

Highest Common Factors Worksheet

Complete all the questions below on Highest Common Factors (HCF). Show your working where possible and check your answers carefully.

1. Find the highest common factor (HCF) of 24 and 36.
2. What is the HCF of 60 and 90?
3. Two numbers have an HCF of 7. If one number is 21, what could the other number be? List all possibilities less than 50.
4. Find the HCF of 56 and 84 using their prime factorisation.
5. The HCF of 45 and another number is 15. Name two possible values for the other number.
6. If the HCF of two numbers is 8 and one of the numbers is 24, what is the smallest possible value of the other number?
7. Three friends have 18, 30, and 42 sweets. What is the greatest number of sweets they can each get if all the sweets are shared equally, with none left over?
8. Find the HCF of 72 and 120. Explain your method.
9. A gardener wants to plant 48 red tulips and 64 yellow tulips in rows with the same number of flowers in each row, and all the flowers in each row must be the same colour. What is the greatest number of flowers he can plant in each row?
10. The HCF of two numbers is 12. If one number is 60, what could the other number be? Give two possible answers.

Answer Key

1. 12
2. 30
3. Possible numbers less than 50: 7, 14, 28, 35, 42, 49
4. The prime factors of 56 are 2, 2, 2, 7; for 84: 2, 2, 3, 7. Common factors: 2, 2, 7. $\text{HCF} = 2 \times 2 \times 7 = 28$
5. Possible values: 15, 30, 45, 60, 75, 90, etc. (any multiple of 15 less than or equal to 45, except 45 itself)
6. 8 (the smallest possible value is 8, as 8 is the HCF and must divide the other number exactly)
7. 6 (HCF of 18, 30, and 42 is 6)
8. HCF of 72 ($2^3 \times 3^2$) and 120 ($2^3 \times 3 \times 5$) is $2^3 \times 3 = 8 \times 3 = 24$. Method: Find the lowest power of each common prime factor and multiply them together.
9. 16 (HCF of 48 and 64 is 16)
10. Possible answers: 12, 24, 36, 48, 60, etc. (any multiple of 12 up to 60)