Session 16

PROBLEMS & INVESTIGATIONS

Subtraction Table, Part 2 Half Facts, Take Away Tens & Run Away Ones

Overview

Students identify and locate three more categories of facts on the Subtraction Table. Today they explore the half facts, take away tens, and run away ones, all of which were introduced in second grade *Bridges.* The teacher introduces Work Place 1F, Tens or Ones, a game that gives students practice with runaway ones and take away tens. Students will have a chance to visit this Work Place in Session 18.

Actions

1. Students use the ten-strips to model and make generalizations about the half, take away ten, and run away ones facts.
2. The teacher adds these facts to the Subtraction Table.
3. The teacher introduces Work Place 1F, Tens or Ones, for practice with runaway ones and take away tens.

Skills & Concepts

- ★ fluency with subtraction facts to 20
- ★ using pictures, words, and numbers to solve subtraction problems
- ★ describing, extending, and making generalizations about numeric patterns
- ★ using fact families for addition and subtraction

You'll need

- ★ Ten-Strips (Overhead 1.6)
- ★ Ten-Strips (Blackline 1.13, saved in student folders)
- ★ Subtraction Table (Blackline 1.47, saved in student folders from Session 14)
- ★ Subtraction Table (assembled and posted in Session 14)
- ★ bag of 20 game markers per student (10 each in 2 colors) and for the overhead
- ★ marking pens in green, purple, and brown (Use overhead markers if you've laminated the Subtraction Table.)
- ★ class set of colored pencils in green, purple, and brown

Exploring Half Facts

Begin today's session by gathering students where they can all see the Subtraction Table. Give every student about 20 game markers, and ask them to get out their Subtraction Tables and ten-strips. (They should have stored both in their folders.)

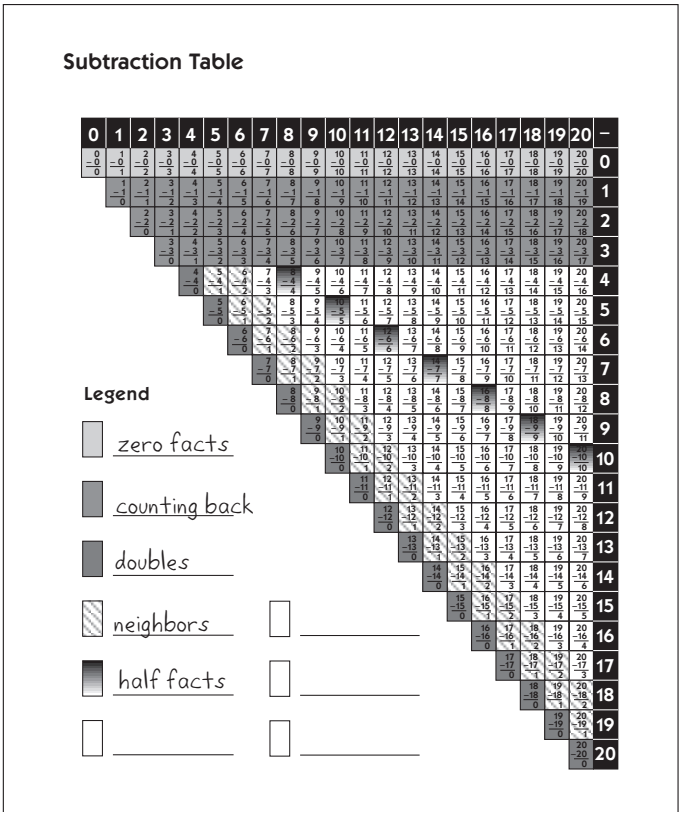
Now write 4 – 2 =, 6 – 3 = and 8 – 4 = on the board or overhead and ask students what these problems have in common and how they might go about solving them.

Session 16 Subtraction Table, Part 2 (cont.)

Give them some time to talk with their neighbors, and encourage them to show their thinking with the game markers on the ten-strips. You might encourage them to think of other examples of similar problems or extend their thinking to larger numbers if they'd like. When they've had some time for partner sharing, invite volunteers to share their thinking with the class. Ask them to show their strategies with the overhead ten-strips and game markers.

