ABSTRACT
Limit response to the space provided below.

Describe the project vision, goals, activities, and key features that will be addressed and expected benefits of the work.

Through this grant teachers will develop and use a process to first diagnose and then address specific gaps in their students' conceptual and procedural knowledge, with a focus on those gaps that indicate a lack of readiness for high school mathematics. Participants will be selected from targeted districts and range from upper-elementary through lower high school levels. All work will be based on the Common Core State Standards for Mathematics (CCSS-M) documents: the CCSS-M standards, CCSS-M learning progressions and trajectories. The proposed process is designed to address the following three goals.

Goal #1. To increase teachers' mathematics knowledge for teaching in three content areas: 1) statistics and probability, 2) measurement and geometry, and 3) the number system and algebra. To accomplish this, teachers will begin with a guided in-depth analysis of CCSS-M documents and exploration of research on mathematics content and pedagogy related to high school readiness. A key feature of this activity will be training on how formative assessment probes can be designed to align to CCSS-M content standards and used to differentiate instruction, assess students' depth of knowledge around a given topic, analyze trends in student thinking and assess effectiveness of instructional strategies.

Goal #2. To uncover student thinking in order to identify misconceptions, specific gaps, or weaknesses in conceptual understanding and procedural knowledge directly related to high school readiness. To accomplish this, teachers will interview students using proven probes and others that they have developed. They will compare and relate their students' responses to points along the mathematics progressions as described in CCSS-M documents. Key features of this activity include: collecting and evaluating data on student thinking, using appropriate interview protocols and statistical analysis to identify trends and commonly held misconceptions.

Goal #3. To improve teaching practices by employing and analyzing strategies that purposefully address previously identified student needs. Teachers, in a professional learning community made up of peers and university mathematics faculty, will use data analysis to identify student needs and define appropriate teaching strategies for addressing these needs. Key features of this activity include: Structured observations of the implementation of specified strategies with reflections on the use of those identified strategies and the collection of longitudinal data regarding student response to the teaching strategies used.

Participation in interactive workshops during the school year and attendance at summer institutes over a three year time period will facilitate attainment of all goals. Teachers will share specific probes developed and appropriate teaching strategies based on the student thinking data both during the scheduled interactions and eventually through a website model available to the public. All activities will take place under the guidance of university mathematics faculty and experts in the field of formative assessment.