What is algebra?

Algebra is a branch of mathematics, as we know maths is queen of science, it plays vital role of developing and flourishing technology, we use all scopes in past and newly, the algebra is not exceptional the maths.

Algebra is one of the main areas of pure mathematics that uses mathematical statements such as term, equations, or expressions to relate relationships between objects that change over time. Here is a list of names who have contributed to the specific field of algebra.

Algebra is seen by much arithmetic with letters and a long historical precedent the textbooks, stretching back of the 14th century. As such it deepens upon experience and facility with arithmetic calculations. It provides student with skill to carry out algebraic manipulations . many of the which parallel arithmetic computation.

At the very least , school algebra is a collection of mathematical practices and procedure to be internalised and integrated into learners functioning , at the very most in its tradition form its afford glimpse of a powerful tool for modelling and thus resolving problems, (page 559 jifa cai)

Word Algebra

The word “ algebra” is a shortened misspelled transliteration of an Arabic titleal-jebr w’al-muqabalah (circa 825) by the Persian mathematician known as al-Khwarizmi [words, p. 21]. Theal-jebrpart means “ reunion of broken parts”, the second partal-muqabalahtranslates as “ to place in front of, to balance, to oppose, to set equal.” Together they describe symbol manipulations common in algebra: combining like terms, moving a term to the other side of an equation, etc.

In its English usage, in the 14thcentury, algebermeant “ bone-setting,” close to its original meaning. By the 16thcentury, the formalgebraappeared in its mathematical meaning. Robert Recorde (c. 1510-1558), the inventor of the symbol”=” of equality, was the first to use the term in this sense. He, however, still spelled it asalgeber. The misspellers proved to be more numerous, and the current spellingalgebratook roots.

Thus the original meaning ofalgebrarefers to what we today callelementary algebrawhich is mostly occupied with solving simple equations. More generally, the termalgebraencompasses nowadays many other fields of mathematics: geometric algebra, abstract algebra, Boolean algebra, i^3-algebra, to name a few.

Algebra is an ancient and one of the most basicbranch ofmathematics, invented by Muhammad Musa Al-Khwarizmi, and evolve over the centuries. The name algebra is itself of Arabic origin. It comes from the Arabic word ‘ al-jebr’.[1] http://www. cut-the-knot. org/WhatIs/WhatIsAlgebra. shtml

The English invented the world (Kelly 1821-1895) algebra of matrices and the research (Paul 1815-1864) may have emerged since 1854 and from this research Boolean algebra, also appeared in 1881 forms of art to illustrate the Boolean algebra, (availablhttp://www. jeddmath. com/vb/showthread. php? t= 5330/15/052011).

History of algebra

In history, we find some following mathematicians who have great contributions in development of algebra.

Cuthbert Tunstall

Cuthbert Tunstall (1474 -1559) was born in Hackforth, Yorkshire, England and died in Lambeth, London, England.

He was a significant royal advisor, diplomat, and administrator, and he gained two degrees with great proficiency in Greek, Latin, and mathematics.

In 1522, he wrote his first printed work that was devoted to mathematics, and this arithmetic book ‘ De arte supputandi libri quattuor’was based on Pacioli’s “ Suma”.

Robert Recorde

Robert Recorde (1510-1558) was born in Tenby, Wales and died in London, England.

He was a Welsh mathematician and physician and in 1557, he introduced the equals sign (=).

In 1540, Recorde published the first English book of algebra ‘ The Grounde of Artes’.

In 1557, he published another book ‘ The Whetstone of Witte’ in which the equals sign was introduced.

John Widman

John Widman (1462-1498) was born in Eger, Bohemia, currently called Czech Republic and died in Leipzig, Germany.

He was a German mathematician who first introduced + and – signs in his arithmetic book ‘ Behende und hupsche Rechnung auf Allen kauffmanschafft’.

Thomas Harriot

Thomas Harriot (1560 -1621) was born in Oxford, London and died in London England.

He was an astronomer and mathematician, and founder of the English school of algebra.

William Oughtred

William Oughtred (1575-1660) was born in Eton, Buckinghamshire, England and died in Albury, Surrey, England.

