remove some.) Demonstrate the method of leveling with the back of a knife. Let students practise.

Suggest that the cup should sit on the counter to keep it level.

Ask if they should do the measuring over the mixing bowl that they are using. Why not? (Some extra might fall in and the measurement would be incorrect.)

When they are comfortable measuring the rice or peas, change to measuring sugar and finally flour. (The finer the product, the more difficult it is to measure accurately.)

Tell them that flour is sometimes sifted before measuring because it can get packed down in the bag and just scooping would get too much.

- The recipe would tell them if they need to sift.
- Demonstrate. (Sift a large quantity into a bowl and then spoon it into the cup. You could first scoop a cup of flour and level it. Then sift that flour and re-measure. They will see that now there is more than 1 cup.)
- Let students practise with the flour and sieve.

Tell them that brown sugar is sometimes packed.

- They would then push down on the sugar in the cup, making it firm (like making sand castles with a pail.)
- This is what they need to do when measuring shortening or margarine as well.
- Let students practise.
5. **MEASURING A HALF-CUP, ETC.**

- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
  - Finding Information 1
- **Continuous Learning**

**Materials:**
- Recipes with different measures: ½, ¼, ⅓, ⅔, ¾.
- Set of measuring cups
- Dry ingredients to practise measuring
- Bowls, spoons, table knife

Look at one of the recipes you have brought in.
- Are all the measurements for 1 cup? (No)
- Ask students to find ½ cup in the recipe. Ask what that means? (half a cup.)
- Tell them to find the measuring cup they should use.
- Ask how many half-cups they think are in a full cup.
- Demonstrate the answer by filling a half cup, dumping it in the cup measure, then repeating.
- Explain that the half-cup is 1 of the 2 measures of that size that would be needed to fill the 1 cup measure.

Now have them find a measurement for one-third.
- Repeat the demonstration and questioning to establish that it would take 3 of this size to fill the cup.
- Have them find the one-third cup measure.

Repeat with one-quarter.

If your set of cups has a ⅓ cup and a ¼ cup, have the student find each.
- Ask if these are larger or smaller than one cup. (smaller)
- Test what happens if they use two or more of those measures. (more than one cup)
- Explain that ⅓ means that this is 2 of the 3 equal parts in a full cup.
- You could fill a ⅓ cup using the ⅓ cup. Note that 2 of the ⅓ cups will fill the ⅓ cup.
- Repeat with ¼ cup: it will take 3 of the ¼ cup measures.

If your set of cups does not have a two-thirds or three-quarters measure, ask if they can think of how to make that much using the cups they do have. (Use the cup with the same bottom number, and fill it the number of times that the top number of the fraction says.)

When following a recipe, they will need to match the cup they choose to the measurement in the recipe.

Give practice choosing and filling the various cups. This should be repeated over several days to make sure that the concepts and skills are thoroughly learned.
**6. HOW TO MEASURE LIQUIDS**

- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
  - Finding Information 1
- **Continuous Learning**

**Materials:**
- Glass measuring cup
- Set of measuring cups
- Rice
- Water
- Student Activity Sheet: *How Many?*

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Explain that liquids are usually measured using a different kind of measuring cup. Show the glass measuring cup. Look at the side with the ¼, ⅓, ½ etc. markings.

- Ask the students to find each. (You could set out the dry measures in order from smallest to largest and then ask the students to find the same measurement on the glass cup. They should note that as the measurement gets bigger, the line is higher up the side of the measuring cup.)

- Have students fill the dry measures with an ingredient, then carefully pour it into the glass measuring cup. Make sure the cup is level. Read the measurement. (They should be the same.)

- Some glass measuring cups also show the measurements in fluid ounces (oz.). Find these. Note that there are 8 oz. in 1 cup; 4 in a ½ cup, and 2 in a ¼ cup.

- Look to see if Metric measurements are given. These will be learned in the next activity.

