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| **Lesson Name:** | **Proofs and Cover Letters** |
| **Grade Level(s):** | 10th Grade |
| **Goal/Objective(s):** | The goal of this lesson is to show students a practical application of a geometric proof.  Students will also create a cover letter for a perspective job demonstrating their skills at analytical thinking. |
| **Standard(s):** | **Math Standards:**  **M.2HS.43** Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; 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. Instructional Note: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Implementation of this standard may be extended to include concurrence of perpendicular bisectors and angle bisectors in preparation for the unit on Circles With and Without Coordinates.  **M.GHS.10** Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; 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. Instructional Note: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Implementation of this standard may be extended to include concurrence of perpendicular bisectors and angle bisectors as preparation for M.GHS.36.  **School Counseling – Student Success Standards:**  **ALP.SS.1.1.2** apply knowledge of personal learning characteristics to focus on strengths and maintain motivation for learning.  **ALP.SS.1.2.5** use personal data to refine academic plan and career /life goals.  **ALP.SS.2.1.1** use a variety of resources to explore career options in relation to personal abilities, skills, interests, values and the current job market. |
| **Instructions:** | Students should watch the following video about proving lines parallel in a real world context: <https://learnzillion.com/lesson_plans/7050-understand-that-a-line-dividing-two-sides-of-a-triangle-proportionally-is-parallel-to-the-third-side>  Have students work on the following problem from Open Middle. <http://www.openmiddle.com/finding-the-length-of-a-right-triangles-altitude/>  This problem can be solved with multiple strategies based on each student’s skill set. After students are satisfied with their solutions, have them try to write their own story context like the one in the video based on this problem.  Have students navigate to the Explore Careers section of cfwv.com. Ask them to locate a career in which they may be able to apply the skills they are currently learning.  Then have students navigate to Career Planning -> Get a Job and click on the Cover Letter Creator. They should pick either Cold Contact letter and write the letter to you as if you are the Human Resources manager at the firm they are applying. |
| **Materials:** | Computer with internet access and projection with sound.  CFWV.com  Learnzillion.com  OpenMiddle.com |
| **CFWV Tools Used:** | Explore Careers  Cover Letter Creator |
| **Assessment** | This problem from Illustrative Math can be used as a lesson assessment.  Joining two midpoints of sides of a triangle: <https://www.illustrativemathematics.org/content-standards/HSG/SRT/B/4/tasks/1095>  You may wish to print the student section, as the website contains an answer key. |