

Geometry Unit 2: Topic 2
Updated Nov. 2021

Marking Period	Unit Title	Recommended Instructional Days
1	Parallel and Perpendicular Lines	18-20
Domain:		<p>Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit</p> <p><u>Essential Questions:</u></p> <ol style="list-style-type: none"> 1. What angle relationships are created when parallel lines are intersected by a transversal? 2. What angle relationships can be used to prove that two lines intersected by a transversal are parallel? 3. How do slopes of lines that are parallel to each other compare? 4. How do slopes of lines that are perpendicular to each other compare? <p><u>Activity Description:</u></p> <ul style="list-style-type: none"> • Parallel lines cut by a transversal • Proving lines parallel • Slopes of parallel and perpendicular lines
<p><i>NJSLS Strand:</i> <i>G.CO.A.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.</i> <i>G.CO.C.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 those exactly equidistant from the segment's endpoints.</i> <i>G.CO.C.10: Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</i></p>	<p><i>Progress Indicator:</i> <i>Tests • Quizzes • Practice problems for homework • Online textbook • Worksheets • IXL • Leveled assessments</i></p>	

G.MG.A.1: Use geometric shapes, their measures, and their properties to describe objects.

G.MG.A.3: Apply geometric methods to solve design problems

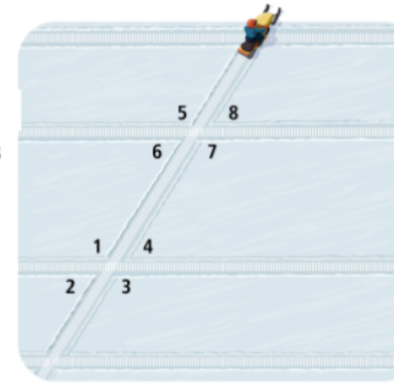
G.GPE.B.5: Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.

Example Tasks:

Task 1:

Identify the pairs of angles of each angle type made by the snowmobile tracks.

Alternate Interior Angles
Alternate Exterior Angles
Corresponding Angles



Answer:

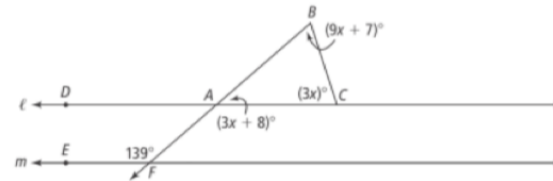
$\angle 7$ and $\angle 1$, and $\angle 6$ and $\angle 4$ are alternate interior angles.

$\angle 2$ and $\angle 8$, and $\angle 5$ and $\angle 3$ are alternate exterior angles.

$\angle 4$ and $\angle 8$, $\angle 1$ and $\angle 5$, $\angle 2$ and $\angle 6$, and $\angle 3$ and $\angle 7$ are corresponding angles.

Task 2:

In the diagram, the lines ℓ and m appear to be parallel. How do you know for sure? Use the diagram to complete Exercises 1–3.



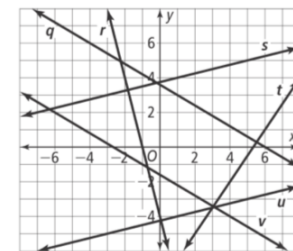
1. Given that the sum of the measures of the angles in a triangle is 180° , solve for x .
2. Find the measure of each angle of $\triangle ABC$.
3. Explain why $\ell \parallel m$.

Answer:

1. 11
2. 33° ; 41° ; 106°
3. $m\angle DAB = 139^\circ$; corresponding angles are congruent

Task 3:

Use the figure for Exercises 2–9. Determine whether each pair of lines are parallel or perpendicular. Write *yes* or *no*.



