Student Guide

Completing the Table (SG p. 205)
Questions 1–2

1.* See the lesson.

2.

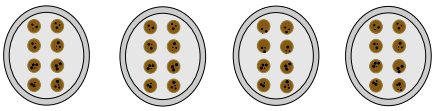
×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	**24**	**28**	**32**	**36**	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	**24**	30	36	**42**	**48**	**54**	60
7	0	7	14	21	**28**	35	**42**	49	**56**	**63**	70
8	0	8	16	24	**32**	40	**48**	**56**	64	**72**	80
9	0	9	18	27	**36**	45	**54**	**63**	**72**	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Homework (SG p. 206)
Questions 1–27

1. 12	**2.** 42	**3.** 30
4. 20	**5.** 63	**6.** 8
7. 40	**8.** 64	**9.** 28
10. 0	**11.** 21	**12.** 54
13. 48	**14.** 56	**15.** 81
16. 35	**17.** 54	**18.** 24
19. 24	**20.** 24	**21.** 9
22. 32	**23.** 36	**24.** 49

For Questions 25–27, facts will vary. One possible response is given for each.

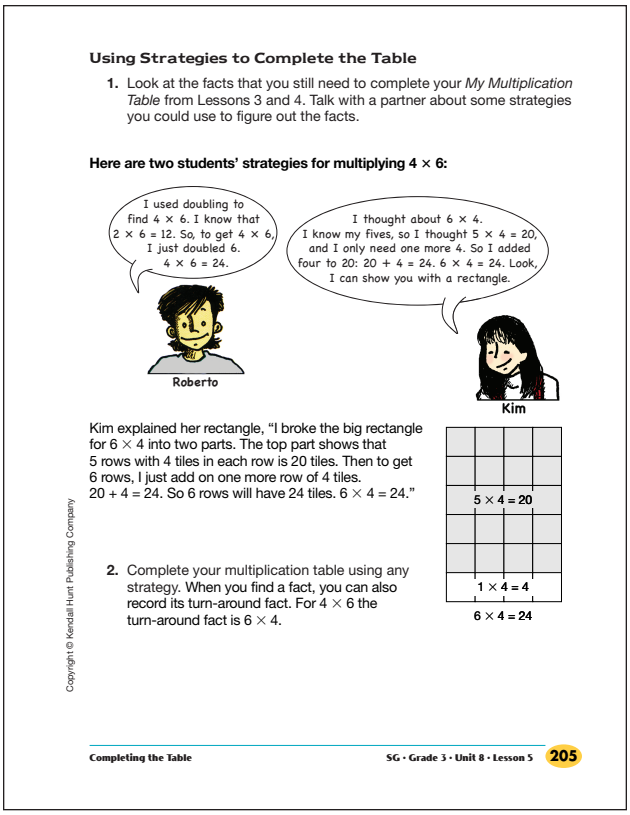
25. There were 4 plates of 8 cookies. How many cookies total?



$4 \times 8 = 32$

26. For 0×6, I know the product is 0 because 0 times any number is 0.

27. For 6×6, I know that $3 \times 6 = 18$. If I double that, $6 \times 6 = 36$.



Using Strategies to Complete the Table

1. Look at the facts that you still need to complete your *My Multiplication Table* from Lessons 3 and 4. Talk with a partner about some strategies you could use to figure out the facts.

Here are two students' strategies for multiplying 4 × 6:

Kim explained her rectangle, "I broke the big rectangle for 6 × 4 into two parts. The top part shows that 5 rows with 4 tiles in each row is 20 tiles. Then to get 6 rows, I just add on one more row of 4 tiles. 20 + 4 = 24. So 6 rows will have 24 tiles. 6 × 4 = 24."

2. Complete your multiplication table using any strategy. When you find a fact, you can also record its turn-around fact. For 4 × 6 the turn-around fact is 6 × 4.

