



(https://byjus.com/byjus-classes-book-a-free-demo-class/registration/?
utm_source=website&utm_medium=maths&utm_campaign=k10topbannerwithteacher)

Number System

The number system or the numeral system is the system of naming or representing numbers. There are various types of number systems in maths like binary, decimal, etc. This lesson covers the entire concepts of the numeral system with their types, conversions and questions. Also, check mathematics for grade 12 (https://byjus.com/maths/what-is-mathematics/) here.

Table of Contents:

- Definition
- Types
- Chart
- Conversions
- Video
- Questions
- Number System in Computers
- FAQs

What is Number System in Maths?

A number system is defined as a system of writing to express numbers. It is the mathematical notation for representing numbers of a given set by using digits or other symbols in a consistent manner. It provides a unique representation of every number and represents the arithmetic and algebraic structure of the figures. It also allows us to operate arithmetic operations like addition, subtraction and division.

The value of any digit in a number can be determined by:

- The digit
- Its position in the number
- The base of the number system

Click Here to Download Number System PDF (https://byjus.com/maths/number-system-pdf/)



There are various types of number system in mathematics. The four most common number system types are:

1. Decimal number system (Base- 10)
2. Binary number system (Base- 2)
3. Octal number system (Base-8)
4. Hexadecimal number system (Base- 16)

Decimal Number System (Base 10 Number System)

Decimal number system has base 10 because it uses ten digits from 0 to 9. In the decimal number system, the positions successive to the left of the decimal point represent units, tens, hundreds, thousands and so on. This system is expressed in decimal numbers (<https://byjus.com/maths/decimals/>).

Every position shows a particular power of the base (10). For example, the decimal number 1457 consists of the digit 7 in the units position, 5 in the tens place, 4 in the hundreds position, and 1 in the thousands place whose value can be written as

$$(1 \times 10^3) + (4 \times 10^2) + (5 \times 10^1) + (7 \times 10^0)$$

$$(1 \times 1000) + (4 \times 100) + (5 \times 10) + (7 \times 1)$$

$$1000 + 400 + 50 + 7$$

$$1457$$

Binary Number System (Base 2 Number System)

The base 2 number system is also known as the Binary number system (<https://byjus.com/maths/binary-number-system/>) wherein, only two binary digits exist, i.e., 0 and 1. Specifically, the usual base-2 is a radix of 2. The figures described under this system are known as binary numbers which are the combination of 0 and 1. For example, 110101 is a binary number.

We can convert any system into binary and vice versa.

Example

Write $(14)_{10}$ as a binary number.

Solution:

2	14	
2	7	0
2	3	1
	1	1

© Byjus.com

Base 2 Number System Example

$$\therefore (14)_{10} = 1110_2$$

Octal Number System (Base 8 Number System)

In the octal number system (<https://byjus.com/maths/octal-number-system/>), the base is 8 and it uses numbers from 0 to 7 to represent numbers. Octal numbers are commonly used in computer applications. Converting an octal number to decimal is the same as decimal conversion and is explained below using an example.

Example: Convert 215_8 into decimal.

Solution: byjus.com/classes-book-a-free-60-minutes-class/registration/?utm_campaign=mobile-fixed-button-book-class&utm_source=byjus.com&utm_medium=button

$$215_8 = 2 \times 8^2 + 1 \times 8^1 + 5 \times 8^0$$



Chat now



$$= 141_{10}$$



Number System Questions

1. Convert $(242)_{10}$ into hexadecimal. [**Answer:** $(F2)_{16}$]
2. Convert 0.52 into an octal number. [**Answer:** 4121]
3. Subtract 1101_2 and 1010_2 . [**Answer:** 0010]
4. Represent 5C6 in decimal. [**Answer:** 1478]
5. Represent binary number 1.1 in decimal. [**Answer:** 1.5]

Also Check: Binary Operations (<https://byjus.com/maths/binary-operation/>)

Computer Numeral System (Number System in Computers)

When we type any letter or word, the computer translates them into numbers since computers can understand only numbers. A computer can understand only a few symbols called digits and these symbols describe different values depending on the position they hold in the number. In general, the binary number system is used in computers. However, the octal, decimal and hexadecimal systems are also used sometimes.

More Topics Related to Number Systems

Number System for Class 9 (https://byjus.com/maths/number-system-for-class-9/)	NCERT Solutions for Class 9 Maths Chapter 1- Number Systems (https://byjus.com/ncert-solutions-class-9-maths/chapter-1-number-systems/)
Important Questions Class 9 Maths Chapter 1 Number System (https://byjus.com/maths/important-questions-class-9-maths-chapter-1-number-system/)	Number System Class 9 Notes – Chapter 1 (https://byjus.com/cbse-notes/cbse-class-9-maths-notes-chapter-1-number-system/)

Frequently Asked Questions

What is Number System and its Types?