Fill the glass cup to 1 cup. Explain (and show) that they will see a “double line” of the liquid at eye level. Explain that they must read the bottom line when measuring. (The liquid “climbs” up the side a tiny bit at the edges.)

Ask students why they should put the cup on a table or countertop that is level. (accurate measurement)

- Fill the cup to the one-cup mark. Let students try holding the cup so that the water is level with the mark. They will discover that it is very difficult to keep it level. It may show more than one cup at one side and less at the other side.

- Give students practice filling to one cup, half-cup, one-third cup, etc. emphasize “adding” to reach the amount needed (may be costly to pour extra liquid away.)

Tell students that some recipes might ask for 2 or 3 cups of an ingredient. Ask how they would measure that. (measure one cup at a time, accurately, count out loud as each is poured into the mixing bowl and keep track of how many cups have been added.

Use Student Activity Sheet: *How Many?* To reinforce filling multiple cups.
## 7. METRIC MEASUREMENT

- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
  - Finding Information 1
- **Continuous Learning**

<table>
<thead>
<tr>
<th>Materials:</th>
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<tbody>
<tr>
<td>• Glass measuring cup with Metric measurements</td>
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<tr>
<td>• Teaching Aid: <em>Two Ways to Measure</em></td>
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</tbody>
</table>

Explain that some recipes use a different way of measuring, called the Metric system.

Show that the glass measuring cup has a second set of lines and numbers (sometimes on the other side of the cup, other times on the same side as the fractions, but to the right or left.)

Use Teaching Aid: *Two Ways to Measure* and compare to real measuring cups.

***Dry measuring cups are not commonly available in Metric size: the Imperial might give the ml equivalent, but the numbers will be very unhelpful!***

Show a recipe with Metric measurements.

- Help students locate given measurements.
- Note that 250 ml is almost the same as 1 cup.

Give students practice measuring different Metric quantities of water.
## 8. DIFFERENT STYLES OF MEASURING CUPS

- **Document Use 1**
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

### Materials:

- Glass measuring cups in 1, 2, and 4 cup sizes

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### Show students different styles of glass measuring cups: 1, 2 and 4 cup sizes.

- Ask what they might use the different sizes for.
  - Measuring large quantities is easier with the larger cup:
  - They wouldn’t have to measure as many times or keep track as much,
  - BUT they would have to figure out how many times to fill the cup to achieve the total:
    - 12 cups – refill the 4-cup measure 3 times.

Remind them that while dry ingredients are best measured with a set of cups (easier to level), they might have to use the glass one if the workplace did not have a set.

- Stress that accuracy is important.
- Ask what they would do to make sure that the dry ingredient was level.
### 9. TEASPOONS AND TABLESPOONS

- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
  - Finding Information 1
- **Continuous Learning**

<table>
<thead>
<tr>
<th>Materials:</th>
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</thead>
<tbody>
<tr>
<td>Set of measuring spoons (1 tablespoon, 1 teaspoon, ½, ¼, ⅛ teaspoon)</td>
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<tr>
<td>Recipes including tablespoon and teaspoon measurements</td>
</tr>
</tbody>
</table>

Tell students that some ingredients are measured not in cups, by in “spoons”.
- Compare eating and serving spoons of various sizes with standard measuring spoons.
- As with cups, emphasize that accuracy and consistency are important in measuring.

Teach the abbreviations for tablespoon (tbsp) and teaspoon (tsp).

Look at some recipes and see what kinds of ingredients are measured this way. (spices and seasonings, baking powder and soda, sometimes other ingredients like flour or sugar when only a little is needed.)

Demonstrate correct measurement technique:
- Leveling dry ingredients as before,
- Not measuring over bowl,
- Extra care with liquids.

Give students practice choosing the correct spoon and measuring real ingredients.

Add measuring spoons to display of kitchen measuring equipment.
# 10. BOWL SIZE

- **Reading Text 1**
- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
  - Data Analysis 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

### Materials:
- Bowls of varying sizes (ranging from 2 - 10 cups)
- Glass measuring cup
- Labels, marker
- Water
- Student Activity Sheet: *The Mixing Bowl*

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Explain that it is important to select a bowl that will hold all the ingredients.

