TABLE of CONTENTS

NYS NEXT GENERATION MATHEMATICS LEARNING STANDARDS

1.OA.6.a Add and subtract within 20. Use strategies such as:

- counting on;
- making ten;
- decomposing a number leading to a ten;
- using the relationship between addition and subtraction; and
- creating equivalent but easier or known sums.

1.OA.6.b Fluently add and subtract within 10.

Introduction

The lesson reviews strategies for adding and subtracting, including making ten and the use of fact families. Read or have a volunteer read through the lesson and discuss the examples with the class. Guide students to understand that a number can be decomposed into two smaller numbers and one of them added to another number to make ten. Review facts to 10 before starting the lesson; students should know these basic facts by memory.

Guided Practice

The guided practice page provides sample multiple-choice and constructed answer problems for the students to complete on their own. Each item is accompanied by a hint or reminder that guides the student's thinking about how to solve the problem. Offer assistance as needed. When students have completed the items, review the answers and solution processes as a class.

Page 36

LESSON 2 — Addition and Subtraction Strategies
1.OA.6.a, b

Make 10 to help you add.

What is 8 + 4?

Use a ten frame. Show 8.

Add 4 counters. Fill in the ten frame.

Look at the new addition sentence: $10 + 2 = \square$

Add: $10 + 2 = 12$. So $8 + 4 = 12$.

A **fact family** shows related facts. It has three numbers. One is a total. The other two are parts.

What facts are in this fact family?

Part	Part
8	4
Total	
12	

Write addition sentences. Add the parts.

$$8 + 4 = 12 \qquad 4 + 8 = 12$$

Write subtraction sentences. Subtract the parts from the total.

$$12 - 8 = 4 \qquad 12 - 4 = 8$$

Add to put groups together.

Subtract to take a group apart.

Make 10. Then count on from 10.

A **ten frame** is a box with ten spaces. Use it to add and subtract.

Addition facts help you with subtraction facts. Think of the addition fact. Use it to find the subtraction fact.

Page 37

GUIDED PRACTICE

Read and solve each problem.

1 What addition sentence does this ten frame show?

A $8 + 4 = 12$
B $9 + 3 = 12$
C $9 + 1 = 10$
D $9 + 4 = 13$

How many black circles are there? How many white circles?

2 Dion adds 9 + 6. What make-10 fact could he use?

A $9 + 10$
B $10 + 5$
C $10 + 6$
D $9 + 6 + 10$

Use a ten-frame. Fill the box. Then find out how many are outside the box.

3 Look at this addition fact.

$$9 + 8 = 17$$

What is a related subtraction fact?

Answer $17 - 8 = 9$ or $17 - 9 = 8$
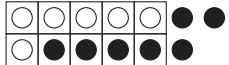
Use the same three numbers. Write a subtraction fact.

Answer Rationales

1. The addition sentence related to 15 − 8 is part of the fact family built on 7, 8, and 15. The total is 15, and the parts are 8 and another number. Find the missing part: 8 + 7 = 15. Choice C is correct. *(1.OA.6.a)*

2. To make ten, break apart 8 into 4 + 4. Then add 6 + 4 + 4 = 10 + 4 = 14. To model this fact in a ten frame, first draw 6 open circles inside the frame to show the addend 6. Then draw 4 solid circles inside the frame to fill it and 4 circles outside the frame for a sum of 14. Choice B is correct. *(1.OA.6.a, 1.OA.6.b)*

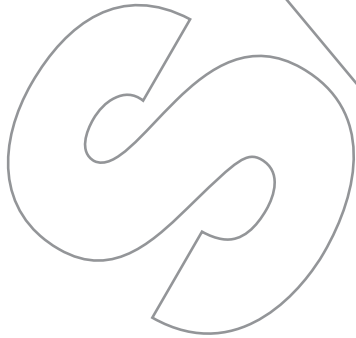**3.** A fact family uses the same three numbers to make four related addition and subtraction facts. Two addition facts and one subtraction fact are given, so the missing sentence is a subtraction fact, eliminating choices C and D. Choice B uses the wrong numbers. Choice A is correct. *(1.OA.6.a)*

