## Student Activity Book

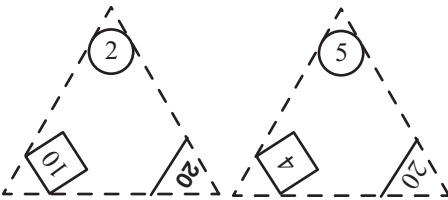### Number and Multiplication Concepts

Questions 1–27 (SAB pp. 61–78)

1. 21 and 99 are both multiples of 3; Possible response: I can make a rectangle that is 3 by something for both 21 and 99 or I can organize both 21 and 99 into groups of 3 evenly. Students might draw 7×3 rectangle for 21 and a 3×33 rectangle for 99. Students might also show how 19 units can be organized into a 3 x 6 rectangle with one left over.

2. I do not agree with Joe Smart. 2 and 3 are not factor s of 35. I cannot arrange 35 into groups of 2 or 3 evenly. When I skip-count by 2s I do not land on 35. When I skip-count by 3s I do not land on 35 either.

3. **A.** $5 \times 6 = 30$

   B.
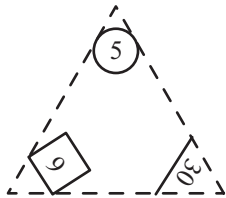
   C. 10, 3, 5, and 6 are four factors of 20.
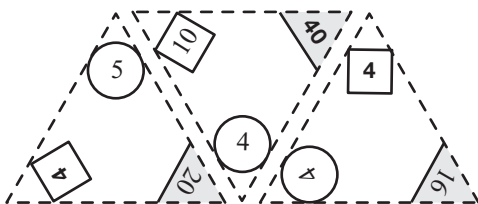
   D.

   E. $5 \times 4 = 20$; $10 \times 2 = 20$
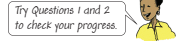
   F. 5, 4, 2, and 10 are four factors of 20.

   G.

   20, 40, and 16 are multiples of 4.
   $4 \times 5 = 20$, $4 \times 10 = 40$; $4 \times 4 = 16$

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Number and Multiplication Concepts

Factors, Multiples, and Primes

Try Questions 1 and 2 to check your progress.

✓ **Self-Check: Questions 1-2**

1. Which numbers are multiples of 3? Show or tell how you know.
   A. 21   **B.** 19   **C.** 99

2. Joe Smart thinks 1, 2, 3, 5, and 7 are all factors of 35. Do you agree with Joe? Why or why not?

How did you do? Use Questions 1 and 2 to help you choose which problems to work on.

	Working On It! I could use some extra help.	**Getting It!** I just need some more practice.	**Got It!** I'm ready for a challenge
Can I find factors and multiples?	★ Q# 3–7, 11	● Q# 4–8, 11	■ Q# 7–11

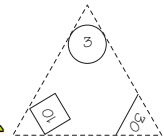Workshop: Factors, Multiples, and Primes   SAB · Grade 4 · Unit 3 · Lesson 6   **61**

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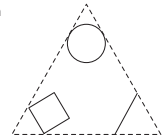

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★**3.** John said, "This flash card is for $3 \times 10 = 30$. It tells me that:
   • 3 and 10 are **factors** of 30; and
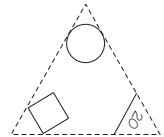   • 30 is a **multiple** of 3 and 10.

   A. Find another flash card that shows two more factors of 30. Write a multiplication fact for this card _____ .

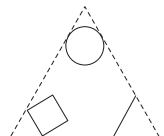   **B.** Copy the numbers into the card to the right.

   C. Use the two cards to list four factors of 30.

   D. Find two flash cards that show factors of 20. Copy the numbers onto the cards at the right.

   E. Write a multiplication fact for each card.

   _____

   F. Use the cards to list 4 factors of 20.

   _____

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H. Responses will vary. Possible responses.

$5 \times 8 = 40; 2 \times 5 = 10;$
$5 \times 10 = 50; 5 \times 5 = 25;$
10, 25, 40, and 50 are multiples of 5.