- Ask what would happen if they used a bowl that was too small (the ingredients would spill over the side and they wouldn’t have an accurate amount).
- Usually, it will not matter too much if the bowl is too big.

Ask students how they could measure how much a bowl would hold. (Count how many cups of water it would take to fill the bowl to the brim without spilling it.)

Have students practice measuring how much different size bowls will hold.

- Have them count out loud.
- Write the number of cups on a label and attach to the bowl.

What is the difference between a cereal bowl and a mixing bowl?

- Between a small mixing bowl and a commercial-size mixing bowl?
- Which is the smallest?
- The largest?
- Which holds more?

Explain that they will want the bowl to be a bit bigger than the ingredients, so that they can mix without spilling.

- You may need to demonstrate this.
- Ask students to choose which bowl they would use for 2 cups of liquid?
- For 4 cups of liquid?
- For 10 cups of liquid?
- Explain that students must look for a bowl that holds a higher number of cups than the amount to be added.

Tell them that some recipes will tell them what size to use: often this is because mixing will change the volume – such as beating eggs or cream.

Give Student Activity Sheet: *The Mixing Bowl* to practise choosing the right size of bowl to use for their ingredients.
### 11. HEAVY AND LIGHT

- **Document Use 1**
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

<table>
<thead>
<tr>
<th>Materials:</th>
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<tbody>
<tr>
<td>- Chart paper and markers</td>
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<td>- Bathroom scales</td>
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<td>- Different types of food scales (or pictures from catalogues: ebay is a good source – google “kitchen scales”)</td>
</tr>
<tr>
<td>- Teaching Aid: <em>Kitchen Scales</em></td>
</tr>
</tbody>
</table>

Ask students if they think they could pick up a dining room table.
- Why not? (It is too heavy.)
- Would they be able to pick up a cotton ball?
- Why? (It is light.)

Make a list, with the students, of things they know would be heavy, and things they know would be light. (elephant, feather, pencil, book, TV, etc.)
- Explain that the terms “heavy” and “light” are used when talking about the weight of an object.

Ask students if they know their own weight: how much they weigh.

Ask students if they know the name of the machine that is used to measure weight. (scale)

Show various types of scales: bathroom scales, food scales of different kinds.
- Explain that scales measure the weight of objects that are placed on them.
- Use Teaching Aid: *Kitchen Scales* if you are unable to bring in different scales or have no access to Internet to locate a wide range of types.
### 12. WEIGHT

- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
  - Data Analysis 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

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</table>
| - Kitchen scale (show both digital and non-digital if possible. Use non-digital for activity)  
- Baggies containing varying amounts of labeled common substances: flour, sugar, etc. |

Show students a kitchen scale. Ask where the food would be placed. Point out the markings on the scale display.
- If it is a digital scale, the weight will be displayed immediately.
- For a non-digital scale, every object placed on the scale makes the needle move. The needles points to the mark which will tell the weight of the object.

Demonstrate the scale’s operation, using various household objects: a salt shaker, a small spoon, a baggie with some flour, a baggie with some sugar, etc.
- Ask what happens to the needle each time something is put on the scale. (The needle moves to a line and stops.)
- Explain that line indicates the weight of what is on the scale. The farther the needle moves, the heavier the object.

Let students practise with the scale, weighing various items.
- Ask which made the needle move the farthest.
- Which made it move the least?
- Ask which was the heaviest.
- Which was the lightest?
13. **CHECK YOUR GUESS**

- **Document Use 1**
- **Numeracy**
  - Data Analysis 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

**Materials:**
- Kitchen scales
- Various objects: eraser, small book, orange, tin of tuna, etc.
- Student Activity Sheet: *Check Your Guess*

Show students how to guess whether one object weighs more or less than another by using their hands as scales.

