STD – 10 MATHS

CHAPTER - 1

REAL NUMBER

EXERCISE - 1.1 Q-2 Q-3

(2) Show that any positive odd integer is of the form

$6q + 1$, or $6q + 3$, or $6q + 5$, where q is some integer.

- Let a be any positive integer and $b = 6$. Then, by Euclid's algorithm, $a = 6q + r$, for some integer $q \geq 0$, and $r = 0, 1, 2, 3, 4, 5$, because $0 \leq r < 6$.
- Now substituting the value of r, we get,

  If $r = 0$, then $a = 6q$

- Similarly, for $r = 1, 2, 3, 4$ and 5, the value of a is $6q + 1$, $6q + 2$, $6q + 3$, $6q + 4$ and $6q + 5$, respectively.
- If $a = 6q$, $6q + 2$, $6q + 4$, then a is an even number and divisible by 2. A positive integer can be either even or odd Therefore, any positive odd integer is of the form of $6q + 1$, $6q + 3$ and $6q + 5$, where q is some integer.

3. 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?

- Given

  Number of army contingent members = 616

  Number of army band members = 32

- **If the two groups have to march in the same column, we have to find out the highest common factor between the two groups. HCF (616, 32), gives the maximum number of columns in which they can march.**
- **By Using Euclid's algorithm to find their HCF, we get, Since, 616 > 32, therefore,**
- **a = 616**
- **b = 32**

$$
\begin{array}{r}
19 \\
32\sqrt{61} \\
\underline{32} \\
296 \\
\underline{288} \\
8
\end{array}
$$

So that

q = 19

r = 8

616 = 32 × 19 + 8

Since, $8 \neq 0$ therefore, taking 32 as new dividend and 8 as new divisor we have,

$a = 32$

$b = 8$

$$
\begin{array}{r}
19 \\
8\overline{)32} \\
32 \\
\hline
0
\end{array}
$$

So that

$q = 4$

$r = 0$

$32 = 8 \times 4 + 0$

- Now we have got remainder as 0, therefore, HCF (616, 32) = 8.
- Hence, the maximum number of columns in which they can march is 8.

Thanks

For watching