4. A. 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

B. 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

C. 20 and 40 are multiples of both 4 and 5.

D. Yes, 64 is a multiple of 8. I found 64 in the row when I shaded all the multiples of 8. See chart.

E. No. 31 is not a multiple of 5. I looked at the multiples I shaded on the chart. 30 and 35 are multiples, but 31 is not listed.

F. Answers will vary. Possible responses: 0, 10, 20, 30, 40, 50.

G. See chart. 9 and 2 are also factors of 18.

H. 2, 3, 4, and 6 are factors of 12.

5. A.

B. Yes, all these numbers have 5 as a factor. If I skip count by 5 from zero, I land on these numbers, or if I skip count from each number to zero I land on zero.

C. No, 22 is not a multiple of 5. When I skip count by 5 from zero, I do not land on 22.

6. A.

B. No, 2 is not a factor of 15. When I skip count by 2 from zero, I do not land on 15.

C. Yes, 3 is a factor of 15. When I skip count by 3 from zero, I land on 15.

D. No, 4 is not a factor of 15. When I skip count by 4 from zero, I do not land on 15.

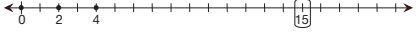**E.** Yes, 5 is a factor of 15.

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★●5. **A.** Skip count to name the multiples of 5. Mark the multiples of 5 on this number line.

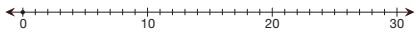**B.** Is 5 a factor of all the numbers you marked? How do you know?

C. Is 22 a multiple of 5? How do you know?

★●6. **A.** Maya wanted to find the factors of 15. She started to skip count by 2 on the number line. Finish marking and labeling the multiples of 2.
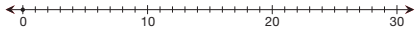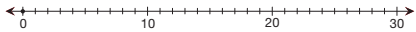

B. Is 2 a factor of 15? How do you know?

C. Use Maya's strategy to decide if 3 is a factor of 15.

C. Use Maya's strategy to decide if 4 is a factor of 15.

E. Use Maya's strategy to find if 5 is a factor of 15.
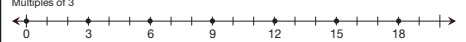

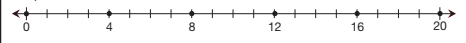Workshop: Factors, Multiples, and Primes   SAB · Grade 4 · Unit 3 · Lesson 6   65

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Maya created the number lines below to show multiples. Use her number lines to answer Questions 7–8 on the next page.

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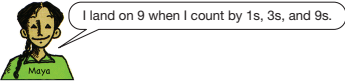

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★●■7. **A.** Use Maya's number lines to list the multiples of 3 from 0 to 20.

B. Sixteen is a multiple of two. What other numbers have 16 as a multiple?

C. Twenty is a multiple of what numbers?

D. Twelve is a multiple of what numbers?

●■8. Maya decided that 1, 3, and 9 are factors of 9.

I land on 9 when I count by 1s, 3s, and 9s.

Use Maya's strategy to find and list the factors of the following numbers.

A. 18

B. 4

C. 7

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7. A. 0, 3, 6, 9, 12, 15, 18

   B. 4 and 8 have 16 as a multiple.

   C. 2, 4, 5, and 10 have 20 as a multiple.

   D. 2, 3, 4, and 6 have 12 as a multiple.

8. A. 1, 2, 3, 6 and 9 are factors of 18.

   B. 1, 2, and 4 are factors of 4.

   C. 1 and 7 are the only factors of 7.

9. A–B.

| 1	2	3	4	5	6
1	4	9	16	25	36
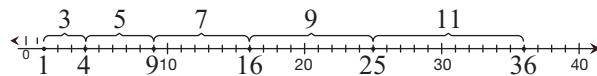
   C. Yes. The distances continue to the next odd number.

   D. Yes. To check, continue the pattern. 36 plus the next odd number (13) is 49 which is the next square number.

10. A.
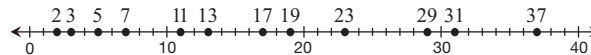
   B. There is no pattern.

   C. No, the next prime numbers cannot be predicted.

11. A. 17 is prime. Possible response: I tried to make rectangles with 17 tiles, and the only one I could make was the 1×17. The only factors are 1 and 17, so 17 is prime.