- Place an eraser in one hand and a small book in the other.
- Move your hands up and down to get the “feel” of each object.
- Which one is heavier?
- Which one is lighter?
- Put the objects one by one on the scale.
- The heavier object made the needle move farther than it moved for the lighter object.
- Ask students if their guess was correct.

Use Student Activity Sheet: *Check Your Guess.*
14. **UNITS OF WEIGHT**
- **Reading Text 1**
- **Document Use 1**
- **Writing 1**
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Continuous Learning**

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<thead>
<tr>
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<tbody>
<tr>
<td>• Teaching Aid: <em>Number Pattern on a Scale</em></td>
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<tr>
<td>• Student Activity Sheet: <em>Read the Scale</em></td>
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</tbody>
</table>

Write ounce, pound, gram and kilogram and their abbreviations on the board. Review.

Review the number of ounces in a pound (16) and grams in a kilogram (1000).

Explain that often scales will count continuously with the larger unit (pounds or kilograms) and will count from 1 – 15 or 1 – 900 in between each larger unit.
- They would then read the larger unit first.
- Then they will read the smaller: for example, 6 pounds and 4 ounces.
- Use Teaching Aid: *Number Pattern on a Scale* or draw it on the board.

Tell students that we write and say the weights in a special way.
- Compare this to counting, writing and reading money: $4.75 = 4 dollars and 75 cents.
- With Imperial measure, we say 6 pounds and 4 ounces.
- With Metric, we say 2.7 kilograms. (Remind them they do not need to say or write zeros to the right of the final digit.)
- Use Student Activity Sheet: *Read the Scale*
15. MARKINGS ON A SCALE

- Reading Text 1
- Document Use 1
- Numeracy
  - Measurement & Calculation 1
  - Data Analysis 1
- Oral Communication 1
- Thinking Skills
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- Working With Others
- Continuous Learning

### Materials:
- Kitchen scale
- Assortment of items to be weighed: baggie of flour, baggie of sugar, mixing bowl, orange, etc. (label baggies)
- Teaching Aid: Counting With Number Lines
- Student Activity Sheet: Weighing in the Kitchen

Have the students look carefully at the lines on the scale.
- Notice the numbers beside the lines.
- These numbers form a number line like the one they use on the board, their paper
- The numbers will tell how much the object weighs.

Most modern scales (in Canada) will have two sets of numbers, often in different colours, often with one on one side of the line and the other set on the other side of the line: one gives the weight in ounces and pounds, and the other gives it in grams and kilograms.
- Ask students if they can figure out which is which. What could they look for as a clue? (oz., lb., g., kg.)
- Since each scale is different, you will need to see whether the numbers continue past the pound/kilogram or begin again.

Remind the students how to read the number line: if all the numbers are not written, the little lines between the displayed numbers can be counted.
- Practise this with a regular number line.
- Use Teaching Aid: Counting with Number Lines or draw your own on the board.

Now practise on the scale.
- Put an object on the scale and read and record on chart paper where the needle stops for the different objects.
- Remind students that the farther the needle moves, the more it weighs, (the heavier it is.)
- Record both ounces and grams.
- DO NOT CONVERT!

Use the Student Activity Sheet: Weighing in the Kitchen.
- Students will weigh and record several prepared samples of common kitchen foods.
- They should record using both grams and ounces.
- Have students use the same objects so that they can compare their answers for accuracy.
16. PUTTING ON WEIGHT; TAKING OFF WEIGHT

- Reading Text 1
- Document Use 1
- Numeracy
  - Measurement & Calculation 1
  - Data Analysis 1
- Oral Communication 1
- Thinking Skills
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- Working With Others
- Continuous Learning

**Materials:**
- Kitchen scale
- Sugar

Show students a bowl of sugar. Ask them to observe what happens as you put more and more sugar on the scale. (The needle goes up.)

Explain that they may be asked to measure a specific amount of sugar: for example, 4 oz.

Show how to measure out 4 oz. by putting the sugar on the scale one spoon at a time. As the needle gets closer to 4 oz., put smaller amounts on till it measures exactly 4 oz.

