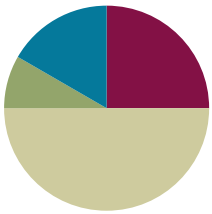
Lesson 5

Objective: Count by units of 7 to multiply and divide using number bonds to decompose.

Related Topics: More Lesson Plans for the Common Core Math

Suggested Lesson Structure

Fluency Practice	(15 minutes)
Application Problem	(5 minutes)
Concept Development	(30 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



Fluency Practice (15 minutes)

- Multiply by 6 **3.OA.7** (7 minutes)
- Group Counting **3.OA.1** (4 minutes)
- Make Seven Game **3.OA.5** (4 minutes)

Multiply by 6 (7 minutes)

Materials: (S) Multiply by 6 Pattern Sheet (1–5)

Note: This activity builds fluency with multiplication facts using units of 6. It works toward students knowing from memory all products of two one-digit numbers.

T: (Write 6 × 5 = ____.) Let's skip-count by sixes to find the answer. I'll raise a finger for each six. (Count with fingers to 5 as students count.)

S: 6, 12, 18, 24, 30.

T: (Circle 30 and write 6 × 5 = 30 above it. Write 6 × 3 = ____.) Let's skip-count up by sixes again. (Count with fingers to 3 as students count.)

S: 6, 12, 18.

T: Let's see how we can skip-count down to find the answer, too. Start at 30 with 5 fingers, 1 for each six. (Count down with your fingers as students say numbers.)

S: 30 (5 fingers), 24 (4 fingers), 18 (3 fingers).

Repeat the process for 6 × 4.

T: (Distribute the Multiply by 6 Pattern Sheet.) Let's practice multiplying by 6. Be sure to work left to right across the page.

Directions for administration of Multiply By Pattern Sheets:

- Distribute Multiply By Pattern Sheet.
- Allow a maximum of two minutes for students to complete as many problems as possible.
- Direct students to work left to right across the page.
- Encourage skip-counting strategies to solve unknown facts.

Group Counting (4 minutes)

Note: Group counting reviews interpreting multiplication as repeated addition. Counting by sevens prepares students for multiplication using those units in this lesson. Group counting eights and nines anticipates multiplication using those units later in the module. Direct students to count forward and backward, occasionally changing the direction of the count.

- Sevens to 70
- Eights to 80
- Nines to 90

Make Seven Game (4 minutes)

Note: This activity prepares students for the skip-counting strategy used to multiply using units of 7 in today's lesson.

Students play in pairs. Each pair has a set of 6 cards, each with a number (1–6).

T: (Write ___ + ___ = 7.) Spread the cards out in front of you.

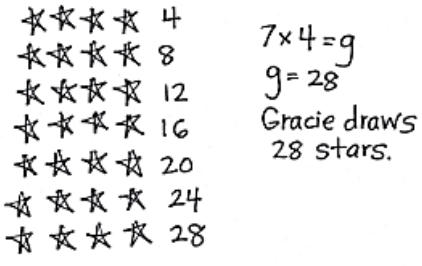
T: Put your hands behind your back. I'll write a number in the first blank. When you know the number that belongs in the second blank, touch the card that shows the number. The first person to touch the card keeps it. Whoever has the most cards at the end wins. (Write 5 + __ = 7.)

S: (Touch the 2 card. The first to touch it keeps the card.)

Continue with the following suggested sequence: 1, 4, 2, 3, and 5.

Application Problem (5 minutes)

Gracie draws 7 rows of stars. In each row, she draws 4 stars. How many stars does Gracie draw in all? Use a letter to represent the unknown and solve.



Note: This problem reviews the G3–M1 concept of multiplying using units of 4. It will be used in the Concept Development to lead into skip-counting by sevens. Be sure to circulate and find a student's work to be used as an example in the Concept Development (find a student who counted by four 7 times to solve the problem).

Concept Development (30 minutes)

Materials: (S) Personal white boards

Part 1: Use number bonds to decompose and make ten as a strategy for skip-counting units of 7.

T: I noticed that Student A solved the Application Problem by skip-counting by four 7 times. Is there another count-by strategy that could be used to solve this problem?

S: Skip-count by seven 4 times.