The number system is simply a system to represent or express numbers. There are various types of number systems and the most commonly used ones are decimal number system, binary number system, octal number system, and hexadecimal number system.

Why is the Number System Important?

Number system helps to represent numbers in a small symbol set. Computers, in general, use binary numbers 0 and 1 to keep the calculations simple and to keep the amount of necessary circuitry less, which results in the least amount of space, energy consumption and cost.

What is Base 1 Number System Called?

Base 1 number system is called the unary numeral system and is the simplest numeral system to represent natural numbers.

MATHS Related Links	
What Is Mathematics (https://byjus.com/maths/what-is-mathematics/)	Binary Division (https://byjus.com/maths/binary-division/)
Imaginary Numbers (https://byjus.com/maths/imaginary-numbers/)	Prime Number (https://byjus.com/maths/prime-numbers/)
Composite Numbers (https://byjus.com/maths/composite-numbers/)	Square Root (https://byjus.com/maths/square-root/)



Chat now



MATHS Related Links

Square Numbers (<https://byjus.com/maths/square-numbers/>)

Natural Numbers (<https://byjus.com/maths/natural-numbers/>)

Odd Numbers (<https://byjus.com/maths/odd-numbers/>)

Smallest Two Digit Number (<https://byjus.com/maths/digit/>)

13 Comments

Ntui JUNE 27, 2020 AT 7:55 AM ([HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-109899](https://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-109899))

This is wonderfull

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=109899#RESPOND>)

vincent JULY 15, 2020 AT 5:11 AM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-119633>)

i love it

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=119633#RESPOND>)

Yashaswini AUGUST 16, 2020 AT 8:26 AM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-138725>)

It's soo helpful and wonderfull

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=138725#RESPOND>)

Harshit Dagar AUGUST 18, 2020 AT 5:40 PM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-140325>)

This is very very wonderful.

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=140325#RESPOND>)

Anita AUGUST 23, 2020 AT 10:13 AM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-143114>)

This is an amazing app

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=143114#RESPOND>)

Navya AUGUST 23, 2020 AT 10:40 AM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-143128>)

Very helpful 😊👍👍

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=143128#RESPOND>)

Ram Kumar AUGUST 28, 2020 AT 1:25 PM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-146679>)

Very impressive this is.

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=146679#RESPOND>)

Ishwar OCTOBER 7, 2020 AT 4:48 PM (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-177107>)

This is very wonderful app

REPLY (<HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=177107#RESPOND>)

<https://byjus.com/free-class/> (<https://byjus.com/free-class/>)

Free Class



Chat now



Shivani

OCTOBER 14, 2020 AT 1:24 PM (HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-183859)

This app is very helpful for all students and teachers

REPLY (HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=183859#RESPOND)



S://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-187093)

HS/NUMBER-SYSTEM/?REPLYTOCOM=187093#RESPOND)

'S://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-223374)

HS/NUMBER-SYSTEM/?REPLYTOCOM=223374#RESPOND)

(https://byjus.com/byjus-classes-book-a-free-demo-class/registration/?

Shivani

DECEMBER 11, 2020 AT 4:50 PM (HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-227232)

utm_source=website&utm_medium=maths&utm_campaign=sidebar)

BYJU'S teacher is very intelligent

REPLY (HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=227232#RESPOND)

CBSE Sample Papers

- CBSE Sample Papers Class 8 Maths

Sunaina DECEMBER 11, 2020 AT 7:50 AM (HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/#COMMENT-231617)

(Https://Byjus.Com/Cbse-Sample-Papers-For-Class-8-Maths/)

- CBSE Sample Papers Class 9 Maths

(Https://Byjus.Com/Cbse-Sample-Papers-For-Class-9-Maths/)

REPLY (HTTPS://BYJUS.COM/MATHS/NUMBER-SYSTEM/?REPLYTOCOM=231617#RESPOND)

- CBSE Sample Papers Class 10 Maths

(Https://Byjus.Com/Cbse-Class-10-Sample-Papers-For-Maths/)

Leave a Comment

Your email address will not be published. Required fields are marked *

Comment (Https://Byjus.Com/Cbse-Sample-Papers-For-Class-11-Maths/)

Please don't use any HTML or external links in the comment box.

