Exercise 2E

We have to find the least five-digit number that is exactly divisible by 16, 18, 24 and 30.
But LCM=720 is a three digit number.

The least five digit number = 10000
Dividing 10000 by 720, we get:

$$720\overline{)10000}\ 13$$
$$-720$$
$$2800$$
$$-2160$$
$$640$$

The greatest four-digit number exactly divisible by 720 = 10000-640
=9360
So, the least five-digit number exactly divisible by 720 = 9360 + 720
= 10080

Q24

Answer :

First, we will find the LCM of 9, 12, 15, 18 and 24.

$2\overline{)9,12,15,18,24}$
$2\overline{)9,6,15,9,12}$
$2\overline{)9,3,15,9,6}$
$3\overline{)9,3,15,9,3}$
$3\overline{)3,1,5,3,1}$
$5\overline{)1,1,5,1,1}$
1,1,1,1,1

$\therefore$ LCM of the numbers $= 2^3 \times 3^2 \times 5$
$= 360$

The least six-digit number = 100000
The greatest five-digit number divisible by 360
will be the quotient of $\frac{100000}{360}$ mutiplied by 360.

$$360\overline{)100000}\ 277$$
$$720$$
$$2800$$
$$2520$$
$$280$$

So, the greatest five-digit number exactly divisible
by the given numbers will be
$360 \times 277 = 99720$

Q25

Answer :

Three bells toll at intervals of 9, 12 and, 15 minutes.
The time when they will toll together again is given by the LCM of 9, 12 and 15.

$$
\begin{array}{r|l}
3 & 9, 12, 15 \\
\hline
3 & 3, 4, 5 \\
\hline
5 & 1, 4, 5 \\
\hline
2 & 1, 4, 1 \\
\hline
2 & 1, 2, 1 \\
\hline
 & 1, 1, 1
\end{array}
$$

Required time $= 2^2 \times 3^2 \times 5$

$= 180$ minutes

$= 3$ h

If they start tolling together, they will toll together again after 3 h.

Q26

Answer :

From the starting point, they will step together again when they travel a distance that is exactly divisible by the lengths of their steps.

The least distance from the starting point where they will step together will be given by the LCM of 36, 48 and 54.

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