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New Mexico Instructional Scope

5th Grade Geometry Guide

The purpose of this tool is to help educators understand each of the grade level standards and how those standards connect to the students' overall preparation for college and career readiness.

The NMIS is a teacher-influenced tool, designed to provide instructional planning support at the programmatic level for districts and instructional level for teachers. Its foundation stems from the vision and mission of the PED and came into existence to assure that students in NM will be engaged in a culturally and linguistically responsive educational system that meets the social, emotional, and academic needs of ALL students. This is also rooted in the belief that all students must have access to on-grade-level standards, focusing on acceleration. The purpose of this tool is to help educators understand each of the grade level standards and how those standards connect to the students' overall preparation for college and career readiness.

Standards are defined as the most critical prerequisite skills and knowledge. This document is color-coded to reflect both anchor and priority standards. Though previous emphasis was placed on priority standards to address lost learning due to COVID-19, New Mexico teachers should note that moving forward, while priority standards allow for acceleration of learning, all standards should be addressed in instruction throughout the school year.

In this guide you will find:

- A breakdown of each of the grade level standards within the cluster, including:
  - Standards of Mathematical Practice
  - Common Misconceptions
  - Identification of Priority Standards, as identified by NMPED.
  - Level of Rigor Identification
- Sample aligned assessment items
- Suggested Student Discourse Guide
- A multilayered system of supports (MLSS) and culturally and linguistically responsive instruction (CLR) guide

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Key		
	Priority Standard	Priority standards, as identified by NMPED, are denoted with red highlighting. Priority standards are the most critical prerequisite skills and knowledge a student needs. This does not mean that these are only standards required to be taught, just these are the standards that will allow for the acceleration the students of New Mexico need during this time.
	*Conceptual Understanding*	Conceptual Understanding standards help students build a deep understanding of the **how** and **why** of mathematics.
	*Application*	Application standards help students identify the appropriate concepts and skills to tackle **novel real-world problems.**
	*Procedural Skill and Fluency*	Procedural standards help students develop **efficiency** and **accuracy** in computations.

Standards Breakdown

- Graph points on the coordinate plane to solve real-world and mathematical problems
  - 5.G.A.1
  - 5.G.A.2
- Classify two-dimensional figures into categories based on their properties
  - 5.G.B.3
  - 5.G.B.4

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Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Cluster Standard: 5.G.A.1

Standard	**Standards for Mathematical Practice**
Graph points on the coordinate plane to solve real world mathematical problems. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y axis and y-coordinate).	• **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• These standards deal with only the first quadrant (positive numbers) in the coordinate plane. Although students can often "locate a point," these understandings are beyond simple skills. For example, initially, students often fail to distinguish between two different ways of viewing the point (2, 3), say, as instructions: "right 2, up 3"; and as the point defined by being a distance 2 from the y-axis and a distance 3 from the x-axis. In these two descriptions the 2 is first associated with the x-axis, then with the y-axis.	• Graph points in the first quadrant. • Interpret coordinate values of points in real world context and mathematical problems. • Represent real world and mathematical problems by graphing points in the first quadrant.
DOK	**Blooms**
1-2	Apply, Understand

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Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Cluster Standard: 5.G.A.2

Standard	**Standards for Mathematical Practice**
Graph points on the coordinate plane to solve real world mathematical problems. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.	• **SMP 1:** Make sense of problems and persevere in solving them. • **SMP 2:** Reason abstractly and quantitatively.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard references real-world and mathematical problems, including the traveling from one point to another and identifying the coordinates of missing points in geometric figures, such as squares, rectangles, and parallelograms.	• Graph points in the first quadrant. • Interpret coordinate values of points in real world context and mathematical problems. • Represent real world and mathematical problems by graphing points in the first quadrant.
DOK	**Blooms**
1	Apply

Common Misconceptions

• Students may think the order in plotting a coordinate point is not important.	

