

EXERCISE 2.6

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1. Find the HCF of the following numbers using prime factorization method:**(i) 144, 198****(ii) 81, 117****(iii) 84, 98****(iv) 225, 450****(v) 170, 238****(vi) 504, 980****(vii) 150, 140, 210****(viii) 84, 120, 138****(ix) 106, 159, 265****Solution:****(i) 144, 198**We know that the prime factorization of $144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$ The same way prime factorization of $198 = 2 \times 3 \times 3 \times 11$ Hence, HCF of 144, 198 is $2 \times 3 \times 3 = 18$ **(ii) 81, 117**We know that prime factorization of $81 = 3 \times 3 \times 3 \times 3$ The same way prime factorization of $117 = 3 \times 3 \times 13$ Hence, HCF of 81, 117 = $3 \times 3 = 9$ **(iii) 84, 98**We know that prime factorization of $84 = 2 \times 2 \times 3 \times 7$ The same way prime factorization of $98 = 2 \times 7 \times 7$ Hence, HCF of 84, 98 = $2 \times 7 = 14$ **(iv) 225, 450**We know that prime factorization of $225 = 3 \times 3 \times 5 \times 5$ The same way prime factorization of $450 = 2 \times 3 \times 3 \times 5 \times 5$ Hence, HCF of 225, 450 = $3 \times 3 \times 5 \times 5 = 225$ **(v) 170, 238**We know that prime factorization of $170 = 2 \times 5 \times 17$ The same way prime factorization of $238 = 2 \times 7 \times 17$ Hence, HCF of 170, 238 = $2 \times 17 = 34$ **(vi) 504, 980**We know that the prime factorization of $504 = 2 \times 2 \times 2 \times 3 \times 3 \times 7$ The same way prime factorization of $980 = 2 \times 2 \times 5 \times 7 \times 7$ Hence, HCF of 504, 980 = $2 \times 2 \times 7 = 28$

(vii) 150, 140, 210

We know that prime factorization of $150 = 2 \times 3 \times 5 \times 5$

The same way prime factorization of $140 = 2 \times 2 \times 5 \times 7$

Prime factorization of $210 = 2 \times 3 \times 5 \times 7$

Hence, HCF of 150, 140, 210 = $2 \times 5 = 10$

(viii) 84, 120, 138

We know that prime factorization of $84 = 2 \times 2 \times 3 \times 7$

The same way prime factorization of $120 = 2 \times 2 \times 2 \times 3 \times 5$

Prime factorization of $138 = 2 \times 3 \times 23$

Hence, HCF of 84, 120, 138 = $2 \times 3 = 6$

(ix) 106, 159, 265

We know that prime factorization of $106 = 2 \times 53$

The same way prime factorization of $159 = 3 \times 53$

Prime factorization of $265 = 5 \times 53$

Hence, HCF of 106, 159, 265 = 53

2. What is the HCF of two consecutive

(i) Numbers

(ii) even numbers

(iii) odd numbers

Solution:

(i) We know that the common factor of two consecutive numbers is 1.

Hence, HCF of two consecutive numbers is 1.

(ii) We know that the common factors of two consecutive even numbers are 1 and 2.

Hence, HCF of two consecutive even numbers is 2.

(iii) We know that the common factors of two consecutive odd numbers is 1.

Hence, HCF of two consecutive odd numbers is 1.

3. HCF of co-prime numbers 4 and 15 was found as follows:

$4 = 2 \times 2$ and $15 = 3 \times 5$

Since there is no common prime factor. So, HCF of 4 and 15 is 0. Is the answer correct? If not, what is the correct HCF?

Solution:

No. It is not correct.

The HCF of two co-prime numbers is 1.

We know that 4 and 15 are co-prime numbers having common factor 1.

Therefore, HCF of 4 and 15 is 1.