Completing the Table SG • Grade 3 • Unit 8 • Lesson 5 205

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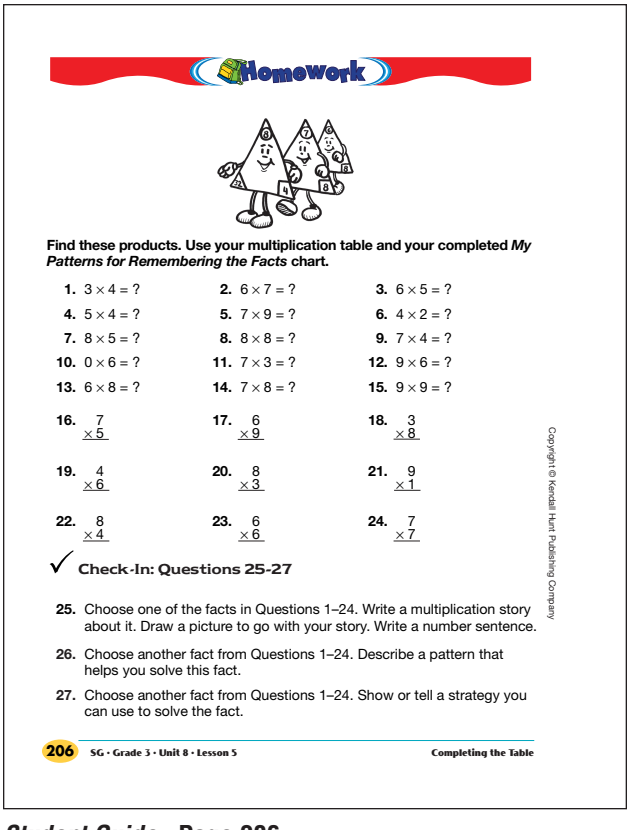

Homework

Find these products. Use your multiplication table and your completed *My Patterns for Remembering the Facts* chart.

1. $3 \times 4 = ?$	**2.** $6 \times 7 = ?$	**3.** $6 \times 5 = ?$
4. $5 \times 4 = ?$	**5.** $7 \times 9 = ?$	**6.** $4 \times 2 = ?$
7. $8 \times 5 = ?$	**8.** $8 \times 8 = ?$	**9.** $7 \times 4 = ?$
10. $0 \times 6 = ?$	**11.** $7 \times 3 = ?$	**12.** $9 \times 6 = ?$
13. $6 \times 8 = ?$	**14.** $7 \times 8 = ?$	**15.** $9 \times 9 = ?$

16. $\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$	**17.** $\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$	**18.** $\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$
19. $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$	**20.** $\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$	**21.** $\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$
22. $\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$	**23.** $\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$	**24.** $\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$

✓ **Check-In: Questions 25-27**

25. Choose one of the facts in Questions 1–24. Write a multiplication story about it. Draw a picture to go with your story. Write a number sentence.

26. Choose another fact from Questions 1–24. Describe a pattern that helps you solve this fact.

27. Choose another fact from Questions 1–24. Show or tell a strategy you can use to solve the fact.

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***Answers and/or discussion are included in the lesson.**

Name _____ Date _____

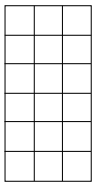
Break-Apart Products

Discuss

1. **A.** How many rows does the rectangle to the right have?
   Rows: _____

   B. How many squares are in each row?
   Squares: _____

   C. Write a number sentence on the rectangle for the total number of squares.



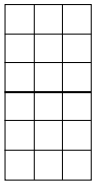
2. The rectangle to the right has been divided in half.

   A. Color the top half red and write a number sentence on the top half for the total number of small red squares.

   How many rows are red? _____

   B. Color the bottom half yellow. Write a number sentence on the bottom half for the total number of small yellow squares.

   How many rows are yellow? _____

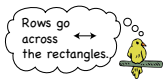


   C. Complete these number sentences using the rectangle for Question 2:

   $6 \times 3 = 3 \times 3 + 3 \times 3$

   $6 \times 3 =$ ____ + ____

   $6 \times 3 =$ ____



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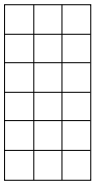
Name _____ Date _____

3. **A.** Color the first 5 rows of the rectangle on the right red. Write a number sentence on the red rectangle for the total number of red squares.

