

SIGMABUDGIE · GRADE 4

Multiplication

A gentle walkthrough & a 24-question exam

Part 1 walks through multiplying bigger numbers from the very beginning, with drawings. Part 2 is a 24-question exam that starts easy and slowly builds to harder, ISEE-style reasoning questions. Work through the lesson together first, then let your child try the exam. The answer key at the back explains every question.

1 • The facts, fast

Everything in this walkthrough leans on the times tables to **12 × 12**. Row 7, column 8: **56**.

Tricks that help: × 9 is × 10 minus one group ($9 \times 7 = 70 - 7 = 63$). × 4 is double, then double again. × 6 is × 5 plus one more group.

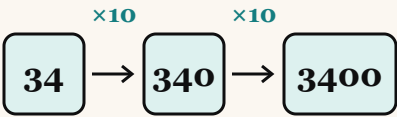
×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

$7 \times 8 = 56$

2 • Multiplying by 10 and 100

× 10 moves every digit one place bigger, so a 0 fills the ones: $34 \times 10 = \mathbf{340}$. × 100 adds two zeros: $34 \times 100 = \mathbf{3,400}$.

Multiples of ten: 3×40 is 3×4 tens = 12 tens = **120**. $30 \times 40 = 3 \times 4$ with two zeros = **1,200**.



× 10, then × 10 again

3 · Break apart: 2-digit × 1-digit

28 × 9: split 28 into 20 and 8. $20 \times 9 = 180$, $8 \times 9 = 72$. Add: $180 + 72 = \mathbf{252}$.

The area model draws this: one big rectangle cut into a tens part and a ones part.

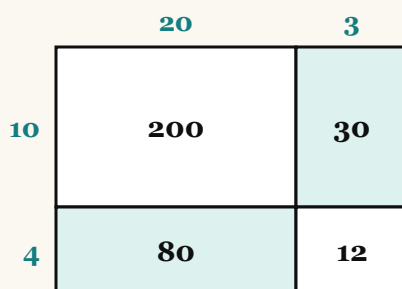


$$(20 \times 9) + (8 \times 9) = 180 + 72 = 252$$

4 · The area model: 2-digit × 2-digit

23 × 14: split both numbers. $23 = 20 + 3$ and $14 = 10 + 4$. That makes four small rectangles.

$20 \times 10 = 200$, $3 \times 10 = 30$, $20 \times 4 = 80$, $3 \times 4 = 12$. Add all four: $200 + 30 + 80 + 12 = \mathbf{322}$.



$$200 + 30 + 80 + 12 = 322$$

5 · The column method

Same problem, written in columns. First multiply by the ones: $23 \times 4 = \mathbf{92}$. Then by the tens: $23 \times 10 = \mathbf{230}$. Add: $92 + 230 = \mathbf{322}$.

The second row always ends in 0, because it is a multiple of ten.

$$\begin{array}{r} 23 \\ \times 14 \\ \hline 92 \\ 230 \\ \hline 322 \end{array}$$

$$92 + 230 = 322$$

6 • Carrying in multiplication

47×6 : $7 \times 6 = 42$. Write 2, carry 4. Then $4 \times 6 = 24$, plus the carried 4 = 28. Answer **282**.

Check with the break-apart: $40 \times 6 = 240$, $7 \times 6 = 42$, $240 + 42 = 282$. Same.

$$\begin{array}{r} 4 \\ 47 \\ \times 6 \\ \hline 282 \end{array}$$

$7 \times 6 = 42$: write 2, carry 4

7 • Estimate first

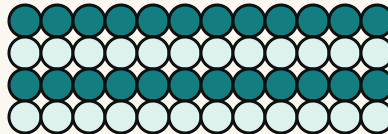
Before you multiply, round and guess: 28×9 is about $30 \times 9 = 270$. The real answer, 252, is close. If you got 2,520, something went wrong.

Tests ask "about how many" or "closest to." Round both numbers, then multiply.

8 • Rows and columns

A hall has 23 rows with 14 chairs in each row. Rows $\times$ chairs per row = $23 \times 14 = 322$ chairs.

An array is just a picture of rows $\times$ columns. Any "rows of" or "boxes of" problem is multiplication.



4 rows of 12 = 48

9 • Which is bigger: compare products

6×8 or 7×7 ? 48 vs 49: 7×7 by one. 12×5 or 10×6 ? Both 60: **equal**.

Work out both sides before you compare. The bigger factors do not always win.

10 • Multiplying three numbers

$4 \times 7 \times 5$: pair up the easy ones first. $4 \times 5 = 20$, then $20 \times 7 = 140$. Order does not matter in multiplication.

Look for pairs that make 10, 100, or a multiple of ten.

11 • Doubling and halving

16 × 25: halve one, double the other. $8 \times 50 = 400$, or $4 \times 100 = \mathbf{400}$. The answer does not change.

This trick is gold for $\times 25$ and $\times 5$: $24 \times 5 = 12 \times 10 = 120$.

12 • Two-step multiplication stories

"A store has 28 boxes with 9 crayons in each. It sells 50 crayons. How many are left?" First $28 \times 9 = 252$, then $252 - 50 = \mathbf{202}$.

Write the first answer down before the second step. You are ready for the test! 🎉

Read each drawing first, then choose the best answer. Take your time, there is no clock here. Questions start gentle and get harder toward the end. Circle your answer.