- CBSE Sample Papers Class 12 Maths

(Https://Byjus.Com/Cbse-Class-12-Maths-Sample-Paper/)

CBSE Previous Year Question Papers

Name *

- CBSE Previous Year Question Papers Class 12

Maths (Https://Byjus.Com/Cbse-Study-

Material/Last-Year-Question-Paper-Cbse-Class-12-Maths/)

Email *

- CBSE Previous Year Question Papers Class 10

Maths (Https://Byjus.Com/Cbse-Study-

Material/Class-10-Maths-Previous-Year-Papers/)

POST COMMENT

ICSE Sample Papers

- ICSE Sample Papers Class 8 Maths

(Https://Byjus.Com/Icse-Sample-Papers-For-Class-8-Maths/)

(/byjus-classes-book-a-free-60-minutes-class/registration/?utm_campaign=mobile-fixed-button-book-class&utm_source=website)

Free Class (Https://Byjus.Com/Icse-Sample-Paper-For-Class-9-Maths/)

CHAT
WITH
US!

Chat now



- ICSE Sample Papers Class 10 Maths
(<https://Byjus.Com/Icse-Class-10-Maths-Sample-Papers/>)
- ISC Sample Papers Class 11 Maths
(<https://Byjus.Com/Isc-Sample-Paper-Class-11-Maths/>)
- ISC Sample Papers Class 12 Maths
(<https://Byjus.Com/Isc-Sample-Papers-For-Class-12-Maths/>)

ICSE Previous Year Question Papers

- ICSE Previous Year Question Papers Class 10
(<https://Byjus.Com/Icse-Class-10-Maths-Previous-Year-Question-Papers/>)
- ISC Previous Year Question Papers Class 12 Maths
(<https://Byjus.Com/Isc-Class-12-Maths-Previous-Year-Question-Papers/>)

CBSE Sample Papers

- CBSE Sample Papers Class 8 Maths
(<https://Byjus.Com/Cbse-Sample-Papers-For-Class-8-Maths/>)
- CBSE Sample Papers Class 9 Maths
(<https://Byjus.Com/Cbse-Sample-Papers-For-Class-9-Maths/>)
- CBSE Sample Papers Class 10 Maths
(<https://Byjus.Com/Cbse-Class-10-Sample-Papers-For-Maths/>)
- CBSE Sample Papers Class 11 Maths
(<https://Byjus.Com/Cbse-Sample-Papers-For-Class-11-Maths/>)
- CBSE Sample Papers Class 12 Maths
(<https://Byjus.Com/Cbse-Class-12-Maths-Sample-Paper/>)

CBSE Previous Year Question Papers

- CBSE Previous Year Question Papers Class 12 Maths
(<https://Byjus.Com/Cbse-Study-Material/Last-Year-Question-Paper-Cbse-Class-12-Maths/>)
- CBSE Previous Year Question Papers Class 10 Maths
(<https://Byjus.Com/Cbse-Study-Material/Class-10-Maths-Previous-Year-Papers/>)

ICSE Sample Papers

- ICSE Sample Papers Class 8 Maths
(<https://Byjus.Com/Icse-Sample-Papers-For-Class-8-Maths/>)
- ICSE Sample Papers Class 9 Maths
(<https://Byjus.Com/Icse-Sample-Paper-For-Class-9-Maths/>)

Byjus classes book a free 60 minutes class/registration/?utm_campaign=mobile-fixed-button-book-class&utm_source=website)
(<https://Byjus.Com/Icse-Class-10-Maths-Sample-Papers/>)



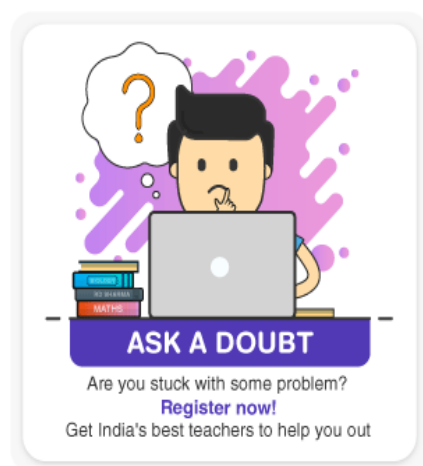
Chat now



- ISC Sample Papers Class 11 Maths (<https://byjus.com/isc-sample-paper-class-11-maths/>)
- ISC Sample Papers Class 12 Maths (<https://byjus.com/isc-sample-papers-for-class-12-maths/>)

ICSE Previous Year Question Papers

- ICSE Previous Year Question Papers Class 10 (<https://byjus.com/icse-class-10-maths-previous-year-question-papers/>)
- ISC Previous Year Question Papers Class 12 Maths (<https://byjus.com/isc-class-12-maths-previous-year-question-papers/>)



