

# NYSED/CUNY Fast Track GRASP Math Learning Modules

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Different models for use of the modules

- GRASP distance learning (18 hours per module, plus 6 hours for language practice)
- Fast Track math classes
- Traditional ABE/HSE math classes (in class or as additional independent work)

The packets provide practice in the high-priority topic areas on the TASC listed below. Students develop underlying concepts as an introduction to each topic and then practice applying what they have learned in context. Students work through TASC-style questions followed by guidance on test-taking skills and explanation of answer choice design. Finally, an optional section on the language of the math topic is provided. We hope that it is helpful for all students, but especially useful for lower-level students and English Language Learners.

These are the 8 subject areas to be completed by the end of January, 2019. Population Density and Rigid Transformations are ready for pilot and general use. They can be found on the Teacher Leader section of CollectEdNY.org. We are interested in feedback from teachers who use the materials.

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The modules are listed below with examples of the topics included:

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## Density

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### Population Density

**Available now!**

- area
- population density
- rate: per = “for every”

### Density of Matter

**Available in early November**

- volume
- density of matter
- measurement conversion

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## Transformations: Shapes on a Plane

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**Available now!**

- rigid transformations: reflection, translation, rotation
- congruence
- coordinate grid

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## Evaluating Algebraic Expressions & Solving Simple Equations

- match expressions/equations with context/situations
- inequality notation
- area models for combining like terms & the distributive property
- explain steps when solving simple equations
- evaluate volume formulas
- systems of equations (guess and check, using a graph)

## Interpreting Graphs & Functions

- graphs of linear, quadratic, and exponential functions
- features of graphs (rate of change, starting amount, zeros)
- matching situation to graph/graph to situation
- matching graph to function

## Basics of Functions

- what is and what is not a function
- three views of a function (rule, equation, graph, table)
- rate of change
- function notation
- comparing linear and nonlinear functions
- elements of function in context

## Exponents & Roots

- squares/square roots
- cubes/cube roots
- fractional ( $\frac{1}{2}$  &  $\frac{1}{3}$ ) and negative exponents
- rules for exponents
- exponential growth & decay

## Geometric Attributes & the Pythagorean Theorem

- geometry definitions (parallel, perpendicular, angles, lines, perimeter vs area vs volume)
- volume of rectangular prism
- shapes and composite shapes
- pythagorean theorem (area, squares, square roots)

## Statistics & Probability

- benchmark percents (50%, 25%, 10%, 1%)
- measures of central tendency
- two-way relative frequency tables
- basic probability
- random sampling