1 $7 \times 8 = ?$

A 54

B 56

C 48

D 64

2 $34 \times 10 = ?$

A 34

B 3,400

C 44

D 340

3 $9 \times 6 = ?$

A 54

B 56

C 45

D 63

4 $3 \times 40 = ?$

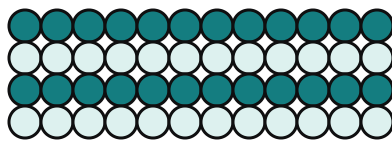
A 43

B 1,200

C 120

D 70

5 How many dots are in the array?



A 16

B 44

C 52

D 48

6 $12 \times 12 = ?$

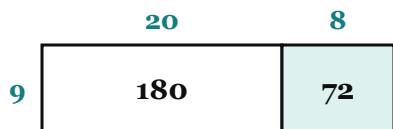
A 124

B 144

C 132

D 148

- 7 Use the area model. $28 \times 9 = ?$



- A 242 B 182
C 252 D 272
-

- 8 $34 \times 100 = ?$

- A 3,400 B 340
C 34,000 D 134
-

- 9 $47 \times 6 = ?$

$$\begin{array}{r} 47 \\ \times 6 \\ \hline \end{array}$$

- A 242 B 282
C 262 D 288
-

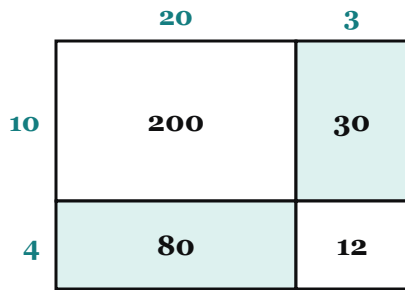
- 10 $30 \times 40 = ?$

- A 120 B 70
C 12,000 D 1,200
-

- 11 About how much is 28×9 ?

- A about 270 B about 200
C about 2,700 D about 180
-

- 12 Use the area model. $23 \times 14 = ?$



- A 312 B 292
C 322 D 332
-

- 13 A store has 28 boxes with 9 crayons in each. How many crayons in all?

- A 37 B 242
C 182 D 252
-

- 14 Which is greater: 6×8 or 7×7 ?

- A 6×8 , by 1 B 7×7 , by 1
C They are equal D 6×8 , by 2
-

- 15 $4 \times 7 \times 5 = ?$

- A 120 B 160
C 140 D 28
-

- 16 A hall has 22 rows of chairs with 12 chairs in each row. How many chairs in all?

- A 264 B 244
C 254 D 34
-

- 17 $16 \times 25 = ?$

- A 400 B 350
C 425 D 300
-

18 $56 \times 7 = ?$

A 352

B 382

C 392

D 402

19 Which has the same answer as 12×5 ?

A 11×5

B 12×6

C $5 \times 5 \times 2$

D 10×6

20 A store has 23 crates with 9 apples in each. It sells 60 apples. How many apples are left?

A 207

B 147

C 267

D 137

21 $35 \times 24 = ?$

A 740

B 820

C 840

D 870

22 A number times 8 is 96. What is that number times 3?

A 36

B 32

C 24

D 288

23 Tickets cost \$14 each. A class of 23 students buys one ticket each. About how much do they spend?

A about \$200

B about \$320

C about \$400

D about \$250

24 Which statement is true?

A $9 \times 12 > 6 \times 18$

B $9 \times 12 < 6 \times 18$

C $9 \times 12 = 8 \times 14$

D $9 \times 12 = 6 \times 18$

ANSWER KEY & EXPLANATIONS

- 1 B** $7 \times 8 = 56$.
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- 2 D** Multiplying by 10 adds a zero: 340.
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- 3 A** $10 \times 6 = 60$, minus one 6 is 54.
-
- 4 C** 3×4 tens = 12 tens = 120.
-
- 5 D** 4 rows of 12: $4 \times 12 = 48$.
-
- 6 B** $12 \times 12 = 144$.
-
- 7 C** $20 \times 9 = 180$ and $8 \times 9 = 72$. $180 + 72 = 252$.
-
- 8 A** Multiplying by 100 adds two zeros.
-
- 9 B** $40 \times 6 = 240$, $7 \times 6 = 42$. $240 + 42 = 282$.
-
- 10 D** $3 \times 4 = 12$, then two zeros: 1,200.
-
- 11 A** Round 28 to 30: $30 \times 9 = 270$.
-
- 12 C** $200 + 30 + 80 + 12 = 322$.
-
- 13 D** $28 \times 9 = 252$.
-
- 14 B** $6 \times 8 = 48$ and $7 \times 7 = 49$.
-
- 15 C** $4 \times 5 = 20$, then $20 \times 7 = 140$.
-
- 16 A** 22×12 : $22 \times 10 = 220$ and $22 \times 2 = 44$. $220 + 44 = 264$.
-
- 17 A** Halve and double: $8 \times 50 = 400$.
-
- 18 C** $50 \times 7 = 350$, $6 \times 7 = 42$. $350 + 42 = 392$.
-
- 19 D** $12 \times 5 = 60$ and $10 \times 6 = 60$.
-
- 20 B** $23 \times 9 = 207$. Then $207 - 60 = 147$.
-
- 21 C** $35 \times 20 = 700$ and $35 \times 4 = 140$. $700 + 140 = 840$.
-
- 22 A** $96 \div 8 = 12$. Then $12 \times 3 = 36$.
-
- 23 B** Round: $20 \times 14 = 280$ or $23 \times 15 = 345$. The exact answer, 322, is closest to 320.
-
- 24 D** $9 \times 12 = 108$ and $6 \times 18 = 108$. ($8 \times 14 = 112$.)
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