

Grade 3 - Properties of Multiplication - Test

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Name: _____ Class: _____ Date: ____/____/____

This **properties multiplication test** for 3rd Grade covers properties of multiplication (Common Core 3.OA.B.5), with a free PDF to print.

This test has 9 questions worth 20 points. It covers the commutative, associative, and distributive properties of multiplication (3.OA.B.5). Work carefully, show your number sentences, and check every product.

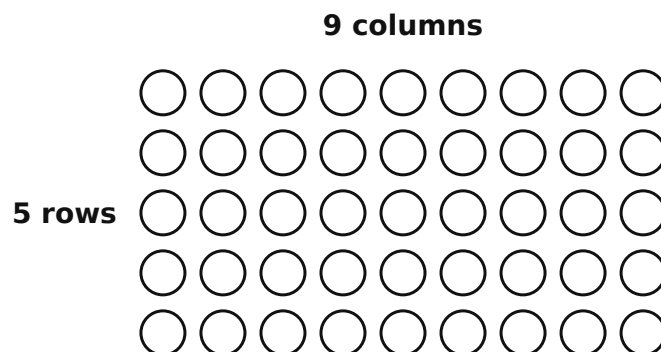
Time and points

About this test

- Grade: Grade 3
- Chapter: Properties of Multiplication
- Standards: 3.OA.B.5
- Time: 45 minutes
- Total: 20 points

Properties multiplication test: questions

Question 1 - Read an array [2 pts]



An array of dots.

- Write a multiplication sentence for the array. (1 point)
- Write a different multiplication sentence for the same dots, and give the product. (1

point)

Question 2 - Missing factors [2 pts]

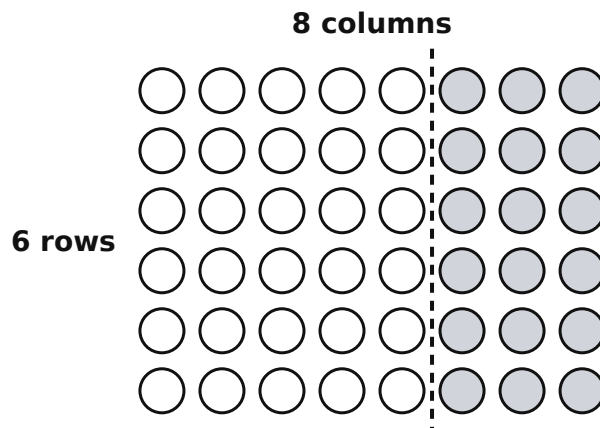
- a. Find n : $8 \times 3 = n \times 8$. (1 point)
- b. Aisha knows $6 \times 9 = 54$. Find 9×6 . (1 point)

Question 3 - Regroup the factors [2 pts]

Find both products.

- a. $(2 \times 4) \times 5$ (1 point)
- b. $2 \times (4 \times 5)$ (1 point)

Question 4 - Split the array [2 pts]



The left part has 5 columns. The right part has 3 columns.

- a. Write the array as the sum of two products. (1 point)
- b. Find the total number of dots. (1 point)

Question 5 - Complete the sentence [2 pts]

Maya writes $7 \times 9 = 7 \times 5 + 7 \times n$.

- a. Find n . (1 point)
- b. Find 7×9 . (1 point)

Question 6 - Friendly products [2 pts]

Find each product.

- a. $5 \times 2 \times 8$ (1 point)
- b. $4 \times 5 \times 3$ (1 point)

Question 7 - Card binders [3 pts]



3 binders. Each dot is a page.

Jamal has 3 binders. Each binder has 4 pages. Each page holds 6 cards.

- a. How many cards are in all the binders? (2 points)
- b. Write the product with the factors grouped a different way. (1 point)

Question 8 - Library shelves [3 pts]

A library shelf has 6 red books and 4 blue books. The library has 7 shelves like it.

- a. Find the number of books in all, using two products. (2 points)
- b. Write the total number of books as one product. (1 point)

Question 9 - Find the mistake [2 pts]

Ben writes $6 \times 7 = 6 \times 5 + 7 \times 2$.

- a. Explain his mistake. (1 point)
- b. Write a correct sentence and find the product. (1 point)

Key facts behind this properties multiplication test

Key facts

- Commutative: $3 \times 6 = 6 \times 3$. The order of two factors does not change the product.
- Associative: $(2 \times 3) \times 4 = 2 \times (3 \times 4)$. Regrouping three factors does not change the product.
- Distributive: $6 \times 7 = 6 \times 5 + 6 \times 2$. Split a factor, multiply the parts, then add.
- An array turned on its side shows the commutative property.
- Known facts help you find unknown facts, such as 5s and 2s for 7s and 8s.

How to use this properties multiplication test

Time yourself: the test is designed for an average student in 45 minutes. Answer the questions you are sure of first, then come back to the longer ones and check your units.