   B. 39 is not prime. Possible response: I skip counted by 2 and did not land on 39, but I did when I skip counted by 3. So 3 as well as 1 and 39 are factors of 39.

   C. 51 is not prime. Possible response: I divided 51 by several numbers and found that 51 is divisible by 3 and 17, so it has more factors than 1 and itself.
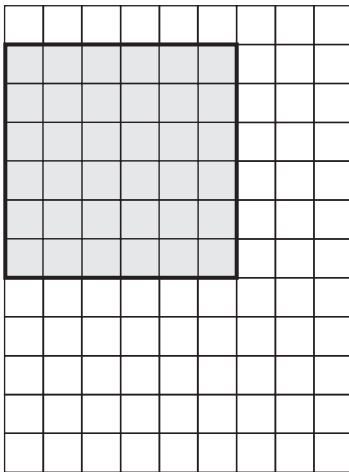
12. $7 \times 6 = 42$; Possible response: I skip counted by 3 because I noticed there 3 rows of 7 on top of 3 rows of 7. I skip counted by 3 seven times. Then $21 + 21 = 42$.

7

6
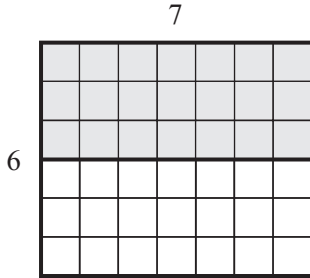
13. 12 squares in each row; $3 \times 12 = 36$
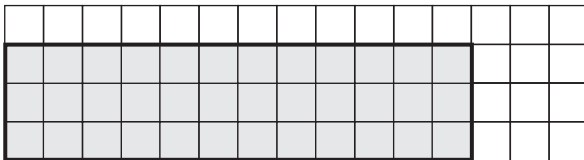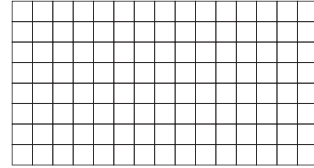
14. 6 squares in each row; $6 \times 6 = 36$

15.

8

A.

3   $3 \times 8 = 24$ squares

9

B.

5   $5 \times 9 = 45$ squares

9

C.

$36 \div 4 = 9$ squares

4

3

D.

6   $18 \div 6 = 3$ squares


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Multiplication and Division with Rectangles

✓ **Self-Check: Questions 12-13** *Try Questions 12–13 to check your progress.*

12. Linda is playing the Floor Tiler game. She spins 7 and 6. Draw a rectangle to find the product of 7 and 6. Show or tell your strategy.

13. Michael is playing the Floor Tiler game. He spins 9 and 4. He decides to draw a rectangle with 3 rows. How many squares will be in each row? Draw the rectangle. Write a related number sentence.
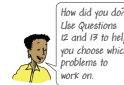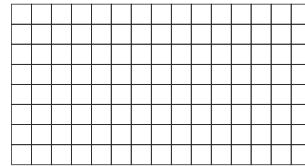
How did you do? Use Questions 12 and 13 to help you choose which problems to work on.

Working On It!	Getting It!	Got It!
I could use some extra help.	I just need some more practice.	I'm ready for a challenge

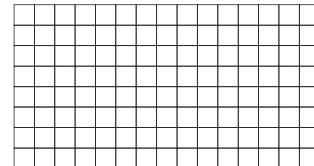**Can I use rectangles to multiply and divide?** | ★ Q# 14–16 | ● Q# 15–18 | ■ Q# 16–19

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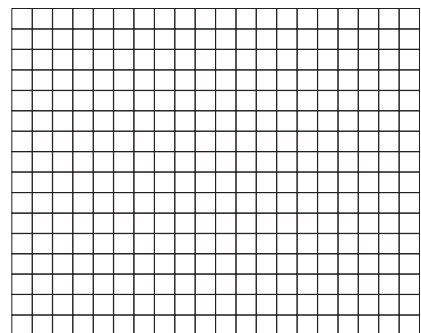
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★14. Shannon also spins 9 and 4. She decides to draw a rectangle with 6 rows. How many squares will be in each row? Draw the rectangle. Write a related number sentence.

