

WHAT IS MATHEMATICS

Mathematics is the queen of all the sciences. It is much more than arithmetic, which is the science of numbers and computation. It is more than geometry, which is the study of shapes, sizes and spaces. It is more than statistics, which is the science of interpreting data and graphs. It is more than calculus, which is the study of change, limits, and infinity. Mathematics is all of these and more.

Mathematics is a way of reasoning. Mathematics can be used to determine whether or not an idea is true, or at least, whether it is probably true. Mathematics is a field of exploration and invention, where new ideas are being discovered every day. It is a way of thinking that is used to solve all kinds of problems in the sciences, government, and industry. It is a language of symbols that is understood in all civilized nations of the world. It has been suggested that mathematics would be the language that would be understood by the inhabitants of Mars (if there are any)! It is an art like music, with symmetry, pattern, and rhythm that can be very pleasing.

Mathematics has also been described as the study of patterns where a pattern is any kind of regularity in form or idea. This study of patterns has been very important for science because pattern, regularity, and symmetry occur so often in nature. For example, light, sound, magnetism, electric currents, waves of the sea, the flight of a plane, the shape of a snowflake and the mechanics of the atom all have patterns that can be classified by mathematics.

Mathematics has more permanence than any other field of knowledge. It is the only science in which the major theories of 20 centuries ago are still true and useful. The value of π has always been 3.14159... and always will be (even though a state legislature once tried to change it to 3). The musical scale that the ancient Greek philosopher and mathematician Pythagorus established, in which vibrations producing tones have the ratios $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, continues to be a basic scale in music.

Perhaps the most exciting fact about mathematics is that it has unlimited opportunity for creativeness. Just as no one has composed the most elegant poem or painted the most beautiful picture, no one has invented the ultimate mathematical structure. Every field of mathematics, from arithmetic to topology, gives ample opportunity for the creation of new ideas.

Mathematics 15 Topics

Week	Tuesday		Thursday	
1	4/1 What is Mathematics?		4/3 What is Mathematics?	
2	4/8 Mathematical Thinking		4/10 Problem Solving And Critical Thinking	
3	4/15 Sequences And Series I		4/17 Sequences And Series II	
4	4/22 Interest Simple/compound		4/24 Geometry Topology	
5	4/29 Geometry Topology		5/1 Euler's Theorems	
6	5/6 Midterm		5/8 Discrete Mathematics	
7	5/13 Discrete Mathematics Factorials Permutations Combinations		5/15 Probability I	
8	5/20 Probability II		5/22 Binomial Probability	
9	5/27 Expected Value		5/29 Venn Diagram	
10	6/3 Review		6/5 FINAL	