   B. Color the last row yellow. Write a number sentence on the yellow rectangle for the total number of yellow squares.



   C. Complete the number sentences below to match the rectangle:

   $6 \times 3 =$ ____ $\times 3 +$ ____ $\times 3$

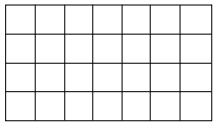
   $6 \times 3 =$ _____ + _____

   $6 \times 3 =$ _____

4. How are the rectangles in Questions 2 and 3 alike? How are they different?

Explore

5.



   A. How many squares are in the rectangle above? _____

   B. Write a number sentence on the rectangle for the total number of squares.

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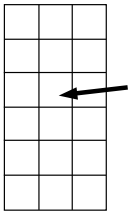
Student Activity Book

Break-Apart Products (SAB pp. 281–286) Questions 1–13

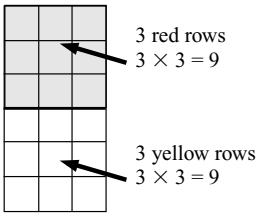
1. **A.*** 6 rows,

   B.* 3 squares

   C.*

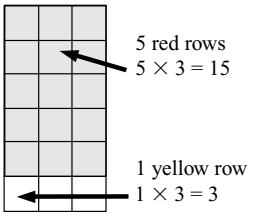


2. **A–B.***



   C.* $6 \times 3 = 3 \times 3 + 3 \times 3$
   $6 \times 3 = \underline{9} + \underline{9}$
   $6 \times 3 = \underline{18}$

3. **A–B.***

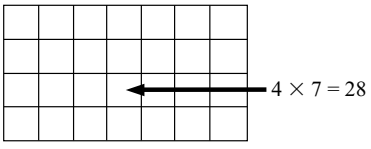


   C.* $6 \times 3 = 5 \times 3 + 1 \times 3$
   $6 \times 3 = \underline{15} + \underline{3}$
   $6 \times 3 = \underline{18}$

4.* The rectangles are alike because they all have 18 squares. The rectangles are divided into different numbers of rows.

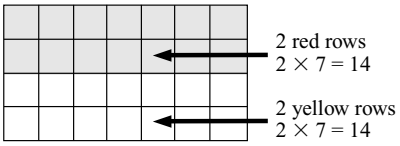
5. **A.** 28 squares

   B.



***Answers and/or discussion are included in the lesson.**

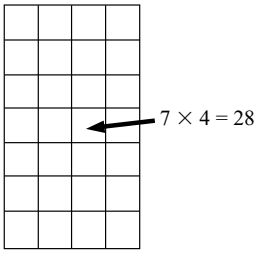
6. A–B.



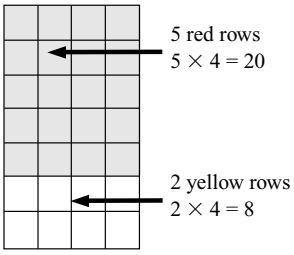
C. $4 \times 7 = 2 \times 7 + 2 \times 7$
$4 \times 7 = \underline{14} + \underline{14}$
$4 \times 7 = \underline{28}$

7. A. 28 squares

B.



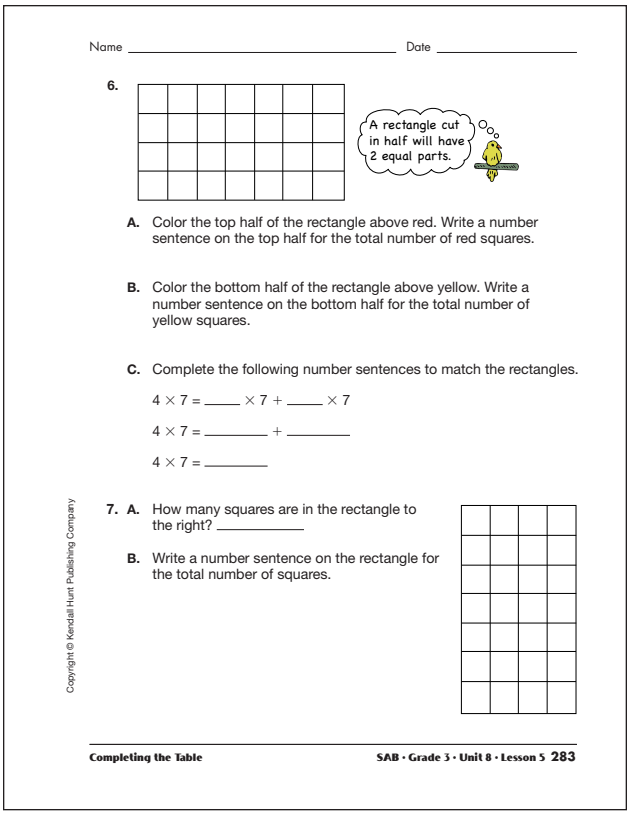
8. A–B.