> ***Sara*** *Those are easy for me because the second number is half of the first number.*
>
> ***Zofia*** *When Sara said that, I didn't know what she meant. So I built them on the ten-strips like this. Here's 4. Take away 2 and you have 2 left. The same thing happens when you take 3 away from 6. You still have 3 left. You always have the same number left that you took away.*
>
> 4 – 2 = 2, 6 – 3 = 3
>
> ***Juan*** *The first number is always an even number that can be split in half.*
>
> ***Dan*** *I know that 7 plus 7 equals 14, so 14 minus 7 equals 7. It's the opposite of the doubles in addition.*

Ask students to direct you to the half facts and color them in using a green marker. Be sure to label them in the legend as well. When you're finished, ask a few volunteers to share what they notice about the half facts.



Session 16 Subtraction Table, Part 2 (cont.)

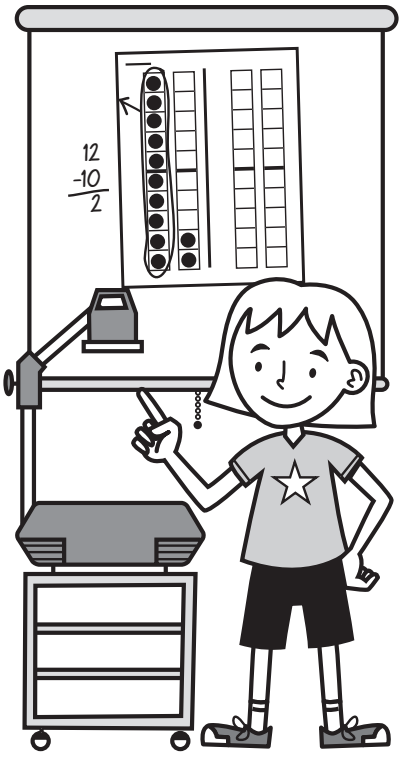
Exploring Take Away Tens Facts

Next, write the following problems on the whiteboard or overhead. Ask students to think about what these facts have in common.

12 – 10 = ____ 15 – 10 = ____ 18 – 10 = ____

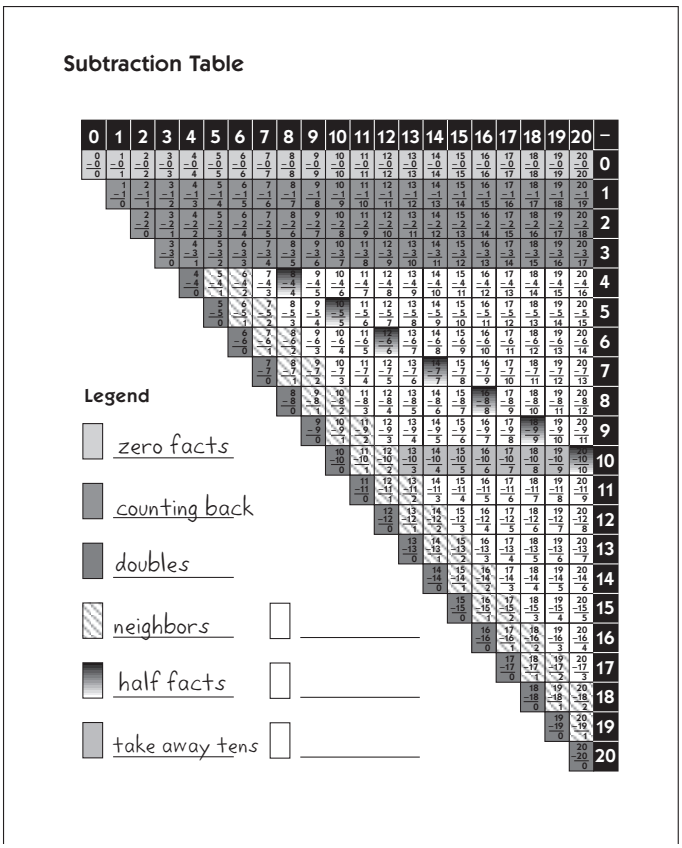
Give them a few minutes to talk over this question in pairs and use the ten-strips and game markers to explain their thinking to one another. Then invite students to share their thinking with the class. Encourage them to make generalizations about these facts, using the overhead ten-strips and game markers to show their thinking.

> ***Sara*** *I remember from last year! Those are called take away tens. You're taking away the 10 each time, so you just have the number in the ones place left.*
>
> ***Teacher*** *Sara, can you show us what one of those facts might look like using these ten-strips and some game markers?*
>
> ***Sara*** *There are 10 here and 2 here, so this is 12. Then if you take away the 10, you just have 2 left.*



With students' help, locate all the take away tens facts on the Subtraction Table and color those facts with a purple pen. Label the take away tens in the legend. Outline the other facts already addressed with another strategy as well.

