#464926

Topic: HCF and LCM

An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?

Solution

HCF $(616, 32)$ is the maximum number of columns in which they can march.

Step 1: First find which integer is larger.

$616 > 32$

Step 2: Then apply the Euclid's division algorithm to 616 and 32 to obtain

$616 = 32 \times 19 + 8$

Repeat the above step until you will get remainder as zero.

Step 3: Now consider the divisor 32 and the remainder 8, and apply the division lemma to get

$32 = 8 \times 4 + 0$

Since the remainder is zero, we cannot proceed further.

Step 4: Hence the divisor at the last process is 8

So, the H.C.F. of 616 and 32 is 8.

Therefore, 8 is the maximum number of columns in which they can march.

#464929

Topic: HCF and LCM

Express each number as a product of its prime factors:

(i) 140 (ii) 156 (iii) 3825 (iv) 5005 (v) 7429

Solution

(i) 140

$140 = 2 \times 70$

$= 2 \times 2 \times 35$

$= 2 \times 2 \times 5 \times 7$

$= 2 \times 2 \times 5 \times 7 \times 1$

(ii) 156

$156 = 2 \times 78$

$= 2 \times 2 \times 39$

$= 2 \times 2 \times 3 \times 13$

$= 2 \times 2 \times 3 \times 13 \times 1$

(iii) 3825

$3825 = 3 \times 1275$

$= 3 \times 3 \times 425$

$= 3 \times 3 \times 5 \times 85$

$= 3 \times 3 \times 5 \times 5 \times 17$

$= 3 \times 3 \times 5 \times 5 \times 17 \times 1$

(iv) 5005

$5005 = 5 \times 1001$

$= 5 \times 7 \times 143$

$= 5 \times 7 \times 11 \times 13$

$= 5 \times 7 \times 11 \times 13 \times 1$

(v) 7429

$7429 = 17 \times 437$

$= 17 \times 19 \times 23$

$= 17 \times 19 \times 23 \times 1$

#464937

Topic: HCF and LCM

Find the LCM and HCF of the following integers by applying the prime factorisation method.

(i) $12, 15$ and 21 (ii) $17, 23$ and 29 (iii) $8, 9$ and 25

Solution

Using prime factorisation method:

(i) 12, 15 and 21

Factor of $12 = 2 \times 2 \times 3$

Factor of $15 = 3 \times 5$

Factor of $21 = 3 \times 7$

HCF $(12, 15, 21) = 3$

LCM $(12, 15, 21) = 2 \times 2 \times 3 \times 5 \times 7 = 420$

(ii) 17, 23 and 29

Factor of $17 = 1 \times 17$

Factor of $23 = 1 \times 23$

Factor of $29 = 1 \times 29$

HCF $(17, 23, 29) = 1$

LCM $(17, 23, 29) = 1 \times 17 \times 23 \times 29 = 11,339$

(iii) 8, 9 and 25

Factor of $8 = 2 \times 2 \times 2 \times 1$

Factor of $9 = 3 \times 3 \times 1$

Factor of $25 = 5 \times 5 \times 1$

HCF $(8, 9, 25) = 1$

LCM $(8, 9, 25) = 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 = 1,800$

#464944

Topic: HCF and LCM

Check whether 6^n can end with the digit 0 for any natural number n.

Solution

If any digit has the last digit 10 that means it divisible by 10.

The factor of $10 = 2 \times 5,$

So value of $6n$ should be divisible by 2 and 5.

Both $6n$ is divisible by 2 but not divisible by 5.

So, it can not end with 0.