C. $7 \times 4 = 5 \times 4 + 2 \times 4$
$7 \times 4 = \underline{20} + \underline{8}$
$7 \times 4 = \underline{28}$

9. A. They all have 28 squares.

B. They are divided into different numbers of rows.



Name _____ Date _____

6.

A. Color the top half of the rectangle above red. Write a number sentence on the top half for the total number of red squares.

B. Color the bottom half of the rectangle above yellow. Write a number sentence on the bottom half for the total number of yellow squares.

C. Complete the following number sentences to match the rectangles.

$4 \times 7 =$ ____ $\times 7 +$ ____ $\times 7$

$4 \times 7 =$ _____ + _____

$4 \times 7 =$ _____

7. A. How many squares are in the rectangle to the right? _____

B. Write a number sentence on the rectangle for the total number of squares.

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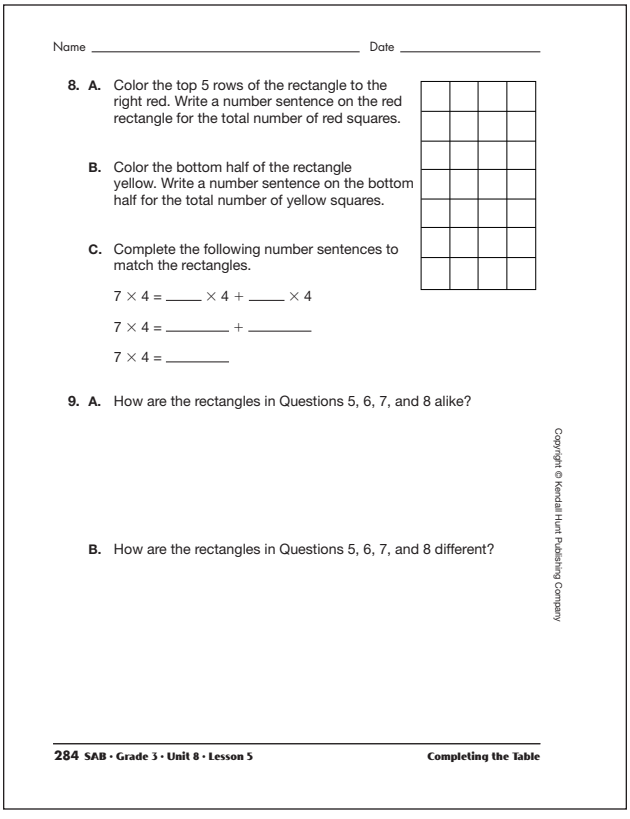
***Student Activity Book* - Page 283**



Name _____ Date _____

8. A. Color the top 5 rows of the rectangle to the right red. Write a number sentence on the red rectangle for the total number of red squares.

B. Color the bottom half of the rectangle yellow. Write a number sentence on the bottom half for the total number of yellow squares.

