LESSON MAKER PRO

Factor the Sum

Find the greatest common factor, then use the distributive property.

GRADE 6 · 6.NS.B.7

6.NS.B.7 "Use the distributive property to express the sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers with no common factor."

NAME _____ DATE _____

THE BIG IDEA

To write a sum as a product, find the greatest common factor of both numbers. Divide each number by that factor, then put the two quotients inside parentheses. The numbers inside the parentheses should have no common factor greater than 1.

WORKED EXAMPLE

Write 18 + 30 as a product of a number and a sum.

1. The greatest common factor of 18 and 30 is 6.
2. 18 ÷ 6 = 3 and 30 ÷ 6 = 5.
3. Use the distributive property: 18 + 30 = 6(3 + 5).

Answer: 6(3 + 5)

PRACTICE 6 problems

1 Write 24 + 56 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.

ANSWER _____

2 Write 28 + 42 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.

ANSWER _____

3 Write 45 + 63 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.

ANSWER _____

4 Write 32 + 80 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.

ANSWER _____

5 Write 77 + 121 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.

ANSWER _____

6 Write 88 + 120 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.

ANSWER _____

APPLY IT Show your work

1 A game club has 48 blue tokens and 64 red tokens. The club wants to use every token to make the greatest possible number of identical prize packs. How many packs can it make, and how many tokens of each color go in a pack? Write 48 + 64 as a product to show your answer.

WORK SPACE

ANSWER _____

2 For a school movie night, volunteers have 42 fruit snacks and 105 popcorn bags. They want to use everything to make the greatest possible number of identical snack bundles. How many bundles can they make, and what goes in each bundle? Write 42 + 105 as a product to show your answer.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student writes 68 + 102 = 2(34 + 51). Explain why this product does not meet the rule that the numbers in the sum have no common factor greater than 1. Then rewrite 68 + 102 so it does meet the rule.

WORK SPACE AND ANSWER

ANSWER KEY

Factor the Sum

GRADE 6 · 6.NS.B.7

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 24 + 56 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.	**8(3 + 7)**
2	Write 28 + 42 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.	**14(2 + 3)**
3	Write 45 + 63 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.	**9(5 + 7)**
4	Write 32 + 80 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.	**16(2 + 5)**
5	Write 77 + 121 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.	**11(7 + 11)**
6	Write 88 + 120 as a product of a number and a sum. The numbers in the sum must have no common factor greater than 1.	**8(11 + 15)**

PART 2 · APPLY IT

1. **16 packs; 3 blue tokens and 4 red tokens per pack; 48 + 64 = 16(3 + 4)** The greatest common factor of 48 and 64 is 16. Divide each token count by 16 to find the number of each color per pack.
2. **21 bundles; 2 fruit snacks and 5 popcorn bags per bundle; 42 + 105 = 21(2 + 5)** The greatest common factor of 42 and 105 is 21. Dividing both counts by 21 gives 2 fruit snacks and 5 popcorn bags per bundle.

CHALLENGE

34 and 51 share a factor of 17, so 2 is not the greatest common factor of 68 and 102. The greatest common factor is 34, giving 68 + 102 = 34(2 + 3).

Accept reversed terms inside parentheses if the product is otherwise correct. For the challenge, accept any explanation that identifies a common factor greater than 1 in 34 + 51 and gives 34(2 + 3).