He was one of the world’s great and formally trained mathematicians.

Oughtred, in his book Clavis Mathematicae included Hindu-Arabic notation, decimal fractions and experimented on many new symbols such as Ã-,::, >, and <.

John Pell

John Pell (1611-1685) was born in Southwick, Sussex, England, and died in Westminster, London, England.

Pell’s work was mostly based on number theory and algebra.

Pell published many books on mathematics such as Idea of Mathematicsin 1638 and the two page ‘ A Refutation of Longomontanus’s Pretended Quadrature of the Circle’ in 1644.

Reverend John Wallis

John Wallis (1616-1703) was born in Ashford, Kent, England and died in Oxford, England.

In 1656, Wallis published his most famous book Arithmetica Infinitorum in which he introduced the formula /2 = (2. 2. 4. 4. 6. 6. 8. 8. 10...)/ (1. 3. 3. 5. 5. 7. 7. 9. 9...).

In another of his works, ‘ Treatise on Algebra’, Wallis gives a wealth of information on algebra.

John Herschel

John Frederick William Herschel (1792-1871) was born in Slough, England and died in Kent, England.

He was a great astronomer who discovered Uranus.

In 1822, he published his first work on astronomy, a small work to calculate the eclipses of the moon.

In 1824, he published his first major work on double stars in the Transactions of the Royal Society.

Charles Babbage

Charles Babbage (1791 -1871) was born in London, England and died in London, England.

In 1821, Babbage made the Difference engine to compile tables of mathematics.

In 1856, he invented Analytical Engine, which is a general symbol manipulator and similar to today's computers.

Sir Isaac Newton

Sir Isaac Newton (1643-1727) was born in Lincolnshire, England and died in London, England.

He was a great physicist, mathematician, and one of the greatest scientific intellects of all time.

In 1672, he published his first work on light and color in the Philosophical Transactions of the Royal Society.

In 1704, Newton's works on pure mathematics was published and in 1707, his Cambridge lectures from 1673 to 1683 were published. (http://www. barcodesinc. com/articles/algebra-history. htm)

How is Algebra used in daily life?

Every day in our life and all over the world we use Algebra many places as well as finances, engineering, schools, and universities we can't do most scopes without maths.(It is actually quite common for an average person to perform simple Algebra without realizing it. For example, if you go to the grocery store and have ten dollars to spend on two dollar candy bars. This gives us the equation $2x = 10$ where x is the number of candy bars you can buy. Many people don't realize that this sort of calculation is Algebra; they just do it). (http://wiki. answers. com and http://wiki. answers. com)

Other Definitions

Algebra is the parts of mathematics where numbers and letters are used like A B or X and Y, or other symbols are used to represent unknown or variable numbers.

For examples : inA +5 = 9, A is unknown, but we can solve by subtracting 5 to both sides of the equal sign (=), like this: A+5 = 9

A+ 5 – 5 = 9 – 5

A +0 = 4

A = 4

3b+12= 15 subtract both sides 12

3b+12-12= 15-12

3b= 3 divide both sides 3 to get the value of b which is 1 and so on

5x/5x= 1 if you substitute x any number not zero the equation will be true

(Algebra is branch of mathematics that substitutes letters for numbers. An algebraic equation represents a scale, what is done on one side of the scale with a number is also done to the other side of the scale. The numbers are the constants. Algebra can include real numbers, complex numbers, matrices, vectors etc. Moving from Arithmetic to Algebra will look something like this: Arithmetic: 3 + 4 = 3 + 4 in Algebra it would look like: x + y = y +)

artical http://math. about. com/cs/algebra/g/algebradef. htm

Terminology used in algebra

to make algebra easy or any other branches of maths, we must understand well all basic sign in all operations and use it right way, these signs are , subtractions , division, addition , multiplication. variable is also called an unknown and can be represented by letters from the alphabet letters. Operations in algebra are the same as in arithmetic: addition, subtraction, multiplication and division. An expression is a group of numbers and variables, along with operations. An equation is the equality of two expressions. (Polynomials are often written in descending order, in which the terms with the largest powers are written first (like 9×2- 3x + 6). If they are written with the smallest terms appearing first, this is ascending order (like 6 – 3x + 9×2).

