Materials

Materials

- Counters
- Index cards
- Linking cubes

Optional

- Laminated hundred board where the back has a blank grid
- Playing cards

Mental Math Sheets

(singaporemath.com/higprintouts)

Mental Math		After Lesson
23	Sums 11–19	1
24	Sums 11–19	3
25	Sums 11–19	3
26	Sums to 20	4
27	Sums to 20	5

Printouts

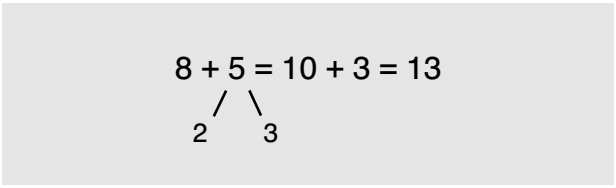
(singaporemath.com/higprintouts)

- Addition Fact Cards
- Blank Double Ten-frame
- Blank Hundred Chart
- Number Cards

Notes

In this chapter, students will learn a strategy that involves "making a ten" in order to add one-digit numbers mentally when the sum is 11–19. Knowing this strategy will allow students to quickly compute math facts. Understanding it requires understanding the structure of numbers and more "number sense" than simply memorizing math facts as isolated facts, such as a telephone number or a history date. Even if your student has already memorized the math facts they should understand this strategy, which will help them with mental math strategies when adding greater numbers.

The strategy involves "making a 10" with one of the addends and can be illustrated with a number bond:



To make a ten with 8, take 2 from 5 (split 5 into 2 and 3), which leaves 3, so the answer is 10 and 3, or 13.

This type of reasoning requires students to know the math facts or number bonds to 10, either thinking 8 + ? = 10 or 10 – 8 = ?, and then, after getting the answer 2, thinking 2 + ? = 5 or 5 – 2 = ?. It also requires them to understand the base-ten system of numeration, i.e. that 10 + 3 is 13.

Do not require your student to write equations such as the one above. Although it may be helpful for them to initially write the number bond for the addend that is split, they should eventually not need to do so, except to occasionally explain the strategy they used, if required.

Some students do struggle with the idea of adding by "making a ten" and keeping track of all the numbers, particularly if they have been moved into this level early because Kindergarten was easy. This level requires more abstract thinking than Kindergarten did. Let your student use manipulatives as needed, then draw the number bond for the addend that is being split, and circle the two numbers that make the ten as needed, until they are competent with finding the answer mentally. Take your time with this chapter.

Fact Practice

Continue with facts for addition and subtraction within 10, as needed, including any earlier facts that your student is slow to recall. Add in new ones for addition within 20, using adaptations of activities from Chapter 3, new ones in this chapter, mental math sheets, or other means.

Accuracy and confidence in a correct answer is more important than some arbitrary speed. Your student should be able to recall or compute the facts reasonably quickly without having to always resort to counting on fingers.

Games

- After Lesson 4
  Materials: Four sets of number cards, or playing cards ace–10
  Purpose: Add within 20.
  Goal: Get the most cards.
  Procedure: Shuffle cards and deal all of them out. Players keep their cards face down. Each player turns over two cards and finds the sum. The player with the greatest sum gets all the cards. If more than one player has the same sum, they each turn over two more card to see who wins the round.

- After Lesson 5
  Materials: Several sets of number cards 0–20 and symbol cards for "+" and "=."
  Purpose: Make true equations.
  Goal: Get the most cards.
  Procedure: Shuffle the number cards and place them face down. Players take turns turning the cards over one by one and laying them face up for all to see. Each time, any player that sees 3 cards they can use to make an equation first should take those cards and form the equation. If correct, that player gets to keep the cards.
  Variation: Play this game after Lesson 6 in Chapter 7 by including a "–" symbol card.

- After Lesson 5
  Materials: Two number cubes labeled 5–10, counters (different color for each player), grid (blank hundred chart).
  Preparation: Write the numbers 10–20 randomly on a grid, using 10 and 20 less frequently than 11–19.
  Purpose: Add within 20.
  Goal: Get three in a row.
  Procedure: Players take turns throwing the number cubes, adding the numbers, and putting their counter on the answer. The first player to get three counters in a row (vertically, horizontally, or diagonally), wins.
  Variation: Players could be required to get 4 or 5 in a row.