2. q and v , parallel
3. r and s , parallel
4. r and t , parallel
5. s and u , parallel
6. q and s , perpendicular
7. q and v , perpendicular
8. r and s , perpendicular
9. t and v , perpendicular

Answer: 2. yes, 3. no, 4. no, 5. yes, 6. no, 7. no, 8. yes, 9. no

		<p><u>Interdisciplinary Connections:</u> Mathematical Modeling in 3 Acts: Parallel Paving Company. Textbook page 99 and online. (Also discuss how clearing and leveling land may have an impact on the environment).</p> <p>Career Readiness, life Literacies and Key Skills Content: civil engineering. NJSLS#:G.CO.C.9, MG.A.1, MG.A.3</p> <p>Spot Light On:</p> <ul style="list-style-type: none"> • Lisa Harvey-Smith: British-Australian astrophysicist; Australia's first Women in STEM Ambassador and Professor of Practice in Science Communication at the University of NSW
<p>Mathematics Practices</p>		
<ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reason of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 		
<p>Social and Emotional Learning: <i>Competencies</i></p>	<p>Social and Emotional Learning: <i>Sub-Competencies</i></p>	
<p>Self- awareness</p> <p>Social Awareness</p> <p>Self- Management</p> <p>Relationship Skills</p> <p>Responsible Decision-Making</p>	<p>Recognizing the importance of self-confidence in handling daily tasks and challenges.</p> <p>Demonstrate an awareness of the expectations for social interactions in a variety of ways.</p> <p>Demonstrate an understanding of the need for mutual respect when viewpoints differ.</p>	

		<p>Recognize the skills needed to establish and achieve personal and educational goals.</p> <p>Utilize positive communication and social skills to interact effectively with others.</p> <p>Develop, implement, and model effective problem solving and critical thinking skills.</p>		
<p>Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i></p>		<p>Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i></p>		
<p>Formative Assessments:</p> <ul style="list-style-type: none"> • Entry and Exit Slips • Quizzes • Self Assessments 		<p>Benchmarks:</p> <ul style="list-style-type: none"> • Chapter Tests • Projects <p>Summative Assessments:</p> <ul style="list-style-type: none"> • District Assessments • Midterms • Standardized Tests 		
<p>Differentiated Student Access to Content: Teaching and Learning Resources/Materials</p>				
<p>Core Resources</p>	<p>Alternate Core Resources IEP/504/At-Risk/ESL</p>	<p>ELL Core Resources</p>	<p>Gifted & Talented Core Resources</p>	
<ul style="list-style-type: none"> • Textbooks websites • Achieve the core • Khan Academy • Desmos • IXL 	<ul style="list-style-type: none"> • Skill building worksheets • Math Manipulatives 	<ul style="list-style-type: none"> • Dictionary for native languages • Videos in their native language. 	<ul style="list-style-type: none"> • Leveled Assessments • Enrichment worksheets 	
<p>Supplemental Resources</p>				
<p>Technology:</p> <ul style="list-style-type: none"> • Chromebooks, Graphing Calculators, Online math manipulatives <p>Other:</p> <ul style="list-style-type: none"> • Zoom and Google Meets, Google Classroom, Interactive Textbooks, Private Tutoring 				

Differentiated Student Access to Content: Recommended <i>Strategies & Techniques</i>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
<ul style="list-style-type: none"> Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat 	<ul style="list-style-type: none"> Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks. 	<ul style="list-style-type: none"> Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric. 	<ul style="list-style-type: none"> Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	Disciplinary Concept: Creativity and Innovation	
	<i>Core Ideas:</i>	With a growth mindset, failure is an important part of success
	<i>Performance Expectation/s:</i>	9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
	Career Readiness, Life Literacies, & Key Skills Practices	
	Act as a responsible and contributing community member and employee. Attend to financial well-being. Consider the environmental, social and economic impacts of decisions.	

	<p>Demonstrate creativity and innovation. Utilize critical thinking to make sense of problems and persevere in solving them. Model integrity, ethical leadership and effective management. Plan education and career paths aligned to personal goals. Use technology to enhance productivity, increase collaboration and communicate effectively. Work productively in teams while using cultural/global competence.</p>
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New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)							
Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>	X	LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>		Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>	Standards in Action: <i>Climate Change</i>