



GRADE 4 SUPPLEMENT

Set D1 Measurement: Weight & Mass

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Skills & Concepts

- ★ estimate and determine mass using metric units
- ★ estimate and determine weight using U.S. customary units
- ★ explore the difference between weight and mass
- ★ carry out a simple conversion within a system of measurement such as ounces to pounds

Bridges in Mathematics Grade 4 Supplement

Set D1 Measurement: Weight & Mass

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Set D1 ★ Activity 1



ACTIVITY

The Bread Dough Dilemma

Overview

Students use a balance and gram masses to help you divide a lump of “bread dough” into 4 equal parts.

Skills & Concepts

- ★ estimate and determine mass using metric units
- ★ explore the difference between weight and mass

You'll need

- ★ a balance scale
- ★ gram masses or five boxes of 100 2" paperclips (see Advance Preparation)
- ★ about a pound of modeling clay or playdough (see Advance Preparation)
- ★ a table knife and a cutting board covered with plastic or oilcloth
- ★ Student Math Journals

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Advance Preparation If you don't have gram masses, use jumbo paperclips, which each have a mass of about 1 gram. Bundle some of the paperclips into groups of 10, using a small rubber band or a piece of tape to secure them so that students can count them more efficiently. Make a lump of “bread dough” using modeling clay or playdough. You'll need 430–450 grams (roughly a pound) of “dough.”

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Background for the Teacher: The Difference between Mass and Weight *Mass is the measure of how much matter an object contains. Weight is a measure of how heavy an object is, or more specifically, a measure of the pull of gravity on an object. The mass of an object doesn't change when the location of the object changes, but weight does vary with location. For instance, your weight would be less on the moon since the moon is smaller and exerts less gravitational pull. Your mass, however, would remain the same. Mass is generally measured by using a balance to compare a known amount of matter to an unknown amount of matter. Weight is generally measured on a scale. Since this activity utilizes a balance rather than a scale, we refer to mass rather than weight. Although students are likely to use the words “weight” and “weighing” at first, guide them toward using the words “mass” and “finding the mass” as you conduct the activity.*

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Instructions for The Bread Dough Dilemma

1. Explain to the class that you have a problem and you need their help to solve it. Tell them that you're planning to bake some bread. You want to make a large batch and then divide it into 4 equal parts so you come out with 4 loaves of bread. The problem is, you don't know how to divide the dough into 4 equal portions. Do they have any ideas?

Activity 1 The Bread Dough Dilemma (cont.)

Jace *Just divide it in half and then in half again. Make fourths!*

Teacher *I've been trying to do that, but with a big lump of dough, it's hard for me to decide when it's even.*

2. Take out the “dough” and place it on your cutting board. Have a volunteer use the table knife to cut it into 4 equal parts. Ask the class how they can be absolutely sure the 4 parts are equal. If the dough isn't divided accurately, some of your loaves of bread will be a lot bigger or smaller than other loaves when they're done.

Students *Those pieces look even to me.*

I don't think so.

You could weigh them and see.

Teacher *How are you thinking about that, Amie?*

Amie *You could weigh the parts to make sure they're the same.*

Teacher *I have a balance scale here. Would that work?*

Students *No, because that won't tell you a number like when you weigh stuff.*

But we could use that scale to see if the pieces are even.

3. Explain that you'd need a regular scale to weigh the dough, but that you can use the balance to find the *mass* of the dough. Mass is a measure of how much matter there is in an object. In order to measure mass, people set the item they want to measure on one side of the balance and then place objects of a known mass on the other until the balance is level.

4. Then show students the paperclips. Tell them that a jumbo paperclip has a mass of about 1 gram. Hold up a bundle of 10 paperclips and ask them how many grams are in one bundle. Tell them that each box of paperclips holds 100 and ask them how many grams are in a box. Have several volunteers take turns coming up, picking up the dough and paperclips, and estimating the mass of the entire lump of dough in relation to the mass of the paperclips. Record estimates on the whiteboard.

5. Ask volunteers to help you find the mass of the dough using the balance scale and paperclips. Then ask them to use the information to estimate what the mass of each piece should be if you divide the dough into 4 equal parts.

6. Then work with input from the class to divide the “dough” into 4 parts of equal mass. Although there are a variety of ways to do this, here's one method the students may suggest. Divide the dough into two portions and place them on opposite ends of the balance scale, adding and subtracting to each portion until they balance. Then divide each of these two portions into two smaller portions, using the same methods. Finally, use the paperclips to find the mass of each piece. Are they equal? If not, make adjustments as needed until they are. What is the mass of each?

