

Advanced Mathematical Decision Making (AMDM) Teaching & Learning Framework						
Semester 1			Semester 2			
Unit 1 4 weeks	Unit 2 5 weeks	Unit 3 7 weeks	Unit 4 5 weeks	Unit 5 4 weeks	Unit 6 6 weeks	Unit 7 5 weeks
<b>Analyzing Numerical Data</b>	<b>Probability</b>	<b>Statistical Studies</b>	<b>Using Recursion in Models &amp; Decision Making</b>	<b>Using Functions in Models &amp; Decision Making</b>	<b>Decision Making in Finance</b>	<b>Networks &amp; Graphs</b>
<p><b>MAMDMN1. Students will extend the understanding of proportional reasoning, ratios, rates, and percents by applying them to various settings to include business, media, and consumerism.</b></p> <p>a. Use proportional reasoning to solve problems involving ratios.</p> <p>b. Understand and use averages, weighted averages, and indices.</p> <p>c. Solve problems involving large quantities that are not easily measured.</p> <p>d. Understand how identification numbers, such as UPCs, are created and verified.</p>	<p><b>MAMDMD1. Students will determine probability and expected value to inform everyday decision making.</b></p> <p>a. Determine conditional probabilities and probabilities of compound events to make decisions in problem situations.</p> <p>b. Use probabilities to make and justify decisions about risks in everyday life.</p> <p>c. Calculate expected value to analyze mathematical fairness, payoff, and risk.</p>	<p><b>MAMDMD2. Students will build the skills and vocabulary necessary to analyze and critique reported statistical information, summaries, and graphical displays.</b></p> <p><b>MAMDMD3. Students will apply statistical methods to design, conduct, and analyze statistical studies.</b></p>	<p><b>MAMDMD4. Students will use functions to model problem situations in both discrete and continuous relationships.</b></p> <p>a. Determine whether a problem situation involving two quantities is best modeled by a discrete (pattern identification, population growth, compound interest) or continuous (medication dosage, climate change, bone decay) relationship.</p> <p>b. Use linear, exponential, logistic, piecewise and sine functions to construct a model.</p> <p><b>MAMDMDG1. Students will create and use two- and three-dimensional representations of authentic situations.</b></p> <p><b>MAMDMDG2. Students will solve geometric problems involving inaccessible distances using basic trigonometric principles, including the Law of Sines and the Law of Cosines.</b></p>	<p><b>MAMDMD4. Students will use functions to model problem situations in both discrete and continuous relationships.</b></p> <p>a. Determine whether a problem situation involving two quantities is best modeled by a discrete (pattern identification, population growth, compound interest) or continuous (medication dosage, climate change, bone decay) relationship.</p> <p>b. Use linear, exponential, logistic, piecewise and sine functions to construct a model.</p> <p><b>MAMDMDG1. Students will create and use two- and three-dimensional representations of authentic situations.</b></p> <p><b>MAMDMDG2. Students will solve geometric problems involving inaccessible distances using basic trigonometric principles, including the Law of Sines and the Law of Cosines.</b></p>	<p><b>MAMDMA3. Students will create and analyze mathematical models to make decisions related to earning, investing, spending, and borrowing money.</b></p> <p>a. Use exponential functions to model change in a variety of financial situations.</p> <p>b. Determine, represent, and analyze mathematical models for income, expenditures, and various types of loans and investments.</p>	<p><b>MAMDMA2. Students will use a variety of network models to organize data in quantitative situations, make informed decisions, and solve problems.</b></p> <p>a. Solve problems represented by a vertex-edge graph, and find critical paths, Euler paths, and minimal spanning trees.</p> <p>b. Construct, analyze, and interpret flow charts to develop an algorithm to describe processes such as quality control procedures.</p> <p>c. Investigate the scheduling of projects using PERT.</p> <p>d. Consider problems that can be resolved by coloring graphs.</p>
<p>These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units.</p> <p>All units will include the Mathematical Practices and indicate skills to maintain.</p>						

**NOTE:** Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics. **Revised standards are in red font.**

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### Block Schedule

Unit 1 2 weeks	Unit 2 2.5 weeks	Unit 3 3.5 weeks	Unit 4 2.5 weeks	Unit 5 2 weeks	Unit 6 3 weeks	Unit 7 2.5 weeks
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