Chapter Opener (p. 101)

This Chapter Opener should not take a whole lesson. The first lesson is long and has new concepts, so together the chapter opener and the first lesson could take more than one day.

Have your student look at the page and think about ways to find the total number of each type of fruit without counting them one by one. They should use addition facts from the previous chapter. They do not need to write equations yet.

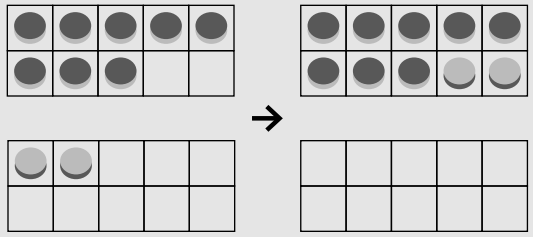
For example, possible methods:

- Onions (12): 4 + 4 is 8, and 4 more is 12.
- Tomatoes (15): 5, 10, 15
- Peaches (17): 8 and 9: 8 is 2 less than 10, 9 is 1 less than 10, so together they are 3 less than 20, so 17
- Pineapples (13): 7 and 3 is 10, and 3 more is 13.
- Watermelons (13): Count mostly by twos and then add on 3: 4, 6, 8, 10, 13

Lesson 1 Add by Making 10 — Part 1 (pp. 102–104)

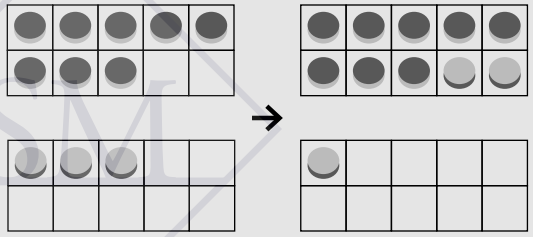
In this lesson, students will make a ten with the first addend in the expression, which will be 5 or greater. Spend as much time as needed with this lesson.

Before looking at the textbook, provide your student with two blank ten-frames and counters. Write the expression 8 + 2. Ask your student to show one of the numbers on one ten-frame and the other number, using a different color counter on the second ten-frame. Encourage your student to use the same arrangement of counters as the dots on the ten-frames they are familiar with from the first chapter. Ask them for the total. Have them move 2 counters to the first ten-frame. Write the answer.



8 + 2 = 10

Repeat with 8 + 3.



8 + 3 = 11

2 1

Answers

13
13

❶ 13
13

❷ 11

❸ 7 + 5 = 12

❹ (a) 10 7
(b) 10 4
(c) 10 1
(d) 10 2
(e) 10 1

❺ (a) 12 (b) 16
(c) 11 (d) 13
(e) 16 (f) 14

After the counters are have been moved, draw a number bond to show the process and discuss it with your student. For example, "8 needs 2 more, we can split 3 into 2 and 1, so now we have 10 and 1."

Repeat with 8 + 4 = 12, just drawing the number bond.

8 + 4 = 12

2 2

Think (p. 102)

Read the question, point out that Sofia is saying to make a ten, and write or have your student write the expression 9 + 4. Ask your student to explain how to find the answer by making a 10. They can explain in any way they want, i.e. with words, with a double ten-frame and counters, or by drawing a number bond.

Learn (p. 102)

This shows that we can add 4 to 9 by thinking about what needs to be added to 9 to make 10. Once we determine that it is 1, we can think of what the other part is if 4 is "split" into two parts, one of which is 1. (Students can think of the missing number in the number bond with 4 as a whole and 1 as one part.) The other part is 3, so the answer is 10 and 3, or 13.

Do (pp. 103–104)

1. The ten-frame card represents the idea shown with the picture with the scissors. The picture itself does not really show why making a ten is useful, but the ten-frame does, since it more closely represents the written numerals.

2. This problem shows the thought process with a number bond. Ask your student why 3 is "split" to form this particular number bond. One of the parts has to be 2, since that "makes a ten" with 8.

