LESSON MAKER PRO

Factor Pair Search

Find every way two whole numbers can make a product.

GRADE 4 · 4.NOS.C.8.a

4.NOS.C.8.a "Identify factor pairs for a whole number in the range of 1–100."

NAME _____ DATE _____

FIND EVERY PAIR

A factor pair is two whole numbers that multiply to make a number. Test possible smaller factors in order, starting at 1. Once a factor reaches its partner, any later pairs repeat in reverse.

WORKED EXAMPLE

Find all factor pairs of 25.

1. Try 1: 1 × 25 = 25.
2. Try 2, 3, and 4: none has a whole-number partner that makes 25.
3. Try 5: 5 × 5 = 25. The factors have met, so stop.

Answer: (1, 25), (5, 5)

PRACTICE 6 problems

1 List all factor pairs of 18.

ANSWER _____

2 List all factor pairs of 28.

ANSWER _____

3 List all factor pairs of 36.

ANSWER _____

4 List all factor pairs of 47.

ANSWER _____

5 List all factor pairs of 56.

ANSWER _____

6 List all factor pairs of 1.

ANSWER _____

APPLY IT Show your work

1 You have 30 trading cards to arrange in equal rows for a display. List every possible (rows, cards per row) pair. Count a pair only once if switching the numbers gives the same arrangement turned sideways.

WORK SPACE

ANSWER _____

2 At a game night, 40 tokens are put into bags. Each bag must hold the same number of tokens, with none left over. List every possible (bags, tokens per bag) pair. Count each pair only once, even if you switch the numbers.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student lists the factor pairs of 72 as (1, 72), (2, 36), (3, 24), (4, 18), and (6, 12). Find the missing pair. Explain how checking possible smaller factors from 1 through 8 shows the list is complete.

WORK SPACE AND ANSWER

ANSWER KEY

Factor Pair Search

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	List all factor pairs of 18.	**(1, 18), (2, 9), (3, 6)**
2	List all factor pairs of 28.	**(1, 28), (2, 14), (4, 7)**
3	List all factor pairs of 36.	**(1, 36), (2, 18), (3, 12), (4, 9), (6, 6)**
4	List all factor pairs of 47.	**(1, 47)**
5	List all factor pairs of 56.	**(1, 56), (2, 28), (4, 14), (7, 8)**
6	List all factor pairs of 1.	**(1, 1)**

PART 2 · APPLY IT

1. **(1, 30), (2, 15), (3, 10), (5, 6)** Find the factor pairs of 30. Each pair gives a number of rows and an equal number of cards in each row.
2. **(1, 40), (2, 20), (4, 10), (5, 8)** Find the factor pairs of 40. In each pair, the first number can be the number of bags and the second can be the tokens in each bag.

CHALLENGE

The missing pair is (8, 9). Of the numbers from 1 through 8, only 5 and 7 do not divide 72. All the others are in the list or make the missing pair, and any larger factor would repeat a pair in reverse.

Accept factor pairs in any order and with the numbers within a pair reversed. Each distinct pair should appear only once.