T: Let's show that work on our boards. Write 7 on your board.

T: How do we get the next number in our count?

S: Add 7!

T: Can we use a number bond to add 7 by making ten like we did yesterday with sixes?

S: Yes, we can break apart 7 into 3 and 4, and then use the 3 to make ten with the first 7.

T: Work with a partner to use number bonds to show how you make ten to count by seven 4 times.

T: Check your work with mine. (Project work as shown.)

T: What is the last number in the sequence when you count by seven 4 times?

S: 28!

T: Is the answer the same even though Student A counted by four 7 times?

S: Yes, it's the same because we just switched the order of the factors. → The product is the same, but the order of the factors is different. It's the commutative property.

T: Work with a partner to complete your sequence by counting by seven 10 times. Use number bonds to make ten. (Circulate and check student work.)

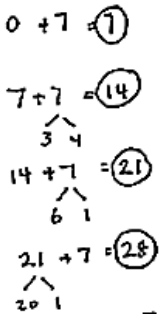
T: Everyone, at my signal, read your count by seven sequence.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

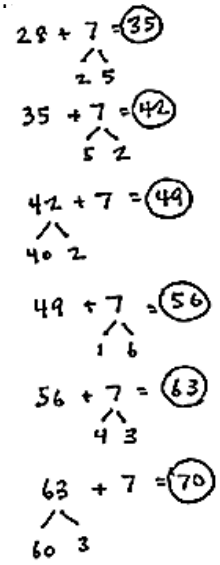
For English language learners you may pre-teach and/or clarify unfamiliar math terms, such as *sequence, row, factors, product, number bond, count by,* and *skip-count.*

Depending on your learners' needs, give explicit prompts for every step of using the make ten strategy to count by seven 4 times. Alternatively, you may scaffold with a checklist or template.

Count by seven 4 times:



Remaining count by seven:



Part 2: Skip-count by seven to solve multiplication and division problems.

T: Let's use our sequence to solve multiplication and division problems with seven. I am going to say a multiplication or division problem. Write the problem on your board and use your sequence to find the answer. At my signal, show your board.

T: Let's do a practice one together. Turn and talk to a partner, how can you use your skip-counting sequence to solve 42 divided by 7?

S: I can count 6 sevens in the sequence, which takes me to 42. So, 42 divided by 7 equals 6.

T: Write the equation on your board.

T: At my signal, show me your board.

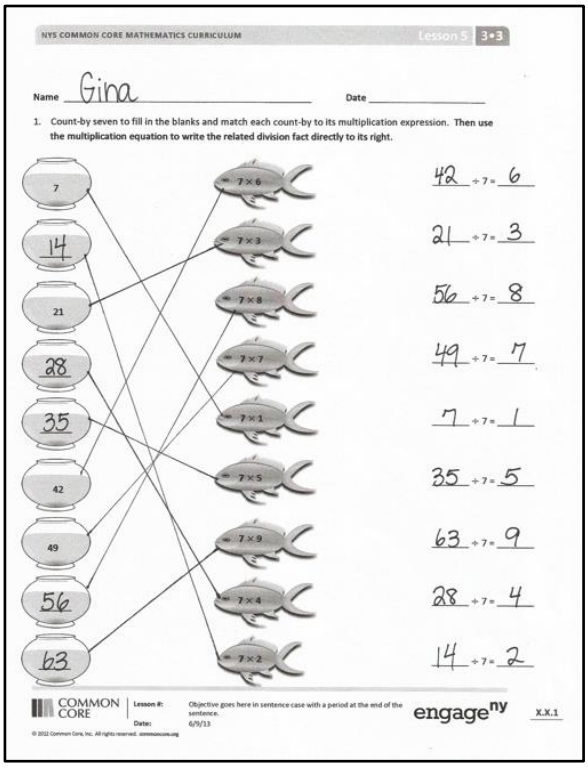
T: Ok, here we go, next problem! 49 divided by 7 equals? (After students work, signal.)

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Some learners may prefer to use the distributive or commutative property to solve 7 times 6. Encourage their personal choices of efficient strategies. Challenge learners to present a multiplication fact they would solve using skip-counting. Ask, "How do you choose your strategy to solve?"

