DOWNLOAD PDF LIST OF TYPES OF NUMBERS

Chapter 1 : SQL Data Types for MySQL, SQL Server, and MS Access

Transfinite numbers: Numbers that are greater than any natural number. Ordinal numbers: Finite and infinite numbers used to describe the order type of well-ordered sets. Cardinal numbers: Finite and infinite numbers used to describe the cardinalities of sets.

Penna Sparrow What are numbers in Math? A number is a mathematical tool which is used in counting individual quantities, calculating and quantifying. In general, decimal number system is used which consists of 10 digits, from 0 to 9. What are various operations that can be performed on numbers? It is the process of finding out single number or fraction equal to two or more quantities taken together. It signifies repeated addition. If a number has to be repeatedly added then that number is multiplicand. The number of multiplicands considered for addition is multiplier. The sum of the repetition is the product. It is a reversal of multiplication. In this we find how often a given number called divisor is contained in another given number called dividend. The number expressing this is called the quotient and the excess of the dividend over the product of the divisor and quotient is called remainder. Numbers which can be quantified and represented by a unique point on the number line are called real numbers. Complex numbers are the numbers which have both real and imaginary part. Numbers which are not rational but can be represented on the number line are called irrational numbers. Whole numbers are the set of positive integers from 0. They do not have any decimal or fractional part. Negative integers are the set of negative numbers before 0. They do not have any fractional or decimal part. They are whole numbers excluding zero. Numbers divisible by 2 are called even numbers. Numbers which are not divisible by 2 are called odd numbers. Odd numbers leave 1 as the remainder when divided by 2. Any number other than 1 which does not have any factor apart from one and the number itself is called a prime number. Two numbers are said to be co-prime or relatively prime if they do not have any common factor other than one. A number is said to be a perfect number if the sum of all its factors, excluding itself but including 1 is equal to the number itself.

Chapter 2 : - The Types of Numbers

Learn all of the different types of numbers: natural numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.

The garrison is not up to its full number. The comic routine followed the dance number. For her third number she played a nocturne. Did you call the right number? There may be a two-way distinction in number, as between singular and plural, three-way, as between singular, dual, and plural, or more. Put those leather numbers in the display window. Number is the basis of science. Show More to mark with or distinguish by numbers: Number each of the definitions. The manuscript already numbers pages. I number myself among his friends. They numbered the highlights of their trip at length. The players were numbered into two teams. Show More verb used without object to make a total; reach an amount: Casualties numbered in the thousands. Several eminent scientists number among his friends. Idioms by the numbers, according to standard procedure, rules, customs, etc. She could do a number on anything from dentistry to the Bomb. Whenever I call, he does his number about being too busy to talk. He was only interested in her fortune, but she got his number fast. That bullet had his number on it. Convinced that her number was up anyway, she refused to see doctors. Number, sum both imply the total of two or more units. Number applies to the result of a count or estimate in which the units are considered as individuals; it is used of groups of persons or things: Sum applies to the result of addition, in which only the total is considered: As a collective noun, number, when preceded by a, is most often treated as a plural: A number of legislators have voiced their dissent. When preceded by the, it is usually used as a singular: The number of legislators present was small. See also amount , collective noun.

Chapter 3 : List of numbers - Wikipedia

Some of the common types of numbers are Natural Numbers, whole numbers, integer, rational numbers, real numbers, complex numbers, even numbers, odd Numbers, prime numbers and composite numbers. These number types are discussed below.

Real numbers that are greater than zero. Real numbers that are less than zero. Because zero itself has no sign , neither the positive numbers nor the negative numbers include zero. When zero is a possibility, the following terms are often used: Real numbers that are greater than or equal to zero. Thus a non-negative number is either zero or positive. Real numbers that are less than or equal to zero. Thus a non-positive number is either zero or negative. Types of integer[edit] Even and odd numbers: An integer is even if it is a multiple of two, and is odd otherwise. An integer with exactly two positive divisors: The primes form an infinite sequence 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, A number that can be factored into a product of smaller integers. Every integer greater than one is either prime or composite. These are numbers that can be represented as dots that are arranged in the shape of a regular polygon , including Triangular numbers , Square numbers , Pentagonal numbers , Hexagonal numbers , Heptagonal numbers , Octagonal numbers , Nonagonal numbers , Decagonal numbers , and Dodecagonal numbers. There are many other famous integer sequences , such as the sequence of Fibonacci numbers , the sequence of factorials , the sequence of perfect numbers , and so forth, many of which are enumerated in the On-Line Encyclopedia of Integer Sequences. Algebraic numbers[edit] Algebraic number: Any number that is the root of a non-zero polynomial with rational coefficients. Any real or complex number that is not algebraic. Any number that is the sine or cosine of a rational multiple of pi. An algebraic number that is the root of a quadratic equation. Such a number can be expressed as the sum of a rational number and the square root of a rational. A number representing a length that can be constructed using a compass and straightedge. These are a subset of the algebraic numbers, and include the quadratic surds. An algebraic number that is the root of a monic polynomial with integer coefficients.

