

Math GLE's Version 2.0 - Grade 7

Strand 1: Number and Operations

1. Understanding numbers, ways of representing numbers, relationships among numbers and number systems
 - A. Read, write and compare numbers: MA 5 1.10 DOK 1
 - Compare and order all positive rational numbers and find their approximate location on a number line
 - B. Represent and use rational numbers: MA 5 1.10 DOK 2
 - Recognize and generate equivalent forms of fractions, decimals and percents
 - C. Compose and Decompose Numbers: MA 5 1.6 DOK 2
 - Recognize equivalent representations for the same number and generate them by decomposing and composing numbers, including exponential notation
 - D. Classify and describe numeric relationships: none
2. Understand meanings of operations and how they relate to one another
 - A. Represent operations: None
 - B. Describe effects of operations: MA 1 1.10 DOK 2
 - Describe the effects of all operations on rational numbers including integers
 - C. Apply properties of operations: MA 1 1.10 DOK 2
 - Apply properties of operations (including order of operations) to positive rational numbers and integers

D. Apply operations on real and complex numbers: MA 5 1.6 DOK 1

- Approximate the value of square roots to the nearest whole number

3. Compute fluently and make reasonable estimates

A. Describe or represent mental strategies: None

B. Develop and demonstrate fluency: None

C. Compute problems: MA 1 3.1 DOK 2

- Apply all operations on rational numbers including integers

D. Estimate and justify solutions: MA 1 3.2 DOK 3

- Estimate and justify the results of all operations on rational numbers

E. Use proportional reasoning: MA 1 3.2 DOK 2

- Solve problems involving proportions, such as scaling and finding equivalent ratios

Strand 2: Algebraic Relationships

1. Understand patterns, relations and functions

A. Recognize and extend patterns: None

B. Create and analyze patterns: MA 4 1.6 DOK 3

- Analyze patterns represented graphically or numerically with words or symbolic rules, including recursive notation

C. Classify objects and representations: MA 4 1.6 DOK 3

- Compare and contrast various forms of representations of patterns

D. Identify and compare functions: MA 4 1.6 DOK 1

- Identify functions as linear or nonlinear from tables, graphs, or equations

E. Describe the effects of parameter changes: None

2. Represent and analyze mathematical situations and structures using algebraic symbols

A. Represent mathematical situations: MA 4 3.3 DOK 2

- Use symbolic algebra to represent unknown quantities in expressions or equations and solve linear equations with one variable

B. Describe and use mathematical manipulation: MA 4 3.2 DOK 2

- Use properties to generate equivalent forms for simple algebraic expressions that include positive rationals and integers

C. Utilize equivalent forms: None

D. Utilize systems: None

3. Use mathematical models to represent and understand quantitative relationships

A. Use mathematical models: MA 4 1.6, 3.6 DOK 2

- Model and solve problems, using multiple representations such as graphs, tables, expressions, and linear equations

4. Analyze change in various contexts.

A. Analyze change: MA 4 1.6 DOK 3

- Compare situations with constant or varying rates of change

Strand 3: Geometric and Spatial Relationships

1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.
 - A. Describe and use geometric relationships: MA 2 1.10 DOK 2
 - Identify the 2- dimensional cross-section of a 3-dimensional shape
 - B. Apply geometric relationships: MA 2 1.6 DOK 2
 - Describe relationships between corresponding sides, corresponding angles and corresponding perimeters of similar polygons
 - C. Compose and decompose shapes: None
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.
 - A. Use coordinate systems: MA 2 3.2 DOK 2
 - Use coordinate geometry to construct and identify geometric shapes in the coordinate plane using their properties
3. Apply transformations and use symmetry to analyze mathematical situations
 - A. Use transformations on objects: *none*
 - B. Use transformations on functions: MA 2 3.6 DOK 2
 - Describe the relationship between the scale factor and the perimeter of the image using a dilation (contractions- magnifications: stretching/ shrinking)
 - C. Use symmetry: MA 2 1.6 DOK 1
 - Determine all lines of symmetry of polygons
4. Use visualizations, spatial reasoning and geometric modeling to solve problems
 - A. Recognize and draw three dimensional representations: MA 2 3.3 DOK 2
 - Use spatial visualizations to identify various 2-dimensional views of isometric drawings
 - B. Draw and use visual models: MA 2 3.3 DOK 3
 - Draw or use visual models to represent and solve problems

Strand 4: Measurement

1. Understand measurable attributes of objects and the units, systems and processes of measurement

A. Determine unit of measurement: MA 2 3.1 DOK 3

- Identify and justify the unit of measure for volume (customary and metric)

B. Identify equivalent measures: MA 2 1.6 DOK 1

- Identify the equivalent area and volume measures within a system of measurement (e.g., sq. ft. to sq. in., m³ to cm³)

C. Tell and use units of time: MA 5 3.1 DOK 2

- Solve problems involving addition and subtraction of time (hours, minutes and seconds)

D. Count and compute money: None

2. Apply appropriate techniques, tools and formulas to determine measurements

A. Use standard or non standard measurement: none

B. Use angle measurement: MA 2 3.2 DOK 1

- Use tools to measure angles to the nearest degree and classify the angle as acute, obtuse, right, straight, or reflex

C. Apply geometric measurements: MA 2 1.10 DOK 2

- solve problems involving circumference and/or area of a circle and surface area/volume of a rectangular or triangular prism, or cylinder

D. Analyze precision: None

E. Use relationships within a measurement system: MA 2 1.6 DOK 1

- Convert from one unit to another within a system of measurement (capacity) and convert square or cubic units within the same system of measurement

Strand 5: Data and Probability

1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.
 - A. Formulate questions: *none*
 - B. Classify and organize data: *none*
 - C. Represent and interpret data: MA 3 1.8 DOK 2
 - Select, create and use appropriate graphical representation of data, including circle graphs, histograms

2. Select and use appropriate statistical methods to analyze data
 - A. Describe and analyze data: MA 3 1.10 DOK 2
 - Find and use and interpret measures of center and spread, including ranges

 - B. Compare data representations: *none*

 - C. Represent data algebraically: *none*

3. Develop and evaluate inferences and predictions that are based on data.
 - A. Develop and evaluate inferences: MA 3 3.5 DOK 3
 - Use observations about differences between samples to make conjectures about the populations from which the samples were taken

 - B. Analyze basic statistical techniques: *None*

4. Understand and apply basic concepts of probability
 - A. Apply basic concepts of probability: MA 3 3.8 DOK 3
 - Use models to compute the probability of an event and make conjectures (based on theoretical probability) about the results of experiments

 - B. Use and describe compound events: *None*