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| **Lesson Name:** | **The Finances of a College Education: Return on Investment using inverse functions** |
| **Grade Level(s):** | 11 (Algebra II and Math 3) |
| **Goal/Objective(s):** | The Student will calculate costs of attending a four year college or university, including tuition, books, fees, room and board, and other miscellaneous expenses over a four year period. Students will calculate total loan amount to attend a four year college. Students will build an inverse function and provide justification. |
| **Standard(s):** | **Math Standards:**  **21C.O.9-12.2.LS1** Student engages in a critical thinking process that supports synthesis and conducts evaluation using complex criteria.  **21C.O.9-12.2.LS2** Student draws conclusions from a variety of data sources to analyze and interpret systems.  **21C.O.9-12.2.LS3** Student engages in a problem solving process by formulating questions and applying complex strategies in order to independently solve problems.  **21C.O.9-12.2.TT1** Student knows how to find information necessary to solve advanced problems related to hardware, software, networks, and connections (e.g., by accessing online help, Internet searches, technical documentation, system utilities, and communication with technical experts).  **M.A2HS.35** Find inverse functions. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. (e.g., f(x) = 2 x3 or f(x) = (x+1)/(x-1) for x ≠ 1.) Instructional Note: Use transformations of functions to find models as students consider increasingly more complex situations. Extend this standard to simple rational, simple radical, and simple exponential functions; connect this standard to M.A2HS.34  **School Counseling – Student Success Standards:**  **ALP.SS.1.2.6** explore costs, eligibility requirements and funding opportunities for various postsecondary options.  **ALP.SS.2.1.7** model expected workplace dispositions, skills and behaviors in school, community and occupational experiences to prepare for career success. |
| **Instructions:** | Procedures: Day 1  • Question & Answer – What is “ROI”? (Return On Investment)  • How much does college cost? What costs / fees are associated with college?  • How do students pay for college?  • What is the difference between a grant, a scholarship and a loan?  • Discussion of the WV Promise scholarship & other available scholarships  • Discussion of Grade Point Average in high school (explain difference between Core GPA and Overall GPA)  • Discussion of ROI with regard to a student’s education / educational choices, including public vs. private institutions, majors of study, etc.  • Read article on cfwv website “An Ivy League Education: Is it Worth it?”  Day 2  • Finances of a College Education Webquest - Computer research  • Research a college / university of your choice  • Research requirements for admission (GPA & ACT Scores)  • Research average tuition & fees (including housing [room & board])  • Calculate costs for four years of college  • Calculate possible scholarship monies for four years  • Using financial aid loan calculator, calculate how much you will pay total for a college education  Day 3  • Students will complete handout to find and justify an inverse function |
| **Materials:** | Cfwv.com  US News Article: <http://www.usnews.com/news/articles/2014/11/13/average-student-loan-debt-hits-30-000>  Information regarding requirements for WV Promise Scholarship  Student Loan Calculator: <http://www.finaid.org/calculators/loanpayments.phtml>  Handouts: Inverse Functions: Return on Investment, Finances of a College Education Webquest |
| **CFWV Tools Used:** | Cfwv.com “An Ivy League Education: Is it Worth it?”  <https://secure.cfwv.com/Home/Article.aspx?articleId=wrWXAP2BPAXr6g3GIiqXAP2FPAXbCq5DbxVAXAP3DPAXXAP3DPAX&level=3XAP2FPAX6J7I3kztATGuYyXAP2BPAXDahIQXAP3DPAXXAP3DPAX>  College Planning: “Explore Postsecondary Schools,” including admissions and costs.  Financial Aid and Planning, Scholarships |
| **Assessment** | Students will complete webquest and orally present information regarding college / university of their choice, including average tuition costs, fees, and other expenses incurred. Student will include cost of attendance of 4 years. Students will calculate loan amounts, including APR. Students will complete handout to find and justify an inverse function. |