

## Missing-Number Cards

Based on Activity 11.13, p. 176

**Grade Level:** Second or third grade (appropriate for remediation at higher grades).

### Mathematics Goals

- To practice part/whole thinking as a foundation for using “think addition” to master subtraction facts.

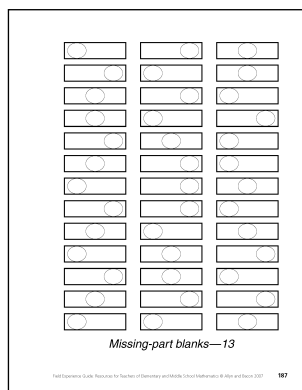
### Thinking About the Students

Even third or fourth grade students can benefit from this activity if they have not mastered their subtraction facts. Students who are still very weak with addition facts will not benefit very much from this activity. The ultimate goal is to think addition when the whole and part are known and then later connect this thinking to subtraction.

### Materials and Preparation

- Missing-number cards.
- Missing-part worksheets.

The specific combinations on the cards and on the worksheets are dependent on the facts that students need yet to master. They should include roughly an equal number of missing part and missing whole examples. (See Figures 11.9 and 11.10 and Blackline Master 13, “Missing-part blanks”)



## LESSON

### BEFORE

#### Introduce the task:

Draw several three-number number families in loops on the board. For example you might show 4, 8, and 12; 6, 9, and 15; and 6, 7, and 13. (See figure 11.9) In each number family the whole is always circled. Have students tell why the numbers go together and what is important about the number that is circled.

Next write some loops with one number in the number family missing. If the whole is missing, put an empty circle in the loop. If a part and a whole are given, circle the whole. For example, for 9, 4, and an empty circle, the missing number is the whole, 13. For 5, and a circled 12, the missing number is 7, the part that goes with 5 to make 12. Ask students to tell what number you have left out of the loops and why. They need to understand the convention of the circled number being the whole and the other two numbers being the parts.

#### *The Task*

Introduce the missing-number flash cards. Show at least five cards with two numbers and a space for a third (either in a circle or not) and have students tell what number is missing on the card. The same reasoning applies to the card as to the loops used initially.

Pass out missing-part worksheets prepared with number families on which students need practice. Their task is to fill in the missing number on each “card” of the worksheet.

### DURING

- Watch to see how fluently students are able to fill in the cards on the worksheets. If you see hesitation or finger counting, stop and ask students to think aloud so that you can understand how they are thinking.

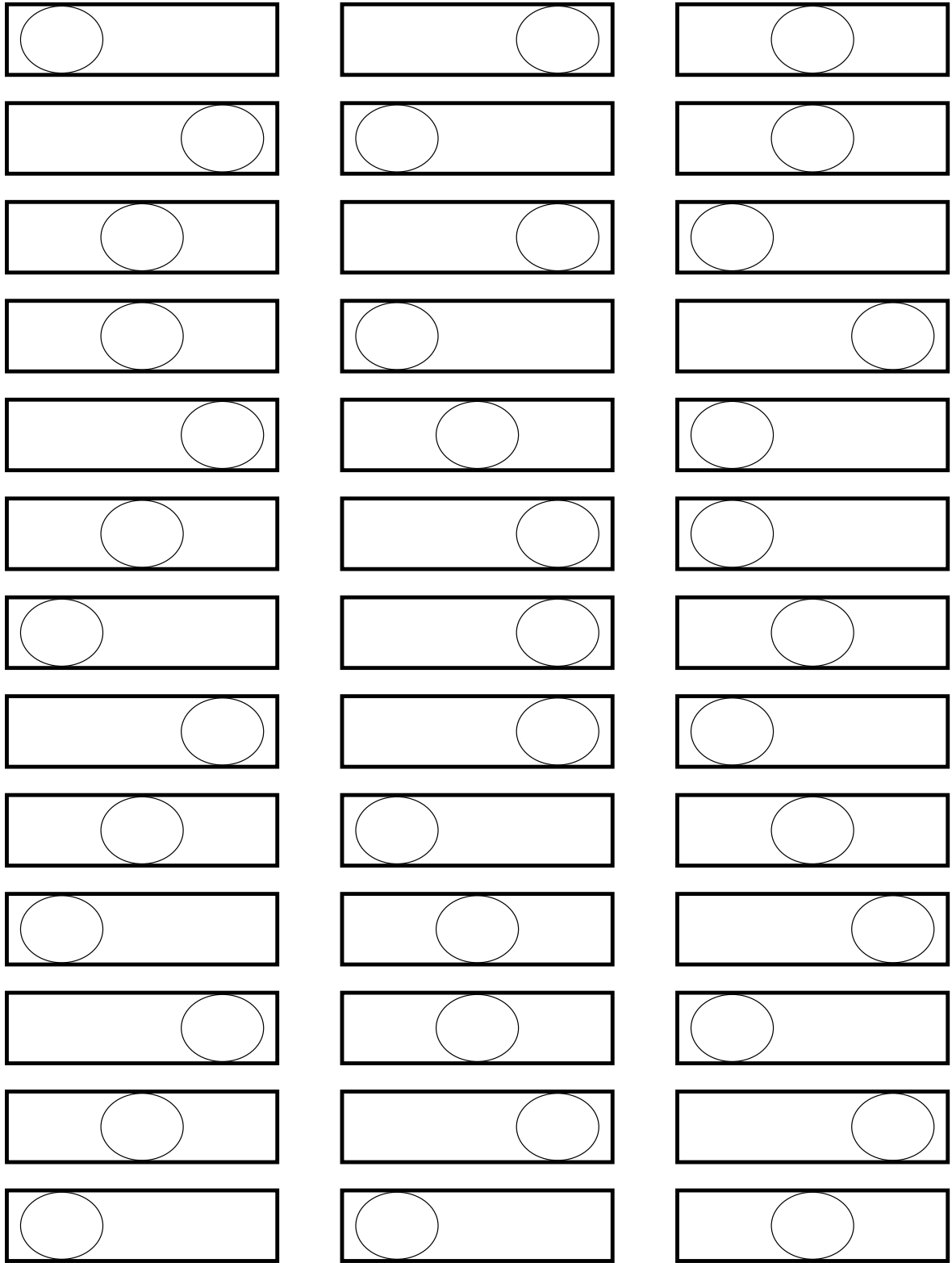
- Make note of students for whom this is easy and those for whom this seems difficult.

### **AFTER**

- Do not offer answers to the worksheet or correct it in class as a whole.
- Select specific cards on the worksheet and ask students to describe how they decided on the answer. Focus especially on missing-part examples. Listen carefully for students who are using reasoning that approximates this: “I saw a 5 and a 14 in a circle so I had to figure out what goes with 5 to make 14. Since 5 and 9 is 14, I put down 9.”

### **ASSESSMENT NOTES**

- The format of this practice activity almost assures a “think-addition” approach. If a student is using take-away reasoning to find a missing part, additional part/whole activities such as those found in Chapter 9 are appropriate.
- For students who struggle with missing parts, it is important to see how fluent they are with the corresponding missing-whole cards. You can similarly check their mastery of addition facts.
- Prepare a page of addition and subtraction facts that correspond to the facts on the missing-part worksheets. Students who can complete the missing-part worksheets fluently should also know the corresponding addition and subtraction facts. Students who revert to counting, especially counting backward (a take-away approach) but who can do the missing-part sheets have not made a connection between missing parts and subtraction. This calls for explicit work on connecting subtraction to missing-part thinking. (See Figure 11.6)



*Missing-part blanks—13*