C. Complete the following number sentences to match the rectangles.

$7 \times 4 =$ ____ $\times 4 +$ ____ $\times 4$

$7 \times 4 =$ _____ + _____

$7 \times 4 =$ _____

9. A. How are the rectangles in Questions 5, 6, 7, and 8 alike?

B. How are the rectangles in Questions 5, 6, 7, and 8 different?

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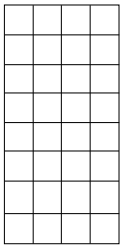
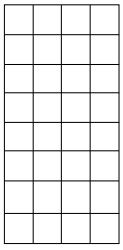
Name _____ Date _____

10. A. Divide the rectangle to the right into two smaller rectangles. Choose a way that will make it easy for you to find the product of 8 × 4.



B. Write number sentences that match your rectangles.

11. A. Divide the rectangle to the right into two smaller rectangles. Choose a different way from the one in Question 10.



B. Write number sentences that match your rectangles.

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Name _____ Date _____

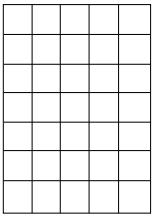
12. A. How are your rectangles in Questions 10 and 11 alike?

B. How are your rectangles in Questions 10 and 11 different?

C. Think about the ways that you divided the rectangle. Which way made it easier for you to find the product of 8 × 4? Why?

✓ **Check-In: Question 13**

13. A. Divide the rectangle to the right into two smaller rectangles that will help you find the total number of squares.



B. Write number sentences that match your rectangles.

C. Use a different strategy to check your work. Show or tell what you did.

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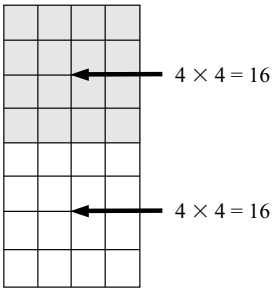
10. A. Possible responses:

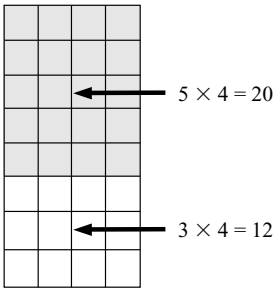


B. Possible responses: $8 \times 4 = 4 \times 4 + 4 \times 4$

$8 \times 4 = \underline{16} + \underline{16}$

$8 \times 4 = \underline{32}$

11. A. Possible responses:



B. Possible responses: $8 \times 4 = 5 \times 4 + 3 \times 4$

$8 \times 4 = \underline{20} + \underline{12}$

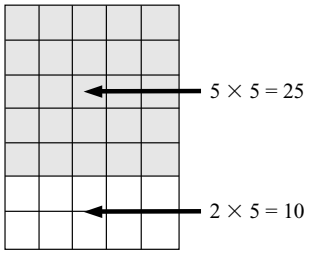
$8 \times 4 = \underline{32}$

12. A. They both have 32 squares. They have the same number of rows and columns.

B. Answers will vary. Possible response: One is divided in half and the other is divided into 5 rows and 3 rows.

C. Answers will vary. Possible responses: I divided the rectangle in Question 10 in half so that I could use doubling. Or, I divided the rectangle into 5 rows and 3 rows because I know my fives.

13. A. Possible response:



B. Possible responses:

$7 \times 5 = 5 \times 5 + 2 \times 5$

$7 \times 5 = \underline{25} + \underline{10}$

$7 \times 5 = \underline{35}$

C. Strategies will vary. Possible response: I skip counted by 5s down each of the 7 rows.

Patterns for the Nines
Questions 1–6 (SAB pp. 287–288)

Row Number	9 × Row Number	10 × Row Number	10 × Row Number - Row Number
1	9 × 1 = 9	10 × 1 = 10	10 − 1 = 9
2	**9 × 2 = 18**	10 × 2 = 20	20 − 2 = 18
3	**9 × 3 = 27**	**10 × 3 = 30**	30 − 3 = 27
4	**9 × 4 = 36**	**10 × 4 = 40**	**40 − 4 = 36**
5	**9 × 5 = 45**	**10 × 5 = 50**	**50 − 5 = 45**
6	**9 × 6 = 54**	**10 × 6 = 60**	**60 − 6 = 54**
7	**9 × 7 = 63**	**10 × 7 = 70**	**70 − 7 = 63**
8	**9 × 8 = 72**	**10 × 8 = 80**	**80 − 8 = 72**
9	**9 × 9 = 81**	**10 × 9 = 90**	**90 − 9 = 81**

1.* Each product increases by nine. The digit in the tens place counts up by one; the digit in the ones place counts down by one.

