

## 78. Finding the Highest Common Factor (HCF) Using Prime Factorisation

### Practice Questions

1. Find the prime factorization of 12 and 18, then determine their HCF.
2. Determine the HCF of 24 and 36 using prime factorization.
3. Find the prime factorization of 15 and 25, then determine their HCF.
4. What is the HCF of 48 and 72 using prime factorization?
5. Find the HCF of 30 and 45.
6. Using prime factorization, determine the HCF of 56 and 98.
7. Find the HCF of 81 and 108 using prime factorization.
8. Determine the HCF of 42 and 70 using prime factorization.
9. Find the HCF of 27 and 63.
10. What is the HCF of 120 and 144 using prime factorization?

### Scenario Questions

1. A baker is making cakes using 24 chocolate chips and 36 raisins. What is the largest equal-sized batch they can make using all ingredients?
2. A teacher divides 30 pencils and 45 erasers into equal packs. What is the largest number of packs possible?
3. A farmer has 56 apples and 98 oranges. He wants to arrange them in the largest possible equal groups. How many groups can he make?
4. Two ropes are 81 cm and 108 cm long. What is the longest piece that can be cut to divide both exactly?
5. A shop packs 42 cans of soup and 70 bottles of juice into identical gift baskets. What is the largest number of baskets possible?
6. A printer produces 120 colour pages and 144 black-and-white pages per hour. What is the maximum number of complete batches that can be printed?
7. A decorator has 48 red tiles and 72 blue tiles. What is the largest number of equal designs they can create?
8. Two joggers complete laps every 15 minutes and 25 minutes respectively. What is the longest time after which they will meet at the starting point?
9. A factory produces 27 toy cars and 63 toy trains per hour. What is the maximum number of identical sets they can produce?
10. A chef is making pastries using 30 almonds and 45 cashews. What is the maximum number of trays he can prepare?

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### Practice Questions

1. HCF of 12 ( $2^2 \times 3$ ) and 18 ( $2 \times 3^2$ ) is 6.
2. HCF of 24 ( $2^3 \times 3$ ) and 36 ( $2^2 \times 3^2$ ) is 12.
3. HCF of 15 ( $3 \times 5$ ) and 25 ( $5^2$ ) is 5.
4. HCF of 48 ( $2^4 \times 3$ ) and 72 ( $2^3 \times 3^2$ ) is 24.
5. HCF of 30 ( $2 \times 3 \times 5$ ) and 45 ( $3^2 \times 5$ ) is 15.
6. HCF of 56 ( $2^3 \times 7$ ) and 98 ( $2 \times 7^2$ ) is 14.
7. HCF of 81 ( $3^4$ ) and 108 ( $2^2 \times 3^3$ ) is 27.
8. HCF of 42 ( $2 \times 3 \times 7$ ) and 70 ( $2 \times 5 \times 7$ ) is 14.
9. HCF of 27 ( $3^3$ ) and 63 ( $3^2 \times 7$ ) is 9.
10. HCF of 120 ( $2^3 \times 3 \times 5$ ) and 144 ( $2^4 \times 3^2$ ) is 24.

### Scenario Questions

1. 12 batches (HCF of 24 and 36).
2. 15 packs (HCF of 30 and 45).
3. 14 groups (HCF of 56 and 98).
4. 27 cm (HCF of 81 and 108).
5. 14 baskets (HCF of 42 and 70).
6. 24 batches (HCF of 120 and 144).
7. 24 designs (HCF of 48 and 72).
8. 75 minutes (LCM of 15 and 25).
9. 9 sets (HCF of 27 and 63).
10. 15 trays (HCF of 30 and 45).