Chapter 4 : C# List Examples - Dot Net Perls

A circular prime number is one that remains a prime number after repeatedly relocating the first digit of the number to the end of the number. For example, , and are all prime numbers. Similarly, , , and are all prime numbers.

See also amicable numbers. Harshad number A Harshad number is a number that is divisible by the sum of its own digits. Harshad numbers are also known as Niven numbers. A Harshad amicable pair is an amicable pair m, n such that both m and n are Harshad numbers. There are Harshad amicable pairs in first 5, amicable pairs. Hexadecimal numbers are written using the symbols 0â€"9 and Aâ€"F or aâ€"f. Hexadecimal provides a convenient way to express binary numbers in modern computers in which a byte is almost always defined as containing eight binary digits. When showing the contents of computer storage â€" for example, when getting a core dump of storage in order to debug a new computer program or when expressing a string of text characters or a string of binary values â€" one hexadecimal digit can represent the arrangement of four binary digits. Two hexadecimal digits can represent eight binary digits, or a byte. For example, the highest common factor hcf of 15 and 17 is 1, since 17 is a prime number. In algebra, the hcf of two or more algebraic expressions may be found by examination of the factors of each: See also large numbers and superfactorials. Hyperreals emerged in the s from the work of Abraham Robinson who showed how infinitely large and infinitesimal numbers can be rigorously defined and developed in what is called nonstandard analysis. Hyperreals include all the reals in the technical sense that they form an ordered field containing the reals as a subfield and also contain infinitely many other numbers that are either infinitely large numbers whose absolute value is greater than any positive real number or infinitely small numbers whose absolute value is less than any positive real number. No infinitely large number exists in the real number system and the only real infinitesimal is zero. But in the hyperreal system, it turns out that that each real number is surrounded by a cloud of hyperreals that are infinitely close to it; the cloud around zero consists of the infinitesimals themselves. Conversely, every finite hyperreal number x is infinitely close to exactly one real number, which is called its standard part, st x. In other words, there exists one and only one real number st x such that x â€" st x is infinitesimal. Integers can be added and subtracted, multiplied, and compared. Like the natural numbers, the integers form a countably infinite set. An important property of the integers is division with remainder: The numbers q and r are uniquely determined by a and b. From this follows the fundamental theorem of arithmetic, which states that integers can be written as products of prime numbers in an essentially unique way. The number pi , for instance, is far more interesting than 1. Confining our attention to integers, can there be such a thing as an uninteresting number? It is easy to show that the answer must be "no. Then it must contain a least member, u. But the property of being the smallest uninteresting integer makes u interesting! As soon as u is removed from U, there is a new smallest uninteresting integer, which must then also be excluded. And so the argument could be continued until U was empty. Given that all integers are interesting can they be ranked from least to most interesting? To be ranked as "least interesting" is an extremely interesting property, and thus leads to another logical contradiction! When Srinivasa Ramanujan , the great Indian mathematician, was ill with tuberculosis in a London hospital, his colleague G. Hardy went to visit him. Hardy opened the conversation with: The vast majority of real numbers are irrational, so that if you were to pick a single point on the real number line at random the chances are overwhelmingly high that it would be irrational. Put another way, whereas the set of all rationals is countable, the irrationals form an uncountable set and therefore represent a larger kind of infinity. Also, an irrational number to an irrational power can be rational. The answer is irrational. This follows from the so-called Gelfond-Schneider theorem, which says that if A and B are roots of polynomials , and A is not 0 or 1 and B is irrational, then AB must be irrational in fact, transcendental. Kaprekar number Take a positive whole number n that has d number of digits. Take the square n and separate the result into two pieces: Add these two pieces together. If the result is n, then n is a Kaprekar number. The first 20 Kaprekar numbers according to this definition are 1, 9, 45, 55, 99, , , , , , , , , , , , , , , and Kaprekar numbers can also be defined by higher powers. The first ten numbers with this property are: For fourth powers, the sequence begins 1, 7, 45, 55, 67, , , , , , Liouville number A Liouville number is a transcendental number that can be approximated very closely by a rational number. Normally, proving that any given number is transcendental is difficult. However, the French mathematician Joseph Liouville