7. Ask students to get out their pencils and math journals. Have them use pictures, numbers, and words to remind you of what you need to do the next time you bake bread if you want your loaves to come out even.

Activity 1 The Bread Dough Dilemma (cont.)

Extension

- Present students with the following variation of the bread dough problem:

“My friend was telling me about a similar bread dough problem that he’s been having. He’s using the same recipe, but he needs to divide the dough into 6 parts because he wants to make 6 loaves in small pans for 6 of his friends at work. He needs some instructions as to how he might use his measuring tools—he has the same measuring tools that we do—to make 6 loaves of bread that have the same mass. Use pictures, numbers, and words to give my friend some ideas.”

Set D1 ★ Activity 2



ACTIVITY

Estimate, Measure & Compare the Mass

Overview

Students estimate the mass of different geoblocks and then use a balance scale and gram weights to find the actual mass. This activity is designed for use by small groups of students during Work Places or other work periods.

Skills & Concepts

- ★ estimate and determine mass using metric units
- ★ explore the difference between weight and mass

Recommended Timing

Anytime after Set D1 Activity 1

You'll need

- ★ Estimate, Measure & Compare the Mass Instructions (page D1.7, several copies, see Advance Preparation)
- ★ Estimate, Measure & Compare the Mass Record Sheet 1 (page D1.8, class set)
- ★ Estimate, Measure & Compare the Mass Record Sheet 2 (page D1.9, optional, run as needed)
- ★ 3 balance scales
- ★ 3 sets of geoblocks
- ★ gram masses or 6 boxes of 100 2" paperclips, some bundled in groups of 10

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Advance Preparation If you don't have gram masses, use jumbo paperclips, which each have a mass of about 1 gram. Bundle some paperclips in groups of ten, using a small rubber band or piece of tape to secure them, so that students can count them more efficiently. Set up 3 work stations around the room where pairs of students can work independently over the next few weeks as time allows. At each station, place a balance scale, a set of geoblocks, gram masses (1 full box of 100 jumbo clips, and 9 or 10 bundles of 10 if you don't have gram masses), a copy of the Estimate, Measure & Compare the Mass Instructions, and 8–10 copies of Estimate, Measure & Compare the Mass Record Sheet 1.

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Instructions for Estimate, Measure & Compare the Mass

1. Explain that you've set up some measuring stations around the room to give students more practice estimating and measuring mass. Show students a balance, a set of geoblocks, and the gram masses or paperclips. Ask what they'd need to do to find the mass of one of the geoblocks. As you discuss this with the class, review the concept of mass and help students articulate some of the differences between mass and weight.

***Teacher** I've set up some balances, geoblocks, and paperclips at the back of the room so you can practice measuring mass. How could you use the balance and the paperclips to find the mass of one of these geoblocks?*

Activity 2 Estimate, Measure & Compare the Mass (cont.)

Students Put the block on one side and find out how many paperclips it takes until the balance is level. Those paperclips are each a gram, so if you know how many paperclips it takes to balance the block, you know how heavy it is.

Teacher Do you know how heavy it is or how much mass it has?

Kiara How much mass, but I don't really get the difference between mass and weight.

Teacher Can anyone help Kiara with this question?

Students They're kind of the same, but mass is how much stuff there is in something. When people go to the moon, they're not as heavy—like they can jump really high and stuff. But they stay the same size so their mass doesn't change.

Teacher That's right. Their mass stays the same, even though their weight changes. Does anyone have other ideas about the difference between mass and weight?

Carlos We use a scale with numbers on it at home. I just step on the scale and the number shows how much I weigh.

Teacher Yes, people use scales to measure weight. You might have a kitchen scale at home at shows how many ounces or grams something weighs. Or maybe you have a bathroom scale that shows your weight in pounds or kilograms. You have to use a balance instead of a scale to measure mass, though.

2. Show students a copy of the Estimate, Measure & Compare the Mass Instructions and Estimate, Measure & Compare the Mass Record Sheet 1. Review the instructions with the class. Let students know where to find the materials and explain that you've set up 3 stations in the room for them to use in pairs. Explain how they'll know when it's their turn, and establish any ground rules for using the materials, turning in their work, and so on.

Extension

- When everyone in class has had a chance to complete the first record sheet, introduce Estimate, Measure & Compare the Mass Record Sheet 2. This sheet is just like the first except it allows students to choose the 5 geoblocks they want to measure.