Session 16 Subtraction Table, Part 2 (cont.)



Exploring Run Away Ones Facts

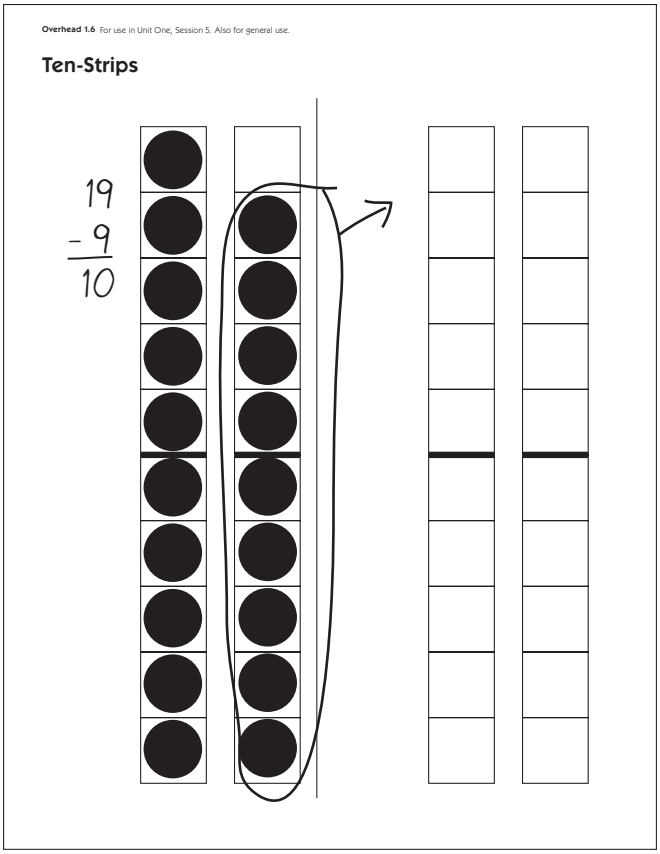
Now write the following facts on the whiteboard or overhead.

14	16	19
- 4	- 6	- 9

Ask students to think about what these facts have in common and share their ideas in pairs. Encourage students to use the ten-strips and game markers to explain their thinking to one another. Then invite students to share their strategies with the class and make generalizations about these facts, using the overhead ten-strips and game markers to show their thinking visually.

> ***Dan*** *I'll do the last one. I'll put 19 markers on the ten-strips, and then I just take 9 away and have 10 left.*

Session 16 Subtraction Table, Part 2 (cont.)



Dan *When you write it, the same number is on the top and the bottom. See, there's a 9 up there in 19, and then a 9 right below.*

Juan *The ones in the top and the ones on the bottom cancel each other out. You only have the 10 left. I can't remember what we called them last year.*

Sara *They were run away ones, because the ones all go away. It always does that. If I have 14 and take 4 away, I just have the 10 left.*

Draw students back to the Subtraction Table again, and with their help find all the run away ones facts. They'll probably tell you that they're easy to find, because the difference is always 10. You'll also want them to consider the minuends and subtrahends involved, because you'll want them to see that the ones in the minuend are always the same as the subtrahend. Color in the cells with the brown marker, and record the run away ones strategy in the legend.

Session 16 Introduce Work Place IF

WORK PLACE 1F

Introduce Work Place 1F Tens or Ones

Skills & Concepts

- ★ composing and decomposing numbers by place value
- ★ fluency with addition and subtraction facts to 20
- ★ using strategies to demonstrate fluency

This Work Place basket will need

- ★ Work Place 1F Instructions (Blackline 1.49, 1 copy)
- ★ Ten-Strips (Blackline 1.13, stored in students' folders)
- ★ 1F Tens or Ones Record Sheet (Work Place Student Book, pages 26 and 27)
- ★ 3 1F Tens or Ones Spinners
- ★ game markers

