

Mathematics Program Essential Questions

The Nature of Mathematics

- What characteristics make mathematics a language?
- When is the correct solution not the answer to a problem?

Numbers and Operations

- How do you know that an answer is reasonable?
- Why are there different number systems?
- How do you determine when to calculate with pencil and paper, find an estimate, or use a calculator?
- What does it mean to be simplified?
- Is there more than one way to simplify an expression?

Measurement

- What does it mean to be accurate?
- How do you measure?
- How does changing a dimension affect a figure's length, area and volume?

Geometry

- Why do all statements need justification?
- What is the logical progression of statements in a proof?
- How are figures classified?
- How do you name a geometric figure and why are standard naming conventions important?
- Why are points, lines, and planes so important in Euclidean geometry?
- How and when is the Pythagorean Theorem used?
- What do similarity and congruency statements tell you about polygons?

Algebraic Concepts

- What does solve mean?
- Is your solution always the appropriate answer to a problem?
- How do expressions and equations differ?
- What makes a relationship linear?
- How can a line be used to make predictions?
- When is it necessary to use a system of equations?
- Why would you represent a pattern/function in different ways?

Data Analysis and Probability

- What is the purpose of collecting data?
- How is data used or abused?
- How do we make predictions based on probability?