Estimate, Measure & Compare the Mass Instructions

To do this activity, you'll need

- ★ Estimate, Measure & Compare the Mass Instructions
- ★ Estimate, Measure & Compare the Mass Record Sheet
- ★ a balance scale
- ★ gram masses or 2-inch paperclips
- ★ a set of geoblocks

Instructions for Estimate, Measure & Compare the Mass

- 1 Record your name and the date at the top of a record sheet. Choose a partner to work with. You'll both fill out your own record sheets for this activity.
- 2 Estimate the mass of the first geoblock in grams. Record your estimate.
- 3 Find the mass of the block and record the measurement. Round your measurement to the nearest gram.
- 4 Find the difference between your estimate and the actual measurement. Record the difference in the last column.

Set D1 Measurement: Weight & Mass Blackline Run a class set			
NAME <u>Deanna</u>		DATE <u>2/26</u>	
Estimate, Measure & Compare the Mass Record Sheet 1			
Geoblock	Your Estimate (in grams)	Actual Measurement (in grams)	The Difference (in grams)
 Geoblock OF (rectangular prism)	125 g	92 g	33 g

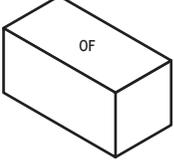
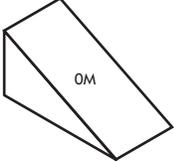
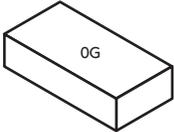
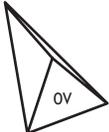
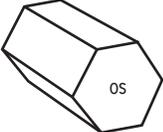
5 Continue estimating, finding the mass, and finding the difference for the other four blocks. Use what you know about the mass of the first object to estimate the others.

6 Answer the questions about mass at the bottom of the record sheet.

NAME _____

DATE _____

Estimate, Measure & Compare the Mass Record Sheet 1

Geoblock	Your Estimate (in grams)	Actual Measurement (in grams)	The Difference (in grams)
1 Geoblock 0F 			
2 Geoblock 0M 			
3 Geoblock 0G 			
4 Geoblock 0V 			
5 Geoblock 0S 			

6 When people measure the mass of an object, they are finding out (circle one):
 how long it is how heavy it is how much matter is in it how wide it is

7 To find the mass of an object, you need (circle one):

a ruler a balance a bathroom scale a measuring cup

NAME _____

DATE _____

Estimate, Measure & Compare the Mass Record Sheet 2

8 Estimate and then find the mass of 5 other geoblocks; you choose which ones. Can you find ways to make more and more accurate estimates?

Geoblock	Your Estimate (in grams)	Actual Measurement (in grams)	The Difference (in grams)

Set D1 ★ Activity 3



ACTIVITY

No Screamin' over Ice Cream

Overview

Students will estimate and find the mass of various portions of “ice cream.” This activity is designed for use by pairs of students during Work Places or other work periods.

Skills & Concepts

- ★ estimate and determine mass using metric units

Recommended Timing

Anytime after Set D1 Activity 1

You'll need

- ★ No Screamin' over Ice Cream Record Sheets (pages D1.12 and D1.13, run a class set)
- ★ a balance scale
- ★ gram masses or five boxes of 100 2" paperclips (See Advance Preparation)
- ★ a pound of modeling clay (see Advance Preparation)
- ★ a table knife and a cutting board covered with plastic or oilcloth

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Advance Preparation If you don't have gram masses, use jumbo paperclips, which each have a mass of about 1 gram. Bundle the clips in the box of 100 into groups of 10, using a small rubber band or a piece of tape to secure each bundle so that students can count them more efficiently. Use a pound of modeling clay to make a single “brick” of ice cream. Set up a work station somewhere in the room where a pairs of students can take turns work independently over the next few weeks as time allows. Place a balance scale, the gram masses or paperclips, the knife, cutting board, the clay, and copies of the No Screamin' over Ice Cream Record Sheet at this station.

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Instructions for No Screamin' over Ice Cream

1. Explain that you've set up another work station to give students more practice estimating and measuring mass. Show students the balance, the clay, knife, and cutting board. Then give each pair of students a copy of the No Screamin' over Ice Cream Record Sheets.
2. Read the sheets with the class and provide any clarification necessary. Take the opportunity to distinguish between mass and weight (see Set D1 Activity 1 for more information about this). Remind students that each paperclip weighs about 1 gram. Groups of 10 paperclips have been bundled together so they won't need to count them 1 at a time. The boxes hold 100 paperclips or about 100 grams.
3. Let students know that they'll be doing this activity in pairs sometime in the next few weeks. Let them know where the work station will be located. Explain how they'll know when it's their turn, and establish any ground rules for using the materials, turning in their work, and so on.

