

Multiplication Facts and Properties: practice solutions, Grade 3 – download the PDF

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

1 Skip counting by 5



Counting by 5 gives 5, 10, **15**, 20, **25**, 30, 35, **40**, 45, 50.

35 is the 7th number in the list, so the fact is $7 \times 5 = 35$.

2 Facts of 2, 5 and 10



a) $2 \times 7 = 14$ (double 7). b) $2 \times 9 = 18$. c) $10 \times 6 = 60$. d) $10 \times 10 = 100$. e) $5 \times 8 = 40$. f) $5 \times 7 = 35$.

3 Reading an array



There are 3 rows with 6 stickers in each row, so $3 \times 6 = 18$.

Turning the picture, there are 6 columns of 3, so $6 \times 3 = 18$.

There are **18 stickers**.

4 Facts of 3 and 4



a) $3 \times 4 = 12$. b) $3 \times 7 = 14 + 7 = 21$. c) $4 \times 6 = 24$ (6, 12, 24). d) $4 \times 8 = 32$ (8, 16, 32). e) $3 \times 9 = 18 + 9 = 27$. f) $4 \times 9 = 36$ (9, 18, 36).

5 Bags of oranges



There are 4 equal groups of 5, so $4 \times 5 = 20$.

The grocer uses **20 oranges**.

6 True or false?



a) True. b) False: $2 \times 8 = 16$. c) True. d) False: $3 \times 5 = 15$. e) False: $4 \times 4 = 16$.

7 The nines trick



a) $30 - 3 = 27$. b) $50 - 5 = 45$. c) $70 - 7 = 63$. d) $90 - 9 = 81$.

Check: the digits of each product add up to 9 ($2 + 7$, $4 + 5$, $6 + 3$, $8 + 1$).

8 Harder facts



a) $6 \times 6 = 36$. b) $6 \times 8 = 48$. c) $7 \times 7 = 49$. d) $7 \times 8 = 56$. e) $8 \times 8 = 64$. f) $6 \times 7 = 5 \times 7 + 7 = 35 + 7 = 42$.

9 Find the missing factor



a) $4 \times 7 = 28$, so the missing number is **7**. b) $9 \times 6 = 54$, so **9**. c) $8 \times 5 = 40$, so **5**. d) $3 \times 7 = 21$, so **3**. e) $6 \times 10 = 60$, so **10**.

10 Splitting an array



- a) The right part has $8 - 5 = 3$ columns. $6 \times 8 = 6 \times 5 + 6 \times 3 = 30 + 18 = 48$.
- b) $8 \times 7 = 8 \times 5 + 8 \times 2 = 40 + 16 = 56$.

11 Changing the grouping



- a) $(2 \times 3) \times 4 = 6 \times 4 = 24$ and $2 \times (3 \times 4) = 2 \times 12 = 24$. Both are 24, which is the associative property.
- b) $5 \times 2 = 10$, then $10 \times 7 = 70$. The product is 70.

12 Multiples of 10



- a) $3 \times 2 = 6$, so 6 tens, or 60. b) $5 \times 3 = 15$, so 150. c) $7 \times 4 = 28$, so 280. d) $6 \times 5 = 30$, so 300. e) $9 \times 3 = 27$, so 270. f) $8 \times 6 = 48$, so 480.

13 Ribbons of two sizes



- a) $6 \times 8 = 48$. Maya has 48 inches of ribbon, which is 4 feet because 12 inches make 1 foot.
- b) $5 \times 9 = 45$. Her brother has 45 centimeters of ribbon.

14 Wheels on cars



- a) The bar for 3 cars reaches 12, so 3 cars have 12 wheels.
- b) Each car adds 4 wheels, so $7 \times 4 = 28$ wheels.
- c) $10 \times 4 = 40$, so 10 cars have 40 wheels.

15 Nine groups the clever way



9×7 is one group fewer than 10×7 . So $9 \times 7 = 70 - 7 = 63$.

In the same way, $10 \times 8 = 80$, and taking away one group of 8 gives $9 \times 8 = 80 - 8 = 72$.

16 Cookies for orders



a) $6 \times 4 = 24$ cookies in the first boxes, and $8 \times 3 = 24$ cookies in the others.

b) $24 + 24 = 48$ cookies in all.

c) $48 < 50$, so there are **not enough** cookies. The baker is 2 cookies short.

17 A frog on the number line



a) After 6 hops it is at $6 \times 7 = 42$.

b) $7 \times 8 = 56$, so it reaches 56 after **8 hops**.

c) No. The landing spots are the facts of 7: 49, then 56. The number 50 is not a product of 7, since it falls between $7 \times 7 = 49$ and $7 \times 8 = 56$.

18 Find the mistake



The product 7×8 is 56, not 54. Check by doubling: $7 \times 4 = 28$ and $28 + 28 = 56$.

For 6×30 , Liam forgot the zero. $6 \times 3 = 18$ means 18 *tens*, so $6 \times 30 = 180$.

19 Multiples of 10 and grouping



First way: $(3 \times 2) \times 40 = 6 \times 40 = 240$ because $6 \times 4 = 24$ and 24 tens is 240.

Second way: $3 \times (2 \times 40) = 3 \times 80 = 240$ because $3 \times 8 = 24$.

Both give **240**, as the associative property promises.

20 Mystery product



The products of 6 near that range are 24 (6×4) and 30. The products of 8 near that range are 24 (8×3) and 32. Only 24 is in both lists and between 20 and 30.

I am **24**: $6 \times 4 = 24$ and $8 \times 3 = 24$.

21 Unknown factors



a) $9 \times 8 = 72$, so 9. b) $7 \times 9 = 63$, so 9. c) $6 \times 9 = 54$, so 6. d) $8 \times 7 = 56$, so 7.

22 Equal rows of desks



We look for facts with product 24 where both factors are 8 or less.

$3 \times 8 = 24$: 3 rows of 8 desks. $4 \times 6 = 24$: 4 rows of 6. $6 \times 4 = 24$: 6 rows of 4.

$8 \times 3 = 24$: 8 rows of 3.

The facts 2×12 , 12×2 , 1×24 and 24×1 do not fit the rule, because 12 and 24 are more than 8.



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