NiE PART 1

Did you know?

MATHEMATICS has originated from numbers and the number system is a special field of it, from which other branches of mathematics are developed.

The numbers game

WITHOUT numbers, how would it be possible to count the total of students in the class, dollars in the pocket, runs in a cricket match or days in a week?

Numbers are everywhere in daily life. They have become an indispensable part our world.

Can you imagine not having numbers? Look around you. They are everywhere.

Types of numbers

The idea of numbers dates back to early civilisations where societies had some system of counting as a way to organise and keep track of things as they were used up, added to or traded.

With the invention of writing, symbols were used to represent the numbers. Different methods of representing numeric symbols were invented and the various strands of mathematics developed.

There are many different types of numbers, each of which plays an important role within both mathematics and our world.

The most common types of numbers you explore through mathematics are:

natural numbers: These are the first numbers you learn about, also known as counting numbers. These are numbers used primarily for counting and ordering eg: 3

Integers. These are whole numbers, including negative number values eg: -2; -1; 0; 1; 2;

prime numbers: natural numbers greater than 1 that can be divided by only 1 and itself (eg, 43)

composite numbers: any number having three or more factors/divisors

rational numbers: numbers that can be expressed as the ratio of two integers eg: ½ also referred to as fractions. All rational numbers have a decimal equivalent. Eg 0.5

irrational numbers: numbers that cannot be expressed as simple fractions eg, pi

real numbers: All the rational plus all the irrational numbers.

infinite number: is one that is greater than all other numbers, the largest of all numbers, a limitless quantity

Ordinal numbers: denote order in a set by describing the position eg: third

FACTS & FIGURES

A numeral system is a writing system for expressing numbers.

■ The numerical digits we use today such as 1, 2 and 3 are based on the Hindu-Arabic numeral system developed over 1000 years ago.
It is the most commonly used numerical system in the world.

■ Another system is Roman numerals represented by combinations of letters.
Roman numerals, as used today, are based on seven symbols (value): I (1) V (5) X (10) L (50) C (100) D (500) M (1000)
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NUMBER KNOW HOW

Base numbers

OUR everyday number system is a Base-10 system because it uses 10 as its base number. It is also known as the decimal system – deci means 10.

The symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9, are used to create numbers in the base 10 decimal number system, using place value and a decimal point to separate whole numbers from fractions.

A base number is the basis of a place value number system. In the Base-10 system each place is 10 times larger than the place to its right.

But you don't have to use 10 as a Base. You could use 2 (Binary) or even 16 (Hexadecimal).

Try this

USING hexadecimal as a base means every number place is 16 times bigger.

Hexadecimal numbers look the same as the decimal numbers up to 9, but then there are the letters A, B, C, D, E, F in place of the decimal numbers 10 to 15.
Hexadecimal: 0 1 2 3 4 5 6 7 8 9 A B C D E F
Decimal: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Example:
4B5
■ The 4 is in the 16×16 position, so that means 4 ×16×16
■ The B (11) is in the 16 position, so that means 11 ×16
■ The 5 is in the 1 position so that means 5.
Answer: 4B5 = 4×16×16 + 11×16 + 5 =1205 Decimal

Your turn

Work out the decimal values of these hexadecimal numbers.
23 = (2x16 + 3) =
1CE= (1 x16x16 + 12x16 + 14) =
A59C = (10x16x16x16 + 5x16x16 + 9x16 + 12) =

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