NAME _____

DATE _____

No Screamin' Over Ice Cream Record Sheet

 page 1 of 2

- Record your name and the date at the top of this record sheet. Choose a partner to work with. You'll both fill out your own record sheets for this activity.
- Your aunt has agreed to hire you to help out at her ice cream stand. In order to keep the job, you must prove that you can measure mass in metric units, because all the ice cream portions and toppings are measured in grams. Estimate the mass of the whole brick of ice cream in grams. Record your estimate.
- Find the actual mass of the ice cream and record the measurement. Round your measurement to the nearest gram.
- Find the difference between your estimate and the actual measurement. Record the difference in the last column.

Amount of Ice Cream	Your Estimate (in grams)	Actual Mass (in grams)	The Difference (in grams)
Whole brick of ice cream			

- To give you some more practice, your aunt asks you to divide the brick of ice cream into 6 equal portions. Your "customers" (otherwise known as your cousins) will be very upset if someone gets more than the others. Estimate how many grams each of the 6 cousins will get. Then cut the brick into 6 equal parts and find the mass of one of the parts. (Be sure the parts are equal!)

Amount of Ice Cream	Your Estimate (in grams)	Actual Mass (in grams)	The Difference (in grams)
$\frac{1}{6}$ of the ice cream brick			

NAME _____

DATE _____

No Screamin' Over Ice Cream Record Sheet

 page 2 of 2

6 What if you had to divide the brick of ice cream among 7 cousins? Estimate how many grams of ice cream each cousin would get. Then divide the brick into 7 parts and find the mass of one of the parts. (Be sure the parts are equal!)

Amount of Ice Cream	Your Estimate (in grams)	Actual Mass (in grams)	The Difference (in grams)
$\frac{1}{7}$ of the ice cream brick			

7 Mold the clay back into 1 large piece again so the next pair of students can start with a fresh brick of “ice cream.”

Set D1 ★ Activity 4



ACTIVITY

The Sack of Groceries

Overview

Students estimate the weight of a sack of groceries, weigh it to find the actual weight, and then add the weights of the individual items to see if the total matches the scale reading.

Skills & Concepts

- ★ estimate and determine weight using U.S. customary units
- ★ explore the difference between weight and mass
- ★ carry out a simple conversion within a system of measurement such as ounces to pounds

Recommended Timing

Anytime after Set D1 Activity 1

You'll need

- ★ 20–24 cans and/or packages of food (see Advance Preparation)
- ★ 2 grocery sacks with handles
- ★ bathroom scale
- ★ Student Math Journals
- ★ calculators (half-class set)

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Advance Preparation Look through your kitchen cupboards to find a variety of canned goods and packaged dry foods (i.e., beans, macaroni, and so on) that vary in weight from just a few ounces to about a pound. Make sure that each is clearly marked with its weight in U.S. customary units. Place one grocery sack inside the other and “double-bag” the items. Weigh the sack to be sure the combination of cans and packages totals about 12 pounds.

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Instructions for The Sack of Groceries

1. Place your sack of groceries where students can see it clearly. Ask them to share some of their experiences with grocery shopping. Have they ever had to help load the sacks of groceries into the car at the store? Have they ever had to help carry the sacks into their house or apartment? How much do they think an average bag of groceries weighs?
2. Invite a volunteer to pick up the sack. How heavy does it feel? Record his or her estimate on the board. Repeat this with a second volunteer. Do their estimates match? Then explain that sometime during the day, you'd like each student to pick up the bag, estimate its weight, and add his or her estimate to the board.
3. Perhaps students have noticed that you're asking them to estimate the *weight* of the sack rather than its mass. What's the difference between weight and mass? Ask students to share anything they already know. If they don't have much to share, have several volunteers do a little research. Encourage them to read any math dictionaries you might have in class or in the school library and/or go online. (one way to narrow the search is to Google such phrases as “difference between weight and mass.”) Ask them to be prepared to report their findings the following day.
4. The next day, ask your volunteers to share what they learned. Record their discoveries on a T-chart at the board or the overhead as students do so in their math journals.

Activity 4 The Sack of Groceries (cont.)

How much does this sack of groceries weigh?

