

Entering Grade _____

Full Name _____

Concord Academy
MATHEMATICS QUESTIONNAIRE
Due May 13, 2020

Please answer all the questions on this form with the help of your current teacher, if possible.

Present school and location _____

Title of your current mathematics course _____

I. GEOMETRY By the end of this school year will you have completed either this year or previously:

A full-year course in plane geometry, with substantial proofs? () YES () NO

One or more integrated courses in algebra and plane geometry? () YES () NO

If both answers are NO, go to the ALGEBRA section.

Title/author of textbook used for geometry: _____

Check all topics which you have already learned or will have learned by the end of the school year:

- () Prove triangles congruent
- () Prove lines parallel or perpendicular
- () Prove properties of familiar polygons (parallelograms, trapezoids, etc.)
- () Prove polygons similar
- () Solve problems using the Pythagorean Theorem
- () Compute areas of plane geometric figures (trapezoids, regular polygons, etc.)
- () Compute volumes of solid figures (spheres, cones, pyramids, etc.)
- () Compute angle measures associated with tangents, chords, and secants in circles
- () Compute angles and sides using right triangle trigonometry

II. ALGEBRA By the end of this school year will you have completed either this year or previously:

One or more full-year courses in algebra? () YES () NO

One or more integrated courses in algebra and plane geometry? () YES () NO

If both answers are NO, go to MISCELLANEOUS below.

Check all topics which you have already learned or will have learned by the end of the school year:

Algebra 1

- () Simplify arithmetic expressions (positive and negative numbers, order of operations)
- () Simplify arithmetic expressions (absolute value)
- () Simplify algebraic expressions (distributive law, collect like terms)
- () Solve linear equations (one variable, with distributive law and collecting like terms)
- () Solve word problems involving linear equations (one variable, rates)
- () Graph lines (two variables) using slopes and intercepts
- () Determine equation of line in slope-intercept and point-slope forms
- () Determine equations of parallel and perpendicular lines
- () Derive and use distance and midpoint formulas

Intermediate Algebra

Your Name Again _____

- Solve and graph linear inequalities (1 variable)
- Solve word problems with linear inequalities (1 variable)
- Solve systems of linear equations in two variables
- Graph inequalities (two variables) (lines with shading)
- Graph systems of two or more linear inequalities (2 variables)
- Reduce, multiply, and divide polynomial fractions by factoring
- Reduce expressions with radicals (square roots, cube roots)
- Add, subtract, multiply, and divide radicals; rationalize denominator
- Add, subtract, and multiply (FOIL) polynomials
- Factor polynomials
- Simplify expressions with negative exponents
- Simplify expressions with fractional exponents
- Solve radical equations

Algebra 2

- Determine domain and range of functions
- Graph quadratic functions; determine vertex of parabolas
- Use $f(x)$ function notation; composite and inverse functions
- Add, subtract, multiply, and divide imaginary numbers
- Solve quadratic equations by the quadratic formula (real and imaginary roots)
- Divide polynomials (long division)
- Draw a best fit-line for a scatter plot
- Add and subtract polynomial fractions
- Solve equations with polynomial fractions
- Solve logarithmic and exponential equations
- Graph logarithmic and exponential functions
- Solve exponential growth/decay problems

Trigonometry and higher level

- Solve polynomial equations
- Use factor and remainder theorems
- Graph polynomial functions
- Prove trigonometric identities
- Solve trigonometric equations
- Solve triangles (Law of Sines, Law of Cosines)
- Graph trigonometric functions
- Graph rational functions with limits, asymptotes
- Solve linear systems in 3 variables using matrices
- Polar form of complex numbers
- Polar-coordinate graphs
- Conic sections
- Sequences and series
- Mathematical induction proofs
- Calculate descriptive statistics
- Permutations, combinations
- Probability
- Normal probability distribution

III. MISCELLANEOUS

1. Sometimes incoming students are near the border between two different placement options. If this is the case for you, are you the type of student who would prefer to ease your transition by taking the less challenging class, or would you prefer to take the more advanced class?
2. Please ask your teacher what topics you will cover between the time you take your placement test and the end of your school year. List them here:
3. What Concord Academy mathematics course(s) are you requesting for next year?
4. If there is any additional information which may help us (e.g., participation in enrichment programs, a history of unusual success or difficulty with mathematics or timed testing, etc.), please provide it here:

Please return this questionnaire along with your placement test and other registration forms by **May 13**.