2.* Each product increases by 10. The first digit of the product is the same as one of the factors. The last digit is zero.

3.* Answers will vary but may include the answers increase by nine. The digit in the tens place counts up by one while the digit in the ones place counts down by one.

4. Answers will vary.

5. **A.** 9 × 47 = 423 4 + 2 + 3 = 9

   B. 9 × 83 = 747 7 + 4 + 7 = 18
   1 + 8 = 9

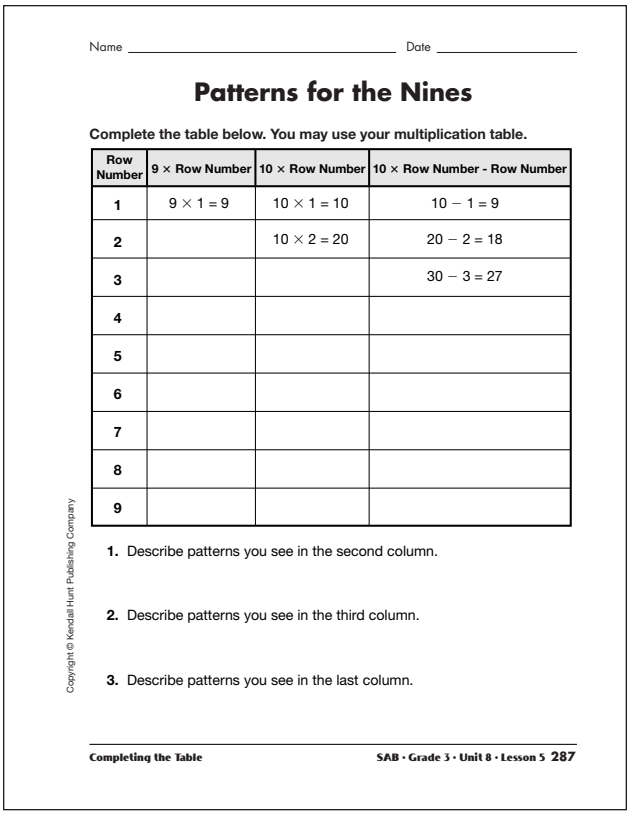
   C. 9 × 89 = 801 8 + 0 + 1 = 9

   D. 9 × 123 = 1107 1 + 1 + 0 + 7 = 9

   E. 9 × 633 = 5697 5 + 6 + 9 + 7 = 27
   2 + 7 = 9

   F. 9 × 697 = 6273 6 + 2 + 7 + 3 = 18
   1 + 8 = 9

6. The single digit that is the final sum is always 9.



Name _____ Date _____

Patterns for the Nines

Complete the table below. You may use your multiplication table.

Row Number	9 × Row Number	10 × Row Number	10 × Row Number - Row Number
1	9 × 1 = 9	10 × 1 = 10	10 − 1 = 9
2		10 × 2 = 20	20 − 2 = 18
3			30 − 3 = 27
4			
5			
6			
7			
8			
9			