Our estimates:

10 pounds	16 pounds	5 pounds
25 pounds	11 pounds	7 pounds
15 pounds	30 pounds	9 pounds
12 pounds	24 pounds	14 pounds

What's the difference between weight and mass?

Weight

- How heavy something is
- Usually measured on a scale
- Measures how hard gravity is pulling on something. Can change if you go to a smaller planet where gravity doesn't pull as hard.
- Weight equals the mass of an object times the force of gravity. Something with a mass of 1,000 kilograms will weigh 0 kilograms in outer space because there's no gravity.

Mass

- How much matter there is in something
- Usually measured on a balance
- Never changes. It doesn't matter where you go. Even on a different planet, an object's mass doesn't change.

You can use customary units (like ounces and pounds) or metric units (like grams or kilograms) to measure both weight and mass.

5. Then show students the bathroom scale. Explain that you want them to each come up and weigh the sack of groceries sometime before the end of the day. When they find out what the actual weight is, they'll need to keep it a secret until everyone in class has had a turn.

6. Toward the end of the day, record the actual weight of the sack of groceries on the board. How does this compare with students' estimates? How does it compare with some of the sacks of groceries they've helped carry in from the car?

7. Now take several of the lighter items out of the sack and show students how to read the labels to find out how much they weigh. How do the weights of these items compare to a pound? Remind students that there are 16 ounces in a pound.

Teacher *This can of cat food weighs 5 and a half ounces. This box of macaroni and cheese weighs 7 ounces. The mushroom soup weighs about 11 ounces. Do any of these weigh a pound?*

Students *No! They're really light.*

The macaroni and cheese weighs about half a pound.

Activity 4 The Sack of Groceries (cont.)

Students *If you put them together, they're not even 2 pounds, because that would be 32 ounces. You must have some stuff in there that's a lot heavier, or the bag wouldn't weigh 12 pounds. There are lots of things in there, though. I looked.*

8. Record the weights of the items you've selected on the board and work with input from the class to find the total. If it's more than 16 ounces, have the students help you convert it to pounds and ounces.

		16 ounces in a pound
cat food	5.5 ounces	23.5 ounces
mac & cheese	7.0 ounces	- 16.0 ounces
soup	+ 11.0 ounces	-----
	23.5 ounces	7.5 ounces
These 3 items add up to 1 pound 7.5 ounces		

9. Take all the cans and boxes out of the bag. Give each group of four students 2–4 of the items. Ask them to find the weight on the label of each and add the weights to find out how much their little set of items totals. (Be sure they read the weight in customary rather than metric units if some of the items are labeled both ways.) Record each group's total on the board and then work with the class to add all the weights. Does the grand total match what the scale said? If not, how would students explain the difference?

Extension

- Go online with your class to further explore the difference between weight and mass. If you enter “difference between weight and mass” into a search engine such as Google, it will bring up a number of different web sites, some of which will calculate your weight (or the weight of a common animal or favorite dinosaur) on a variety of different planets. Many of these sites also feature explanations that are appropriate for elementary students about the differences between weight and mass.

Set D1 ★ Activity 5



ACTIVITY

Kitten & Cat Weights

Overview

Students place food items in a grocery sack to approximate average kitten and cat weights, weigh the sack, make needed adjustments, and record their results. This activity is designed for use by student pairs during Work Places or other work periods.

Skills & Concepts

- ★ estimate and determine weight using U.S. customary units
- ★ carry out a simple conversion within a system of measurement such as ounces to pounds

Recommended Use

Anytime after Set D1 Activity 4

You'll need

- ★ Kitten & Cat Weights (page D1.20, class set)
- ★ 20–24 cans and/or packages of food (see Set D1 Activity 4 Advance Preparation notes)
- ★ grocery bag with handles
- ★ bathroom scale
- ★ 2 calculators

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Advance Preparation Set up the materials listed above in a location somewhere in the classroom where pairs of students can work independently over the next few weeks as time allows.

Instructions for Kitten & Cat Weights

1. Talk with students about kittens and cats. Do any of them own a kitten or a cat? Do they know how much it weighs? Do they have any idea how much a newborn kitten or a full-grown cat weighs? Then explain that you've set up some materials to help them find out, and to give them more experience estimating and measuring weight.
2. Show students a copy of the Kitten & Cat Weights sheet. Review the instructions on the sheet with the class and model the procedures described as needed.
3. Let students know where to find the materials and explain that they'll be working in pairs to do this activity. Explain how they'll know when it's their turn, and establish any ground rules for using the materials, turning in their work, and so on.