â€” showed the existence of a large in fact, infinitely large class of transcendentals whose nature is easy to ascertain. A typical Liouville number is 0. For example, the lowest common multiple of 2, 4, and 6 is Start with a list of integers, including 1, and cross out every second number: The second surviving integer is 3. Cross out every third number not yet eliminated. This removes 5, 11, 17, 23, The third surviving number from the left is 7; cross out every seventh integer not yet eliminated: Repeat this process indefinitely and the numbers that survive are the "lucky" ones: For example, there are 25 primes less than and 23 luckies less than In fact, it turns out that primes and luckies crop up about equally often within given ranges of integers. Also, the gaps between successive primes and the gaps between successive luckies widen at roughly the same rate as the numbers increase, and the number of twin primes â€” primes that differ by 2 â€” is close to the number of twin luckies. The luckies even have their own equivalent of the famous still unsolved Goldbach Conjecture , which states that every even number greater than 2 is the sum of two primes. In the case of luckies, it is conjectured that every even number is the sum of two luckies; no exception has yet been found. Another unresolved problem is whether there are an infinite number of lucky primes. Mersenne number A Mersenne number is a number of the form 2n - 1 one less than a power of 2 , where n is a positive integer. See also Mersenne prime. The largest narcissistic number in base 10 is , which is the sum of the 39th powers of its digits. So there is no way any digit number can be equal to the sum of the 70th powers of its digits. To avoid confusion, 0, 1, 2, 3, Adding or multiplying natural numbers always produces other natural numbers. However, subtracting them can produce zero or negative integers, while dividing them produces rational numbers. An important property of the natural numbers is that they are well-ordered, in other words, every set of natural numbers has a smallest element. The deeper properties of the natural numbers, such as the distribution of prime numbers, are studied in number theory. Natural numbers can be used for two purposes: In the finite world, these two concepts coincide; however, they differ when it comes to infinite sets see infinity. Here the "- sign" on the left hand side of the equation represents an operation; on the right hand side it forms part of the number itself. Representation of the numbers on a straight line clarifies the notion of a negative number. Long denied legitimacy in mathematics, negative numbers are nowhere to be found in the writings of the Babylonians, Greeks, or other ancient cultures. On the contrary, because Greek mathematics was grounded in geometry, and the concept of a negative distance is meaningless, negative numbers seemed to make no sense. They surface for the first time in in bookkeeping records seventh-century India and in a chapter of a work by the Hindu astronomer Brahmagupta. Their earliest documented use in Europe is in in the Ars magna of Girolamo Cardano. By the early 17th century, Renaissance mathematicians were explicitly using negative numbers but also meeting with heavy opposition. Gottfried Leibniz admitted that they could lead to some absurd conclusions, but defended then as useful aids in calculation. By the eighteenth century, negative numbers had become an indispensable part of algebra. Niven number A Niven number is any whole number that is divisible by the sum of its digits. Niven numbers are name after the number theorist Ivan Niven who, in , gave a talk at a conference in which he mentioned integers which are twice the sum of their digits. Then in a article, the mathematician Robert Kennedy christened numbers which are divisible by their digital sum in honor of Niven. They are also known as Harshad numbers. A constant is considered normal to base 10 if any single digit in its decimal expansion appears one-tenth of the time, any two-digit combination one-hundredth of the time, any three-digit combination one-thousandth of the time, and so on. In the case of pi , the digit 7 is expected to appear 1 million times among the first 10 million digits of its decimal expansion. It actually occurs 1,, times â€” very close to the expected value. Each of the other digits also turns up with approximately the same frequency, showing no significant departure from predictions. A number is said to be absolutely normal if its digits are normal not only to base 10 but also to every integer base greater than or equal to 2. In base 2, for example, the digits 1 and 0 would appear equally often. He quickly established that there are lots of normal numbers, though finding a specific example of one proved to be a major challenge. Analogous normal numbers can be created for other bases. To date, no specific "naturally occurring" real number has been proved to be absolutely normal, even though it is known that almost all real numbers are absolutely normal! However, in , Greg Martin of the University of Toronto found some examples of the opposite extreme â€” real numbers that are normal to no base whatsoever.