4. The ten frame shows 8 open circles and 2 solid circles. There are 3 more solid circles outside the ten frame. So the addition sentence is 8 + 2 + 3 = 8 + 5 = 13. Choice D is correct. *(1.OA.6.a, 1.OA.6.b)*

5. The model shows 6 open circles and 7 solid circles so the addition sentence shown is 6 + 7 = 13. The ten frame shows 6 open circles and 4 solid circles: 6 + 4 = 10. There are 3 more solid circles outside the ten frame: 10 + 3 = 13. So the make-10 fact is 10 + 3 = 13. *(1.OA.6.a, 1.OA.6.b)*

TEST YOURSELF

Read and solve each problem.

1 Cassie subtracts 15 − 8. Which addition sentence can help her?
- **A** 15 + 8 = 23
- **B** 8 + 10 = 18
- **C** 8 + 7 = 15
- **D** 3 + 12 = 15

2 Steve added 6 + 8. He makes ten. Which model shows what Steve did?
- **A**
- **B**
- **C**
- **D**

3 Look at this fact family.

4 + 7 = 11   11 − 4 = 7
7 + 4 = 11   ?

Which number sentence is missing?
- **A** 11 − 7 = 4
- **B** 11 − 9 = 2
- **C** 11 + 7 = 18
- **D** 11 + 4 = 15

4 What addition sentence does this ten frame show?
- **A** 4 + 6 = 10
- **B** 2 + 8 = 10
- **C** 10 + 3 = 13
- **D** 8 + 5 = 13

5 Write the addition sentence shown. Then write the make-10 fact.

Addition sentence _____ 6 + 7 = 13 _____

Make-10 fact _____ 10 + 3 = 13 _____

38 UNIT 2 **Understanding Addition and Subtraction**

UNIT 2 **31**

6. A fact family consists of four related addition and subtraction sentences made from the same three numbers. The parts are added to make the total, so the addition sentences are 9 + 5 = 14 and 5 + 9 = 14. One part is subtracted from the total to equal the other part, so the subtraction sentences are 14 − 9 = 5 and 14 − 5 = 9. *(1.OA.6.a)*

7. Part A Start by drawing 5 open circles inside the ten frame to represent the addend 5. Then draw 7 solid circles, first filling in the remaining boxes of the ten frame and drawing the rest of the circles outside. The model shows 5 + 5 + 2 = 10 + 2 = 12. The sum is 12. *(1.OA.6.a, 1.OA.6.b)*

Part B Use the three numbers of the addition fact to make two related subtraction facts. Subtract each addend in turn from the total, 12, to equal the other addend: 12 − 7 = 5 and 12 − 5 = 7. *(1.OA.6.a)*

TEST YOURSELF

6 Write the facts in this fact family. There are two addition sentences. There are two subtraction sentences.

Part	Part
9	5
Total	
14	

Addition sentences 9 + 5 = 14, 5 + 9 = 14

Subtraction sentences 14 − 9 = 5, 14 − 5 = 9

7 Lana adds 5 + 7.

Part A Use this ten frame to add 5 + 7. Write the sum.

Answer 12

Part B Lana writes a related subtraction fact. What are the two related subtraction facts?

Answer 12 − 7 = 5

12 − 5 = 7

UNIT 2 **Understanding Addition and Subtraction** 39

CONNECTING TO MATHEMATICAL CONTENT

Grade-span connections:
K.OA.3, K.OA.4, K.OA.5 → 1.OA.6 → 2.OA.2

Grade-level connections:
1.OA.7 (understanding equations)
1.OA.8 (finding unknown numbers in addition and subtraction equations)

CONNECTING TO MATHEMATICAL PRACTICES

MP1: Make sense of problems and persevere in solving them.

MP4: Model with mathematics.

MP7: Look for and make use of structure.