The Distributive Property with Common Factors

Distributive property with common factors: Mistakes and missing information

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

QUICK REVIEW

Distribute $a(b+c) = ab + ac$; reverse by factoring a common factor. Since GCF$(18, 30) = 6$, $18 + 30 = 6(3 + 5) = 48$. For subtraction, $28 - 12 = 4(7 - 3) = 16$. A factored expression must reproduce both terms.

Worked example

Factor $24 + 40$ using the GCF, then evaluate.

1. The GCF is 8: $24/8 = 3$ and $40/8 = 5$.
2. Factor and compute: $8(3 + 5) = 8 \times 8 = 64$.
3. Expanding returns $8 \times 3 + 8 \times 5 = 24 + 40$.
Answer: $24 + 40 = 8(3 + 5) = 64$.

Practice Problems

Show your thinking.

1. Correct $20 + 30 = 10(2 + 30)$.

2. A student writes $42 - 18 = 6(7 + 3)$. Repair the sign and evaluate.

3. Find both missing terms in $28 + 49 = 7(\square + \square)$.

4. A student factors out 4 but is asked for the GCF. Refactor $16 + 40$.

5. Which two quotients complete $63 - 21 = 21(\square - \square)$?

6. Explain by expansion whether $10(3 + 5)$ matches $30 + 50$.

7. Correct $24 + 60 = 12(2 + 60)$, then evaluate.

8. Recover the blanks in $48 - 16 = 16(\square - \square)$.

Answer Key

1. $20 + 30 = 10(2 + 3) = 50$.
2. $42 - 18 = 6(7 - 3) = 24$.
3. $28 + 49 = 7(4 + 7) = 77$.
4. $16 + 40 = 8(2 + 5) = 56$.
5. $63 - 21 = 21(3 - 1) = 42$.
6. $30 + 50 = 10(3 + 5) = 80$.
7. $24 + 60 = 12(2 + 5) = 84$.
8. $48 - 16 = 16(3 - 1) = 32$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The GCF is 10: $20/10 = 2$ and $30/10 = 3$.
2. Factor and compute: $10(2 + 3) = 10 \times 5 = 50$.
3. Expanding returns $10 \times 2 + 10 \times 3 = 20 + 30$.

Problem 2

1. The GCF is 6: $42/6 = 7$ and $18/6 = 3$.
2. Factor and compute: $6(7 - 3) = 6 \times 4 = 24$.
3. Expanding returns $6 \times 7 - 6 \times 3 = 42 - 18$.

Problem 3

1. The GCF is 7: $28/7 = 4$ and $49/7 = 7$.
2. Factor and compute: $7(4 + 7) = 7 \times 11 = 77$.
3. Expanding returns $7 \times 4 + 7 \times 7 = 28 + 49$.

Problem 4

1. The GCF is 8: $16/8 = 2$ and $40/8 = 5$.
2. Factor and compute: $8(2 + 5) = 8 \times 7 = 56$.
3. Expanding returns $8 \times 2 + 8 \times 5 = 16 + 40$.

Problem 5

1. The GCF is 21: $63/21 = 3$ and $21/21 = 1$.
2. Factor and compute: $21(3 - 1) = 21 \times 2 = 42$.
3. Expanding returns $21 \times 3 - 21 \times 1 = 63 - 21$.

Problem 6

1. The GCF is 10: $30/10 = 3$ and $50/10 = 5$.
2. Factor and compute: $10(3 + 5) = 10 \times 8 = 80$.
3. Expanding returns $10 \times 3 + 10 \times 5 = 30 + 50$.

Problem 7

1. The GCF is 12: $24/12 = 2$ and $60/12 = 5$.
2. Factor and compute: $12(2 + 5) = 12 \times 7 = 84$.
3. Expanding returns $12 \times 2 + 12 \times 5 = 24 + 60$.

Problem 8

1. The GCF is 16: $48/16 = 3$ and $16/16 = 1$.
2. Factor and compute: $16(3 - 1) = 16 \times 2 = 32$.
3. Expanding returns $16 \times 3 - 16 \times 1 = 48 - 16$.

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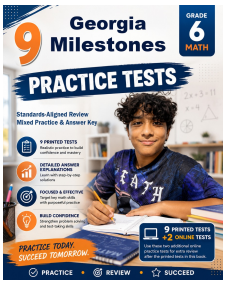

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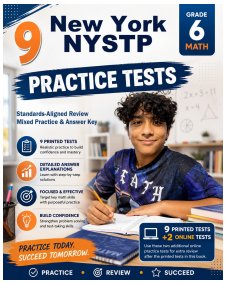

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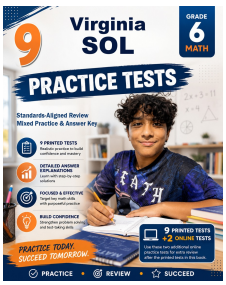

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