equation- An equation is a mathematical statement that contains an equal sign, like ax + b = c.

exponent- An exponent is a power that a number is raised to. For example, in 23, the exponent is 3.

expression- An algebraic expression consists of one or more variables, constants, and operations, like 3x-4. Each part of an expression that is added or subtracted is called a *term* For example, the expression 4×2-2x+7 has three terms.

factor- The factor of a number is a number that divides that number exactly. For example, the factors of 6 are 1, 2, 3 and 6.

formula- A formula shows a mathematical relationship between expressions.

fraction- A fraction is a part of a whole, like a half, a third, a quarter, etc. For example, half of an apple is a fraction of an apple. The top number in a fraction is called the numerator; the bottom number in a fraction is called the denominator.

inequality- An inequality is a mathematical expression that contains an inequality symbol. The inequality symbols are :

< less than (1 <2)

> greater than (2> 1)

â‰¤ less than or equal to

â‰¥ greater than or equal to

â‰ not equal to (1â‰ 2).

integer- The integers are the numbers …, -3, -2, -1, 0, 1, 2, ….

inverse (addition)- The inverse property of addition states that for every number a, a + (-a) = 0 (zero).

inverse (multiplication)- The inverse property of multiplication states that for every non-zero number a, a times (1/a) = 1.

matrix-

nth-

operation- An operation is a rule for taking one or two numbers as inputs and producing a number as an output. Some arithmetic operations are multiplication, division, addition, and subtraction.

polynomial- A polynomial is a sum or difference of terms; each term is:

* a constant (for example, 5)

* a constant times a variable (for example, 3x)

* a constant times the variable to a positive integer power (for example, 2×2)

* a constant times the product of variables to positive integer powers (for example, 2x3y).

monomial is a polynomial with only one term. A binomial is a polynomial that has two terms. A trinomial is a polynomial with three terms.

prime number- A prime number is a positive number that has exactly two factors, 1 and itself. Alternatively, you can think of a prime number as a number greater than one that is not the product of smaller numbers. For example, 13 is a prime number because it can only be divided evenly by 1 and 13. For another example, 14 is not a prime number because it can be divided evenly by 1, 2, 7, and 14. The number one is not a prime number because it has only one factor, 1 itself.

quadratic equation- A quadratic equation is an equation that has a second-degree term and no higher terms. A second-degree term is a variable raised

to the second power, like x2, or the product of exactly two variables, like x and y.

When you graph a quadratic equation in one variable, like y = ax2+ bx + c, you get a parabola, and the solutions to the quadratic equation represent the points where the parabola crosses the x-axis.

quadratic formula- The quadratic formula is a formula that gives you a solution to the quadratic equation ax2+ bx + c = 0. The quadratic formula is obtained by solving the general quadratic equation.

radical- A radical is a symbol âˆš that is used to indicate the square root or nthroot of a number.

root- An nthroot of a number is a number that, when multiplied by itself n times, results in that number. For example, the number 4 is a square root of 16 because 4 x 4 equals 16. The number 2 is a cube root of 8 because 2 x 2 x 2 equals 8.

solve- When you solve an equation or a problem, you find solutions for it.

square root- The square roots of a number n are the numbers s such that s2= n. For example, the square roots of 4 are 2 and -2; the square roots of 9 are 3 and -3.

symbol- A symbol is a mark or sign that stands for something else. For example, the symbol ÷ means *divide* .

system of equations- A system of equations is two or more independent equations that are solved together. For example, the system of equations: x + y = 3 and x – y = 1 has a solution of x= 2 and y= 1.

terms- In an expression or equation, terms are numbers, variables, or numbers with variables. For example, the expression 3x has one term, the expression 4×2+ 7 has two terms.

variable- A variable is an unknown or placeholder in an algebraic expression. For example, in the expression 2x+y, x and y are variables.

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Learn algebra

Symbolizes the number in the account to a group that contains that number of things, for example, No. 5, always stands for a set containing 5 things. In algebra, the symbols may be replaced by numbers, but it is possible to solve the number one or more replace one icon. To learn algebra, we must first learn how to use symbols replace the numbers. And then how to create a constraint for strings of numbers.

