MATHEMATICS · GRADES 4-6

Two-digit by two-digit multiplication

Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you multiply two two digit numbers, like working out the cost of 24 tickets at 18 dollars each or the tiles in a 32 by 45 grid, by breaking it into two simpler rows. Each row handles one digit of the second number, so the big multiplication becomes two easy ones. Adding the two rows together gives the full total, without having to hold the whole thing in your head at once. That is how you work out a real total, like a ticket order or a tiled floor, with pencil and paper.



Rule

Two-digit by two-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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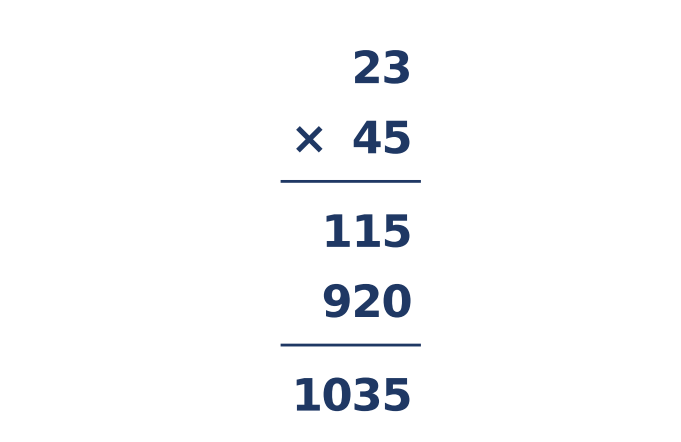
Worked examples

EXAMPLE 1

Q $23 \times 45 = ?$



SOLUTION

Ones row: 5 × 23 = 115, working right to left with carries.

Tens row: put 0 in the ones column first, then 40 × 23 = 920

Add the rows: 115 + 920 = 1035

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EXAMPLE 2

Q 36 × 24 = ?

$$\begin{array}{r} 36 \\ \times\ 24 \\ \hline 144 \\ 720 \\ \hline 864 \end{array}$$

SOLUTION

Ones row: 4 × 36 = 144, working right to left with carries.

Tens row: put 0 in the ones column first, then 20 × 36 = 720

Add the rows: 144 + 720 = 864

Practice questions

1. A hall has 34 rows with 26 seats in each row. How many seats are there in the hall?

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2 A farmer plants 28 rows with 35 plants in each row. How many plants is that in all?

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3 A school orders 42 boxes with 18 notebooks in each box. How many notebooks is that?

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4 A car travels 54 km each hour for 13 hours. How far does it travel in all?

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5 A baker makes 27 trays with 31 buns on each tray. How many buns is that?

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6 A library shelf holds 64 books. There are 15 shelves just like it. How many books is that?

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7 Each of 48 students brings 25 stickers for a swap. How many stickers is that in all?

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8 A garden has 19 rows with 37 plants in each row. How many plants is that?

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9 A shop sells 56 pens a day for 22 days. How many pens is that?

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10 A team scores 43 points in each of 12 games. How many points is that in all?

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ANSWER KEY

1. 884

2. 980

3. 756

4. 702

5. 837

6. 960

7. 1200

8. 703

9. 1232

10. 516

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