The Distributive Property with Common Factors

Name: _____	Date: _____	Score: _____ / 24

Quick Review

The **distributive property** lets you rewrite a sum of two numbers as a **common factor** times a sum. First find the **GCF** of the two numbers. Then divide each number by the GCF, and write the GCF outside parentheses with the two results inside. For example, $18 + 24 = 6(3 + 4)$, because the GCF is 6, $18 \div 6 = 3$, and $24 \div 6 = 4$. You can always check by multiplying back out: $6 \times 3 + 6 \times 4 = 18 + 24$.

◇ **Example:** Rewrite $20 + 30$ using the distributive property.

⇒ We are looking for the greatest common factor of 20 and 30. The factors they share are $1, 2, 5,$ and 10, so the GCF is 10. Now divide each number by 10: $20 \div 10 = 2$ and $30 \div 10 = 3$. Write the GCF outside and the quotients inside the parentheses: $10(2 + 3)$. To check, multiply back: $10 \times 2 + 10 \times 3 = 20 + 30$. It matches!

Answer: $10(2 + 3)$

PRACTICE

Rewrite each sum as the GCF times a sum in parentheses.

1. $8 + 12$ _____

2. $9 + 15$ _____

3. $12 + 18$ _____

4. $14 + 21$ _____

5. $15 + 25$ _____

6. $16 + 40$ _____

7. $18 + 24$ _____

8. $20 + 30$ _____

9. $21 + 28$ _____

10. $22 + 33$ _____

11. $24 + 36$ _____

12. $25 + 35$ _____

13. $27 + 45$ _____

14. $30 + 42$ _____

15. $32 + 24$ _____

16. $36 + 60$ _____

17. $40 + 16$ _____

18. $18 + 45$ _____

19. $14 + 49$ _____

20. $28 + 42$ _____

Word Problems

21. A class has 18 markers and 24 crayons. Write $18 + 24$ as the GCF times a sum to show equal-size supply groups. _____

22. A gardener plants 16 tulips and 40 daisies. Write $16 + 40$ using the distributive property. _____

23. A baker has 27 muffins and 45 cookies. Write $27 + 45$ as the GCF times a sum. _____

24. A coach has 30 tennis balls and 42 cones. Write $30 + 42$ using the distributive property. _____

Answer Keys

1. $4(2+3)$
2. $3(3+5)$
3. $6(2+3)$
4. $7(2+3)$
5. $5(3+5)$
6. $8(2+5)$
7. $6(3+4)$
8. $10(2+3)$
9. $7(3+4)$
10. $11(2+3)$
11. $12(2+3)$
12. $5(5+7)$
13. $9(3+5)$
14. $6(5+7)$
15. $8(4+3)$
16. $12(3+5)$
17. $8(5+2)$
18. $9(2+5)$
19. $7(2+7)$
20. $14(2+3)$
21. $6(3+4)$
22. $8(2+5)$
23. $9(3+5)$
24. $6(5+7)$

Step-by-Step Explanations

1. The GCF is 4: $8 \div 4 = 2$ and $12 \div 4 = 3$.
2. The GCF is 3: $9 \div 3 = 3$ and $15 \div 3 = 5$.
3. The GCF is 6: $12 \div 6 = 2$ and $18 \div 6 = 3$.
4. The GCF is 7: $14 \div 7 = 2$ and $21 \div 7 = 3$.
5. The GCF is 5: $15 \div 5 = 3$ and $25 \div 5 = 5$.
6. The GCF is 8: $16 \div 8 = 2$ and $40 \div 8 = 5$.
7. The GCF is 6: $18 \div 6 = 3$ and $24 \div 6 = 4$.
8. The GCF is 10: $20 \div 10 = 2$ and $30 \div 10 = 3$.
9. The GCF is 7: $21 \div 7 = 3$ and $28 \div 7 = 4$.
10. The GCF is 11: $22 \div 11 = 2$ and $33 \div 11 = 3$.
11. The GCF is 12: $24 \div 12 = 2$ and $36 \div 12 = 3$.
12. The GCF is 5: $25 \div 5 = 5$ and $35 \div 5 = 7$.
13. The GCF is 9: $27 \div 9 = 3$ and $45 \div 9 = 5$.
14. The GCF is 6: $30 \div 6 = 5$ and $42 \div 6 = 7$.
15. The GCF is 8: $32 \div 8 = 4$ and $24 \div 8 = 3$.
16. The GCF is 12: $36 \div 12 = 3$ and $60 \div 12 = 5$.
17. The GCF is 8: $40 \div 8 = 5$ and $16 \div 8 = 2$.
18. The GCF is 9: $18 \div 9 = 2$ and $45 \div 9 = 5$.
19. The GCF is 7: $14 \div 7 = 2$ and $49 \div 7 = 7$.
20. The GCF is 14: $28 \div 14 = 2$ and $42 \div 14 = 3$.
21. The GCF of 18 and 24 is 6, so $18 + 24 = 6(3+4)$ — six groups of 3 markers and 4 crayons.
22. The GCF of 16 and 40 is 8, so $16 + 40 = 8(2+5)$.
23. The GCF of 27 and 45 is 9, so $27 + 45 = 9(3+5)$.
24. The GCF of 30 and 42 is 6, so $30 + 42 = 6(5+7)$.

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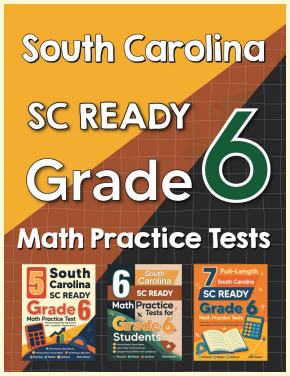

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