Model Integrated Pathway: Model Mathematics III Overview [MIII]

Number and Quantity

The Complex Number Systems

- **C.** Use complex numbers in polynomial identities and equations.

Vector and Matrix Quantities

- **A.** Represent and model with vector quantities.
- **C.** Perform operations on matrices and use matrices in applications.

Algebra

Seeing Structure in Expressions

- **A.** Interpret the structure polynomial and rational expressions.
- **B.** Write expressions in equivalent forms to solve problems.

Arithmetic with Polynomials and Rational Expressions

- **A.** Perform arithmetic operations on polynomials.
- **B.** Understand the relationship between zeros and factors of polynomials.
- **C.** Use polynomial identities to solve problems.
- **D.** Rewrite rational expressions.

Creating Equations

- **A.** Create equations that describe numbers or relationships.

Reasoning with Equations and Inequalities

- **A.** Understand solving equations as a process of reasoning and explain the reasoning.
- **D.** Represent and solve equations and inequalities graphically.

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Functions

Interpreting Functions

- **B.** Interpret functions that arise in applications in terms of the context (rational, polynomial, square root, cube root, trigonometric, logarithmic).
- **C.** Analyze functions using different representations.

Building Functions

- **A.** Build a function that models a relationship between two quantities.
- **B.** Build new functions from existing functions.

Linear, Quadratic, and Exponential Models

- **A.** Construct and compare linear, quadratic and exponential models and solve problems.

Trigonometric Functions

- **A.** Extend the domain of trigonometric functions using the unit circle.
- **B.** Model periodic phenomena with trigonometric functions.
- **C.** Prove and apply trigonometric identities.

Geometry

Similarity, Right Triangles, and Trigonometry

D. Apply trigonometry to general triangles.

Geometric Measurement and Dimension

B. Visualize relationships between two-dimensional and three-dimensional objects.

Modeling with Geometry

A. Apply geometric concepts in modeling situations.

Statistics and Probability

Interpreting Categorical and Quantitative Data

A. Summarize, represent, and interpret data on a single count or measurement variable. Use calculators, spreadsheets, and other technology as appropriate.

Making Inferences and Justifying Conclusions

A. Understand and evaluate random processes underlying statistical experiments.

B. Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

Using Probability to Make Decisions

B. Use probability to evaluate outcomes of decisions.