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Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Classify two-dimensional figures into categories based on their properties**

Cluster Standard: 5.G.B.3

Standard	Standards for Mathematical Practice
Classify two-dimensional figures into categories based on their properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	• **SMP 6:** Attend to precision. • **SMP 8:** Look for and express regularity in repeated reasoning.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard calls for students to reason about the attributes (properties) of shapes. Students should have experiences discussing the property of shapes and reasoning. The notion of congruence (“same size and same shape”) may be part of classroom conversation but the concepts of congruence and similarity do not appear until middle school.	• Recognize that some two-dimensional shapes can be classified into more than one category based on their attributes. • Recognize if a two-dimensional shape is classified into a category, that it belongs to all subcategories of that category.
DOK	**Blooms**
1-3	Understand

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Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Classify two-dimensional figures into categories based on their properties**

Cluster Standard: 5.G.B.4

Standard	**Standards for Mathematical Practice**
Classify two-dimensional figures into categories based on their properties. Classify two dimensional figures in a hierarchy based on properties.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard builds on what was done in 4th grade. Figures from previous grades: polygon, rhombus/rhombi, rectangle, square, triangle, quadrilateral, pentagon, hexagon, cube, trapezoid, half/quarter circle, circle, kite. A kite is a quadrilateral whose four sides can be grouped into two pairs of equal-length sides that are beside (adjacent to) each other. Students should be able to reason about the attributes of shapes by examining: What are ways to classify triangles? Why can't trapezoids and kites be classified as parallelograms? Which quadrilaterals have opposite angles congruent and why is this true of certain quadrilaterals, and How many lines of symmetry does a regular polygon have? • Note, in the U.S., the term "trapezoid" may have two different meanings. Research identifies these as inclusive and exclusive definitions. The inclusive definition states: A trapezoid is a quadrilateral with at least one pair of parallel sides. The exclusive definition states: A trapezoid is a quadrilateral with exactly one pair of parallel sides. With this definition, a parallelogram is not a trapezoid. North Carolina has adopted the exclusive definition. (Progressions for the CCSSM: Geometry, The Common Core Standards Writing	• Recognize the hierarchy of two-dimensional shapes based on their attributes. • Analyze properties of two-dimensional figures in order to place them into a hierarchy. • Classify two-dimensional figures into categories and/or subcategories based on their attributes.

Team, June 2012.)	
DOK	**Blooms**
1-2	Understand

Common Misconceptions

• Students may think that when describing geometric shapes and placing them in subcategories, the last category is the only classification that can be used.	

ASSESSMENT GUIDE

- Graph points on the coordinate plane to solve real-world and mathematical problems
- Classify two-dimensional figures into categories based on their properties

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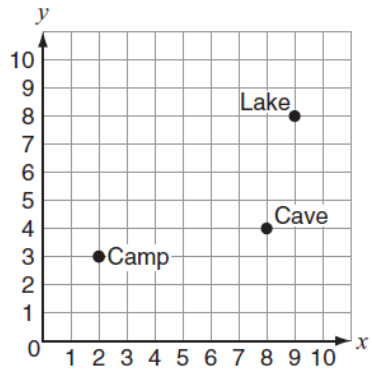
Grade	*CCSS Domain*	*CCSS Strand*
5	**Geometry**	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Sample Task #1 (Constructed Response)

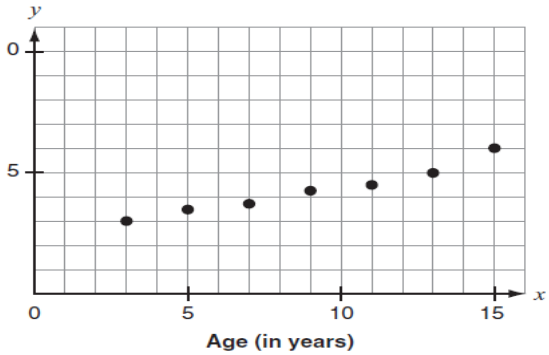
Terry plotted the locations of places in a state park.



a. What is the ordered pair that gives the location of the camp?

Sample Task #2 (Multiple Choice)

4. Gabriel made this coordinate grid to show his height at different ages.



The *x*-axis represents his age in years, and the *y*-axis represents his height in feet.

Based on the coordinate grid, how much did Gabriel grow from age 3 to age 13?

Ⓐ 2 feet
Ⓑ 3 feet
Ⓒ 4 feet
Ⓓ 5 feet

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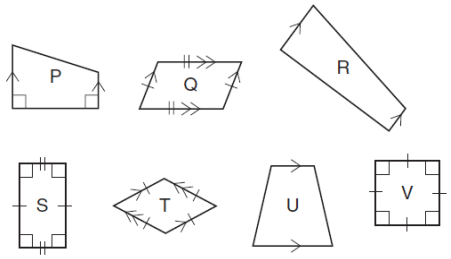
Grade	*CCSS Domain*	*CCSS Strand*
5	**Geometry**	**Classify two-dimensional figures into categories based on their properties**

Sample Task #1 (Constructed Response)

A teacher drew these shapes on the board.



a. Which shapes are parallelograms? List **all** that apply.

