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Frequently Asked Questions

This section has been produced in response to the continued FAQ received, often relating to one of the published solutions or just general curiosity.

Number

- [Prime Numbers](#) What is a prime number?
- [Number of Primes](#) How many primes are there?
- [Number of Divisors](#) How many divisors does a number have?
- [Sum of Divisors](#) How do you work out the sum of divisors?
- [Perfect Numbers](#) What are perfect, abundant, and deficient numbers?
- [Irrational Roots](#) When is a square root irrational?
- [Figurate/Polygonal Numbers](#) What are square and triangle numbers?
- [Sum of Squares](#) How do you find the sum of square numbers?
- [Sum of Cubes](#) Is there a formula to add a sequence of cubes?
- [Fibonacci Numbers](#) What are Fibonacci numbers?
- [0.999...](#) Is 0.999... really equal to 1?
- [Division by Zero](#) Why are you not allowed to divide by zero?
- [Number System](#) What are rational, irrational, real, imaginary, complex, algebraic, and transcendental numbers?
- [Roman Numerals](#) How do you read and write Roman numerals?

Geometry

- [Angle Properties](#) What are the fundamental angle properties?
- [Circle Theorems](#) How do you prove the circle theorems?
- [Trigonometry](#) What is trigonometry?
- [Pythagorean Theorem](#) How do you prove the Pythagorean Theorem?
- [Trigonometric Ratios/Identities](#) Where do sin, cos, tan, sec, cosec, and cot come from?
- [General Trigonometry](#) How do you work out lengths/angles in a general triangle?
- [Area of Planar Shapes](#) How do you find the area of planar shapes?
- [Circumference of a Circle](#) How do you find the circumference of a circle?
- [Area of a Circle](#) How do you find the area of a circle?
- [Volume of a Prism](#) How do you find volume of a prism?
- [Volume of a Pyramid](#) How do you find volume of a pyramid?
- [Volume of a Sphere](#) How do you find volume of a sphere?
- [Surface Area of a Sphere](#) How do you find surface area of a sphere?

Constructions

- [Basic Constructions](#) What are the principles of basic constructions?
- [Polygonal Constructions](#) How do you construct basic polygons?
- [Geometrical Arithmetic](#) Can you do basic arithmetic geometrically?
- [Geometrical Square Root](#) How do you perform a square root geometrically?
- [Geometrical Quadratic](#) Is it possible to solve quadratics geometrically?

- [Impossible Constructions](#) Are any constructions impossible?
- [Trisecting an Angle](#) Is it impossible to trisect an angle?
- [Constructing a Heptagon](#) Is it impossible to construct a heptagon?

Code Breaking

- [Cryptography](#) What is cryptography?
- [Monoalphabetic Substitution](#) How does basic substitution work?
- [Polyalphabetic Substitution](#) Can you make the basic substitution method more secure?
- [Transposition](#) What is a shuffle/transposition cipher?
- [Frequency Lists](#) Are there useful strategies in decryption?
- [Binary and Hexadecimal](#) What are binary and hexadecimal codes?
- [ASCII Codes](#) What is ASCII?

If your question has not been answered here please feel free to contact mathschallenge.net by using the email address at the bottom of this page.

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