Repeat with different amounts to reinforce the process of gradually adding the sugar and watching the needle approach the desired weight.

Ask students what they should do if they put too much sugar on the scale. (They should take it off gradually, spoon by spoon, until they get back to the desired number.)

Demonstrate this by putting too much on the scale and removing it bit by bit.
  - Show how they might have to subtract a bit, then add a bit till they get exactly the right amount on the scale.

Give students opportunity to practise this skill.
## 17. MAKING COOKIES

- **Reading Text 1**
- **Document Use 1**
- **Numeracy**
  - Measurement & Calculation 1
- **Oral Communication 1**
- **Thinking Skills**
  - Problem Solving 1
  - Decision Making 1
  - Significant Use of Memory
- **Working With Others**
- **Continuous Learning**

<table>
<thead>
<tr>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Teaching Aid: <em>Drop Cookie Recipe</em></td>
</tr>
<tr>
<td>- Ingredients</td>
</tr>
<tr>
<td>- Bowls, mixing spoons, cookie sheet, etc.</td>
</tr>
<tr>
<td>- Kitchen scale</td>
</tr>
</tbody>
</table>

Now is the ideal opportunity to combine the skills learned in the *Counting & Patterns* unit with the skills learned in this unit.

Make a batch of cookies, if possible, and give instructions on how the unbaked cookies are to be arranged on the cookie sheet.

- If you have already done the unit on Setting Temperatures, the students can do that too. If not, then you will need to.

This is a good activity to do as a group. Eating the results will celebrate the completion of the unit. It’s been a lot of work!!

Use the Teaching Aid: *Drop Cookie Recipe.*
What Is a Measuring Cup?

A **cup** is used when making many foods. Recipes say to use a **cup** of something when cooking or baking. This kind of **cup** is a measurement.

Sometimes the recipe will ask for more than one cup. Then you need to count the number of cups.

Sometimes the recipe will ask for part of a cup. The marks on the cup will tell you how much to add.

You use a cup to measure out the exact amount asked for.

You have teacups and mugs at home. They do not hold the same amount as a measuring cup. They may hold more or less than a measuring cup.

Which of these are measuring cups? Which would you use to measure 1 cup of milk? Which would you use to measure 1 cup of sugar?
Empty to Full

When a container is empty, it has nothing in it.

When a container is full, it has something in it right to the top.

When a container is half-empty or half-full, it has something in it, but there is room for more: twice as much. Half-empty and half-full mean the same.

Empty          Full          Half-full
Half-empty

[Diagram of cylinders showing empty, full, and half-full states]
Two Ways to Measure

Imperial

Metric
Kitchen Scales
Number Pattern on a Scale

Pounds and ounces

Kilograms and grams
Counting With Number Lines

What numbers do the lines represent?
Drop Cookie Recipe

4 oz margarine
3 oz sugar
1 oz corn syrup
6 oz cake & pastry flour
1 tsp cinnamon

Set oven to 325°F. Lightly grease cookie sheets.

- Put margarine, sugar and syrup into a small saucepan and heat gently until the margarine melts. Stir constantly.

- Mix flour and spice together in a medium mixing bowl.

- Pour the sugar mixture into the flour mixture.

- Mix well.

- Drop teaspoonfuls onto cookie sheets about 2 inches apart.

- Bake for 15 – 20 minutes.

- Leave the cookies to cool and firm slightly on the cookie sheet before removing to a wire rack to cool completely.

- ENJOY WITH FRIENDS!!
Match the Levels

Join the picture to its description.

FULL

EMPTY

HALF-FULL

HALF-EMPTY
How Many?

Circle the cups that are asked for. Number the cups.

6 cups

5 cups

8 cups

12 cups
The Mixing Bowl

Draw a line from the recipe amount to the bowl that could be used. You may use the same bowl more than once.

8 c water

1 c milk

5 c flour

3 c sugar

2 c cream

½ c vinegar

2 cup bowl

4 cup bowl

6 cup bowl

10 cup bowl
## Check Your Guess

Circle the heavier object in each row.

