Name _____ Date _____

Distributive Property With the GCF

Write each sum as the GCF times a sum of two numbers with no common factor. Example: 36 + 8 = 4(9 + 2).

1. 81 + 39 _____
2. 92 + 62 _____
3. 85 + 55 _____
4. 90 + 100 _____
5. 60 + 39 _____
6. 54 + 99 _____
7. 4 + 42 _____
8. 45 + 35 _____
9. 98 + 77 _____
10. 72 + 74 _____
11. 90 + 80 _____
12. 5 + 100 _____

Answer Key: Distributive Property With the GCF

Each answer shows the prime factorizations used to find it.

1. **3(27 + 13)** $81 = 3^4$; $39 = 3 \times 13$. Shared primes, lowest powers: 3, so the GCF is 3. $81 \div 3 = 27$ and $39 \div 3 = 13$, which share no factor, so $81 + 39 = 3(27 + 13) = 3 \times 40 = 120$.
2. **2(46 + 31)** $92 = 2^2 \times 23$; $62 = 2 \times 31$. Shared primes, lowest powers: 2, so the GCF is 2. $92 \div 2 = 46$ and $62 \div 2 = 31$, which share no factor, so $92 + 62 = 2(46 + 31) = 2 \times 77 = 154$.
3. **5(17 + 11)** $85 = 5 \times 17$; $55 = 5 \times 11$. Shared primes, lowest powers: 5, so the GCF is 5. $85 \div 5 = 17$ and $55 \div 5 = 11$, which share no factor, so $85 + 55 = 5(17 + 11) = 5 \times 28 = 140$.
4. **10(9 + 10)** $90 = 2 \times 3^2 \times 5$; $100 = 2^2 \times 5^2$. Shared primes, lowest powers: 2×5, so the GCF is 10. $90 \div 10 = 9$ and $100 \div 10 = 10$, which share no factor, so $90 + 100 = 10(9 + 10) = 10 \times 19 = 190$.
5. **3(20 + 13)** $60 = 2^2 \times 3 \times 5$; $39 = 3 \times 13$. Shared primes, lowest powers: 3, so the GCF is 3. $60 \div 3 = 20$ and $39 \div 3 = 13$, which share no factor, so $60 + 39 = 3(20 + 13) = 3 \times 33 = 99$.
6. **9(6 + 11)** $54 = 2 \times 3^3$; $99 = 3^2 \times 11$. Shared primes, lowest powers: 3^2, so the GCF is 9. $54 \div 9 = 6$ and $99 \div 9 = 11$, which share no factor, so $54 + 99 = 9(6 + 11) = 9 \times 17 = 153$.
7. **2(2 + 21)** $4 = 2^2$; $42 = 2 \times 3 \times 7$. Shared primes, lowest powers: 2, so the GCF is 2. $4 \div 2 = 2$ and $42 \div 2 = 21$, which share no factor, so $4 + 42 = 2(2 + 21) = 2 \times 23 = 46$.
8. **5(9 + 7)** $45 = 3^2 \times 5$; $35 = 5 \times 7$. Shared primes, lowest powers: 5, so the GCF is 5. $45 \div 5 = 9$ and $35 \div 5 = 7$, which share no factor, so $45 + 35 = 5(9 + 7) = 5 \times 16 = 80$.
9. **7(14 + 11)** $98 = 2 \times 7^2$; $77 = 7 \times 11$. Shared primes, lowest powers: 7, so the GCF is 7. $98 \div 7 = 14$ and $77 \div 7 = 11$, which share no factor, so $98 + 77 = 7(14 + 11) = 7 \times 25 = 175$.
10. **2(36 + 37)** $72 = 2^3 \times 3^2$; $74 = 2 \times 37$. Shared primes, lowest powers: 2, so the GCF is 2. $72 \div 2 = 36$ and $74 \div 2 = 37$, which share no factor, so $72 + 74 = 2(36 + 37) = 2 \times 73 = 146$.
11. **10(9 + 8)** $90 = 2 \times 3^2 \times 5$; $80 = 2^4 \times 5$. Shared primes, lowest powers: 2×5, so the GCF is 10. $90 \div 10 = 9$ and $80 \div 10 = 8$, which share no factor, so $90 + 80 = 10(9 + 8) = 10 \times 17 = 170$.
12. **5(1 + 20)** 5 is prime; $100 = 2^2 \times 5^2$. Shared primes, lowest powers: 5, so the GCF is 5. $5 \div 5 = 1$ and $100 \div 5 = 20$, which share no factor, so $5 + 100 = 5(1 + 20) = 5 \times 21 = 105$.