Groups and variables. There is a relationship between the symbols in algebra and groups of numbers. It is certain that each of us has some knowledge of groups of objects, such as collections of books, collections of postage stamps, and groups of dishes. And groups of numbers are not different for these groups a lot. One way to describe sets of numbers in algebra is that we

are using one of the alphabet, such as the name of her p.. Then half of the numbers of this group Bhzaretha brackets of the form {}. For example, can be expressed set of numbers from 1 to 9 as follows:

A = {1, 2. 3, 4, 5. 6, 7, 8. 9}.

The group of odd numbers under 20 are:

B = {1. 3, 5, 7. 9, 11, 13. 15, 17, 19}.

These examples demonstrated the models of the groups used in algebra.

Suppose that the age of four persons were respectively: 12, 15. 20, 24.

Then can be written in this age group numbers.

A = {12. 15, 20, 24}.

How is the age of each of them after three years?

One way to answer this question is that we write 12 +3. 15 +3. 20 +3 and 24 + 3. We note that the number 3 is repeated in each of the formulas ¸ - four. In algebra we can express all previous versions form a single task is m + 3 where m is any number of numbers of a group. That is, it can replace any of the numbers 12, 15, 20 or 24 m are indicated. Is called the symbol m variable, called the group a field of this variable, but No. 3 in the formula m+3 is called hard because its value is always one. Known variable in algebra as a symbol can be compensated for the number of one or more belongs to a group.

We can replace any names lead to correct reports or reports the wrong variable. For example:

Hungary is bordered by the State of the Black Sea

Report of the wrong, as in fact can not be like this report is correct only if compensated by the variable r one of the States: Bulgaria or Romania, or Turkey. The report shall be ¸ Turkey is a country bordered by the Black Sea

for example, the right one called the compensation that makes the report and called the right roots group consisting of all roots with a solution. The solution set is the previous example. {Bulgaria, Romania, Turkey}. And in reparation for not use the names to compensate for variables, but we use the numbers.

Equations known as the camel sports is equal to reflect the two formats. Phrase:

Q +7 = 12

For example, an easy equation ¸ mean the sum of the number 7 with the number equal to 12

- To solve this equation, we can do to compensate for different numbers of Q until we get a report of the equation makes the right one. If we substitute for x the equation becomes number five report is correct, and if we substitute for x any number of other reports, the equation becomes wrong. So to solve this equation set is {5}. This group contains only one root.

It is possible that the equation more than one root:

X ² + 18 = 9 o.

No. 2 highest first variable x means that the number of representative variable Q is the number of box, that number multiplied by itself once. See: box. In this equation, we can make up for X number 3:

3 Ã- 3 + 18 = 9 Ã- 3

9 + 18 = 27

27 = 27

We can also compensate for X number 6:

6 Ã- 6 + 18 = 9 Ã- 6

36 + 18 = 54

54 = 54

Any other compensation for making the equation Q report wrong. Then 3 and 6 are the root of the equation. Thus, the solution set is {3. 6}.

There are also equations having no roots:

X = + 3

If we substitute for x any number, this equation becomes a false report, and a solution is called the group of free and symbolized by the symbol {}.

and some of the equations, an infinite number (for high standards) from the roots.

$(X + 1)^2 = x^2 + 2x + 1$

In this equation if we substitute for x any number we get the right report, the Group resolved to contain all the numbers http://nabad-alkloop. com/vb/showthread. php? t= 38762

What is best way to learn and teach algebra?

Step-by-step equations solving is the key of teaching and learning. To find fully worked-out answers and learn how to solve math problems, one step at a time. Studying worked-out solutions is a proven method to help you retain information. Don’t just look for the answer in the back of the book;

There are five laws basic principles of math governing operations: multiplication addition subtract and expressing the variables and can be compensated for any number

Algebra is anessential subject. It’s the gateway to mathematics. It’s used extensively in the sciences. And it’s an important skill in many careers. Many people think, it is a nightmare and causes more stress, homework tears and plain confusion than any other subject on the curriculum but that is not true.

