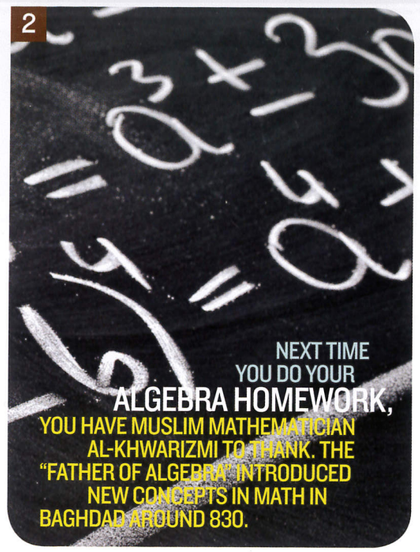
25 NIFTY NUMBER FACTS

A THOUSAND YEARS BEFORE EUROPEANS MADE SIGNIFICANT ADVANCES IN THE FIELD, SCHOLARS IN MUSLIM CIVILIZATION WERE **CREATING NEW MATHEMATICAL KNOWLEDGE** AND BROADENING THE SCOPE OF **MATH.**

AL-KHWARIZMI IS KNOWN IN LATIN AS ***ALGORITMI,*** THE SOURCE OF THE MATH AND COMPUTER TERM **"ALGORITHM."**

2



NEXT TIME YOU DO YOUR **ALGEBRA HOMEWORK,** YOU HAVE MUSLIM MATHEMATICIAN AL-KHWARIZMI TO THANK. THE "FATHER OF ALGEBRA" INTRODUCED NEW CONCEPTS IN MATH IN BAGHDAD AROUND 830.

3

MATHEMATICAL INVENTIONS FROM MUSLIM CIVILIZATION INCLUDE **THE CREATION OF ALGEBRA,** ADDITIONS TO GEOMETRY, THE DECIMAL NUMBERING SYSTEM, THE SINE AND COSINE, AND MANY OTHERS OF **LASTING INFLUENCE.**

5

ALGEBRA REVOLUTIONIZED THE WAY PEOPLE LOOKED AT **NUMBERS** AND BROKE AWAY FROM GEOMETRY, WHICH WAS THE ROOT OF THE GREEK CONCEPT OF MATH.

AL-KHWARIZMI'S book, *Al-Jabr wa-'l-Muqabala,* introduced the basics of the algebra we study today.

7

AL-KARAJI, another mathematician, **BUILT ON THE RULES OF ALGEBRA** and started an algebra school that **THRIVED FOR SEVERAL** hundred years.

8

GEOMETRY WAS USED IN MANY DESIGNS IN THE MUSLIM WORLD, LIKE THE DAZZLING TILE MOSAICS ON MOSQUES AND PALACES. THE MATHEMATICAL SIGNIFICANCE OF MUSLIM TILES AND DESIGNS WAS DISCOVERED ONLY RECENTLY.

MUSLIMS WERE THE FIRST TO GIVE **ZERO** A MATHEMATICAL PROPERTY. Without this contribution, there would be no way to tell the difference between numbers like 23 and 203.

10

EVEN POETS LOVED MATH IN MUSLIM CIVILIZATION. THE POET WE KNOW TODAY AS UMAR AL-KHAYYAM CONTRIBUTED TO ALGEBRA WITH HIS IDEAS ABOUT SOLVING COMPLEX EQUATIONS.

LGEBRA MADE ITS AY TO EUROPE BY THE **2TH** CENTURY.

12

THE NUMBERS WE USE TODAY **(0, 1, 2,...9)** COME FROM THE ARABIC SYMBOLS USED MORE THAN **1,000** YEARS AGO.

13

MUSLIMS HAD **TWO** COUNTING, OR NUMERICAL, SYSTEMS: **ONE** in which numbers were written as letters of the alphabet; **AND ANOTHER** in which numbers were written using ancient Babylonian symbols.

14

THE TWO TRADITIONAL MUSLIM COUNTING SYSTEMS WERE EVENTUALLY REPLACED BY NEW NUMBERS KNOWN AS **ARABIC NUMERALS,** DEVELOPED FROM AN ANCIENT INDIAN SYSTEM.

15

ARABIC NUMERALS WERE ALSO KNOWN AS ***GHUBARI*** **NUMBERS** BECAUSE MUSLIMS INITIALLY USED DUST *(GHUBAR)* BOARDS TO MAKE CALCULATIONS.

16

ARABIC NUMERALS MADE CALCULATIONS MUCH EASIER THAN THE ROMAN SYSTEM, WHICH USED LETTERS LIKE **X, V, I, L, C, AND M** FOR NUMBERS, OR OTHER SYSTEMS BASED ON DOTS, PICTOGRAPHS, OR FINGER COUNTING.

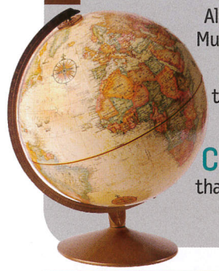
17

Arabic numerals also led to the introduction of **SIMPLE FRACTIONS** and decimal fractions (a fraction in which the bottom number is a power of ten).

18

BEGINNING IN THE 11TH CENTURY, **STUDENTS** STUDYING IN MUSLIM LEARNING CENTERS IN NORTH AFRICA AND SOUTHERN EUROPE INTRODUCED ARABIC NUMERALS TO THE REST OF **EUROPE.**

19



Al-Biruni, one of the greatest Muslim scholars, used **TRIGONOMETRY** to come up with a figure for the **EARTH'S CIRCUMFERENCE** that is very close to the accepted value today.

20

IN THE EARLY **9TH CENTURY** AL-KHWARIZMI CONSTRUCTED TABLES THAT COULD HELP CALCULATE MISSING VALUES IN **ASTRONOMICAL TABLES** THAT DEFINE THE LOCATIONS OF **STARS.**

21

TODAY TRIGONOMETRY IS USED TO **CALCULATE** DISTANCES TO THE STARS, MEASURE THE HEIGHTS OF BUILDINGS AND TREES, AND MUCH MORE.

22

THE SCHOLARS AT THE **HOUSE OF WISDOM** IN BAGHDAD AND AT UNIVERSITIES IN CAIRO, EGYPT, PICKED UP WHERE THE GREEKS LEFT OFF, THEN ADDED THEIR OWN CONTRIBUTIONS TO **GEOMETRY.**

23

WITH A BETTER UNDERSTANDING FOR MATH, PEOPLE WERE ABLE TO USE IT AS A PRACTICAL TOOL IN BUSINESS AND EVERYDAY LIFE.

24

IN THE 10TH CENTURY, IBN AL-HAYTHAM WAS THE FIRST MATHEMATICIAN TO FIGURE OUT HOW TO FIND ALL **EVEN PERFECT NUMBERS**— A SET OF UNIQUE NUMBERS THAT HAS FASCINATED THINKERS SINCE ANCIENT TIMES.

25

COMPLEX **GEOMETRIC PATTERNS** WERE USED IN MUSLIM ARCHITECTURE TO COVER WALLS, CEILINGS, FLOORS, AND ARCHES.