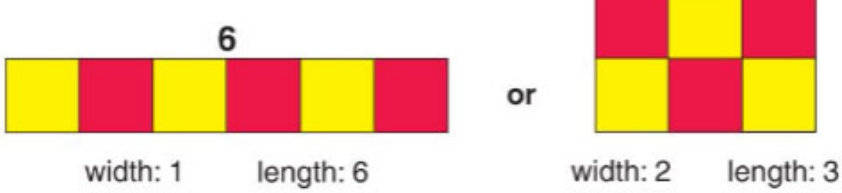
Algebra 8-6

HANDS-ON UNDERSTANDING

Factors

Any whole number can be represented by one or more rectangles.



width: 1 length: 6 width: 2 length: 3

Materials: tiles, paper, pencil

Use tiles to find as many different rectangles as you can for 24. Record each width and length.

	Width	Length
1.	1	24
2.	2	?

1. How many different rectangles did you find?

The widths and lengths stand for the factors of 24.

2. What are all the factors of 24?

Now find as many different rectangles as you can for 18. Record each width and length.

3. How many different rectangles did you find?

4. What are all the factors of 18?

5. Did 18 and 24 have any rectangles and factors that were the same? Which ones?

Common factors are numbers that are factors of two or more products.

6. What are all the common factors of 24 and 18?

The greatest common factor (GCF) of two or more products is the greatest number that is a factor of those products.

7. What is the greatest common factor (GCF) of 24 and 18?

You can also use multiplication sentences to find all the factors of a number.

$1 \times 24 = 24$
$2 \times 12 = 24$
$3 \times 8 = 24$
$4 \times 6 = 24$

Factors of 24: 1, 2, 3, 4, 6, 8, 12, and 24

8. How would you use multiplication sentences to find all the common factors of two or more numbers?

List all the common factors of each set of numbers. Then circle the GCF.

9. 8 and 12 **10.** 6 and 15 **11.** 9 and 21 **12.** 10 and 30

13. 12 and 16 **14.** 18 and 30 **15.** 25 and 35 **16.** 36 and 42

17. 8, 20, and 40 **18.** 10, 25, and 45 **19.** 18, 48, and 54

Communicate

20. A prime number is greater than 1 and has exactly two factors, itself and 1. Composite numbers have more than two factors. Of the common factors you identified in exercises 17 through 19 above, which are prime numbers and which are composite numbers?

21. Look at the set of numbers at the right. Can the GCF be greater than 12? Explain why or why not. Then find the GCF.

12	30	42
18		48
24	36	