Missouri End-of-Course Assessment Achievement Level Descriptors

Geometry

Achievement Levels

Advanced: Students performing at the Advanced level on the Missouri Geometry End-of-Course Assessment demonstrate a thorough understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in geometric and spatial relationships, measurement, and probability. In addition to demonstrating, understanding, and applying the skills at the Proficient level, students scoring at the Advanced level carry out strategies to solve non-routine problems with high precision and fluency.

Scale Score Cut: 225-250

Proficient: Students performing at the Proficient level on the Missouri Geometry End-of-Course Assessment demonstrate sufficient understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in geometric and spatial relationships, measurement, and probability. In addition to demonstrating, understanding, and applying the skills at the Basic level, students scoring at the Proficient level carry out strategies to solve problems with sufficient precision and fluency.

Scale Score Cut: 200-224

Basic: Students performing at the Basic level on the Missouri Geometry End-of-Course Assessment demonstrate partial understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in geometric and spatial relationships, measurement, and probability. In addition to demonstrating, understanding, and applying the skills at the Below Basic level, students scoring at the Basic level carry out strategies to solve routine problems with partial precision and fluency.

Scale Score Cut: 189-199

Below Basic: Students performing at the Below Basic level on the Missouri Geometry End-of-Course Assessment demonstrate limited understanding of important college and career ready mathematical content and concepts. They demonstrate these skills in geometric and spatial relationships, measurement, and probability. In addition, students scoring at the Below Basic level carry out strategies to solve simple problems with limited precision and fluency.
Scale Score Cut: 100-188

Achievement Descriptors

Advanced

Scale Score Cut: 225-250

In addition to understanding and applying the skills at the Proficient level, students at this level:

- ✓ Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied non-routine problems
- ✓ Use transformations, congruence, and similarity criteria to solve multi-step problems and to prove relationships among composite geometric figures
- ✓ Apply properties and theorems of angles, segments, and arcs in circles to solve problems, model relationships, and formulate generalizations
- ✓ Apply geometric concepts and trigonometric ratios to describe, model, and solve non-routine applied geometric problems
- ✓ Apply Cavalieri's principle to find the volume of an oblique cylinder, pyramid, or cone
- ✓ Identify three-dimensional objects generated by rotations of two-dimensional objects
- ✓ Complete the square to find the center and radius of a circle given by an equation
- ✓ Derive the equation of a parabola given a focus and directrix

Proficient

Scale Score Cut: 200-224

In addition to understanding and applying the skills at the Basic level, students at this level:

- ✓ Determine and use appropriate geometric theorems and properties to routine problems
- ✓ Use trigonometric ratios, the Pythagorean Theorem, and its converse to solve right triangles in mathematical or applied problems
- ✓ Use transformations and congruence and similarity criteria for triangles to prove relationships among geometric figures and to solve problems
- ✓ Use similarity transformations with right triangles to define trigonometric ratios for acute angles
- ✓ Apply properties and theorems of angles, segments, and arcs in circles to solve problems and model relationships
- ✓ Apply geometric concepts and trigonometric ratios to describe, model, and solve more complex applied geometric problems
- ✓ Make geometric constructions, given a line and a point not on the line, using a variety of tools and methods (perpendicular and parallel lines, equilateral triangles, squares and regular hexagons inscribed in circles)
- ✓ Use formulas to solve mathematical and contextual problems that involve the volume of composite figures formed with cylinders, pyramids, cones, and spheres
- ✓ Construct the shapes of two-dimensional cross-sections of three-dimensional objects
- ✓ Derive the equations for circles of given center and radius using the Pythagorean theorem

Basic

Scale Score Cut: 189-199

In addition to understanding and applying the skills at the Below Basic level, students at this level:

- ✓ Use geometric theorems and properties to prove statements about properties of lines, angle measurement, distance, triangles, and congruence
- ✓ Solve right triangle problems using the Pythagorean Theorem and its converse
- ✓ Specify a sequence of transformations, using precise geometric terminology, that will carry a given figure onto an image or vice versa
- ✓ Identify relationships among geometric figures using transformations and use them to solve problems
- ✓ Use geometric relationships in the coordinate plane to solve problems involving area, perimeter, and ratios of lengths
- ✓ Define trigonometric ratios
- ✓ Apply geometric properties and concepts to describe, model, and solve applied problems related to the Pythagorean Theorem, geometric shapes, their measures, and properties
- ✓ Make geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment
- ✓ Construct perpendicular and parallel lines given a line and a point not on the line
- ✓ Identify the center and radius in the equation of a circle in standard form
- ✓ Use formulas to solve mathematical and contextual problems that involve the volume of cylinders, pyramids, cones, and spheres
- ✓ Identify the shapes of two-dimensional cross-sections of three-dimensional objects

Below Basic

Scale Score Cut: 100-188

Students at this level:

- ✓ Use geometric theorems and properties to solve problems about properties of lines, angle measurement, distance, triangles, and congruence
- ✓ Use the Pythagorean Theorem to solve for the missing side in a right triangle
- ✓ Specify a transformation that will carry a given figure onto an image or vice versa
- ✓ Use geometric relationships to solve problems involving area and perimeter
- ✓ Apply geometric concepts to describe, model, and solve applied problems related to geometric shapes, their measures, and properties
- ✓ Identify basic geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment
- ✓ Apply properties and theorems of angles, segments, and arcs in circles to solve problems
- ✓ Use formulas to find the volume of cylinders, pyramids, cones, and spheres