General Education Requirements

What “mathematical” knowledge do all students need?

Macalester College’s answer: The ability to

- Describe the world quantitatively,
- Evaluate sources and quality of data,
- Distinguish association from causation,
- Understand trade-offs,
- Understand uncertainty and risk, and
- Use estimation and modeling to evaluate claims and test theories

How do we know when a student can do these?
Transition from High School to College

Approximately one in three traditional entering college students has studied calculus in high school.

What happens to these students? Are we serving their needs?
Prerequisite Conceptual Knowledge

What conceptual knowledge does a student need to succeed in Calculus?

How do we know when a student has this prerequisite knowledge?

*Science, 24.10.2008*: What future rates of emission and removal will stabilize CO$_2$ concentration in the atmosphere?
General Education Requirements:

What mathematical and scientific knowledge should all students have by the time they graduate? How do we know if they have it?

Transition from High School to College:

The number of students majoring in mathematics/science/engineering has not been increasing. Why? What happens during this transition? What can we do to improve retention and persistence?

Prerequisite Conceptual Knowledge:

What are the key conceptual steps in developing the mathematical/scientific understanding needed for success in these fields? How can we accurately assess their progress? How do we help students acquire it?