3. Dion is "thinking" of a number bond. This is simply to show pictorially the thought process. Students can picture the process any way they want. Some students might picture a ten-frame, or simply remember the numbers for the number bonds. They do not have to draw a number bond on the equation unless it is helpful to do so.

4. The problems in each row are meant to guide students in first thinking of what will make a ten with the first number, and then what will be "left over" when that is "split off" of the second number.

Lesson 5 Practice (pp. 115–116)

2 Your student can write the number represented by the question mark in the number bonds.

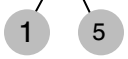
5 Some students may find these confusing. (a) does not use the words "in all" or "altogether." (b) uses the words "left over" but this is not a subtraction situation. If necessary, have your student act out the problem with counters. In (b), the total is how many are in the vase plus how many are not in the vase at the end.

6 You can write the expressions on index cards and let your student write the answers and rearrange them, if that is easier for your student.

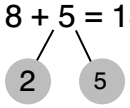
Answers

1 13

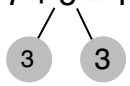
2 (a) $9 + 6 = 15$



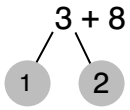
(b) $8 + 5 = 13$



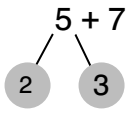
(c) $7 + 5 = 13$



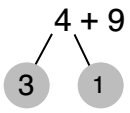
(d) $3 + 8 = 11$



(e) $5 + 7 = 12$



(f) $4 + 9 = 13$



3 (a) 4 (b) 4
(c) 1 (d) 1

4 (a) 16 (b) 18
(c) 12 (d) 12

5 (a) $4 + 9 = 13$
(b) $8 + 5 = 13$

6 (a) $5 + 4$, $6 + 6$, $8 + 5$, $10 + 6$, $14 + 3$
(9, 12, 13, 16, 17)
(b) $17 - 10$, $6 + 3$, $15 - 5$, $8 + 4$, $11 + 4$
(7, 9, 10, 12, 15)

7 (a) True (b) True
(c) False (d) True
(e) False (f) True
(g) True (h) False

Chapter 6 Workbook Answers

Exercise 1, pp. 101–104

❶ 13
13

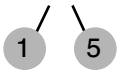
❷ 13

❸ 11 12
14 13
11 16
11 16

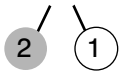
❹ Check that your student circled only 10 objects in each problem.

12 12
11 15
12 13
12 14

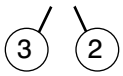
❺ (a) 9 + 6 = 15



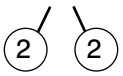
(b) 8 + 3 = 11



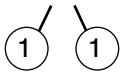
(c) 7 + 5 = 12



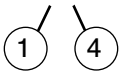
(d) 8 + 4 = 12



(e) 9 + 2 = 11



(f) 9 + 5 = 14



❻ (a) 13 (b) 13
(c) 18 (d) 12
(e) 14 (f) 14

Exercise 2, pp. 105–108

❶ 13
13

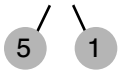
❷ 11

❸ 12 11
14 15
12 14
13 13

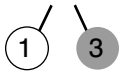
❹ Check that your student circled only 10 objects in each problem.