1. Describe patterns you see in the second column.

2. Describe patterns you see in the third column.

3. Describe patterns you see in the last column.

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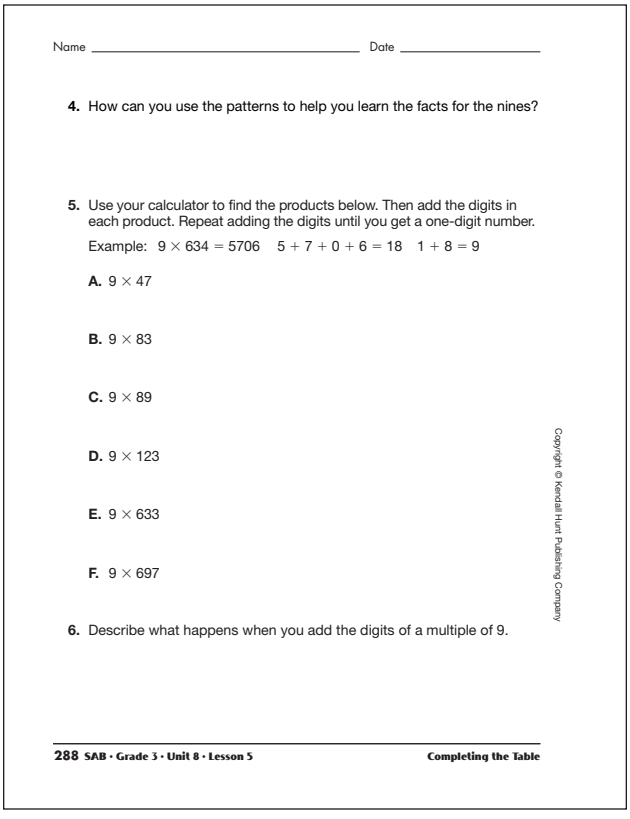

Name _____ Date _____

4. How can you use the patterns to help you learn the facts for the nines?

5. Use your calculator to find the products below. Then add the digits in each product. Repeat adding the digits until you get a one-digit number.
Example: 9 × 634 = 5706 5 + 7 + 0 + 6 = 18 1 + 8 = 9

A. 9 × 47

B. 9 × 83

C. 9 × 89

D. 9 × 123

E. 9 × 633

F. 9 × 697

6. Describe what happens when you add the digits of a multiple of 9.

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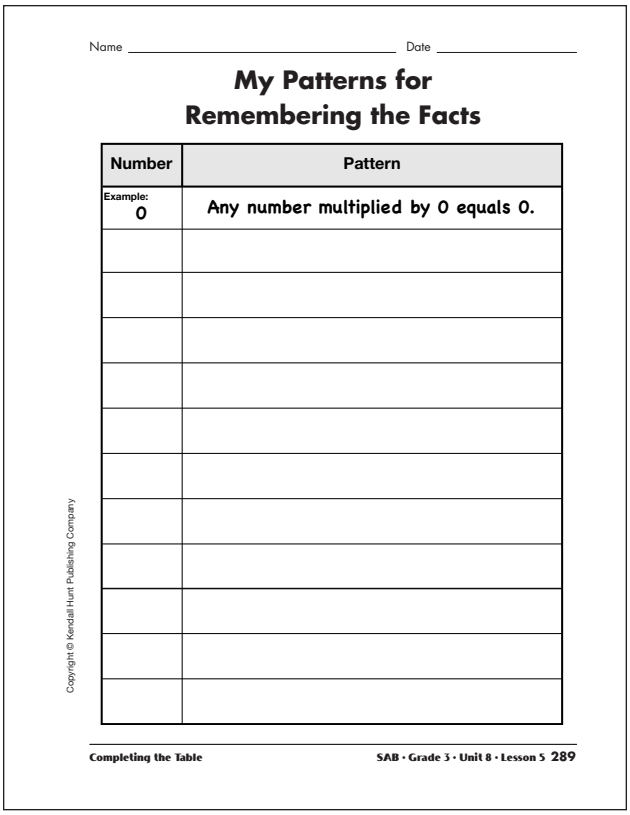
***Answers and/or discussion are included in the lesson.**



Name _____ Date _____

My Patterns for Remembering the Facts

Number	Pattern
Example: 0	Any number multiplied by 0 equals 0.

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My Patterns for Remembering the Facts (SAB p. 289)

*Possible responses are listed.

Number	Pattern
Example: 0	Any number multiplied by 0 equals 0.
1	Any number times 1 is itself.
2	All multiples of 2 are even.
3	Skip count to hit the multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30.
5	All multiples of 5 end in 0 or 5.
10	All multiples of 10 end in 0.
Turn-around facts	In a multiplication sentence, turn around the factors and get the same product.
Square numbers	The square numbers are on a diagonal on the multiplication chart.
9	Multiply that number by 10 and then subtract that number to find the product of 9.

***Answers and/or discussion are included in the lesson.**