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Pythagorean Theorem

Pythagoras' studies of Egyptian "rope stretchers," the engineers who built the pyramids, helped him to develop his theorem

Pythagorean Triples all satisfy $a^2 + b^2 = c^2$

For any right triangle, the hypotenuse squared equals the sum of the squares of the legs

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14th century merchants started using the abacus to add and subtract

Ancient Chinese Mathematics

Chinese mathematicians wrote 10 math books called the 10 Classics (100 BC)

Students studied the 10 Classics before taking a civil service examination

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Non-positional number system
did not use a zero

Ancient Greek Mathematics

Different states in Greece used
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number system

1st Greek number system,
Acrophonic, represented
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2nd number system used
27 alphabetical numerals

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Pascal's Triangle

Omar Khayyam, Persian mathematician and poet, discussed "Pascal's" triangle around 1100 AD

Contains binomial coefficients, the triangular numbers and the Fibonacci sequence

Blaise Pascal found so many patterns in this triangle it was given his name

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Least Common Multiples were used to synchronize the calendars throughout Central America

Ancient Calendars

5000 years ago religious calendars throughout Central America were 260 days long

5000 years ago solar years of 365 days were used as the civil calendar for daily life

The study of flood patterns led the Egyptians to design the first 365 day solar calendar

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This number sequence can be found in nature (pineapple rinds, pinecones and seashells)

Fibonacci Numbers

You can find the sequence in Pascal's triangle

The sum of two consecutive terms is the next term in the sequence

In 1202 Fibonacci posed his famous rabbit problem which leads to the sequence 1, 1, 2, 3, 5,, ... in "Liber abaci"

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PI / π

Archimedes obtained the first approximation of π
 $223/71 < \pi < 22/7$
which gives $\pi \cong 3.1418$

The early Egyptians used $4(8/9)^2$
= 3.16 for the number π

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Roots of words are used still today (duo, quadriceps, decade, and millimeter)

Roman Numbers

Number placement with in a number can sometimes indicate subtraction or addition

III is used instead of IV on clocks

This numbering system uses seven letters (I,V,X,C,L,D,M)

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First represented with
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Babylonians used two wedges
to represent zero

Indian mathematicians used a
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al'Kharizmi – the first person to
create a place-value system
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The German Enigma Machine had over 150 million million million possible permutations before repeating itself

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1882-1935
Complimented by Albert Einstein

Women Mathematicians

Hypatia 370-415 / The “first”
woman mathematician, she
worked on Conic sections

Emilie de Breteuil 1706-1749
She stole Voltaire’s heart
and translated Newton’s
Principia into French

Sophie Germain 1776-1831
Wrote papers using a false, male
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Ancient African Mathematics

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Magic Squares

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The sum of the numbers in each horizontal, vertical or diagonal row is the same

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ARITHMETIC MACHINE

THE ABACUS

FINGERS

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