

# 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. $8 + 12$   | _____ | 11. $24 + 36$ | _____ |
| 2. $9 + 15$   | _____ | 12. $25 + 35$ | _____ |
| 3. $12 + 18$  | _____ | 13. $27 + 45$ | _____ |
| 4. $14 + 21$  | _____ | 14. $30 + 42$ | _____ |
| 5. $15 + 25$  | _____ | 15. $32 + 24$ | _____ |
| 6. $16 + 40$  | _____ | 16. $36 + 60$ | _____ |
| 7. $18 + 24$  | _____ | 17. $40 + 16$ | _____ |
| 8. $20 + 30$  | _____ | 18. $18 + 45$ | _____ |
| 9. $21 + 28$  | _____ | 19. $14 + 49$ | _____ |
| 10. $22 + 33$ | _____ | 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. $4(2 + 3)$   | 13. $9(3 + 5)$  |
| 2. $3(3 + 5)$   | 14. $6(5 + 7)$  |
| 3. $6(2 + 3)$   | 15. $8(4 + 3)$  |
| 4. $7(2 + 3)$   | 16. $12(3 + 5)$ |
| 5. $5(3 + 5)$   | 17. $8(5 + 2)$  |
| 6. $8(2 + 5)$   | 18. $9(2 + 5)$  |
| 7. $6(3 + 4)$   | 19. $7(2 + 7)$  |
| 8. $10(2 + 3)$  | 20. $14(2 + 3)$ |
| 9. $7(3 + 4)$   | 21. $6(3 + 4)$  |
| 10. $11(2 + 3)$ | 22. $8(2 + 5)$  |
| 11. $12(2 + 3)$ | 23. $9(3 + 5)$  |
| 12. $5(5 + 7)$  | 24. $6(5 + 7)$  |

### Step-by-Step Explanations

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



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