

# Changes in Materials for *Balancing and Weighing*



Since publication of the *Balancing and Weighing Teacher's Guide First Edition*, Plasti-Tak™ is no longer available. For that reason, we have replaced Plasti-Tak™ with masking tape. Masking tape remains on the "Needed But Not Supplied Materials" list and is commonly available in most schools or can be brought from home. This change in materials requires revised instructions in the *Teacher's Guide* for Lessons 8, 9, 10, and 11.

This errata set includes the following:

- For the *Balancing and Weighing Teacher's Guide First Edition*— revised pages 4, 72–74, 76, 83–85, 90, 92, and 101

Photocopy and distribute these new instruction pages as needed.

If you have questions about these changes or about the module in general, call Carolina's product information staff at 800-227-1150 (8 am–5 pm ET, M–F), or email [stc@carolina.com](mailto:stc@carolina.com).

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## Placing Six Objects in Serial Order

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### Overview and Objectives

The two main activities in this lesson—placing six objects in serial order and recording this order on paper—challenge students to expand and refine their comparison-making strategies. Students determine where to place two new objects in the serial order of the original four objects from Lesson 8. In the next lesson, they will explore another strategy for comparing objects—weighing.

- Students predict where two new objects will fit in the serial order of four objects established in Lesson 8.
- Students use the equal-arm balance to place six objects in serial order.
- Students record and discuss the serial order of the six objects.

### Background

All the issues discussed in the **Background** of Lesson 8 are applicable to this lesson, and you may want to review that section before beginning Lesson 9. The **Assessment** section in Lesson 6 provides suggestions for evaluating specific behaviors you may observe during your students' activities.

### Materials

*For each student*

- 1 pair of scissors
- 1 strip of newsprint with four cutouts attached in serial order (from Lesson 8)

*For every two students*

- 2 copies of the blackline master **Two New Objects**
- 1 assembled equal-arm balance
- 1 piece of clay
- 1 plastic cup, 296 ml (10 oz)
- 1 Ping-Pong ball
- 1 plastic spoon
- 1 wood block
- 1 metal cube
- 1 acrylic cylinder

*For the class*

- 1 set of six cutouts (from the blackline master **Teacher's Objects** in Lesson 8)
- 30 sheets of writing paper
- 1 sheet of newsprint
- 1 marker
- Masking tape
- 6 magnets (optional)

**Preparation**

1. Make enough copies of the blackline master **Two New Objects**, pg. 87, so that each student has a picture of both objects.
2. Make sure you have the cutouts of the acrylic cylinder and the metal cube, which are found on the blackline master **Teacher's Objects**, on pg. 78 in Lesson 8, and the four cutouts that you used in Lesson 8.
3. On the sheet of newsprint, write the title "From Lightest to Heaviest."
4. Assemble the materials in the distribution center. Put the cylinders, metal cubes, writing paper, and the students' newsprint strips in a separate place. You will distribute them during the lesson.

**Procedure**

1. Distribute the students' strips of newsprint from Lesson 8 and give each child a sheet of writing paper. Then hold up the metal cube and the acrylic cylinder. Let students know that they will add these two objects to their strips and create a new serial order.
2. Distribute the cubes and cylinders. Ask students to feel how heavy or light each object is. Ask them to predict where each will fit in their existing serial order of four objects and to record their predictions on the writing paper.
3. Have students collect the equal-arm balances, a piece of clay, and the four objects from the distribution center.
4. Give students a few moments to equilibrate their equal-arm balances. Then challenge them to devise a strategy to place the six objects in serial order.

**Figure 9-1**

*Comparing the six objects*



5. As students complete this activity, have them place the six objects on their desks, from left to right, in the serial order they have determined.
6. Ask students to return the equal-arm balances and clay to the distribution center. Have them pick up the scissors, the blackline master **Two New Objects**, and masking tape.
7. Have students cut out the pictures of the metal cube and the acrylic cylinder and attach them to their strips in a way that shows the serial order of all six objects.
8. Have students return all materials except the strips to the distribution center.

