Real Numbers Ex 1.2 Q5

Answer :

We need to find m if the H.C.F of 408 and 1032 is expressible in the form $1032\,m - 408 \times 5$.
Given integers are 408 and 1032 where $408 < 1032$.
By applying Euclid's division lemma, we get $1032 = 408 \times 2 + 216.$
Since the remainder $\neq 0$, so apply division lemma on divisor 408 and remainder 216

$408 = 216 \times 1 + 192.$

Since the remainder $\neq 0$, so apply division lemma on divisor 216 and remainder 192

$216 = 192 \times 1 + 24.$

Since the remainder $\neq 0$, so apply division lemma on divisor 192 and remainder 24

$192 = 24 \times 8 + 0.$

We observe that remainder is 0. So the last divisor is the H.C.F of 408 and 1032.
Therefore,

$$24 = 1032m - 408 \times 5$$
$$\Rightarrow \quad 1032m = 24 + 408 \times 5$$
$$\Rightarrow \quad 1032m = 24 + 2040$$
$$\Rightarrow \quad 1032m = 2064$$
$$\Rightarrow \quad m = \frac{2064}{1032}$$
$$\Rightarrow \quad \boxed{m = 2}.$$

Real Numbers Ex 1.2 Q6

Answer :

We need to find x if the H.C.F of 657 and 963 is expressible in the form $657x + 963y(-15)$.
Given integers are 657 and 963.
By applying Euclid's division lemma, we get $963 = 657 \times 1 + 306.$
Since the remainder $\neq 0$, so apply division lemma on divisor 657 and remainder 306

$657 = 306 \times 2 + 45.$

Since the remainder $\neq 0$, so apply division lemma on divisor 306 and remainder 45

$306 = 45 \times 6 + 36.$

Since the remainder $\neq 0$, so apply division lemma on divisor 45 and remainder 36

$45 = 36 \times 1 + 9.$

Since the remainder $\neq 0$, so apply division lemma on divisor 36 and remainder 9

$36 = 9 \times 4 + 0.$

Therefore, H.C.F. = 9.
Given H.C.F $= 657x + 936(-15)$.
Therefore,

$$\Rightarrow \quad 9 = 657x - 14445$$
$$\Rightarrow \quad 9 + 14445 = 657x$$
$$\Rightarrow \quad 14454 = 657x$$
$$\Rightarrow \quad x = \frac{14454}{657}$$
$$\Rightarrow \quad \boxed{x = 22}.$$

Real Numbers Ex 1.2 Q7

Answer :

We are given that 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. We need to find the maximum number of columns in which they can march.

Members in army = 616

Members in band = 32.

Therefore,

Maximum number of columns = H.C.F of 616 and 32.

By applying Euclid's division lemma

$616 = 32 \times 19 + 8$

$32 = 8 \times 4 + 0.$

Therefore, H.C.F. = 8

Hence, the maximum number of columns in which they can march is $\boxed{8}$.

Real Numbers Ex 1.2 Q8

Answer :

We need to find the largest number which divides 615 and 963 leaving remainder 6 in each case.

The required number when divides 615 and 963, leaves remainder 6, this means $615 - 6 = 609$ and $963 - 6 = 957$ are completely divisible by the number.

Therefore,

The required number = H.C.F. of 609 and 957.

By applying Euclid's division lemma

$957 = 609 \times 1 + 348$

$609 = 348 \times 1 + 261$

$348 = 216 \times 1 + 87$

$261 = 87 \times 3 + 0.$

Therefore, H.C.F. = 87.

Hence, the required number is $\boxed{87}$.

Real Numbers Ex 1.2 Q9

Answer :

We need to find the greatest number which divides 285 and 1249 leaving remainder 9 and 7 respectively.

The required number when divides 285 and 1249, leaves remainder 9 and 7, this means $285 - 9 = 276$ and $1249 - 7 = 1242$ are completely divisible by the number.

Therefore, the required number = H.C.F. of 276 and 1242.

By applying Euclid's division lemma

$1242 = 276 \times 4 + 138$

$276 = 138 \times 2 + 0.$

Therefore, H.C.F. = 138

Hence, required number is $\boxed{138}$.

Real Numbers Ex 1.2 Q10

Answer :

We need to find the largest number which exactly divides 280 and 1245 leaving remainders 4 and 3, respectively.

The required number when divides 280 and 1245, leaves remainder 4 and 3, this means $280 - 4 = 276$ and $1245 - 3 = 1242$ are completely divisible by the number.

Therefore, the required number = H.C.F. of 276 and 1242.

By applying Euclid's division lemma

$1242 = 276 \times 4 + 138$

$276 = 138 \times 2 + 0.$

Therefore, H.C.F. = 138.

Hence, the required number is $\boxed{138}$.

*********** END **********