Interpreting Products of Whole Numbers

Spot mistakes, reason, and work backward

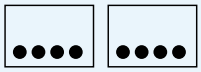
Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Multiplication counts equal groups. In $3 \times 4 = 12$, 3 counts the groups and 4 counts the objects in each group: $4 + 4 + 4 = 12$. Use this groups-first convention on this page.

Worked example

The picture has equal groups. Write a multiplication equation and tell what each factor counts.



1. Count 2 boxes and 4 buttons in each box.
2. Add the groups: $4 + 4 = 8$.
3. The equation $2 \times 4 = 8$ counts all 8 buttons.
Answer: $2 \times 4 = 8$ buttons; 2 groups, 4 in each.

Practice Problems

Show your thinking.

1. Ari says $4 \times 3 = 7$ because he adds the factors. Correct him using equal groups.

2. Draw 3 equal groups with 21 buttons altogether. How many go in each group?

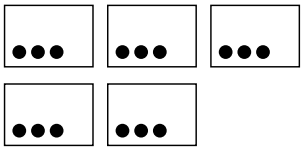
3. Compare 2 bags of 5 buttons with 5 bags of 2. Same total? Same group size?

4. Write $4 + 4 + 4 + 4 + 4$ as multiplication. Find the total.

5. Boxes A and B hold 4 beads each; box C holds 5. Why does 3×4 not count every bead? Find the real total.

Box	Beads
A	4
B	4
C	5

6. Jo draws 5 groups of 3. She labels 3 as the number of groups. Correct both factor labels without changing the total.



7. Each full box holds 6 cards. After one full box is removed, 4 full boxes remain. Write products for the cards before and after removal.

8. Complete the table of equal groups. Which row changes the number of groups rather than the size of each group?

Row	Groups	In each	Total
A	3	4	☐
B	5	4	☐
C	3	5	☐

Answer Key

1. $4 \times 3 = 12$, not 7.
2. 7 in each group; draw 3 groups of 7.
3. Same total, 10 buttons; group sizes 5 and 2 differ.
4. $5 \times 4 = 20$.
5. 13 beads; the groups are not equal.
6. 5 groups, 3 per group; $5 \times 3 = 15$.
7. Before $5 \times 6 = 30$; after $4 \times 6 = 24$ cards.
8. Totals $12, 20, 15$; A to B changes the group count.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. $4 + 3 = 7$ combines only two amounts, not 4 equal groups.

2. 4 groups of 3 give $3 + 3 + 3 + 3 = 12$.

Problem 2

1. Share 21 into 3 groups: $21 \div 3 = 7$.

2. Check the drawing: $3 \times 7 = 21$ buttons.

Problem 3

1. First total: $2 \times 5 = 10$. Second: $5 \times 2 = 10$.

2. The first bag holds 5 and the second holds 2; equal totals do not mean equal groups.

Problem 4

1. There are 5 equal addends; each addend is 4.

2. $5 \times 4 = 20$, so the sum is 20.

Problem 5

1. $3 \times 4 = 12$ would count three boxes of exactly 4 beads.

2. The actual amounts give $4 + 4 + 5 = 13$; box C contributes one extra bead.

Problem 6

1. The repeated sum is $3 + 3 + 3 + 3 + 3 = 15$, with five addends.

2. Therefore the groups-first equation is $5 \times 3 = 15$; 5 counts groups and 3 counts beads per group.

Problem 7

1. Before removal there were $4 + 1 = 5$ equal boxes, so $5 \times 6 = 30$ cards.

2. After removal, $4 \times 6 = 24$ cards remain; $30 - 6 = 24$ checks the change.

Problem 8

1. A: $3 \times 4 = 12$. B: $5 \times 4 = 20$; both have 4 per group, but the group count grows from 3 to 5.

2. C: $3 \times 5 = 15$; compared with A, the group count stays 3 and the size changes from 4 to 5.

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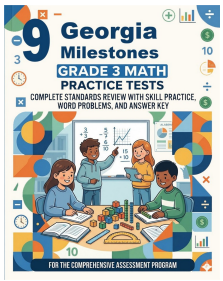

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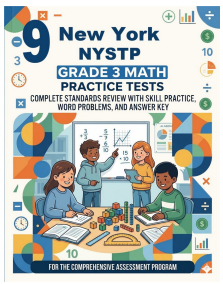

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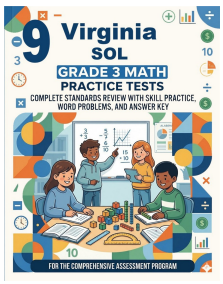

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