

Course Name: Math Explorations 8
Course Code: M2812

Course Description:

This course broadens the foundation of algebraic and geometric ideas through exploratory and inquiry-based learning activities. Interdisciplinary units centered on 21st Century themes guide students through real-life scenarios. The students construct visual representations to demonstrate their understanding of mathematics and its relevance to their world. The course includes topics such as use of variables, writing expressions and equations, ratios and rates, proportions, linear functions, transformations, and data analysis.

Course Proficiencies: The following is a list of the proficiencies that describe what students are expected to know and be able to do as a result of successful completion of the course. The proficiencies are the basis of the assessment of student achievement. The learner will demonstrate the ability to:

1. Graph proportional relationships, interpreting the unit rate as the slope of the graph. **8.EE.5**
2. Use similar triangles to explain and illustrate the concept of slope. **8.EE.6**
3. Solve linear equations in one variable. **8.EE.7**
4. Analyze and solve pairs of simultaneous linear equations. **8.EE.8**
5. Solve real-world problems using systems of equations.
6. Demonstrate an understanding that a function is a rule that assigns to each input exactly one output. **8.F.1**
7. Interpret the equation $y = mx + b$ as defining a linear function. **8.F.3**
8. Construct a function to model a linear relationship between two quantities. **8.F.4**
9. Verify experimentally the properties of rotations, reflections, and translations. **8.G.1**
10. Describe the effect of dilations, translations, and reflections on two-dimensional figures using coordinates. **8.G.3**
11. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. **8.G.8**
12. Construct and Interpret scatter plots. **8.SP.1**
13. Use the equation of a linear model to solve problems in the context of data. **8.SP.3**
14. Apply mathematics in practical situations and in other disciplines.
15. Use critical thinking skills to make sense of problems, solve them, and communicate processes. **CRP 2, 4 & 8.**
16. Use technology to gather, analyze, and communicate mathematical information. **8.I.8.A.1, 8.I.8.A.2, 8.I.8.A.4, 8.I.8.F.1**
17. Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income. **9.I.8.A.2**

Math Explorations 8 Proficiencies – *cont'd.*

18. Explain how income affects spending decisions. **9.1.8.A.6**
19. Distinguish among cash, check, credit card, and debit card. **9.1.8.B.1**
20. Explain the effect of the economy on personal income, individual and family security, and consumer decisions. **9.1.8.B.5**
21. Determine the most appropriate use of various financial products and services (e.g., ATM, debit cards, credit cards, check books). **9.1.8.B.9**
22. Justify safeguarding personal information when using credit cards, banking electronically, or filing forms. **9.1.8.B.10**
23. Evaluate the appropriate financial institutions to assist with meeting various personal financial needs and goals. **9.1.8.B.11**
24. Compare and contrast credit cards and debit cards and the advantages and disadvantages of using each. **9.1.8.C.1**
25. Compare and contrast the financial products and services offered by different types of financial institutions. **9.1.8.C.2**
26. Compare and contrast debt and credit management strategies. **9.1.8.C.3**
27. Determine potential consequences of using “easy access” credit (e.g., using a line of credit vs. obtaining a loan for a specific purpose). **9.1.8.C.7**
28. Explain the purpose of a credit score and credit record, and summarize borrowers’ credit report rights. **9.1.8.C.8**
29. Summarize the causes and consequences of personal bankruptcy. **9.1.8.C.9**
30. Determine when there is a need to seek credit counseling and appropriate times to utilize it. **9.1.8.C.10**
31. Differentiate among various savings tools and how to use them most effectively. **9.1.8.D.2**
32. Differentiate among various investment options. **9.1.8.D.3**
33. Distinguish between income and investment growth. **9.1.8.D.4**
34. Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. **9.1.8.E.1**
35. Identify personal information that should not be disclosed to others and the possible consequences of doing or not doing so. **9.1.8.E.2**
- 36.** Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards. **9.1.8.E.5**
37. Evaluate how fraudulent activities impact consumers, and justify the creation of consumer protection laws. **9.1.8.E.7**
38. Explain how the economic system of production and consumption may be a means to achieve significant societal goals. **9.1.8.F.1**
39. Examine the implications of legal and ethical behaviors when making financial decisions. **9.1.8.F.2**
40. Relate the impact of business, government, and consumer fiscal responsibility to the economy and to personal finance. **9.1.8.F.3**
41. Explain why it is important to develop plans for protecting current and future personal assets against loss. **9.1.8.G.1**
42. Determine criteria for deciding the amount of insurance protection needed. **9.1.8.G.2**

Math Explorations 8 Proficiencies – *cont'd.*

43. Analyze the need for and value of different types of insurance and the impact of deductibles. **9.1.8.G.3**

44. Evaluate the need for different types of extended warranties. **9.1.8.G.4**

Assessment: Evaluation of student achievement in this course will be based on the following:

1. Unit Portfolio- During the course, portfolios will be maintained. These will include, but not limited to:
 - Journals
 - Classroom tasks
 - Presentations
2. Classwork- The students' daily work will be assessed according to the math practices outlined below:
 - Make sense of problems and persevere in solving them.
 - Reason abstractly and quantitatively.
 - Construct viable arguments and critique the reasoning of others.
 - Model with mathematics.
 - Use appropriate tools strategically.
 - Attend to precision.
 - Look for and make use of structure.
 - Look for and express regularity in repeated reasoning.