Sample Task #2 (Multiple Choice)

Three figures are shown.

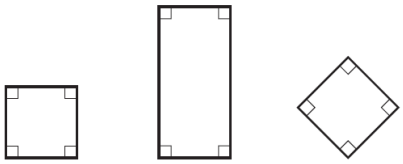


Figure 1 Figure 2 Figure 3

Which figures are rectangles?

Ⓐ figure 2 only
Ⓑ figures 1 and 2 only
Ⓒ figures 1 and 3 only
Ⓓ figures 1, 2, and 3

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MLSS AND CLR GUIDE

- Graph points on the coordinate plane to solve real-world and mathematical problems
- Classify two-dimensional figures into categories based on their properties

CCSS Domain	*CCSS Cluster*
Geometry	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on graphing points on the coordinate plane to solve real-world and mathematical problems, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, families and communities can create different charts and graphs to analyze various types of fundraiser sales to determine which items would be more efficient in selling during community events.	
Cross-Curricular Connections	STEM: Plot on a coordinate system. For example: Plot stars, planets, moons, asteroids, and other celestial bodies on a diorama of the solar system. Plot stars of a constellation on a coordinate system. Identify the location of stars on a system map using ordered pairs.	
Validate/Affirm/Build/ Bridge	• *How can you design your mathematics classroom to intentionally and purposefully legitimize the home culture and languages of students and reverse the negative stereotypes regarding the mathematical abilities of students of marginalized cultures and languages?* • *How can you create connections between the cultural and linguistic behaviors of your*	• When planning with your HQIM, consider how to modify tasks to represent the prior experiences, culture, language and interests of your students to "portray mathematics as useful and important in students' lives and promote students' lived experiences as important in mathematics class." Tasks can also be designed to "promote social justice [to] engage students in using mathematics to understand and eradicate social inequities (Gutstein 2006)." For example, when studying graphing points on the coordinate plane to solve real-world and mathematical problems the types of mathematical tasks are critical because when students are given problems that they can relate to their everyday lives, they tend to develop a strong understanding of the concept or skill that is being taught. By allowing the

	students' home culture and language, the culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?	students to have a part in developing the problem, it gives them ownership of the problem and it allows them to perform successfully on the task. The teacher should only provide the framework and allow the students to fill in the remaining information that is needed to complete the problem. This allows the students to use their personal and real-life situations to create more meaningful tasks that will allow for more success.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to plotting points on a number line and construct perpendicular lines. **(4.G.1, 4. MD.4)**	• Connect to forming ordered pairs from given rules and graph points on a coordinate plane. **(5.OA.3)**	• Connect to extending understanding of a coordinate plane to the negative number coordinates. **(6.NS.6)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	For example, some learners may benefit from targeted pre-teaching that rehearses prior learning when studying graphing points on the coordinate plane to solve real-world and mathematical problems because students must be able to understand domain specific vocabulary and should be able to access prior knowledge learned in previous grade levels.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	3.MD.B.4: This standard provides a foundation for work with graphing points on the coordinate plane to solve real-world and mathematical problems because students should be able to show data by making a line plot, where the horizontal scale is marked off in appropriate units. Without knowledge of the vocabulary and prior knowledge, the students will continue to struggle. If students have unfinished learning within this standard,

		based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.
Re-Teach		
Level of Intensity	***Essential Question***	***Examples***
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	For example, students may benefit from re-engaging with content during a unit on graphing points on the coordinate plane to solve real-world and mathematical problems by clarifying mathematical ideas and/or concepts through a short mini-lesson because confusion by students of key domain specific vocabulary which can cause students to reverse the data being presented. Reteaching key domain specific vocabulary and any prior knowledge will present comprehension of the standard being taught.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	For example, some students may benefit from intensive extra time during and after a unit graphing points on the coordinate plane to solve real-world and mathematical problems by confronting student misconceptions because students will be able to identify the difference between horizontal and vertical and its association with the variables x and y on a coordinate grid. Students will be able to distinguish between Horizontal (lying flat) vs Vertical (standing tall) which are commonly reversed.
Extension		
Essential Question		***Examples***
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?		For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying graphing points on the coordinate plane to solve real-world and mathematical problems because students will be able to develop an understanding of why coordinate grids are listed as x-axis, y-axis) and explain in full detail what would happen if mixed around.