Theimportance of understanding equation

Connotation and denotation on extension of a concept two opposite yet complementary aspects is clarified the extension is defined vice versa understanding the concept equation includes its connotation and denotations.

This session of observed lessons will show the essential nature or the equation is consolidated by designing problem variation putting emphasis on clarifying the connotation and differentiation the boundary of the set of object in the extension. (Page 559 Jifa cai)

What's the best formula for teaching algebra?

Immersing students in their course work, or easing them into learning the new skills or does a combination of the two techniques adds up to the best strategy? Researchers at the Centre for Social Organization of Schools at Johns Hopkins are aiming to find out through a federally funded study that will span 18 schools in five states this fall.

The study, now in its second year of data collection, will evaluate two ways to teach algebra to ninth-graders, determining if one approach is more effective in increasing mathematics skills and performance or whether the two approaches are equally effective. Participating schools in North Carolina, Florida, Ohio, Utah and Virginia will be randomly assigned to one of two strategies for the 2009-2010 school year; to be eligible, students must not have previously taken Algebra I. Twenty-eight high schools were studied during the 2008-2009 school year.

One strategy, called Stretch Algebra, is a yearlong course in Algebra 1 with students attending classes of 70 to 90 minutes a day for two semesters. This approach gives students a " double dose" of algebra, with time to work on fundamental mathematics skills as needed.

The second strategy is a sequence of two courses, also taught in extended class periods. During the first semester, students take a course called

Transition to Advanced Mathematics, followed by the district’s Algebra I course in the second semester. The first-semester course was developed by researchers and curriculum writers at Johns Hopkins to fill gaps in fundamental skills, develop mathematics reasoning and build students’ confidence in their abilities.

“ The question is, Is it better for kids to get into algebra and do algebra, or to give kids the extra time so the teacher can concentrate more on concepts started in middle schools?” said Ruth Curran Neild, a research scientist at Johns Hopkins and one of the study’s principal investigators.

Teachers using both strategies will receive professional development. Mathematics coaches will provide weekly support to those who are teaching the two-course approach; the study will provide teacher guides and hands-on materials for students in Transition to Advanced Mathematics. Johns Hopkins researchers will be collecting data throughout the school year. Findings are expected during the 2010-2011 school year. http://gazette. jhu. edu/2009/08/17/calculating-the-best-way-for-teaching-algebra/

Learn Algebra, the easy way

The key to learn and understand Mathematics is to “ practice more and more” and Algebra is no exception. Understanding the concepts is very vital. There are several techniques that can be followed to learn Algebra the easy way. Learning algebra from the textbook can be boring. Though textbooks are necessary it doesn’t always address the need for a conceptual approach. There are certain techniques that can be used to learn algebra the fun and easy way. Listed below are some of the techniques that can be used. Do

some online research and you will be surprised to find a whole bunch of websites that offer a variety of fun learning methods which makes learning algebra a pleasant experience and not a nightmare. But the key is to take your time in doing a thorough research before you choose the method that is best for you, or you can do a combination of different methods if you are a person who looks for variety to boost your interest.

1. ANIMATED ALGEBRA : You can learn the basic principles of algebra through this method. Animation method teaches the students the concepts by helping them integrate both teaching methods. When the lessons are animated you actually learn more !

2. ALGEBRA QUIZZES : You can use software’s and learn at your own pace & best of all you don’t need a tutor to use it. What you really need is something that can help you with your own homework, not problems it already has programmed into it that barely look like what your teacher or professor was trying to explain. You can enter in your own algebra problems, and it works with you to solve them faster & make them easier to understand.

3. INTERACTIVE ALGEBRA : There are several Interactive Algebra plugins that allows the user toexploreAlgebra by changing variables and see what happens. This promotes an understanding of how you arrive at answers. There are websites that provide online algebra help and worksheets. They also provide interactive onlinegamesand practice problems and provide the algebra help needed.

It is difficult to recommend better methods for studying and for learning because the best methods vary from person to person. Instead, I have

provided several ideas which can be the foundation to a good study program. If you just remember all the rules and procedures without truly understanding the concepts, you will have difficulty learning algebra. (http://www. ehow. com/how_4452787_learn-algebra-easy-way. html)