Chapter 5 : List of types of numbers - Wikipedia

We'll go over each and every one of the main types of numbers you'll need in an algebra class. We'll cover natural numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.

The data type of a column defines what value the column can hold: An SQL developer must decide what type of data that will be stored inside each column when creating a table. The data type is a guideline for SQL to understand what type of data is expected inside of each column, and it also identifies how SQL will interact with the stored data. Data types might have different names in different database. And even if the name is the same, the size and other details may be different! Always check the documentation! Description CHAR size Holds a fixed length string can contain letters, numbers, and special characters. The fixed size is specified in parenthesis. The maximum size is specified in parenthesis. Can store up to characters. Holds up to 4,,, bytes of data ENUM x,y,z,etc. Let you enter a list of possible values. You can list up to values in an ENUM list. If a value is inserted that is not in the list, a blank value will be inserted. The values are sorted in the order you enter them. You enter the possible values in this format: The maximum number of digits may be specified in parenthesis INT size to normal. The maximum number of digits may be specified in parenthesis BIGINT size to normal. The maximum number of digits may be specified in parenthesis FLOAT size,d A small number with a floating decimal point. The maximum number of digits may be specified in the size parameter. The maximum number of digits to the right of the decimal point is specified in the d parameter DOUBLE size,d A large number with a floating decimal point. Normally, the integer goes from an negative to positive value.

Chapter 6 : Types of Numbers

Types of Numbers Natural Numbers Natural numbers count the elements of a whole, cardinal number, or express the order which occupies an element in a whole, ordinal number.

We will look at natural and whole numbers , integers , rational numbers , irrational numbers , real numbers , imaginary numbers and complex numbers. The Natural and Whole Numbers We start with the natural numbers. These are the numbers 1, 2, 3, â€¦ The â€¦ symbol means that the sequence goes on forever. They are used for counting. If we include zero then we get the whole numbers, 0, 1, 2, 3, â€¦. The natural and whole numbers are usually considered to be exact e. But sometimes they are approximate e. Here they are, shown on the number line: Negative numbers are used to describe debts as opposed to assets, temperatures below zero as opposed to temperatures above zero, heights below sea level as opposed to heights above sea level, and so on. The Rational Numbers Next are the rational numbers. A rational number is any number that can be expressed as the quotient of two integers. We can use any of these fraction notations to express rational numbers: The denominator cannot be zero. The notation means that we break something into b equal pieces and we have a of those pieces. Rational numbers can also be written in decimal notation instead of fraction notation. Notice that some rational numbers have no exact decimal equivalent. Rational numbers are usually considered to be exact. For this reason the Algebra Coach program will not convert fractions to decimals when it is running in exact mode. The Irrational Numbers The irrational numbers are those that cannot be expressed as a ratio of two integers. It turns out that there are as many irrational numbers as rational. Irrational numbers have no exact decimal equivalents. To write any irrational number in decimal notation would require an infinite number of decimal digits. Thus these are only approximations: The Real Numbers The rational numbers and the irrational numbers together make up the real numbers. The real numbers are said to be dense. They include every single number that is on the number line. The number line is useful for understanding the order of numbers. Smaller numbers are farther to the left and larger numbers are farther to the right. Here are some examples of the use of these symbols: In fact any negative number is less than any positive number. It means that 3. Real numbers often result from making measurements and measurements are always approximate. For example, with one piece of equipment the length of an object might be measured to be 5. It just means that it is closer to 5. With a more accurate and usually much more expensive piece of equipment the length might be measured to be 5. If an expression contains an approximate number then that whole expression is also approximate. Click here for more information on accuracy and significant figures. The Imaginary Numbers and the Complex Numbers If real numbers include every single number on the number line, then what other numbers could there be? To answer that question, consider how we built up the number system so far: We now want to take the square root of negative numbers but we will need a new type of number to describe the result. We define the square root of a negative number to be an imaginary number. How much further can this process of creating new types of numbers go? The answer is one more step. We can add a real number to an imaginary number. The result is called a complex number. This is the end of the line because it turns out that every possible operation with every possible complex number results only in other complex numbers. We say that complex numbers make the numbers complete. Where do imaginary and complex numbers go on the number line? This picture shows the complex plane. It contains the number line which is now called the real axis and a new axis called the imaginary axis, perpendicular to it. Real numbers lie on the real axis, imaginary numbers lie on the imaginary axis and complex numbers generally lie off the real axis, either above it or below it. The Algebra Coach program can run in real mode or complex mode. In real mode it will not carry out any operation that leads to a non-real number such as taking the square root of a negative number. Click here for more information on complex numbers.

