Applied Statistics

Domain	Functions and Modeling	
Cluster	Explore expressions, functions, and models to describe numbers or relationships.	
Standard(s)	M.ASHS.20	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. (e.g., solve for $z = \frac{x - \mu}{\sigma}$ for σ and Margin of Error = $z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$ for n.) Instructional Note: While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complex situations than those addressed in Algebra I. For example, finding the equation of a line through a given point perpendicular to another line allows one to find the distance from a point to a line. This example applies to earlier instances of this standard, not to the current course.

Content Examples
Literal Equations:
https://www.khanacademy.org/math/algebra-home/alg-basic-eq-ineq/alg-old-school-equations/v/solving-for-a-variable

Relevant Content
Several examples of equations used specifically in statistics and probability to solve will apply to this standard throughout the course.

Vocabulary

» Literal equation: An equation that involves two or more variables

» Formula: An equation that states a relationship among quantities (special type of literal equation)

Solve the z-score equation for standard deviation, σ: $z = \frac{x - \mu}{\sigma}$

Solve the margin of error equation for sample size, n: margin of error = $z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$

Solve the one sample -test for the population mean, $\bar{x}$: $t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$

Assessment Links or Tasks
Rearrange for a Specific Variable in a Formula:
http://www.aquinasmaths.com/information-for-new-students---a-level-further-maths.html
(Scroll to L6 - Preparation – Rearranging Formulae on the left side of the page in "Useful documents.") or
https://actacademy.act.org/assessment/rearrange-for-a-specific-variable-in-a-formula/1193013