

**Rangely RE-4 Curriculum Development
5th Grade Mathematics**

Unit Title	"X" Marks the Spot		Length of Unit	5-6 weeks
Focusing Lens(es)	Patterns Change	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.5-S.1-GLE.1 MA10-GR.5-S.2-GLE.1 MA10-GR.5-S.3-GLE.1 MA10-GR.5-S.4-GLE.2	
Inquiry Questions (Engaging-Debatable):	<ul style="list-style-type: none"> What is the connection between patterns and coordinate points? 			
Unit Strands	Operations and Algebraic Thinking, Geometry, Measurement and Data, Personal Financial Literacy			
Concepts	Patterns, rules, relationships, corresponding terms, graphs, coordinate plane (system), axes, origin, intersection, perpendicular, point, ordered pair, coordinates			

Generalizations My students will Understand that...	Guiding Questions	
	Factual	Conceptual
The understanding of equivalent pairs of measurements allows mathematicians to establish measurement equivalents within the same measurement system (i.e., 1 foot is as long as 12 inches, so 2 feet is as long as $3 \times 12 = 36$ inches) (MA10-GR.5-S.1-GLE.1-EO.d.i)	How many centimeters in a meter? How many inches in a foot? How can you convert from one measurement to another, such as from feet to inches?	How is the metric system similar to our base ten place value system?
The generation of numerical patterns using given rules and graphing the corresponding terms on a coordinate plane provides the foundation for the development of ratio and function (MA10-GR.5-S.2-GLE.1-EO.a, b, c, d)	How can you generate ordered pairs from a rule?	How do you know when there is a pattern? (MA10-GR.5-S.2-GLE.1-IQ.1) How are patterns useful? (MA10-GR.5-S.2-GLE.1-IQ.2)
A pair of perpendicular number lines, called axes, defines a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line (MA10-GR.5-S.4-GLE.2-EO.a, b)	What are the perpendicular number lines on a coordinate grid called? What is the origin?	How does using a coordinate grid help us solve real world problems? (MA10-GR.5-S.4-GLE.2-IQ.1)
A coordinate plane provides the location for visually representing the relationship of ordered pairs (a, b) where the first number indicates how far to travel from the origin in the direction of one (x) axis, and the second number indicates how far to travel in the direction of the second (y) axis (MA10-GR.5-S.4-GLE.2-EO.a, b)	What do x and y mean on a coordinate grid? (F) What are the x and y axes? How do you locate a point from its coordinates? How do find the coordinates for a point?	Why are two numbers necessary for locating points on a coordinate plane?

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Key Knowledge and Skills: My students will...	<i>What students will know and be able to do are so closely linked in the concept-based discipline of mathematics. Therefore, in the mathematics samples what students should know and do are combined.</i>
<ul style="list-style-type: none"> • Generate two numerical patterns using two given rules and identify apparent relationships between corresponding terms (MA10-GR.5-S.2-GLE.1-EO.a, b) (5.CC.OA.3) • Form ordered pairs consisting of corresponding terms of two patterns, and graph the ordered pairs on a coordinate plane (MA10-GR.5-S.2-GLE.1-EO.c) (5.CC.OA.3) <ul style="list-style-type: none"> ○ Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. <i>For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i> PARCC • 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 (MA10-GR.5-S.4-GLE.2-EO.b) (5.CC.G.1) • Recognize in an ordered pair 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) (MA10-GR.5-S.4-GLE.2-EO.a, b) (5.CC.G & G.2) <ul style="list-style-type: none"> ○ 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). PARCC <ul style="list-style-type: none"> ▪ i) Tasks probe student understanding of the coordinate plane as a representation scheme, with essential features as articulated in standard 5.G.1. ▪ ii) It is appropriate for tasks involving only plotting of points to be aligned to this evidence statement. • 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 (MA10-GR.5-S.4-GLE.2-EO.b) (5.CC.G.2) <ul style="list-style-type: none"> ○ 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. Write simple expressions that record calculations with numbers. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. PARCC <ul style="list-style-type: none"> ▪ i) Note that expressions elsewhere in CCSS are thought of as recording calculations with numbers (or letters standing for numbers) as well; see for example 6.EE.2a. See also the first paragraph of the <i>Progression for Expressions and Equations</i>. ○ Interpret numerical expressions without evaluating them. <i>For example, recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$ without having to calculate the indicated sum or product.</i> PARCC 	

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- Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$) and use operations on fractions for this grade to solve problems involving information presented in line plots (MA10-GR.5-S.3-GLE.1-EO.a.i, a.ii) (5.CC.MD.2)
 - Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). PARCC
 - Use operations on fractions for this grade (knowledge and skills articulated in 5.NF) to solve problems involving information in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.* PARCC
- Use patterns to solve problems including those involving saving and checking accounts, such as patterns created when saving \$10 a month (MA10-GR.5-S.2-GLE.1-EO.e)*
- Explain, extend, and use patterns and relationships in solving problems, including those involving saving and checking accounts such as understanding that spending more means saving less (MA10-GR.5-S.2-GLE.1-EO.f)*

Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.
 EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *“Mark Twain exposes the hypocrisy of slavery through the use of satire.”*

A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):

If I save \$10 a month every month for a year starting in January I can graph on a coordinate plane the corresponding terms of the two patterns, the number for each month and totaled saved.

Academic Vocabulary:

Data, scale, intersection, graph, patterns, rules, relationships, point, fraction, measurements, generate

Technical Vocabulary:

Coordinates, x-axis, y-axis, x-coordinate, y-coordinate, ordered pair, quadrant, coordinate grid, coordinate plane, coordinate system, perpendicular lines, line plot

***Denotes connection to Personal Financial Literacy (PFL)**