Continue with the following suggested sequence:

- 7 × 6
- 7 × e = 56
- f ÷ 7 equals 9


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 5 3•3

Name Gina Date

1. Count-by seven to fill in the blanks and match each count-by to its multiplication expression. Then use the multiplication equation to write the related division fact directly to its right.

7, 14, 21, 28, 35, 42, 49, 56, 63

7×6, 7×3, 7×8, 7×7, 7×1, 7×5, 7×9, 7×4, 7×2

42 ÷ 7 = 6
21 ÷ 7 = 3
56 ÷ 7 = 8
49 ÷ 7 = 7
7 ÷ 7 = 1
35 ÷ 7 = 5
63 ÷ 7 = 9
28 ÷ 7 = 4
14 ÷ 7 = 2

COMMON CORE Lesson #: Date: Objective goes here in sentence case with a period at the end of the sentence. 6/9/13 engage^ny X.X.1

Problem Set (10 minutes)

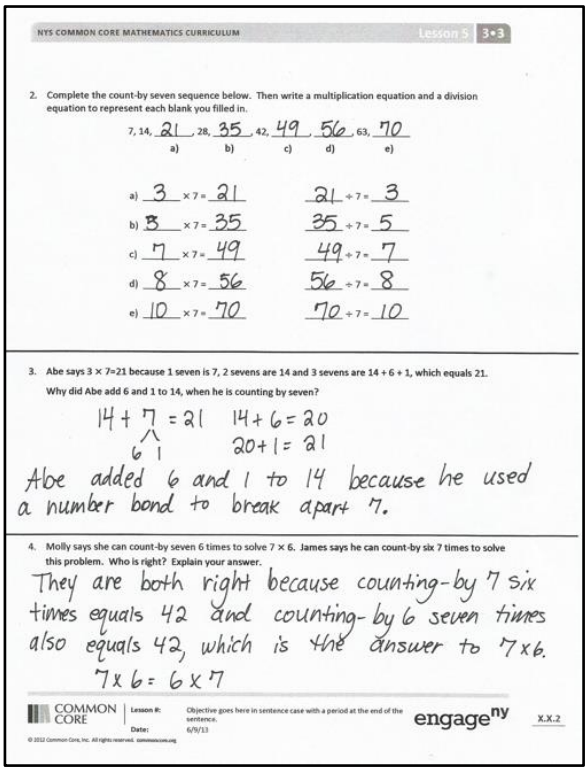
Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

Student Debrief (10 minutes)

Lesson Objective: Count by units of 7 to multiply and divide using number bonds to decompose.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.



- Take turns with a partner reading the multiplication facts in Problem 1 and the related division facts.
- How can you use number bonds to help you solve Problem 2?
- How do you choose your strategy to solve? What are some different strategies that can help you solve multiplication facts using units of 7?

MP.5

- In Problem 3, would it make sense for Abe to use number bonds to find the next number after 21 in the count by seven sequence? Why or why not?
- How does counting by seven help you solve multiplication and division problems with seven?
- How does Problem 4 demonstrate the commutative property?
- How does today's lesson relate to our previous work of adding 1 unit to 5 units?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

Multiply.

6 x 1 = _____	6 x 2 = _____	6 x 3 = _____	6 x 4 = _____
6 x 5 = _____	6 x 1 = _____	6 x 2 = _____	6 x 1 = _____
6 x 3 = _____	6 x 1 = _____	6 x 4 = _____	6 x 1 = _____
6 x 5 = _____	6 x 1 = _____	6 x 2 = _____	6 x 3 = _____
6 x 2 = _____	6 x 4 = _____	6 x 2 = _____	6 x 5 = _____
6 x 2 = _____	6 x 1 = _____	6 x 2 = _____	6 x 3 = _____
6 x 1 = _____	6 x 3 = _____	6 x 2 = _____	6 x 3 = _____
6 x 4 = _____	6 x 3 = _____	6 x 5 = _____	6 x 3 = _____
6 x 4 = _____	6 x 1 = _____	6 x 4 = _____	6 x 2 = _____
6 x 4 = _____	6 x 3 = _____	6 x 4 = _____	6 x 5 = _____
6 x 4 = _____	6 x 5 = _____	6 x 1 = _____	6 x 5 = _____
6 x 2 = _____	6 x 5 = _____	6 x 3 = _____	6 x 5 = _____
6 x 4 = _____	6 x 2 = _____	6 x 4 = _____	6 x 3 = _____
6 x 5 = _____	6 x 3 = _____	6 x 2 = _____	6 x 4 = _____
6 x 3 = _____	6 x 5 = _____	6 x 2 = _____	6 x 4 = _____

Name _____ Date _____

1. Skip-count by seven to fill in the blanks and match each count-by to its multiplication expression. Then use the multiplication equation to write the related division fact directly to the right.

