

Euclid's Division Lemma

Table of Contents

- Euclid's Division Lemma
- Summary
- What's Next?

In the previous segment, we saw Different Categories of numbers that come under **Real Numbers**. In this segment, let us see Euclid's Division Lemma.

What is Euclid's division lemma?

Euclid's Division Lemma states that if an integer is divided by another non-zero integer, a unique integer as quotient and a unique integer as remainder is obtained.

For example,

Say you have seven marbles with you. You need to put as many marbles as possible into the boxes but you can put exactly 3 marbles into one box.

So in the first box, you put three marbles. In the second one, you put three more. The last marble remains as is.



Fig 1

This can be also written as,

$$7 = 3 \times 2 + 1$$

where,

7 is the dividend

3 is the divisor

2 is the quotient

1 is the remainder

Generalising this,

If we're dividing 'a' by 'b', and we get quotients 'q' and 'r', it can be written as,

$$a = b \times q + r$$

where,

a and b are positive integers

$$0 \leq r < b$$

Thus, Euclid's division lemma says that for any two positive integers 'a' and 'b', there are unique integers 'q' and 'r' that satisfy the equation $a = b \times q + r$.

Summary

Euclid's Lemma	Division
	<ul style="list-style-type: none">• If an integer is divided by another non-zero integer, a unique integer as quotient and a unique integer as remainder is obtained• If we're dividing 'a' by 'b', and we get quotients 'q' and 'r', it can be written as, $a = b \times q + r$ where a and b are positive integers and $0 \leq r < b$

What's next?

In our next segment of **Class 10 Maths**, we will learn about **Euclid's Division Algorithm**.