

## GE Standard VIII: Quantitative Standard

Courses seeking to meet the Quantitative Standard must:

- (i) Require students to engage in particular activities, and
- (ii) Use direct assessment to demonstrate improvement of student skills in particular areas

**To meet the Standard, courses must address *each* of the following four areas, and direct assessment must be used in *each* of the four areas.**

The specific requirements for addressing and assessing each Area follow, and are listed under the Area headings themselves. One page is devoted to each of the four Areas.

Area 1: Comprehension of Quantitative Language

Briefly describe contexts in which your course will require students to do one or more of the things listed in the following bullet point:

- Interpret and explain information presented in standard quantitative formats such as graphs, mathematical expressions, equations, diagrams, tables, and English text.

Your course is asked to demonstrate improvement in one or more of the following student skills:

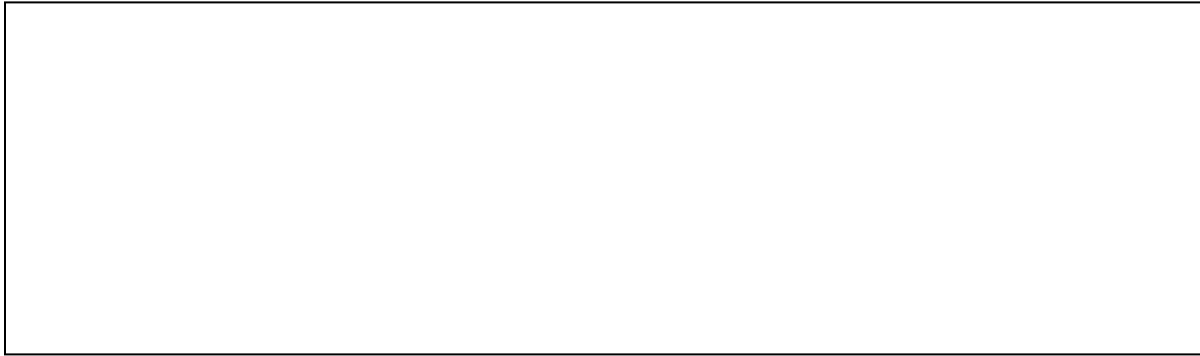
- The ability to extract basic information from graphs, diagrams, or tables
- The ability to identify trends appearing in graphs, diagrams, or tables, and the ability to extrapolate from them
- The ability to extract quantitative information from English text, mathematical expressions, or mathematical equations

Describe what direct assessments you will use in order to demonstrate improvement of such skills among your students.

Area 2: Expression through Quantitative Language

Briefly describe contexts in which your course will require students to do one or more of the things listed in the following bullet point:

- Communicate ideas through the appropriate use of standard quantitative formats such as graphs, equations, diagrams, tables, and English text.



Your course is asked to demonstrate improvement in one or more of the following student skills:

- The ability to communicate information through the use of graphs, diagrams, or tables
- The ability to communicate quantitative information through the use of English text, mathematical expressions, or mathematical equations

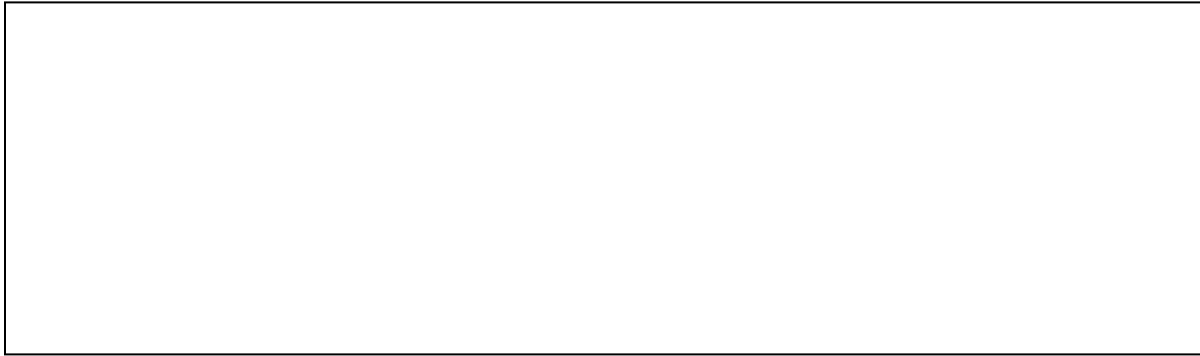
Describe what direct assessments you will use in order to demonstrate improvement of such skills among your students.