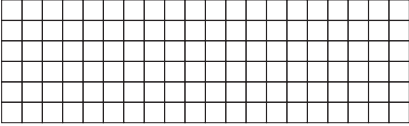**★●15.** Draw rectangles on the grid to solve each of the problems. Write a related number sentence.
  A. 3×8 **B.** 5×9 **C.** $36 \div 4$ **D.** $18 \div 6$
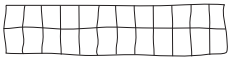
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16. 16 squares in each row, $2 \times 16 = 32$ squares
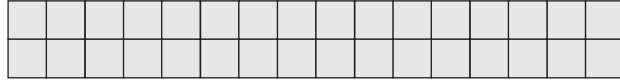
17.

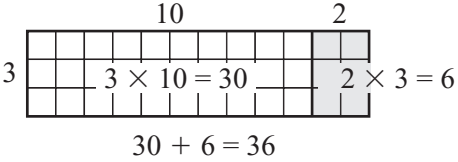| Number of Rows	Tiles in each row	Sketch
1	24	
2	12	
3	8	
4	6	

18. Boxes will vary. Some possible boxes include: 3 layers with 12 candies each, 4 layers with 9 candies each, 6 layers with 6 candies each, etc.
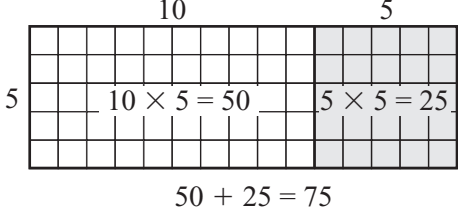
19. 48 oranges need to be boxed; designs of boxes vary. Possible solutions are:

4 layers of oranges, each layer has 12 oranges arranged in 3 rows of 4 oranges (or 6 rows of 2 oranges);
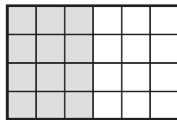
3 layers of oranges, each layer has 16 oranges arranged in 4 rows of 4 oranges (or 8 rows of 2 oranges);

2 layers of oranges, each layer has 24 oranges arranged in 4 rows of 6 oranges (or 8 rows of 3 oranges)

20.

| 10 | 2 |

3 | $3 \times 10 = 30$ | $2 \times 3 = 6$ |

$$30 + 6 = 36$$

21.

| 10 | 5 |

5 | $10 \times 5 = 50$ | $5 \times 5 = 25$ |

$$50 + 25 = 75$$

22. A. $4 \times 2 = 8$
$4 \times 4 = 16$
$16 + 8 = 24$

B. $2 \times 6 = 12$
$2 \times 6 = 12$
$12 + 12 = 24$

C. Responses will vary. Possible response:

$4 \times 3 = 12$
$4 \times 3 = 12$
$12 + 12 = 24$

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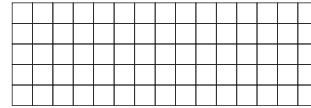
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Break-Apart Products

✓ **Self-Check: Questions 20-21** *Try Questions 20–21 to check your progress.*

20. Solve 3×12 by breaking apart 12 into tens and ones. Write the related number sentences.

21. Solve 5×15 by breaking apart 15 into tens and ones. Write the related number sentences.

| *How did you do? Use Questions 20–21 to help you choose which problems to work on.*	**Working On It!**	**Getting It!**	**Got It!**
	I could use some extra help.	I just need some more practice.	I'm ready for a challenge
Can I use the break-apart strategy to multiply?	★ Q# 22–25	● Q# 23–26	■ Q# 25–27

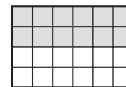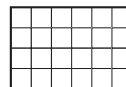**Student Activity Book - Page 75**

