Real Numbers Ex 1.4 Q7

Answer :

GIVEN: In a morning walk, three persons step off together. Their steps measure 80 cm, 85 cm and 90 cm.

TO FIND: minimum distance each should walk so that all can cover the same distance in complete steps.

The distance covered by each of them is required to be same as well as minimum. The required distance each should walk would be the L.C.M of the measures of their steps i.e. 80 cm, 85 cm, and 90 cm.

So we have to find the L.C.M of 80 cm, 85 cm, and 90 cm.

$80 = 2^4 \times 5$

$85 = 17 \times 5$

$90 = 2 \times 3^2 \times 5$

L.C.M of 80,85 and 90 $= 2^4 \times 3^2 \times 5 \times 17$

$\boxed{= 12240 \text{ cm}}$

Hence minimum $\boxed{= 12240 \text{ cm}}$ distance each should walk so that all can cove the same distance in complete steps

Real Numbers Ex 1.4 Q8

Answer :

TO FIND: The number nearest to 110000 but greater than 100000 which is exactly divisible by each of 8, 15 and 21.

L.C.M Of 8, 15 and 21.

$8 = 2^3$

$15 = 3 \times 5$

$21 = 3 \times 7$

L.C.M of 8,15 and 21 $= 2^3 \times 3 \times 5 \times 7 \boxed{= 840}$

When 110000 is divided by 840, the remainder is obtained as 800.

Now, $110000 - 800 = 109200$ is divisible by each of 8, 15 and 21.

Also, $110000 + 40 = 110040$ is divisible by each of 8, 15 and 21.

109200 and 110040 are greater than 100000.

Hence, 110040 is the number nearest to 110000 but greater than 100000 which is exactly divisible by each of 8, 15 and 21.

Real Numbers Ex 1.4 Q9

Answer :

TO FIND: The smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively.

L.C.M of 28 and 32.

$28 = 2^2 \times 7$

$32 = 2^5$

L.C.M of 28, and 32 $= 2^5 \times 7$

$\boxed{= 224}$

Hence 224 is the least number which exactly divides 28 and 32 i.e. we will get a remainder of 0 in this case. But we need the smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively

Therefore

$= 224 - 8 - 12$

$\boxed{= 204}$

Hence $\boxed{= 204}$ is the smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively

Real Numbers Ex 1.4 Q10

Answer :

TO FIND: Smallest number which when increased by 17 is exactly divisible by both 520 and 468.
L.C.M OF 520 and 468

$520 = 2 \times 5 \times 13$
$468 = 2^2 \times 3^2 \times 13$

LCM of 520 and 468 = 2×3²×5×13=4680
Hence 4680 is the least number which exactly divides 520 and 468 i.e. we will get a remainder of 0 in this case. But we need the Smallest number which when increased by 17 is exactly divided by 520 and 468.
Therefore
$= 4680 - 17$
$\boxed{= 4663}$
Hence $\boxed{= 4663}$ is Smallest number which when increased by 17 is exactly divisible by both 520 and 468.

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