NAME _____ DATE _____

Kitten & Cat Weights

A newborn kitten weighs about 4 ounces. By the time a kitten is 5 weeks, he or she should weigh about 16 ounces or 1 pound. The chart below lists average weights for kittens at 7 weeks and 10 weeks, and also for full-grown cats. For each entry on the chart:

- convert the weight to pounds and ounces. (There are 16 ounces in a pound.)
- load groceries into the sack until you think it's about the same as the kitten or cat weight.
- put your sack on the scale and see how much it actually weighs.
- take some things out or add some until the sack weighs as close as you can get to the kitten or cat weight.
- record the items that are in the sack.

Age of Kitten or Cat	Average Weight in Ounces	Weight in Pounds and Ounces	Items in My Sack
7-week old kitten	24 ounces		
10-week old kitten	32 ounces		
Full-grown female cat	128 ounces		
Full-grown male cat	160 ounces		

Set D1 ★ Activity 6



ACTIVITY

Line Them up by Weight

Overview

Students estimate the weights of 6 different items, ordering them from lightest to heaviest. Then they determine the actual weights to check their estimates. This activity is designed for use by student pairs during Work Places or other work periods.

Skills & Concepts

- ★ estimate and determine weight using U.S. customary units

Recommended Use

Anytime after Set D1 Activity 4

You'll need

- ★ Line Them up by Weight Instructions (page D1.22, run 1 copy)
- ★ Line Them up by Weight Record Sheet (page D1.23, run a class set)
- ★ scale that weighs in ounces (borrow one from a grade five Bridges teacher)
- ★ 6 resealable sandwich bags
- ★ items to fill the bags (see Advance Preparation)

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Advance Preparation Label each of the 6 bags with a letter from the alphabet from A to F. Fill each with 1 cup of something easily measured. Suggestions include paperclips, macaroni, rice, beans, unpopped popcorn, and so on. Place the activity instructions, record sheets, scale, and filled bags somewhere in the classroom where pairs of students can work independently over the next few weeks as time allows.

Instructions for Line Them up by Weight

1. Explain that you've set up some materials to give students more practice estimating and finding the weight of things in ounces. Show them the bags and the scale. Remind them that there are 16 ounces in a pound, so 1 ounce doesn't weigh very much. For that reason, scales that weigh things in ounces are very sensitive and can be delicate. Talk with the class about caring for the scale, especially if you've brought it from your own kitchen or borrowed it from another classroom.
2. Show students a copy of the Line them up by Weight instructions and record sheet. Review the instructions with the class, and model the procedure of estimating and measuring as needed. Let students know where to find the materials and explain that they'll be working in pairs to do this activity. Explain how they'll know when it's their turn, and establish any ground rules for using the materials, turning in their work, and so on.

Line Them up by Weight Instructions

This activity will need

- ★ Line Them up by Weight Instructions (page D1.22, 1 copy)
- ★ Line Them up by Weight Record Sheet (page D1.23, class set)
- ★ scale that weighs in ounces
- ★ 6 bags filled with different things

Instructions for Line Them up by Weight

1 Record your name and the date at the top of a record sheet. Choose a partner to work with. You'll both fill out your own record sheets for this activity.

2 Lift the different bags so you can feel how heavy each one is. Put them in the order you think they belong, from lightest to heaviest. Record your predictions.

3 Estimate the weight of Bag A in ounces. Record your estimate.

4 Weigh the bag on the scale to find out how many ounces it really weighs. Record the actual weight.

5 Find the difference between your estimate and the actual weight. Record the difference in the last column.

6 Continue estimating, weighing, and finding the difference for the other 5 bags. Use what you know about the weight of the first bag to help make your estimates.

7 When you've found out how much each bag actually weighs, put them in order from lightest to heaviest, and record their actual ranking.

8 At the bottom of the record sheet, write a sentence or two about what you noticed.

9 Clean up. Shuffle the bags so the next students who do this activity will have the fun of making their own discoveries.

NAME _____

DATE _____

Line Them up by Weight Record Sheet

Put the bags in the order you think they belong, from lightest to heaviest. Record your predictions. Then do the second part of the sheet. After you find out how many ounces each bag weighs, fill in the second row on this chart to show their actual order.

	1st lightest	2nd	3rd	4th	5th	6th heaviest
Estimate						
Actual Rank						

Container	Your estimate (in ounces)	Actual Measurement (in ounces)	The Difference (in ounces)
A			
B			
C			
D			
E			
F			

I noticed that

