Coordinate Plane & Intersecting Lines

1.2 Explore in the coordinate plane

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Foundations of graphing linear equations (8.EE.5, 8.EE.6)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	**Given two coordinates** derive the equation y=mx+b for a line Graph an equation from the form **ax+by=c (using a table or converting to y=mx+b)**	Given the graph of a line, **derive the equation y=mx+b for a line** Graph an equation **from the form y=mx+b (using a table or the y-intercept and the slope)**	Given the graph of a line, **identify the y intercept as a coordinate and the slope** Graph a line **given the y-intercept and the slope**	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1
Find the point (G.GPE.6)		Find the point on a line segment, given two endpoints that divide **the segment into a given ratio.**	Find the point on a line segment, given two endpoints, that divides a **horizontal or vertical segment into a given ratio**.	Find the point on a line segment, given two endpoints, that divides the **segment in half.**	
Prove using formulas (G.GPE.4) **Perimeter and area** (G.GPE.7)		Using coordinate geometry and the Pythagorean, slope, distance and midpoint formulas to do both of the following • find the perimeter of polygons. • find the area **of polygons using** triangles and rectangles	Using coordinate geometry and the Pythagorean, slope, distance and midpoint formulas to do **both** of the following • find the perimeter of polygons. • find the area of triangles and rectangles	Using coordinate geometry and the Pythagorean, slope, distance and midpoint formulas to do **one** of the following • find the perimeter of polygons. • find the area of triangles and rectangles	

G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; ~~prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).~~

G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★

G.GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

8.EE.6 Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Embedded standard not summatively assessed.

G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

Coordinate Plane & Intersecting Lines

1.3 Explore congruence constructions

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Construction of lines and angles (G.CO.12)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing •Connecting •Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	Use a variety of tools to perform both of the following **with precision:** • copy a segment • copy an angle	Use a variety of tools to perform **both** of the following: • copy a segment • copy an angle	Use a variety of tools to perform **1** of the following: • copy a segment • copy an angle	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1
Prove using formulas (G.GPE.4)		Using coordinate geometry and the slope, distance and midpoint formulas to prove **all** of the following • Segments on a coordinate plane are congruent • Segments on a coordinate plane are perpendicular • Segments on a coordinate plane are parallel	Using coordinate geometry and the slope, distance and midpoint formulas to prove **two** of the following • Segments on a coordinate plane are congruent • Segments on a coordinate plane are perpendicular • Segments on a coordinate plane are parallel	Using coordinate geometry and the slope, distance and midpoint formulas to prove **one** of the following • Identify if segments on a coordinate plane are congruent • Identify If segments on a coordinate plane are perpendicular • Segments on a coordinate plane are parallel	

G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

G.GPE.4 Use coordinates to prove simple geometric theorems algebraically.

Embedded standards, can be reassessed.

8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

8.EE.6 Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Coordinate Plane & Intersecting Lines

3.1 Explore parallel and perpendicular lines

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Construction of lines and angles (G.CO.12)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	Use a variety of tools and methods to perform both of the following **with precision:** • Construct perpendicular lines • Construct a line parallel to a given line through a point not on the line.	Use a variety of tools and methods to perform **both** of the following: • Construct perpendicular lines • Construct a line parallel to a given line through a point not on the line.	Use a variety of tools and methods to perform **one** of the following: • Construct perpendicular lines • Construct a line parallel to a given line through a point not on the line.	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1
Prove and use parallel and perpendicular lines (G.GPE.5)		Prove **a pair of lines** are parallel or perpendicular using slope Write the equation of a line that is parallel **and** perpendicular to a given line that passes through a given point	**Given the slope of 1 line**, prove if a pair of lines are parallel or perpendicular **Write** the equation of a line that is parallel **or** perpendicular to a given line that passes through a given point	**Given the slope of a pair of lines**, identify the lines are parallel or perpendicular **Identify** the equation of a line that is parallel or perpendicular to a given line that passes through a given point	

G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

G.GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

Embedded standards , can be reassessed

G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

8.EE.6 Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Coordinate Plane & Intersecting Lines

3.2 Prove theorems about lines and angles

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Prove lines and angles (G.CO.9, G.GPE.4, 8.EE.7)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	**Algebraically solve multistep equations involving** the following theorems: • Vertical angles are congruent. • When a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent	**Algebraically solve one and two step equations involving** the following theorems: • Vertical angles are congruent. • When a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent	**Identify** all of the following • Vertical angles are congruent. • When a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1

G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; ~~prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).~~

G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

8.EE.7 Solve linear equations in one variable. a - Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). b - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Embedded standard not summatively assessed. This concept can be used as a reassessment opportunity.

G.GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).