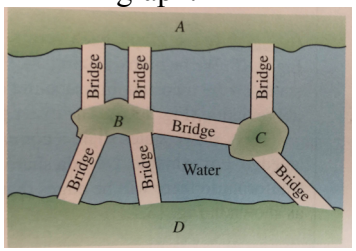
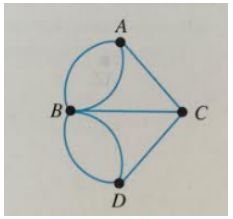
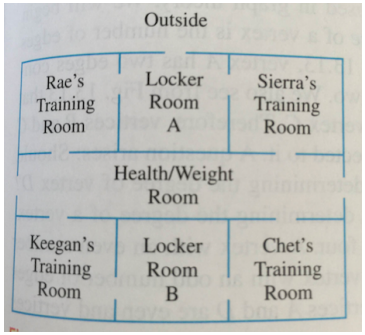
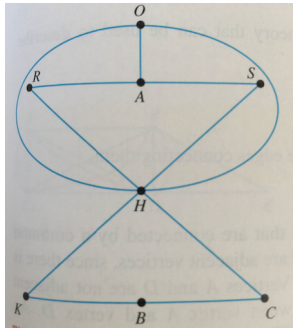
Standard: - New Jersey Student Learning Standards: **Graph Theory (Chapter 13)**		
Strand:		
Curriculum aligned with: 2009 New Jersey Core Curriculum Content Standards for 21st Century Skills (9.1 A-F)		
21st Century Theme: *Global Awareness ☐,Financial, economic, business and entrepreneurial literacy ☐ Civic literacy ☐,Health literacy ☐Environmental Literacy X*		
21st Century Skills: *Critical Thinking & Problem Solving ☐,Creativity and Innovation ☐,Collaboration, Teamwork and Leadership ☐,Cross-Cultural Understanding and Interpersonal Communications X Communication and Media Fluency ☐, Accountability, Productivity and Ethics ☐*		
Interdisciplinary Connection: Math=MA, English=ELA, Science=SCI, Social Studies=SS, Physical Education=PE, Art=ART, Music=MU, Technology=TECH, World Language=WL Business = BU		
Essential Questions	**Enduring Understandings**	**Activities, Investigation, and Student Experiences**

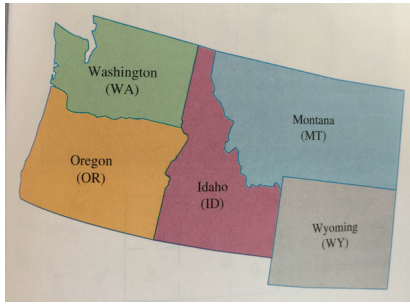
1. What is the best path when traveling? 2. How would you use graph theory in everyday life? 3. What is the difference between a Euler path and a Euler Circuit?	*Students will understand….* ● Graphs, Paths, and Circuits. ● Euler Paths and Euler Circuits.	**Task 1** Using the definitions of vertex and edge, represent the Konigsberg bridge problem with a graph.  **Answer:**  **Task 2 BU**
Content Statements	**Cumulative Progress Indicators**	

Students will know… ● Graphs, paths, and circuits. ● The Konigsberg bridge problem. ● Euler paths and Euler circuits.	● Tests ● Quizzes ● Practice problems for homework ● Projects ● Worksheets ● In-class programs	The figure below shows the floor plan of a fitness gym. Use a graph to represent the floor plan.  **Answer:**
Desired Results		
● Graphs, Paths, and Circuits. ● Euler Paths and Euler Circuits.		



Task 3

Determine whether the graph has an Euler circuit. If yes, give one such Euler circut



Answer:

Yes; WA, ID, MT, WY, ID, OR, WA

	Modifications and/or Accommodations: ● **Special Education:** 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. ● **English Language Learners:** Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online bilingual dictionary, and modified assessment and/or rubric. ● **Students at Risk of School Failure:** Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed. **Gifted Students:** 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 talent development opportunities. **Spot Light On:** *Seek multiple perspectives and different answers to questions.*

Standards for Mathematical Practices	Teacher Resources
1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning 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.	https://learnzillion.com https://www.khanacademy.org/ https://www.desmos.com/

LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*

- Alan Turning: English mathematician, computer scientist, logician, cryptanalyst, philosopher, and theoretical biologist. Turning was highly influential in the development of theoretical computer science.

The mission is to ensure that every student is able to see themselves in our rich and diverse history.

Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
Self-Awareness Social Awareness Self-Management Relationship Skills Responsible Decision-Making	• Recognizing the importance of self-confidence in handling daily tasks and challenges. • Demonstrate an awareness of the expectations for social interactions in a variety of ways. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Recognize the skills needed to establish and achieve personal and educational goals. • Utilize positive communication and social skills to interact effectively with others. • Develop, implement, and model effective problem solving and critical thinking skills.

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)								
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*	x	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	x	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*