11 12
16 11
13 12
15 15

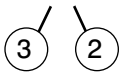
❺ (a) 6 + 9 = 15



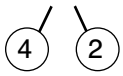
(b) 4 + 7 = 11



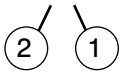
(c) 5 + 8 = 13



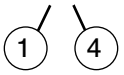
(d) 6 + 8 = 14



(e) 3 + 9 = 12



(f) 5 + 6 = 11



❻ (a) 13 (b) 11
(c) 14 (d) 12
(e) 12 (f) 13

Exercise 3, pp. 109–110

❶ 17
17

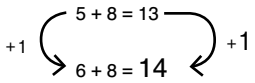
❷ 16 15
13 11

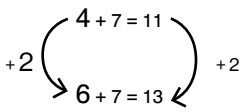
❸ 17 13
12 18

Chapter 6 Workbook Answers

4 (a) 16 (b) 17
(c) 11 (d) 15
(e) 14 (f) 13
(g) 15 (h) 14

Exercise 4, pp. 111–112

1 



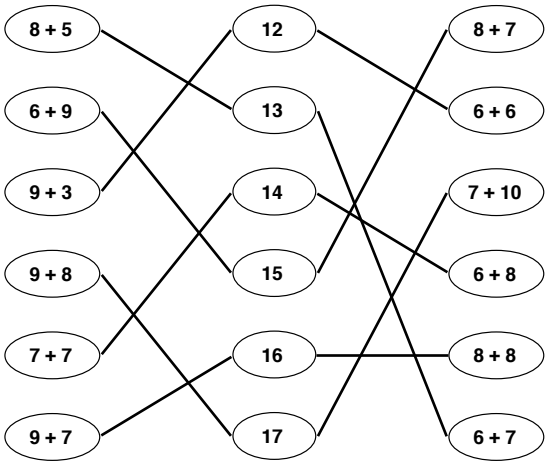
11
11 12
11 12 13
11 12 13 14
11 12 13 14 15
11 12 13 14 15 16
11 12 13 14 15 16 17
11 12 13 14 15 16 17 18

Students should notice that if one of the numbers being added increases by 1 or 2, so does the answer.

2 (a) 5 (b) 6
(c) 9 (d) 3

Students can use the table to complete these, or find the answer for one side and determine the missing number on the other side. Some students may see a pattern and be able to solve by reasoning that if the first addend on one side of the equation decreases or increases by a certain amount compared to the first addend on the other side of the equation, the second added must increase or decrease, respectively, by the same amount.

3 (a) 10 (b) 10
11 11
12 12
13 13

4 

Exercise 5, pp. 113–116

1 (a) 1 ten 8 ones
(b) twenty
(c) 2 + 3
(d) 12 + 5
(e) 9 + 9
(f) 11 + 8
(g) 6 + 10

2

12	9 + 3	11 + 2	9 + 6	4 + 7	6 + 6	7 + 5	8 + 4
11	5 + 6	2 + 9	6 + 6	8 + 3	7 + 4	9 + 4	6 + 5
16	9 + 2	8 + 8	4 + 8	5 + 11	9 + 9	7 + 6	9 + 7
17	13 + 4	7 + 10	16 + 3	8 + 9	7 + 6	6 + 11	15 + 2
13	7 + 6	5 + 7	8 + 8	9 + 4	5 + 9	11 + 2	3 + 8
14	12 + 2	7 + 9	7 + 7	9 + 5	8 + 4	6 + 8	5 + 6
15	9 + 6	11 + 4	8 + 7	9 + 5	4 + 7	3 + 12	6 + 9

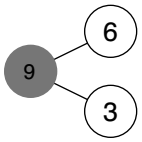
Chapter 6 Workbook Answers

3

5	6	7	12	8	7	11
3	2	8	5	6	7	0
8	8	15	17	14	14	11

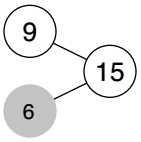
The bottom number is the sum of the top two numbers in each column.

4 9 – 6 = 3
3



The number bond gives students a clue that they need to find a missing part, so this is a subtraction problem. Some students may simply look at the numbers and add them together, since this chapter is on addition.

5 9 + 6 = 15
15



The number bond gives students a clue that they need to find the total, so this is an addition problem, despite the use of the word "left." Students should read the problem carefully, not look for "key words."

6

4	+	8	=	12
+		+		+
3	+	5	=	8
=		=		=
7	+	13	=	20

If your student needs help, suggest that they start by filling in the number for an equation where there is only one missing number.

7 ★ + ★ = 16 ★ = 8

⬢ – ★ = 10 ⬢ = 18

This is the first time in the workbook that students see symbols that stand for unknowns. Make sure your student understands that the star stands for the same number in both equations. If necessary, ask them what number when added to itself is 16. Once your student determines that it is 8, they can substitute it in for the star in the second equation. Your student can write the numbers as they find them below each symbol.