7	7×6	_____ ÷ 7 = _____
_____	7×3	_____ ÷ 7 = _____
21	7×8	_____ ÷ 7 = _____
_____	7×7	_____ ÷ 7 = _____
_____	7×1	_____ ÷ 7 = _____
42	7×5	_____ ÷ 7 = _____
49	7×9	_____ ÷ 7 = _____
_____	7×4	_____ ÷ 7 = _____
_____	7×2	_____ ÷ 7 = _____

2. Complete the count by seven sequence below. Then write a multiplication equation and a division equation to represent each blank you filled in.

7, 14, _____, 28, _____, 42, _____, _____, 63, _____

a) b) c) d) e)

a) _____ × 7 = _____ _____ ÷ 7 = _____

b) _____ × 7 = _____ _____ ÷ 7 = _____

c) _____ × 7 = _____ _____ ÷ 7 = _____

d) _____ × 7 = _____ _____ ÷ 7 = _____

e) _____ × 7 = _____ _____ ÷ 7 = _____

3. Abe says 3 × 7 = 21 because 1 seven is 7, 2 sevens are 14 and 3 sevens are 14 + 6 + 1, which equals 21. Why did Abe add 6 and 1 to 14, when he is counting by seven?

4. Molly says she can count by seven 6 times to solve 7 × 6. James says he can count by six 7 times to solve this problem. Who is right? Explain your answer.

Name _____ Date _____

Complete the **count by seven** sequence below. Then write a multiplication equation and a division equation to represent each number in the sequence.

7, 14, _____, 28, _____, 42, _____, _____, 63, _____

a. _____ × 7 = _____ _____ ÷ 7 = _____

b. _____ × 7 = _____ _____ ÷ 7 = _____

c. _____ × 7 = _____ _____ ÷ 7 = _____

d. _____ × 7 = _____ _____ ÷ 7 = _____

e. _____ × 7 = _____ _____ ÷ 7 = _____

f. _____ × 7 = _____ _____ ÷ 7 = _____

g. _____ × 7 = _____ _____ ÷ 7 = _____

h. _____ × 7 = _____ _____ ÷ 7 = _____

i. _____ × 7 = _____ _____ ÷ 7 = _____

j. _____ × 7 = _____ _____ ÷ 7 = _____

Name _____ Date _____

1. Use number bonds to help you skip-count by seven by making ten or adding to the ones.

(a) 7 + 7 = **10** + **4** = _____

3 4

(b) 14 + 7 = _____ + _____ = _____

6 1

(c) 21 + 7 = _____ + _____ = _____

20 1

(d) 28 + 7 = _____ + _____ = _____

2 5

(e) 35 + 7 = _____

5 2

(f) 42 + 7 = _____ + _____ = _____

(g) 49 + 7 = _____ + _____ = _____

(h) 56 + 7 = _____ + _____ = _____

2. Skip-count by seven to fill in the blanks. Then use the multiplication equation to write the related division fact directly to the right.

_____	7 × 10 = _____	_____ ÷ 7 = _____
_____	7 × 9 = _____	_____ ÷ 7 = _____
_____	7 × 8 = _____	_____ ÷ 7 = _____
49	7 × 7 = _____	_____ ÷ 7 = _____
_____	7 × 6 = _____	_____ ÷ 7 = _____
_____	7 × 5 = _____	_____ ÷ 7 = _____
28	7 × 4 = _____	_____ ÷ 7 = _____
_____	7 × 3 = _____	_____ ÷ 7 = _____
_____	7 × 2 = _____	_____ ÷ 7 = _____
7	7 × 1 = _____	_____ ÷ 7 = _____