(<https://students.byjus.com/oauth/authorize?>

redirect_uri=https%3A%2F%2Flearn.byjus.com%2Fcallback%3Freferrer%3Dmx_Source_of_Lead%253DByjusWeb%2526mx_Campaign_Type%253D_UTM_CAMPAIGN_TYPE_%2526SourceMedia

Join BYJU'S Learning Program

Name

Mobile Number

City / Town

Grade/Exam ▼

Email Address

Submit



http://biology-classes-book-a-free-60-minutes-class/registration/?utm_campaign=mobile-fixed-button-book-class&utm_source=facebook

Chat now





Book EXAMS

- Book EXAMS**



Chat now



RESOURCES

[Blog \(https://blog.byjus.com/\)](#) [Videos \(/videos/\)](#) [CBSE Sample Papers \(/cbse/cbse-sample-papers/\)](#)
[CBSE Question Papers \(/cbse-study-material/cbse-previous-year-question-paper/\)](#) [DSSL \(/about-dssl/\)](#)

EXAM PREPARATION

[Free CAT Prep \(/free-cat-prep/\)](#) [Free IAS Prep \(/free-ias-prep/\)](#) [Maths \(/maths/\)](#) [Physics \(/physics/\)](#) [Chemistry \(/chemistry/\)](#) [Biology \(/biology/\)](#)

COMPANY

[About Us \(/about-us/\)](#) [Contact Us \(/contact-us/\)](#) [Student Feedback \(/reviews/\)](#) [Investors \(/our-investors/\)](#) [Careers \(/careers-at-byjus/\)](#) [BYJU'S in Media \(/press/\)](#)
[Students Stories - The Learning Tree \(https://blog.byjus.com/the-learning-tree/\)](#) [Faces of BYJU'S – Life at BYJU'S \(https://blog.byjus.com/life-at-byjus/\)](#)
[Social Initiative - Education for All \(/educationforall/\)](#) [BYJU'S APP \(/byjus-the-learning-app/\)](#)

FOLLOW US

[\(https://www.facebook.com/byjuslearningapp/\)](https://www.facebook.com/byjuslearningapp/) [\(https://www.youtube.com/channel/UckDw-LPU1Nnd2WRsfnDbUcA\)](https://www.youtube.com/channel/UckDw-LPU1Nnd2WRsfnDbUcA) [\(https://in.linkedin.com/company/byjus\)](https://in.linkedin.com/company/byjus)

Free Textbook Solutions

[\(/textbook-solutions/\)](#)

[NCERT Solutions \(/ncert-solutions/\)](#) [NCERT Exemplar \(/ncert-exemplar/\)](#) [NCERT Solutions for Class 6 \(/ncert-solutions-class-6/\)](#)
[NCERT Solutions for Class 7 \(/ncert-solutions-class-7/\)](#) [NCERT Solutions for Class 8 \(/ncert-solutions-class-8/\)](#) [NCERT Solutions for Class 9 \(/ncert-solutions-class-9/\)](#)
[NCERT Solutions for Class 10 \(/ncert-solutions-class-10/\)](#) [NCERT Solutions for Class 11 \(/ncert-solutions-class-11/\)](#) [NCERT Solutions for Class 12 \(/ncert-solutions-class-12/\)](#)
[RD Sharma Solutions \(/rd-sharma-solutions/\)](#) [RS Aggarwal Solutions \(/rs-aggarwal-maths-solutions/\)](#) [ICSE Selina Solutions \(/icse/selina-solutions/\)](#)

State Boards

[Maharashtra \(/msbshse/\)](#) [Gujarat \(/gseb/\)](#) [Tamil Nadu \(/tn-board/\)](#) [Karnataka \(/kseeb/\)](#) [Kerala \(/kbpe/\)](#) [Andhra Pradesh \(/ap-board/\)](#)
[Telangana \(/telangana-board/\)](#) [Uttar Pradesh \(/upmsp/\)](#) [Bihar \(/bihar-board/\)](#) [Rajasthan \(/rajasthan-board/\)](#) [Madhya Pradesh \(/mp-board/\)](#)

[\(https://byjus.com/disclaimer/\)](https://byjus.com/disclaimer/) |

[\(https://byjus.com/tnc_app/#privacydesc\)](https://byjus.com/tnc_app/#privacydesc) |

[\(https://byjus.com/tnc_app/#tncdesc\)](https://byjus.com/tnc_app/#tncdesc) |

[\(https://byjus.com/sitemap.xml\)](https://byjus.com/sitemap.xml)

© 2020, BYJU'S. All rights reserved.