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★**22.** Mrs. Dewey's class was trying to solve 6×4 using the break-apart method. Below are several strategies students started.
• Write number sentences for each part.
• Write a number sentence to show how to find the total number of squares in the large rectangle.
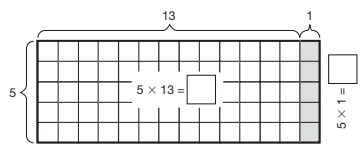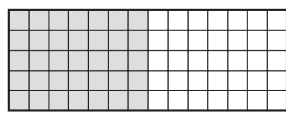
A. Frank drew the rectangle below. Write the related number sentences to solve 6×4:
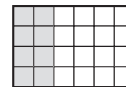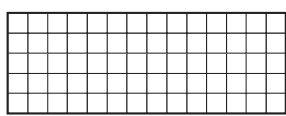
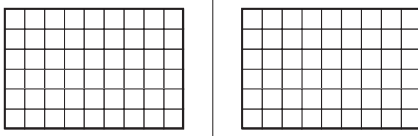**B.** Tanya broke apart the rectangle differently. Write the related number sentences.

C. Find another way to break apart the rectangle. Write the related number sentences.
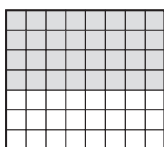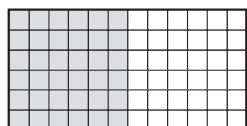
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23. Solutions will vary. Possible responses:
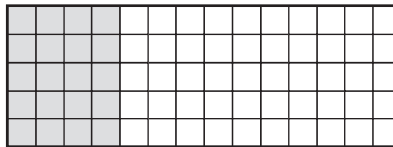

$36 + 18 = 54$ $27 + 27 = 54$
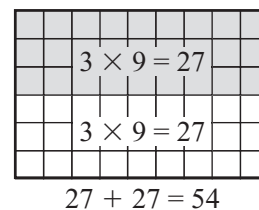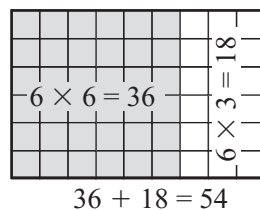
24. $4 \times 8 = 32$
$3 \times 8 = 24$
$32 + 24 = 56$

25. $6 \times 6 = 36$
$6 \times 6 = 36$
$36 + 36 = 72$

26. A. $5 \times 13 = \boxed{65}$

$1 \times 5 = \boxed{5}$

$5 \times 14 = 65 + 5 = 70$

Possible response: Ming's solution works, but I did not know 5×13. The problem would have been easier if he broke the rectangle into multiplication problems that I know like 5×10 and 5×3. Those problems are easy.

B. $5 \times 7 = 35$
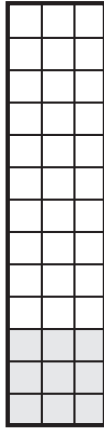$5 \times 7 = 35$
$35 + 35 = 70$

C.

$5 \times 4 = 20$
$5 \times 10 = 50$
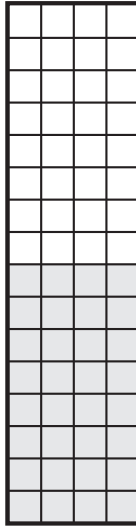$20 + 50 = 70$

27. Possible response:

A.

$3 \times 3 = 9$
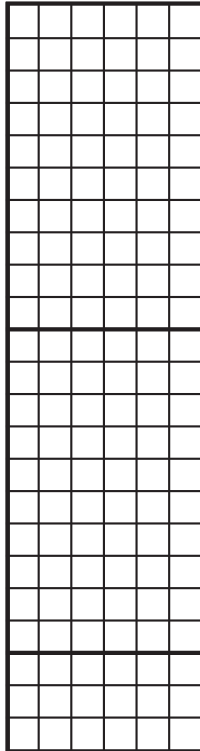$10 \times 3 = 30$
$3 \times 13 = 30 + 9 = 39$

B.

$8 \times 4 = 32$
$8 \times 4 = 32$
$32 + 32 = 64$

C.

$10 \times 6 = 60$
$10 \times 6 = 60$
$3 \times 6 = 18$
$60 + 60 + 18 = 138$

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■27. Solve the following problems using the break-apart method. Use the rectangles below to show your solution. Write the related number sentences.

A. 13×3 **B.** 16×4 **C.** 23×6

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