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CCSS Domain	*CCSS Cluster*
Geometry	**Classify two-dimensional figures into categories based on their properties**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on classifying two-dimensional figures into categories based on their properties, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, have your student identify different shapes in the home and community environment Ask your student to describe the shape based on the number of sides and angles and ask if they can tell you what categories(s) that shape fits into.	
Cross-Curricular Connections	Art: Provide students with multiple colors and textures of paper. Have them work in groups to create collages based on the attributes of different shapes. Give students strips of paper that give examples of different shapes. Allow them to create their collages based on the attributes given. History and Architecture: Have students study the shapes of historical dwellings/buildings. Have students make connections to the building in their communities. Discuss why certain shapes may have been more fitting than others for various buildings. Have students describe the dwellings/buildings based on their attributes.	
Validate/Affirm/Build/ Bridge	• *How can you design your mathematics classroom to intentionally and purposefully legitimize the home culture and languages of students and reverse the negative stereotypes regarding the mathematical abilities of students of marginalized cultures and languages?* • *How can you create connections between the cultural and linguistic behaviors of your students' home culture and language, the culture and language of*	• Facilitating Meaningful Mathematical Discourse: Mathematics discourse requires intentional planning to ensure all students feel comfortable to share, consider, build upon and critique the mathematical ideas under consideration. When student ideas serve as the basis for discussion we position them as knowers and doers of mathematics by using equitable talk moves students and attending to the ways students talk about who is and isn't capable of mathematics we can disrupt the negative images and stereotypes around mathematics of marginalized cultures and languages. "A discourse-based mathematics classroom provides stronger access for every student — those who have an immediate answer or approach to share, those who have begun to formulate a mathematical approach to a task but have not fully developed their thoughts, and those who may not have an approach but can provide feedback to others." For example, when studying

	school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?	classifying two dimensional figures into categories based on their properties, facilitating meaningful mathematical discourse is critical because this cluster requires students to reason about the attributes of shapes. Students need ample opportunity to discuss with peers the properties and attributes of shapes to develop understanding. Lead discussions asking students to not only talk about the properties of polygons, but also to reason about the attributes of each shape and how each shape should be classified. Students should also be able to explain why some shapes fit into subcategories.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to learning that shapes in different categories share attributes. **(2.G.1)** • Connect to learning that shared attributes can define a larger category. For example, rectangles, squares, and rhombuses are all examples of quadrilaterals. **(3.G.1)** • Connect to classifying two-dimensional figures based on lines and angles. **(4.G.2)**	•	• Connect to drawing shapes with given conditions. **(7.G.2)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	For example, some learners may benefit from targeted pre-teaching by rehearsing new mathematical language when studying Classifying Two-Dimensional Figures Into Categories Based On Their Properties because this cluster is rich in mathematical vocabulary that may be confusing for some students.

Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	2.G.A.1: This standard provides a foundation for work with <mathematics of the assigned cluster> because its roots begin in 2nd grade where students recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.
Re-Teach		
Level of Intensity	***Essential Question***	***Examples***
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	For example, students may benefit from re-engaging with content during a unit on Classifying Two-Dimensional Figures Into Categories Based On Their Properties by clarifying mathematical ideas and/or concepts through a short mini-lesson because students may have a difficult time understanding that figures can belong to more than one category, based on their attributes. For example, squares also belong to the following categories: quadrilaterals, rectangles, and parallelograms.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	For example, some students may benefit from intensive extra time during and after a unit Classifying Two-Dimensional Figures Into Categories Based On Their Properties by helping students move from specific answers to generalizations because the more ways students can classify and reason about shapes, the better they will understand their properties. Lead students into answering questions like, “Why is a square always a triangle?” and “Why is a rectangle not always a square?”.
Extension		
Essential Question		***Examples***
What type of extension will offer additional challenges to ‘broaden’ your student’s knowledge of the mathematics developed within your HQIM?		For example, some learners may benefit from an extension such as the opportunity to understand concepts more quickly and explore them in greater depth than other students when studying Classifying Two-

	Dimensional Figures Into Categories Based On Their Properties because students can extend thinking using graphic organizers, such as flow charts or T-charts, to compare and contrast the attributes of geometric figures. (Students need not be limited to quadrilaterals).