ADVANCED MATHEMATICAL DECISION MAKING UNIT PLANNER

Unit title	Unit 1 – Analyzing Numerical Data	Unit duration	12 Days

Essential Questions (OR GUIDING QUESTIONS?)

- What are effective strategies to estimate large numbers?
- How do telecommunications and transportation agencies not run out of numbers?
- What are real world applications of ratios? (focus on tires and media)
- How are weighted averages calculated?

Assessments

- **Skills check** on estimating large numbers, tennis balls, not enough numbers, Fermi, tires, and aspect ratios
- **Unit Test 1** on all skill check items plus UPC, credit cards, and weighted averages

Content Standards

<u>Students will extend their understanding and use of ratios, proportions to solve problems involving in decision making.</u>

MAMDM.N.1 Students will extend the understanding of proportional reasoning, ratios, rates, and percents by applying them to various settings to include business, media, and consumerism.

a. Use proportional reasoning to solve problems involving ratios.
b. Understand and use averages, weighted averages, and indices.
c. Solve problems involving large quantities that are not easily measured.
d. Understand how identification numbers, such as UPCs, are created and verified.

Learning Activities and Experiences

Topic	Resource	Content Addressed	Standards Addressed
Estimating large numbers	Estimating Crowds Notes & Practice	● Estimating large numbers based on sample area ● Focus on parade route crowds and people attending sporting events	**MAMDM.N.1**
	Volume with large numbers Notes & Practice	● Exploring the relationship between the volume of a container and how many given objects will fit in the container (empty volume to object volume) ● Real world applications of combinations ● Focus on phone numbers, license plates, and ID numbers	**MAMDM.N.1**
	Fermi Problems - Project & Lab	● Continued work on estimating numbers through Fermi problems ● History of Fermi ● Fermi jar analysis	**MAMDM.N.1**
Ratios	Tire and Media Ratios Notes & Practice	● Evaluation of ratio markings on car and truck tires ● Real world effects of tire ratio change with odometer and speedometer analysis ● Exploration of aspect ratios as they relate to media screens	**MAMDM.N.1**
UPC codes and credit cards	UPC Codes and Credit Cards Notes & Practice	● Investigation into what the numbers is UPCs represent ● Checking for valid UPC numbers ● Rules for credit card verification	**MAMDM.N.1**
Weighted averages	Weighted Averaged Notes & Practice	● Process to calculate weighted averages	**MAMDM.N.1**
	Additional Resources:		

Personalized Learning and Differentiation
Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace. -SWD/504- Accommodations provided -ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports -Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring -Extensions- Enrichment Tasks and Projects
Resources
Advanced Mathematical Decision Making the UT Dana Center