### Area 3: Mathematical Fluency

Briefly describe contexts in which your course will require students to do one or more of the things listed in the following bullet point:

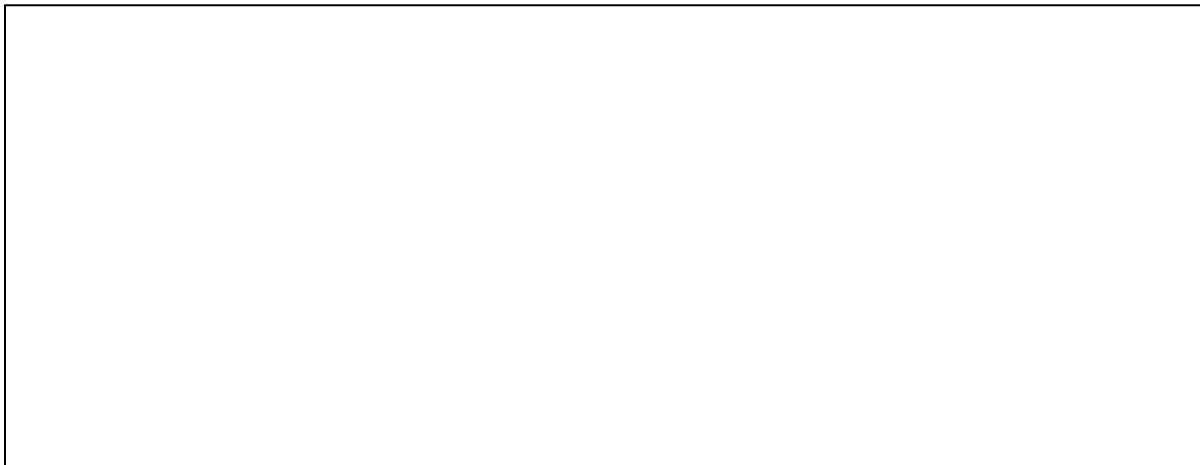
- Use algebraic, geometric, arithmetic, and statistical methods when appropriate in the solutions of problems.



Your course is asked to demonstrate improvement in one or more of the following student skills:

- The understanding of mathematical expressions, including variables and functions of variables
- The understanding of mathematical equations
- The ability to manipulate mathematical expressions, including the ability to perform simple algebraic operations

Describe what direct assessments you will use in order to demonstrate improvement of such skills among your students.



#### Area 4: Data Driven Argumentation

Briefly describe contexts in which your course will require students to do one or more of the things listed in the following bullet point:

- Analyze quantitative data, understand any limits and/or assumptions inherent in a set of data, and be able to use data to formulate and defend arguments based upon that data.

Your course is asked to demonstrate improvement in one or more of the following student skills:

- The ability to use quantitative data to make coherent arguments for or against various conclusions that might be drawn from the data
- The ability to examine critically conclusions claimed to follow from a set of quantitative data by using the data itself
- The understanding of the sources of uncertainty in empirical data, and the ability to estimate the sizes of such uncertainties
- The understanding of the assumptions, uncertainties, and limits of applicability inherent in a given quantitative analysis
- The ability to estimate/approximate quantities when a complete measurement and/or calculation is impossible.

Describe what direct assessments you will use in order to demonstrate improvement of such skills among your students.