Chapter 7 : Numbers | Define Numbers at www.nxgvision.com

The next type of number is the "rational", or fractional, numbers, which are technically regarded as ratios (divisions) of integers. In other words, a fraction is formed by dividing one integer by another integer.

In general we write: Your teacher has a particular fondness for this symbol since the first computer he had much access to had that nickname. There are three important rules for using the summation operator: Since multiplication distributes over addition, the sum of a constant times a set of numbers is the same as the constant times the sum of the set of numbers. Joe got scores of and for his verbal and quantitative SAT scores whereas Jim got scores of and , respectively. In addition to the operations of addition, subtraction, multiplication, and division, several other arithmetic operators often appear. Exponentiation and absolute value are two such. Also, various symbols of inclusion parentheses, brackets, braces, vincula are used. When the square root symbol surd and symbol of inclusion, in recent history a vinculum, but historically parentheses is used, we general although not quite always mean only the positive square root. The absolute value operator indicates the distance always non-negative a number is from the origin zero. The symbol used is a vertical line on either side of the operand. There is a proscribed order for arithmetic operations to be performed. Some calculators are algebraic and handle this appropriately, others do not. Parentheses and other symbols of inclusion are used to modify the normal order of operations. We say these symbols of inclusion have the highest priority or precidence. Exponentiation is done next. There is confusion when exponents are stacked which we will not deal with here except to say computer scientists tend to do it from left to right while mathematicians know that is wrong. Multiplication and Division are done next, in order, from left to right. Addition and Subtraction are done next, in order, from left to right. Precision The distinction between accuracy and precision, reviewed in Numbers lesson 9 , is very important. This ties in with significant figures, and proper rounding of results. I have several major concerns regarding significant digits. There needs to be sufficient not to few. Slide rule accuracy or three significant digits has a long-standing precident in science. We are not doing science here so two may suffice, but rarely one. There should not be too many significant digits. Generally, more than 5 is probably a joke, especially in the "softer" sciences. Care must be taken so that a primary statistics such as variance is not incorrectly derived from a secondary statistic such as standard deviation in such a way that accuracy is lost. We will discuss this more in textbook Chapter 3. A mean and standard deviation or mean and margin of error should be given to compatible precision. There are proper rules, but they are difficult to explain to the general public. Thus every statistics book gives its own heuristic. Uses and Abuses of Statistics Most of the time, samples are used to infer something draw conclusions about the population. If an experiment or study was done cautiously and results were interpreted without bias , then the conclusions would be accurate. However, occasionally the conclusions are inaccurate or inaccurately portrayed for the following reasons: Sample is too small. Even a large sample may not represent the population. Unauthorized personnel are giving wrong information that the public will take as truth. A possibility is a company sponsoring a statistics research to prove that their company is better. Visual aids may be correct, but emphasize different aspects. Often a chart will use a symbol which is both twice as long and twice as high to represent something twice as much. The area, in this case however, is four times as much! Precise statisitics or parameters may incorrectly convey a sense of high accuracy. Misleading or unclear percentages are often used. Statistics are often abused. Many examples could be added, even books have been written but it will be more instructive and fun to find them on your own. Types of Data A dictionary defines data as facts or figures from which conclusions may be drawn. Thus, technically, it is a collective, or plural noun. Some recent dictionaries acknowledge popular usage of the word data with a singular verb. My mother and step-mother were both English teachers, so clearly no offense is intended above. Datum is the singular form of the noun data. Data can be classified as either numeric or nonnumeric. Specific terms are used as follows: Qualitative data are nonnumeric. Qualitative data are often termed catagorical data. Some books use the terms individual and variable to reference the objects and characteristics described by a set of data. They also stress the importance of exact definitions of these variables, including what units they are recorded in.