<table>
<thead>
<tr>
<th>Book</th>
<th>Pencil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>1 Grape</td>
</tr>
<tr>
<td>Stapler</td>
<td>Box of staples</td>
</tr>
</tbody>
</table>

Circle the lighter object in each row.

<table>
<thead>
<tr>
<th>Eraser</th>
<th>Calculator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 paper clip</td>
<td>12 paper clips</td>
</tr>
<tr>
<td>1 mug</td>
<td>1 saucer</td>
</tr>
<tr>
<td>1 empty cup</td>
<td>1 half-full cup</td>
</tr>
</tbody>
</table>
Read the Scale

How much flour is on each scale? Remember to use the units! (oz or g.) The arrow points to what the scale says.
## Weighing in the Kitchen

Name what is being weighed, and its weight in ounces and in grams.

<table>
<thead>
<tr>
<th>What is it?</th>
<th>Ounces</th>
<th>Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty bowl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring cup (empty)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring cup (full)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DEMONSTRATION INSTRUCTOR PAGE

Measure It Up and Weigh It Out

ESSENTIAL SKILLS
• Reading Text 1
• Document Use 1
• Writing 1
• Oral Communication 1

• Numeracy
  o Measurement & Calculation 1
  o Numerical Estimation 1

• Thinking Skills
  o Problem Solving 2
  o Decision Making 1
  o Significant Use of Memory

DEMO DESCRIPTION
The student will measure ingredients according to instructions. The student must choose which kind of cup to use for the liquid and the dry ingredients. The student will determine, by sight, which size bowls to use. Baking is required for one task.

Then, the student will fill baggies according to the weight that is labeled on the baggie. Other filled, but unlabeled, baggies will be weighed using a standard kitchen scale, and labeled accordingly, using both grams and ounces.

INSTRUCTOR NOTES
• Provide a set of dry measuring cups, a glass measuring cup, and a set of measuring spoons.
• Provide bowls of varying sizes (small, medium and large).
• Provide ingredients named in recipes for measuring.
• Provide access to kitchen (oven) and needed utensils: pastry blender, cookie sheet, rolling pin round cookie cutter.
• Provide empty plastic baggies labeled with varying amounts: 4 oz., 200 g., 6 oz., 50 g., etc.
• Provide plastic baggies with varying amounts of rice or sugar, labeled with the units but not the weight, for students to weigh. Use even numbers of ounces, and grams in 10 g increments (or whatever units your scale has lines for: no estimating is required at this point, although higher level students should be able to do this.)
• Provide *What I Have Learned and Skills Practised* to make link between demonstration tasks and the Essential Skills.

With student
• Read aloud Tasks if necessary.
• Do not read numbers on scales or on labels.
ACHIEVEMENT INDICATORS

- Measured liquids accurately.
- Measured dry ingredients accurately, choosing appropriate measuring cup or spoon and leveling or packing as required.
- Measured full and fractional cups.
- Chose glass measuring cup for liquid and nested cups for dry ingredients.
- Visually determined the capacity of various mixing bowls and made appropriate choice.
- Weighed pre-measured samples and recorded weight using appropriate units.
- Measured according to given weights.
- Assessed own performance.
Measure It Up and Weigh It Out

TASK 1

You are helping the cook with a recipe.

2 c Shreddies
½ c pretzels
¼ c chocolate chips
½ c raisins

Choose a bowl to put the ingredients in.

Measure each ingredient and add it to the bowl. Mix.

Enjoy as a healthy snack with other students.
Measure It Up and Weigh It Out

TASK 2

You are going to make scones for lunch. Follow the recipe. Ask your instructor to bake them, or you can bake them yourself.

SCONES

Preheat oven to 425°F.

Combine the ingredients in a medium bowl. Cut with a pastry blender until the shortening is the size of peas.

2 c. flour
5 tbsp. shortening
4 teas. baking powder
1 teas. salt

Add
⅔ c. milk

Mix with a fork till you can make a ball.

