

BREAKDOWN OF TOPICS ON THE MATH SECTION

PRE-ALGEBRA ----14 questions

- place value
- types of numbers such as integers, rational, irrational, whole and imaginary.
- clock problems
- basic operations of numbers (addition, subtraction, multiplication and division)
- order of operations
- number theory, divisibility rules, factors and multiples
- prime and composite numbers
- prime factorization
- lowest common multiples (LCM) and greatest common factor (GCF)
- fractions and reducing fractions to lowest terms
- adding, subtracting, multiplying and dividing fractions
- complex fractions
- improper fractions and mixed numbers
- evaluating expressions or solving for x using fractions
- decimals, converting fractions to decimals and operations with decimals
- ratio, proportion and percent
- application of percents
- percent increase and percent decrease
- basic statistics---organization of data, averages, range, median and mode
- average formula (needs use of Algebra)
- permutations, combinations and the fundamental counting principle
- simple probability
- data collection
- Number problems and multi-step problem solving
- Negative and positive numbers
- working with inequalities
- absolute value
- scientific notation
- rational vs. irrational numbers
- geometric and arithmetic sequences

ELEMENTARY ALGEBRA –10 QUESTIONS

- constants and variables
- similar terms and simplification
- equations including linear equations with one variable
- average formula
- evaluating algebraic expressions by substituting in values for variables and solving
- polynomials and roots of polynomials
- operations with polynomials
- difference of squares
- sum and differences of cubes

ELEMENTARY ALGEBRA CONTINUED

- factoring trinomials in the form of $Ax^2 + Bx + C = 0$
- quadratic equations and finding solutions by factoring
- quadratic formula
- quadratic inequalities
- completing the square
- word problems using algebra
- rules of exponents and radicals
- square and cube roots and approximations
- simplifying radicals
- operations with radicals
- systems of equations
- solving systems of linear equations by substitution
- using variables to express functional relationships
- matrix multiplication
- real v. imaginary numbers
- complex numbers

COORDINATE GEOMETRY AND INTERMEDIATE ALGEBRA 18 QUESTIONS

- graphing and plotting points
- relationship between equations and graphs
- graphing inequalities
- applying the quadratic formula
- distance formula using coordinates
- mid point formula using coordinates
- linear equations
- equation of lines
- slope-intercept form $Y = mX + b$
- finding slope given only two points
- slopes of parallel and perpendicular lines
- conic sections and all the formulas
- functions (exponential, logarithmic and inverse)
- systems of equations or linear algebra
- graphing inequalities
- sequence and series
- progressions and patterns
- binomial theorem
- algebraic problems involving inequalities and absolute value

GEOMETRY 14 questions

- parallel and perpendicular lines
- theorems involving transversals and parallel lines
- angles and types of angles
- polygons
- types of triangles
- triangle inequality theorem and other formulas involving triangles
- quadrilaterals, esp. trapezoids. Every ACT has a trapezoid question
- 30-60-90 right triangles
- 45-45-90 right triangles
- Pythagorean triples
- perimeter and area
- circles---must know formula for area of circle
- triangles within circles
- difference of areas between inscribed and circumscribed squares about circles.
- similarity and congruence
- sum of exterior angles of regular polygon theorem
- number of diagonals in polygon theorem
- 3 dimensional figures.

TRIGONOMETRY only 4 questions

- Converting degrees to radians
- Values of special angles
- SOHCAHTOA
- graphs of trigonometric functions
- inverse trigonometric functions
- trigonometric identities
- applying trigonometric functions to right triangles

If you know everything on this list, your chances of scoring in the 30's are very favorable. Knowledge of the subject matter is necessary, but not sufficient. You will also need ~~ed~~ insight as well as precision to answer the questions correctly. More details of the above subjects are discussed below.