MATHEMATICS · GRADES 4-6

Three-digit multiplication

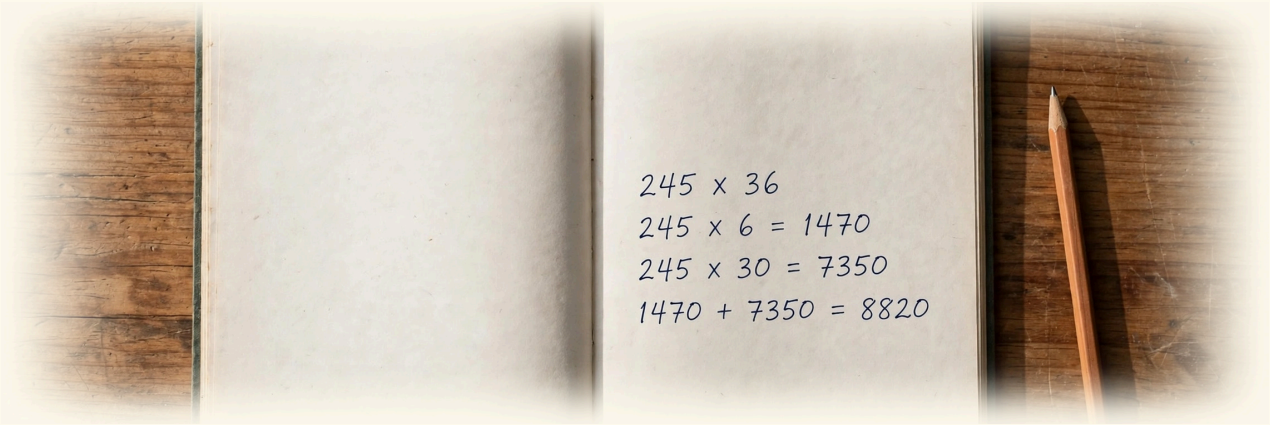
Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you multiply a big number by another number, like working out the total cost of 245 tickets or the seats in a hall with many rows, using the same method with one more digit. It works the same way as two digit multiplication, with one extra row for the hundreds digit. Each row handles one digit of the second number, and adding the rows gives the total. That is how you work out a big total, like a hall full of seats or a large order, without a calculator.



Rule

Three-digit multiplication: multiply by each digit of the second number in turn, one row per digit, then add the rows.

Each new row starts one place further left, with a zero in the ones column.

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Worked examples

EXAMPLE 1

Q Work out 234 × 6.

SOLUTION

This is a three-digit multiplication, so the one rule to remember is: split the big number by place value and multiply each part, then add. That beats trying to hold the whole thing in your head at once.

Split 234 into 200 + 30 + 4, then multiply each part by 6: 200 × 6 = 1200, 30 × 6 = 180 and 4 × 6 = 24.

Add the partial products: 1200 + 180 + 24 = 1404.

EXAMPLE 2

Q Work out 312 × 24.

SOLUTION

This is the same question type with a two-digit multiplier, so work one row per digit of 24 and add the rows, shifting the tens row one place left.

First row, ones: 312 × 4 = 1248. Second row, tens: 312 × 20 = 6240.

Add the rows: 1248 + 6240 = 7488.

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Practice questions

1 A school buys 4 packs of pencils with 123 pencils in each pack. How many pencils is that in all?

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2 A farmer plants 3 rows with 245 plants in each row. How many plants is that in all?

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3 A theatre has 5 sections with 318 seats in each section. How many seats is that in all?

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4 In 256 × 7, what are the three partial products?

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5 A box holds 12 packs with 132 crayons in each pack. How many crayons is that in all?

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6 A hall has 145 rows of seats with 12 seats in each row. How many seats are there in total?

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7 Kim says 203 × 6 = 1208. Is she right? Give the correct product.

- **A** Yes, 203 × 6 = 1208
- **B** No, 203 × 6 = 1218
- **C** No, 203 × 6 = 1212
- **D** Yes, 203 × 6 = 1218

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8 A shop sells 9 bikes at $406 each. How much money does it take in?

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9 Which is greater: 250 × 4 or 180 × 6?

A 250 × 4

B 180 × 6

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10 A factory makes 375 bolts in one hour. How many bolts does it make in 8 hours?

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ANSWER KEY

1. 492

2. 735

3. 1590

4. 1400, 350, 42

5. 1584

6. 1740

7. No, 203 × 6 = 1218

8. 3654

9. 180 × 6

10. 3000

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