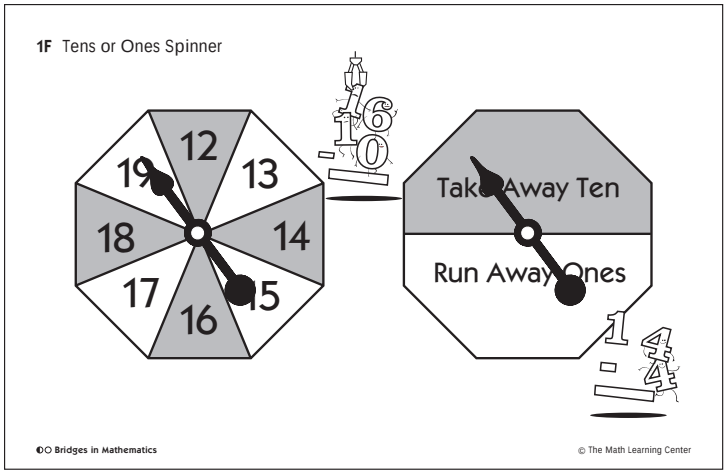
Instructions for Tens or Ones

1. Choose a partner. You should each write your name and today's date at the top of your own record sheet.

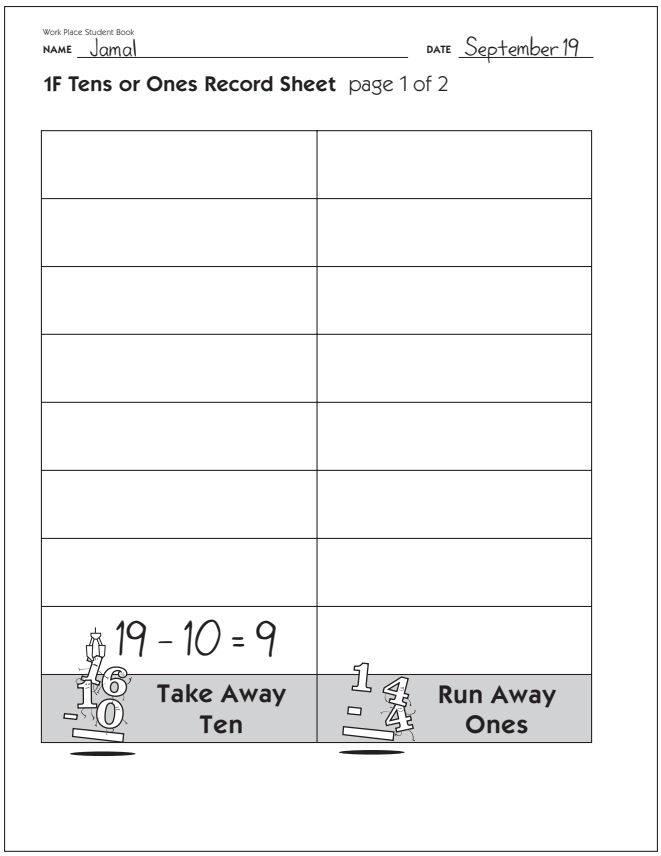
2. Spin the numbered spinner first. Then spin the Take Away Ten and Run Away Ones spinner.

3. If the spinner lands on Run Away Ones, you'll subtract the number in the ones place and record the number sentence in the Run Away Ones column. For example, if the number was 19, you would write 19 – 9 = 10 in the Run Away Ones column.

4. If the spinner lands on Take Away Ten, you'll subtract 10 and record a number sentence in the Take Away Ten column. For example, if the number was 19, you would write 19 – 10 = 9 in the Take Away Ten column.



Session 16 Introduce Work Place IF (cont.)



5. Play until one of the columns is completely filled up. Were you surprised by which column filled first? Share your thinking with your partner.

6. Play a second game with your partner. Before you begin your second game, predict which column will fill up first.

Instructional Considerations for Tens or Ones

These two subtraction strategies are interwoven with place value concepts. When we have a number in the teens, we can decompose (i.e., take apart) the tens and ones, and quickly add or subtract them. These strategies can be extended to working with larger numbers.

Students who struggle with number sense to 20 may need additional time to build the model with ten-strips and game markers. Encourage them to show you the 10 they are taking away, or the ones that are running away. In this way, they will be working towards fluency with addition and subtraction facts and building a better understanding of place value.

This game is also a simple probability experiment, because students are invited to consider the likelihood of spinning Run Away Ones or Take Away Ten. Which kind of fact will they spin more often and why? Because they've worked with many equally divided spinners in second grade *Bridges*, many students may see that the two possibilities are equally likely.

Session 16 Introduce Work Place IF (cont.)

CHALLENGE

If you have students who are already fluent with these facts, ask them how they might apply the strategies to larger numbers. Have them spin the numbered spinner twice and add the two spins. Then they should spin the strategies spinner to determine whether they should subtract 10 or the ones from the total.

18 + 14 = 32 32 – 10 = 22
an extension of take away ten

18 + 14 = 32 32 – 2 = 30
an extension of run away ones