Lesson

17 Word Problems with Measuring

New Concepts

Now that we've reviewed teaspoons, tablespoons, cups, pints, and so on, we'll learn more about pounds and ounces.

> 16 ounces = 1 pound
>
> To change pounds to ounces, multiply the number of pounds by 16.

If you have access to a reasonably accurate scale, help your child collect and weigh a variety of different items. If you do not have access to such a scale, explore weights at the market by weighing various amounts of produce and reading the weights on packages of foods. Find as many opportunities as you can in daily life to explore weights and measures with your child this week.

ASSIGNMENT SUMMARY

- ☐ Use conversions and the four processes to solve multistep word problems.

Complete practice set

- ☐ Word Problems Using Measurements

MATERIALS

kitchen scale (optional)

Now that your child is familiar with weights and measures, we can introduce story problems using measurements. Story problems often contain many steps. Work through the sample problem below with your child, showing how each step can be written out in number form as you work toward the solution. (Refer back to earlier lessons on measurement if necessary.)

> Renee and Julia are making a chocolate cake for their mom's birthday. They need 4 cups of flour, 1 cup of chocolate powder, and 2 cups of sugar. They have a $\frac{1}{2}$ cup measuring cup. How many times will they fill the $\frac{1}{2}$ cup measuring cup with flour?

1 cup = two $\frac{1}{2}$ cups

4 (cups of flour) × 2 ($\frac{1}{2}$ cups) = 8

They will fill the measuring cup 8 times with flour.

> How many times will they fill the measuring cup with chocolate powder? How many times with sugar?

1 (cup of chocolate) × 2 ($\frac{1}{2}$ cups) = 2

2 (cups of sugar) × 2 ($\frac{1}{2}$ cups) = 4

They will fill the cup 2 times with chocolate powder and 4 times with sugar.

How many times did Renee and Julia use the $\frac{1}{2}$ cup measuring cup in all?

$8 + 2 + 4 = 14$

They used it 14 times.

Assignments

1. Practice weighing amounts and converting between ounces and pounds.
2. Work with your child on solving word problems using measurements. Give plenty of practical experience with everyday tasks in the kitchen.
3. Do the following practice set:
    - Word Problems Using Measurements

FOR ENROLLED STUDENTS

You will be sending the next batch of work to your Oak Meadow teacher at the end of lesson 20. Continue to use the assignment checklist and learning assessment form to help you organize your lessons and track your student's progress.

Word Problems Using Measurements

1. Gabe and Nell made lemonade for the swim team picnic. They used a 1-cup measure to fill two 1-gallon jugs. How many cups of lemonade did they need? Gabe poured 18 cups. How many did Nell pour?

2. Katie and Mark are making muffins for the picnic. The recipe uses 4 cups of blueberries. The blueberries at the market are all in 1-pint containers. How many pints will they need? How many pints will Katie and Mark need if they decide to double the recipe?

3. Erin and Evan are making sandwiches for the picnic. They plan to make 24 sandwiches. How many slices of bread will they need? If each 1-pound loaf of bread has 12 slices in it, how many pounds of bread will they need? (Hint: Remember each sandwich needs two slices of bread.)

4. Mary Ellen's grandmother is knitting several pairs of mittens. She needs 8 balls of yarn for the mittens. Each ball of yarn weighs 4 ounces and costs 1 dollar an ounce. How much will the yarn cost? How much will the total amount of yarn weigh in ounces?

5. A.J. weighs 83 pounds. How many ounces does he weigh? He is 4 feet 7 inches tall. How tall is he in inches?

6. Make a bar graph of the weights of four different children. (You can use weights of your friends or siblings, or just make up weights for imaginary children.)

7. Make a bar graph of the heights, in inches, of four different items in your house.

Learning Assessment

Use these assessment rubrics to track your student's progress throughout the year and make notes about the learning your child demonstrates or skills that need work. Please remember that these skills continue to develop over time.

SKILLS	Developing	Consistent	Competent	Notes
Solves problems with two-digit multipliers without carrying				
Solves problems with two-digit multipliers with carrying				
Takes measurements and solves problems with weights and measures				
Makes conversions between different units of measurement				
Records data on a bar graph				
Solves multistep word problems				
Demonstrates knowledge of Roman numerals to 1,000				
Uses math in daily situations				
Solves two- and three-digit addition and subtraction with carrying or borrowing				
Checks addition and subtraction answers using opposite process				
Has memorized times tables up to 12				
Solves simple division problems with remainders in vertical format				
Identifies place value up to seven digits				
Tells time and solves time questions using an analog clock				
Demonstrates understanding of odd, even, greater than, less than, and equal to				

Lesson

23 More Money Math

New Concepts

Now that your child is comfortable with money values, you can introduce adding and subtracting with money. Explain that it is just like regular adding and subtracting, except that a dollar sign and a decimal point are added. Adding these two symbols doesn't change how the numbers are added and subtracted.

The important thing to remember is that the decimal point separates the amount of dollars from the amount of cents. This means that your child must be very careful to keep the decimal points lined up properly in written problems, so dollars get added to dollars and cents get added to cents. (It may help to use graph paper to separate the place value columns and keep the decimal points lined up.)

Remind your child that lining the decimal points up and keeping the columns aligned is important because the columns stand for ones, tens, etc. Point out that there are only two columns for cents (a column for ones and a column for tens), but there can be as many dollar columns as you need: ones, tens, hundreds, thousands, and more!

$.25 = 2 tens + 5 ones (or 2 dimes + 5 pennies)

$25.00 = 2 tens + 5 ones (or 2 ten-dollar bills + 5 one-dollar bills)

Help your child work out these problems on paper by talking through it:

> "If you were adding 25¢ and 75¢, it would equal one dollar or $1.00. You add these numbers together just like you would normally, carrying as necessary, and bring the decimal point straight down into your answer, like this."