**Figure 9-2**

*Placing the six objects in serial order*



### Final Activities

1. Invite students to discuss how their predictions about the serial order of the six objects compared with the results they obtained using the equal-arm balance. On the chart "From Lightest to Heaviest," place your six cutouts in the order that students propose. Write the binary symbols between the objects to show their relationships, as illustrated in Figure 9-3. Have students add the symbols to their strips.
2. Have students discuss the strategies they used to compare the six objects. Students also may want to discuss any changes they made in the order of the original four objects on the basis of the discoveries they made in this lesson.
3. Collect the students' strips and save them for use in the next two lessons.

*For the class*

- 1 sheet of newsprint
- 1 marker
- 1 set of six cutouts (from blackline master **Teacher's Objects**, Lesson 8)
- Masking tape
- 6 magnets (optional)

**Preparation**

1. Make a copy of **Record Sheet 10-A: Balancing with Unifix Cubes™** (pg. 96) for each student.
2. On a sheet of newsprint, create a data table that you will use to record the weight of the six objects. Figure 10-1 illustrates how to set up this table. Since the table will be used over the next three lessons, you may want to make it on poster board. Note that the title of the right column will change from "Number of Cubes" to "Weight" in Lesson 11.
3. Remove six Post-it™ notes from the pad for every two students.
4. Assemble all the materials except the Post-it™ notes in the distribution center.

