

# Geometry and Measurement MCA-III Achievement Level Descriptors

## General comments for all grade levels

Meets State Standard	<b>Exceeds the Standard</b> Students at this level of mathematics exceed the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated very consistently may include:
Meets State Standard	<b>Meets the Standard</b> Student at this level of mathematics meet the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:
Partially Meets State Standard	<b>Partially Meets the Standard</b> Students at this level partially meet the mathematics skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:
Does Not Meet State Standard	<b>Does Not Meet the Standard</b> Students at this level succeed at few of the fundamental mathematical skills of the Minnesota Academic Standards. Some of the skills demonstrated may include:

## Reflection Questions

- What patterns emerge in the **Geometry and Measurement** Strand?
- What similarities and differences do you notice from grade to grade?
- How do the 'verbs' change at each of the 4 achievement levels?
- What can you do to assure all students meet the state standards for this strand?

## 3rd Grade

Meets State Standard	399 <b>Exceeds the Standard</b> Distinguishes between parallel and perpendicular lines in a shape; conceptual understanding of perimeter; determines elapsed time and does not require a graphic.
Meets State Standard	366 <b>Meets the Standard</b> Identifies parallel and perpendicular lines; calculates perimeter; makes correct change from a dollar; tells time from an analog clock; determines elapsed time within an hour; solves problems involving reading a thermometer and calculating temperature.
Partially Meets State Standard	350 <b>Partially Meets the Standard</b> Names and describes polygons based on a familiar pictorial orientation by counting number of sides; determines perimeter using additive model.
Does Not Meet State Standard	340 <b>Does Not Meet the Standard</b> Recognizes parallel lines; matches a picture to the name of a familiar polygon (pattern blocks); knows to use a ruler to measure distance; knows the value of coins; reads a thermometer.
Does Not Meet State Standard	301

## 4th Grade

Meets State Standard	499 <b>Exceeds the Standard</b> Names and classifies polygons in a variety of contexts and orientations; conceptual understanding that polygons can be described using sides AND/OR angles; calculates area by decomposing shapes into rectangles; applies transformations to shapes; conceptual understanding of congruency (reference MN Academic Standards 4.3.3.4).
Meets State Standard	466 <b>Meets the Standard</b> Names and describes triangles and common quadrilaterals using definitions; classifies angles in a variety of orientations; conceptual understanding of area as length times width; identifies a transformation (reference MN Academic Standards 4.3.3).
Partially Meets State Standard	450 <b>Partially Meets the Standard</b> Names and describes polygons based on a familiar pictorial orientation using solely one attribute; identifies lines of symmetry; recognizes congruent shapes with the same orientation; calculates perimeter when all sides of a graphic are labeled.
Does Not Meet State Standard	440 <b>Does Not Meet the Standard</b> Names familiar polygons (e.g., pattern blocks); classifies angles in a familiar orientation (e.g., one ray is horizontal).
Does Not Meet State Standard	401

## 5th Grade

Meets State Standard	599 <b>Exceeds the Standard</b> Understands the connections between two- and three-dimensional representations; conceptual understanding of area, surface area, and volume.
Meets State Standard	563 <b>Meets the Standard</b> Classifies three-dimensional figures and describes distinct attributes using correct vocabulary; uses formulas to calculate area, surface area, and volume; decomposes familiar shapes.
Partially Meets State Standard	550 <b>Partially Meets the Standard</b> Recognizes similar attributes of three-dimensional figures; limited vocabulary for attributes of three-dimensional figures; recognizes area as a multiplicative model (e.g., multiplies two sides of any shape to find area).
Does Not Meet State Standard	540 <b>Does Not Meet the Standard</b> Distinguishes between two- and three-dimensional shapes; uses informal naming conventions.
Does Not Meet State Standard	501

## 6th Grade

Meets State Standard	699 <b>Exceeds the Standard</b> Determines area and perimeter of irregular shapes; determines surface area; understands and uses relationships between angles in geometric figures; converts among units of measure within a measurement system.
Meets State Standard	662 <b>Meets the Standard</b> Recognizes and applies formulas for two- and three-dimensional figures; determines area and perimeter of irregular shapes when key is one-square unit; recognizes vocabulary associated with angles; knows basic conversions among units within a measurement system (e.g., feet to inches, centimeters to meters).
Partially Meets State Standard	650 <b>Partially Meets the Standard</b> Calculates area and volume for basic figures (rectangles) when dimensions are provided; determines area and perimeter of irregular shapes by counting; calculates surface area when a net is provided; converts between feet and inches, hours and minutes.
Does Not Meet State Standard	640 <b>Does Not Meet the Standard</b> When determining area and perimeter of irregular shapes, counts by whole numbers (part is whole, diagonal is always one unit); associates 180 degrees with a triangle and 90 degrees with a right angle; finds one missing angle if given the other two in a triangle; given a problem requiring unit conversion, will multiply or divide.
Does Not Meet State Standard	601

## 7th Grade

Meets State Standard	799 <b>Exceeds the Standard</b> Justifies formulas for surface area and volume; can see relationships between circles and cylinders; solves problems involving scale factor and area ratios (with or without a diagram); uses algebraic rules to describe multiple translations or reflections on a grid.
Meets State Standard	760 <b>Meets the Standard</b> Uses formulas to calculate area and circumference of circles and volume and surface area of cylinders; uses proportions and ratios to solve problems involving scale drawings and conversions; uses verbal descriptions to perform translations or reflections on a grid.
Partially Meets State Standard	750 <b>Partially Meets the Standard</b> Uses formulas for area and circumference of a circle and volume of a cylinder when exact values to substitute are given; solves problems with similar figures when a diagram is provided with corresponding parts labeled with "friendly" numbers; uses verbal description to perform a single translation or reflection on a grid.
Does Not Meet State Standard	740 <b>Does Not Meet the Standard</b> Calculates the circumference of a circle when given the diameter; recognizes a translation or a reflection on a coordinate grid.
Does Not Meet State Standard	701

## 8th Grade

Meets State Standard	899 <b>Exceeds the Standard</b> Conceptual understanding of the Pythagorean Theorem and applies it in non-routine problems; understands and applies slopes of parallel and perpendicular lines graphically and symbolically.
Meets State Standard	861 <b>Meets the Standard</b> Applies the Pythagorean Theorem to solve problems; identifies parallel lines graphically and symbolically; partial connection of slope with perpendicular lines.
Partially Meets State Standard	850 <b>Partially Meets the Standard</b> Substitutes numbers in the Pythagorean Theorem to determine hypotenuse; partial connection of slope with parallel lines.
Does Not Meet State Standard	840 <b>Does Not Meet the Standard</b> Recognizes the equation for the Pythagorean Theorem; recognizes parallel or perpendicular lines on a graph.
Does Not Meet State Standard	801