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ .25 \\ +\ .75 \\ \hline \$1.00 \end{array}$$

ASSIGNMENT SUMMARY

- ☐ Add and subtract money in written format.
- ☐ Create a custom catalog and shop with a budget.
- ☐ Use restaurant menus to plan and budget meals.

Complete practice set

- ☐ Practice Adding Money
- ☐ Practice Adding and Subtracting Money

MATERIALS

graph paper
magazines
restaurant menus

Point out that the decimal point shows where the ones column for the dollars begins. If your child seems confused by this, tell them not to worry about it, and just add the problems in the usual way, ignoring the dollar sign and decimal point. You can revisit the idea of place value after your child is more comfortable adding and subtracting with the dollar sign and decimal point in place.

Assignments

1. Introduce adding and subtracting money in written format. For the rest of the week, work with your child to put these new money skills to use with real-life situations and a variety of word problems.
2. Help your child cut pictures from magazines to make a custom-made catalog. Assign small money values to the items, and let your child "go shopping" with the $10 in change. Try to set it up so your child has many options and can spend the money in a variety of different ways. (Keep this homemade catalog, as you may want to use it again later for review.)

   Sometime this week, give your child a set amount of money (a budget) and a short grocery list and ask them to purchase as many items on the list as possible. It is up to your child to determine whether they have enough money.
3. Assemble your restaurant menus and work with your child on the following problems. Each problem requires several different steps, so you will probably want to spread them out over the course of the week, doing just a few each day. Remind your child to use the good nutrition habits learned in science as they plan various meals for these problems. (Keep your menus for review later in the year.)

   a. You are feeling very hungry, and you just happen to have $15. From one of your menus, order a meal that uses all or nearly all of your money. List your choices, along with the cost. Add them up, then subtract the total amount from your $15 to see if you have any money left. (Hint: $15 has to be written as $15.00 before you can use it in a subtraction problem.)

   b. You have $25.00 to take your cousin out to lunch. Your mother says your little brother wants to come too. Using one of your menus, plan a healthy meal for the three of you. Your little brother might be able to order from the children's section of the menu, which could save you money. Add up the amounts and see how much money will be left over.

   c. Your family is going on a three-day trip. You are taking an ice chest and will buy groceries for picnic lunches, but you'll have to eat out for breakfast and dinner. Using three different menus, plan three days' worth of breakfasts and dinners. Use good nutritional guidelines and include desserts and beverages for at least some of the meals. Write down the meals you select and total the money spent for each meal. Then add up all the meals to find out how much your family will spend for restaurant meals on the trip.

   d. After going to the movies, your dad offers to take everyone out for ice cream. How many people are in your group? Will they have single or double scoops? Will anyone have a shake

or banana split? Write down the mathematical calculations needed to figure out how much money your father spent on ice cream treats that night.

e. One of your friends is vegetarian. Another friend loves meat. Plan a restaurant meal for the three of you, and figure out the cost. Each person needs a drink and a main meal. Desserts and salads are optional, but at least one of you is very hungry, so you'll need to order at least one dessert and one salad. How much money will you spend?

f. You are doing a few errands with your mom, and you've gotten very hungry and thirsty. You don't have much money with you—just a few dollars. What can you order that will provide the most food for your money? Remember, you need to get both food and drink. Search your menus carefully.

g. Look at the menu from your favorite restaurant. Plan a meal for yourself that includes each of the main food groups—dairy, grains, fruits and vegetables, and meats and proteins. List your choices (with prices) and total your bill.

h. Using the same menu as above, plan the same type of balanced meal for a small group of people—three or more. No one orders the same thing. List your choices (with prices) and total your bill.

4. Do some or all of the practice sets in this lesson:
   - Practice Adding Money
   - Practice Adding and Subtracting Money

FOR ENROLLED STUDENTS

You will be sending the next batch of work to your Oak Meadow teacher at the end of the next lesson. You may want to begin gathering samples of your child's work to send.

Practice Adding Money

6.25 + 1.63 $.	5.72 + 4.15 $.	2.41 + .35 $.
4.91 + .21 $.	1.16 + 2.27 $.	8.68 + 6.93 $.

Practice Adding and Subtracting Money

If necessary, help your child work out these problems on paper until she feels confident enough to do them on her own.

Point out that when you have a column of money values, you only have to write the dollar sign in front of the first (or top) number and in front of the answer.

$8.95 − 2.31	$7.54 − 3.24	$14.28 − 1.07
$3.09 − 2.96	$25.25 − 22.19	$49.89 − 19.99
$42.15 22.10 + 3.07	$32.41 60.20 + 82.06	$90.00 4.09 + 88.88

Learning Assessment

Use these assessment rubrics to track your student's progress throughout the year and make notes about the learning your child demonstrates or skills that need work. Please remember that these skills continue to develop over time.

SKILLS	Developing	Consistent	Competent	Notes
Differentiates between numerator and denominator				
Adds and subtracts fractions with common denominators				
Writes money amounts in numbers and words				
Adds and subtracts money amounts				
Conducts money transactions accurately				
Solves problems and makes conversions with weights and measures				
Records data on a bar graph				
Solves problems with two-digit multipliers without carrying				
Solves problems with two-digit multipliers with carrying				
Solves multistep word problems				
Demonstrates knowledge of Roman numerals to 1,000				
Uses math skills in practical situations				
Solves multi-digit addition and subtraction with carrying or borrowing				
Uses opposite process to check answers				
Has memorized times tables up to 12				
Solves division problems with remainders in vertical format				