

Understanding Multiplication: practice solutions, Grade 3 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Plates of cookies



- a. There are 5 plates with 2 cookies each: $2 + 2 + 2 + 2 + 2$.
- b. 5 groups of 2: 5×2 .
- c. Count by twos: 2, 4, 6, 8, 10. So $5 \times 2 = 10$. There are 10 cookies.

2 From addition to multiplication



- a. 6 is added 4 times: $4 \times 6 = 24$.
- b. 9 is added 3 times: $3 \times 9 = 27$.
- c. 2 is added 7 times: $7 \times 2 = 14$.

3 Stickers in an array



- a. There are 3 rows and 4 columns.
- b. 3 rows of 4: $3 \times 4 = 12$. 4 columns of 3: $4 \times 3 = 12$. There are 12 stickers.

4 Skip counting by 5



Five jumps of 5: 5, 10, 15, 20, 25. So $5 \times 5 = 25$.

5 Zeros and ones



- a. $7 \times 1 = 7$ (7 groups of 1).
- b. $1 \times 9 = 9$ (1 group of 9).
- c. $8 \times 0 = 0$ (8 groups of nothing).
- d. $0 \times 6 = 0$ (no groups at all).

6 Name the parts



The factors are 4 and 7, because they are multiplied. The product is 28, because it is the answer.

7 Jumps on a number line



- a. There are 3 jumps, and each jump is 4 long.
- b. They land on 4, 8, and then 12. They end at 12.
- c. $3 \times 4 = 12$.

8 True or false?



- a. True. Factors can switch places, and both products are 18.
- b. True. 5 is added 3 times, and both sides equal 15.
- c. False. Any number times 0 is 0, so $3 \times 0 = 0$.
- d. False. $4 \times 1 = 4$, but $4 + 1 = 5$.

9 Bike shop



6 groups of 2 wheels: $6 \times 2 = 12$. Also, by the commutative property, $2 \times 6 = 12$. There are 12 wheels.

10 Theater seats



The seats form an array with 7 rows and 3 columns. $7 \times 3 = 21$. Check by skip counting: 3, 6, 9, 12, 15, 18, 21. The theater has 21 seats.

11 Bundles of pencils



Count by tens, eight times: 10, 20, 30, 40, 50, 60, 70, 80. So $8 \times 10 = 80$. There are 80 pencils.

12 Switch the factors



- a. $4 \times 7 = 28$.
- b. $9 \times 6 = 6 \times 9$. The box is 9.
- c. $5 \times 8 = 8 \times 5$. The box is 8.

13 Arrays for 12



Three possible arrays: 1 row of 12 ($1 \times 12 = 12$), 2 rows of 6 ($2 \times 6 = 12$), and 3 rows of 4 ($3 \times 4 = 12$). Flipping them gives 4 rows of 3 and 6 rows of 2, which are also correct.

14 Find the mistake



Leo added the factors ($5 + 4 = 9$) instead of finding 5 groups of 4. The correct work is $4 + 4 + 4 + 4 + 4 = 20$, so $5 \times 4 = 20$.

15 The hopping frog



- a. Skip count by 6: 6, 12, 18, 24, 30, 36, 42. The frog lands on 42, and $7 \times 6 = 42$.
- b. Yes. 30 is the 5th landing spot, since $5 \times 6 = 30$.
- c. No. The frog lands on 36 and then 42, so it skips over 40.

16 Marching band



First find the total: $8 \times 5 = 40$. Then subtract the players who left: $40 - 4 = 36$. There are 36 players still on the field.

17 Write your own story



Sample story: "A zoo has 4 pens. Each pen has 9 rabbits. How many rabbits are there?"

Repeated addition: $9 + 9 + 9 + 9 = 36$. So $4 \times 9 = 36$, and there are 36 rabbits. (Any story with 4 equal groups of 9 is correct.)

18 Which is greater?



- a. $6 \times 4 = 24$ and $4 \times 7 = 28$. Since $24 < 28$, 6 groups of 4 is less.
- b. $3 \times 8 = 24$ and $6 \times 4 = 24$. They are equal.

19 Two arrays in one



- a. $5 \times 3 = 15$ tiles and $5 \times 4 = 20$ tiles.
- b. The big array has 5 rows and $3 + 4 = 7$ columns.
- c. $5 \times 7 = 35$, and $15 + 20 = 35$. Both ways give 35 tiles.

20 Zero and one puzzles



- a. 1, because $9 \times 1 = 9$.
- b. $5 \times 0 = 0$ and $1 \times 7 = 7$, so $0 + 7 = 7$. Ben has 7 stickers.
- c. 0, because $12 \times 0 = 0$.

21 Pick the right model



Repeated addition: $4 + 4 + 4 + 4 + 4 + 4 = 24$. Skip counting by 4: 4, 8, 12, 16, 20, 24.
Multiplication: $6 \times 4 = 24$. All three give 24 cartons.



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