Roll the dough on a floured board to about 1 inch thick. Cut with round cookie cutter.

Place on ungreased cookie sheet. Bake for 10 – 15 minutes.

Enjoy with butter and jam.
Measure It Up and Weigh It Out

TASK 3

You must set out bowls for the cook to use. He will be making a large salad. Choose a bowl that would hold about 6 cups of salad.

Then he will make some pudding. It uses 2 cups of milk. Which bowl should you give him?

Finally, he wants to put about 1 cup of sauce in a bowl. Choose the bowl for him.
Measure It Up and Weigh It Out

TASK 4

The chef has asked you to make up some pre-measured bags of flour. He will use them in different recipes that he must make. The baggies are already labeled.

Use the kitchen scale to weigh out the flour into the baggies.

Give the filled baggies to your instructor to be checked.
Measure It Up and Weigh It Out

TASK 5

Another kitchen helper has already measured food into baggies, but forgot to label them with the weight of each.

Weigh each one with the kitchen scales and label it with the exact weight.

Use grams if the label says grams, and ounces if the label says ounces.

Give these to your instructor to check your work.
**Measure It Up and Weigh It Out**  
**TASK 6**

**I CAN MEASURE AND WEIGH INGREDIENTS IN THE KITCHEN**

<table>
<thead>
<tr>
<th>I CAN</th>
<th>YES / DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can choose the right bowl for the job.</td>
<td></td>
</tr>
<tr>
<td>I can count and keep track when I am measuring.</td>
<td></td>
</tr>
<tr>
<td>I can measure full cups.</td>
<td></td>
</tr>
<tr>
<td>I can measure ½ cups.</td>
<td></td>
</tr>
<tr>
<td>I can measure ¼,⅓,⅔,¾ cups.</td>
<td></td>
</tr>
<tr>
<td>I can measure liquids using ml.</td>
<td></td>
</tr>
<tr>
<td>I can measure teaspoons and tablespoons.</td>
<td></td>
</tr>
<tr>
<td>I know how to measure dry ingredients accurately.</td>
<td></td>
</tr>
<tr>
<td>I can measure liquid ingredients accurately.</td>
<td></td>
</tr>
<tr>
<td>I know when something is full, empty, or half-full (half-empty).</td>
<td></td>
</tr>
<tr>
<td>I can tell when an object is heavy.</td>
<td></td>
</tr>
<tr>
<td>I can tell when an object is light.</td>
<td></td>
</tr>
<tr>
<td>I can tell which object is heavier or lighter than another.</td>
<td></td>
</tr>
<tr>
<td>I can read the numbers on a kitchen scale.</td>
<td></td>
</tr>
<tr>
<td>I can weigh objects.</td>
<td></td>
</tr>
<tr>
<td>I can measure ingredients accurately by weight, adding or subtracting the ingredient to be exact.</td>
<td></td>
</tr>
<tr>
<td>I can measure ounces and grams.</td>
<td></td>
</tr>
<tr>
<td>I can measure the ingredients in a recipe.</td>
<td></td>
</tr>
</tbody>
</table>
DEMONSTRATION ASSESSMENT

Measure It Up and Weigh It Out

Student:__________________________
Instructor:________________________
Date:____________________________

Total Time for Demonstration:_______
Help Given? _____Yes _____No
Details:___________________________

Accommodations?: _____Yes ____No
Details:___________________________

ESSENTIAL SKILLS:

• Reading Text 1
• Document Use 1
• Writing 1
• Numeracy
  ° Measurement & Calculation 1
  ° Numerical Estimation
• Oral Communication 1
• Thinking Skills
  ° Problem Solving 2
  ° Decision Making 1
  ° Significant Use of Memory

ACHIEVEMENT INDICATORS

<table>
<thead>
<tr>
<th>indicator</th>
<th>BEGINNING</th>
<th>DEVELOPING</th>
<th>ACCOMPLISHED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured liquids accurately.</td>
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<tr>
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