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The reason the data were collected is also important. Quantitative data are numeric. Quantitative data are further classified as either discrete or continuous. Discrete data are numeric data that have a finite number of possible values. Another classic is the spin or electric charge of a single electron. Quantum Mechanics, the field of physics which deals with the very small, is much concerned with discrete values. When data represent counts, they are discrete. An example might be how many students were absent on a given day. Counts are usually considered exact and integer. Continuous data have infinite possibilities: The real numbers are continuous with no gaps or interruptions. Physically measureable quantities of length, volume, time, mass, etc. At the physical level microscopically , especially for mass, this may not be true, but for normal life situations is a valid assumption. The structure and nature of data will greatly affect our choice of analysis method. By structure we are referring to the fact that, for example, the data might be pairs of measurements. Consider the legend of Galileo dropping weights from the leaning tower of Pisa. The times for each item would be paired with the mass and surface area of the item. Something which Galileo clearly did was measure the time it took a pendulum to swing with various amplitudes. Galileo Galilei is considered a founder of the experimental method. Levels of Measurement The experimental scientific method depends on physically measuring things. The concept of measurement has been developed in conjunction with the concepts of numbers and units of measurement. Statisticians categorize measurements according to levels. Each level corresponds to how this measurement can be treated mathematically. Nominal data have no order and thus only gives names or labels to various categories. Ordinal data have order, but the interval between measurements is not meaningful. Interval data have meaningful intervals between measurements, but there is no true starting point zero. Ratio data have the highest level of measurement. Ratios between measurements as well as intervals are meaningful because there is a starting point zero. Nominal comes from the Latin root nomen meaning name. Nomenclature, nominative, and nominee are related words. Gender is something you are born with, whereas sex is something you should get a license for. Colors To most people, the colors: To an electronics student familiar with color-coded resistors, this data is in ascending order and thus represents at least ordinal data. To a physicist, the colors: Temperatures What level of measurement a temperature is depends on which temperature scale is used. Only Kelvin and Rankine have true zeroes starting point and ratios can be found. Celsius and Fahrenheit are interval data; certainly order is important and intervals are meaningful. Rankine has the same size degree as Fahrenheit but is rarely used. To interconvert Fahrenheit and Celsius, see Numbers lesson Note that since , the use of the degree symbol on tempertures Kelvin is no longer proper. Although ordinal data should not be used for calculations, it is not uncommon to find averages formed from data collected which represented Strongly Disagree, Also, averages of nominal data zip codes, social security numbers is rather meaningless!

Chapter 8 : List of Sugar Names and Sugar Facts from www.nxgvision.com

We now want to take the square root of negative numbers but we will need a new type of number to describe the result. We define the square root of a negative number to be an imaginary number. How much further can this process of creating new types of numbers go?