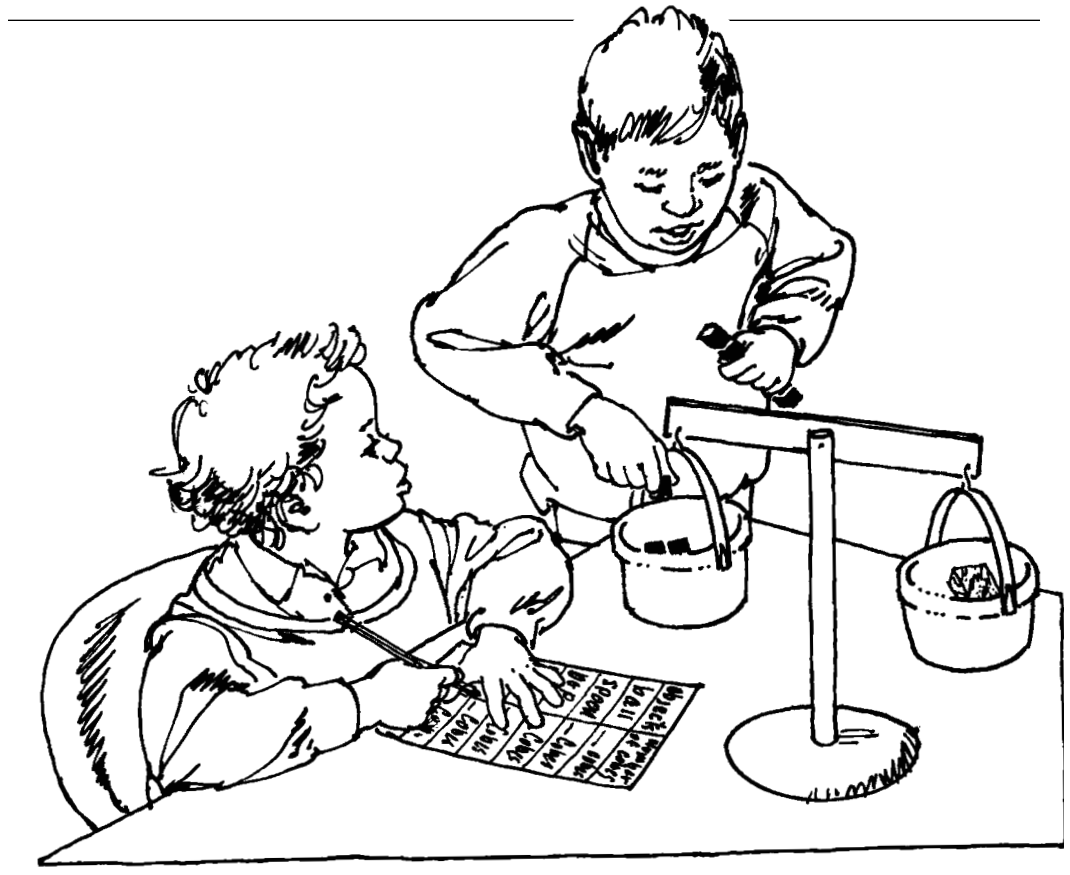
**Figure 10-1**

*Class data table*

Object	Number of Cubes
	___ cubes
	___ cubes
	___ cubes
	___ cubes
	___ cubes
	___ cubes

**Figure 10-3**

Balancing with  
Unifix Cubes™



### Final Activities

1. Display the class data table. Using your six cutouts, ask students to help you place the objects in serial order from top to bottom, lightest to heaviest. Adhere the cutouts to the data table with magnets or folded masking tape.
2. Distribute six Post-it™ notes to every two students. Ask them to write on these notes the number of Unifix Cubes™ they needed to balance each object. Then have partners share the task of adhering the notes on the appropriate spot on the data table.
3. Review the results recorded on the data table. If students reported different numbers of Unifix Cubes™ for an object, discuss the possible reasons for the variations. Students may suggest some of the following reasons:
  - The equal-arm balances were not all level before beginning.
  - Some students may have miscounted the number of Unifix Cubes™ in the pail.
  - Objects may differ in weight, even though they look quite similar.
  - An object may balance between two numbers of Unifix Cubes™. In this case, some students may have used the lower number, while others used the higher number.
4. If any students' results are dramatically different from those of a majority of their classmates, you may want them to check their results by balancing the object again.

**Note:** To prevent students from feeling as though their results were “wrong,” recall some of the ideas they discussed for finding different numbers. Assure them that the reasons for the differences can be valid.

*For the class*

- 15 sheets of newsprint, 61 × 92 cm (24 × 36 in)
- 1 data table (from Lesson 10)
- 1 set of six cutouts (from Lesson 9)
- Masking tape
- 6 magnets (optional)
- “Ways We Balance and Weigh” chart (from Lesson 2)

## Preparation

1. Make one copy for each student of the reading selection “Weighing Animals at the Zoo,” found on pgs. 105–106.
2. Make one copy for each student of the blackline master **Objects for the Graph**, found on pg. 107, and the blackline master **The Cube Towers**, found on pg. 108. You may want to make extra copies of the cube towers in case students need them to complete their graphs.
3. Cut each of the 15 sheets of newsprint in half along the longer side. Each half-sheet should measure 61 × 46 cm (24 × 18 in).
4. Arrange all materials except the serial order strips in the distribution center.
5. On the data table from Lesson 10, tape a piece of paper over the title “Number of Cubes.” Retitle this column “Weight.” Hang the data table in a place that is visible to all students. Using masking tape or magnets, arrange the six cutouts in random order in the left column of the table.

**Note:** Remember that the weights shown on the data table in this lesson and the others are only examples. The weights on which your students agree may be different.

## Procedure

1. To review the results from Lesson 10, ask students to help you rearrange the six objects on the data table in serial order on the basis of weight. Point out that the column titled “Number of Cubes” is now labeled “Weight.”
2. Ask students the following questions. Encourage them to use the data table when making comparisons and drawing conclusions.
  - How many Unifix Cubes™ does the cup (or any of the other objects) weigh?
  - Which object weighs the most Unifix Cubes™? Which object weighs the fewest Unifix Cubes™?
  - Do any two objects weigh the same?
  - What weighs more, the cylinder or the cup?
  - How much heavier is the metal cube than the wood block?
  - Does any object weigh almost two times as much as another object?
3. Now let students know that they will make bar graphs to show the information that appears on the data table.
  - Show students a half-sheet of newsprint. Let them know they will need to turn it so that the longer side is vertical.
  - Now show students the blackline master **Objects for the Graph**. Let them know that they will cut out the objects and place them in serial order, from lightest to heaviest, across the bottom of the newsprint, from left to right.