Only 21 of the numbers from 1 to are abundant. The number is the first odd abundant number. Every even integer greater than 46 is expressible by the sum of two abundant numbers. Every integer greater that 83, is expressible by the sum of two abundant numbers. Any multiple of an abundant number is abundant. A prime number or any power of a prime number is deficient. The divisors of a perfect or deficient number is deficient. The abundant numbers below are 20, 24, 30, 36, 40, 42, 48, 54, 56, 60, 66, 70, 72, 78, 80, 84, 88, 90 and The coefficients a, b, c, d, All rational numbers are algebraic while some irrational numbers are algebraic. The divisors are often referred to as proper divisors. The aliquot parts of the number 24 are 1, 2, 3,4, 6, 8 and The numbers can form an addition, subtraction, multiplication or division problem. Of course, you have to use logic to derive the numbers represented by each letter.. For example, and are amicable numbers whereas all the aliquot divisors of , i. Other amicable numbers are: There are more than known amicable pairs. Amicable numbers are sometimes referred to as friendly numbers. Several methods exist for deriving amicable numbers, though not all, unfortunately. An Arabian mathematician devised one method. For values of n greater than 1, amicable numbers take the form: In reviewing the few amicable pairs shown earlier, it is obvious that this method does not produce all amicable pairs. If the number 1 is not used in the addition of the aliquot divisors of two numbers, and the remaining aliquot divisors of each number still add up to the other number, the numbers are called semi-amicable. For example, the sum of the aliquot divisors of 48, excluding the 1, is 75 while the sum of the aliquot divisors of 75, excluding the 1, is As a matter of general information: While the actual meaning or relevance of the number remain unclear, the number itself has some surprisingly interesting characteristics. The sum of the first 36 positive numbers is which makes it the 36th triangular number. The sum of the squares of the first seven prime numbers is Multiplying the sides of the primitive right triangle by 18 yields non-primitive sides of Even more surprising is the fact that these sides can be written in the Pythagorean Theorem form: They typically evolve from the question how many arrangements of "n" objects are possible using all "n" objects or "r" objects at a time. To find the number of permutations of "n" dissimilar things taken "r" at a time, the formula is: How many ways can you arrange the letters A, B, C, and D using 2 at a time? How many 3-place numbers can be formed from the digits 1, 2, 3, 4, 5, and 6, with no repeating digit? How many 3-letter arrangements can be made from the entire 26 letter alphabet with no repeating letters? Lastly, four persons enter a car in which there are six seats. In how many ways can they seat themselves? Without getting into the derivation, Example, how many different permutations are possible from the letters of the word committee taken all together? There are 9 letters of which 2 are m, 2 are t, 2 are e, and 1 c, 1 o, and 1 i. Therefore, the number of possible permutations of these 9 letters is: Such numbers must end in 1, 5, or 6 as these are the only numbers whose products produce 1, 5, or 6 in the units place. For instance, the square of 1 is 1; the square of 5 is 25; the square of 6 is What about 2 digit numbers ending in 1, 5, or 6? It is well known that all 2 digit numbers ending in 5 result in a number ending in 25 making 25 a 2 digit automorphic number with a square of No other 2 digit numbers ending in 5 will produce an automorphic number. Is there a 2 digit automorphic number ending in 1? Continuing in this fashion, we find no 2 digit automorphic number ending in 1. Is there a 2 digit automorphic number ending in 6? By the same process, it can be shown that the squares of every number ending in or will end in or The sequence of squares ending in 25 are 25, , , , , , etc. This expression derives from the Finite Difference Series of the squares. While the base 10 system uses 10 digits, the binary system uses only 2 digits, namely 0 and 1, to express the natural numbers in binary notation. The binary digits 0 and 1 are the only numbers used in computers and calculators to represent any base 10 number. This derives from the fact that the numbers of the familiar binary sequence, 1, 2, 4, 8, 16, 32, 64, , etc. In this manner, the counting numbers can be represented in a computer using only the binary digits of 0 and 1 as follows.

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Chapter 9 : Definitions, Uses, Data Types, and Levels of Measurement

A list of articles about numbers (not about numerals). Topics include powers of ten, notable integers, prime and cardinal numbers, and the myriad system.

Types of Numbers Natural Numbers Natural numbers count the elements of a whole, cardinal number, or express the order which occupies an element in a whole, ordinal number. The set of the natural numbers is formed by: The difference between two natural numbers is not always a natural number. This only occurs when the minuend is greater than the subtrahend. This only occurs when the division is exact. The root of natural numbers is not always a natural number. This only occurs when the root is exact. Integers Integers are of the type: The addition, subtraction and multipication of two integers is another integer. However, the division of two integers is not always another integer. This occurs only when the division is exact. The root of an integer is not always another integer. This only occurs when the root is exact, of even index and positive radicand. Rational Numbers A rational number is the quotient of two integers with a nonzero denominator. Non-recurrent decimal numbers are not rational numbers, but exact, repeating decimal numbers are. The sum, difference, product and quotient of two rational numbers is another rational number. With rational numbers, we can operate with powers, but the exponent must be an integer. The root of a rational number is not always another rational number. This only happens when the root is exact, the index is even and the radicand is positive. Irrational numbers A number is irrational if there are infinite, non-recurrent decimal places, therefore, it cannot be expressed in the form of fraction. The best known irrational number is , which is defined as the relationship between the perimeter of a circle and its diameter. Other irrational numbers are: The number, e, which appears in growth processes, in radioactive decay and in the formula for catenary a curve found cables or chains exposed to gravity. Real Numbers The set formed by rational and irrational numbers is the set of real numbers denoted by. All operations can be performed with real numbers with the exception of the root of an even index and negative radicand, and division by zero. The Real Line For every real number there is a point on a straight line and for every point on the straight line, a real number. Imaginary Numbers An imaginary number is denoted by bi, where: The set of all complex numbers is denoted by.