

## Scope and Sequence Chart

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
<b>CHAPTER 1 Functions</b>	<p><i>At the end of this chapter, the student shall be able to:</i></p> <ul style="list-style-type: none"> <li>• define a function.</li> <li>• formulate a function that models a real-life situation.</li> <li>• identify the different types of functions.</li> <li>• classify each function as to its type.</li> <li>• determine the domain and range of functions.</li> <li>• evaluate functions at a given value of the independent variable.</li> <li>• define the different operations on functions.</li> <li>• use the operation of functions to combine two or more functions.</li> <li>• define composition of functions.</li> <li>• form composite functions.</li> <li>• determine domains of composite functions.</li> <li>• write functions as compositions of two functions.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of functions.</p> <p><b>Performance Standards</b> The learner will be able to accurately construct mathematical models to represent real-life situations using functions.</p>
<b>1.1 Models of Functions</b>	<ul style="list-style-type: none"> <li>• define a function</li> <li>• formulate a function that models a real-life situation</li> </ul>	<ul style="list-style-type: none"> <li>• represents real-life situations using functions, including piece-wise functions</li> </ul>
<b>1.2 Sets and the Types of Functions</b>	<ul style="list-style-type: none"> <li>• identify the type of functions</li> <li>• understand that a function from a given set of real numbers called the domain to another set called the range assigns each element of the domain to exactly one element of the range</li> </ul>	<ul style="list-style-type: none"> <li>• accurately identifies each function as to its type</li> <li>• correctly describes the domain of each function</li> <li>• correctly describes the range of a function</li> </ul>

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	<ul style="list-style-type: none"> <li>• determine the domain of each type function</li> <li>• determine the range of each type of function</li> </ul>	
<b>1.3 Evaluation of Functions</b>	<ul style="list-style-type: none"> <li>• evaluate functions by substituting assumed numbers for the independent variable</li> </ul>	<ul style="list-style-type: none"> <li>• evaluates a function</li> </ul>
<b>1.4 Operations on Functions</b>	<ul style="list-style-type: none"> <li>• define the different operations on functions</li> <li>• use the operation of functions to combine two or more functions</li> <li>• determine the domain and range of the combination of functions</li> <li>• define the composition of functions</li> <li>• determine the composite function given the component functions</li> <li>• determine the domain and the range of a composite function of two given functions</li> <li>• decompose a composite function into two or more simpler functions</li> </ul>	<ul style="list-style-type: none"> <li>• performs addition, subtraction, multiplication, division, and composition of functions</li> <li>• solves problems involving functions</li> </ul>
<b>CHAPTER 2 Rational Functions, Equations, and Inequalities</b>	<p><i>The learner will be able to</i></p> <ul style="list-style-type: none"> <li>• define a rational function.</li> <li>• find the domain and range of a rational function.</li> <li>• graph a rational function using a table of values.</li> <li>• identify the <math>x</math>-intercept.</li> <li>• identify the <math>y</math>-intercept.</li> <li>• identify vertical asymptotes.</li> <li>• identify horizontal asymptotes.</li> <li>• identify oblique asymptote.</li> <li>• use intercepts and asymptotes to graph a rational function.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of rational functions.</p> <p><b>Performance Standards</b> The learner is able to accurately formulate and solve real-life problems involving rational functions.</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
	<ul style="list-style-type: none"> <li>• solve equations involving rational functions.</li> <li>• solve problems involving rational functions.</li> <li>• solve inequalities involving rational functions.</li> <li>• solve problems involving rational inequalities.</li> </ul>	
<b>2.1 Domain and Range of Rational Functions</b>	<ul style="list-style-type: none"> <li>• define rational function</li> <li>• formulate a rational function that models a real-life situation</li> <li>• simplify rational expressions</li> <li>• determine which real numbers will make the rational function undefined</li> <li>• determine the domain of the rational function</li> <li>• express the domain in a set notation</li> <li>• construct table of values of the rational function</li> <li>• analyze the behavior of the values on the table</li> <li>• make an inference or generalization on the range of the rational function using the table of values</li> <li>• find the range of rational function</li> </ul>	<ul style="list-style-type: none"> <li>• define a rational function</li> <li>• represents real-life situations using rational functions</li> <li>• finds the domain and range of a rational function</li> </ul>
<b>2.2 Graphing Rational Functions Using Table of Values</b>	<ul style="list-style-type: none"> <li>• graph rational functions using the method of point by point plotting</li> <li>• identify the <math>x</math>-intercept</li> <li>• identify the <math>y</math>-intercept</li> <li>• identify vertical asymptotes</li> <li>• identify horizontal asymptotes</li> <li>• identify oblique asymptotes</li> <li>• use intercepts and asymptotes to graph rational functions</li> </ul>	<ul style="list-style-type: none"> <li>• represents a rational function through its: <ul style="list-style-type: none"> <li>(a) table of values,</li> <li>(b) graph, and</li> <li>(c) equation</li> </ul> </li> <li>• determines the: <ul style="list-style-type: none"> <li>(a) intercepts,</li> <li>(b) zeroes, and</li> <li>(c) asymptotes of rational functions</li> </ul> </li> <li>• graphs rational functions</li> </ul>

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<b>2.3 Rational Equations and its Applications</b>	<ul style="list-style-type: none"> <li>• define a rational equation</li> <li>• solve rational equations</li> <li>• verify if the solution to the rational equations satisfies the given equation</li> <li>• apply rational equations to real life situations</li> </ul>	<ul style="list-style-type: none"> <li>• distinguish a rational equation from a linear equation</li> <li>• find a solution to an equation involving rational equations</li> <li>• check if the solution satisfies the given rational equation</li> <li>• formulate a rational equation from a problem involving real life situations</li> <li>• solves rational equations and inequalities</li> </ul>
<b>2.4 Rational Inequalities and its Applications</b>	<ul style="list-style-type: none"> <li>• solve inequalities involving rational functions</li> <li>• determine the critical numbers of a rational inequality</li> <li>• construct a sign graph using the critical numbers as dividing points on a real number line</li> <li>• solve problems involving rational inequalities</li> </ul>	<ul style="list-style-type: none"> <li>• distinguishes rational function, rational equation, and rational inequality</li> <li>• solves rational equations and inequalities</li> <li>• solves problems involving rational functions, equations, and inequalities.</li> </ul>
<b>CHAPTER 3 Inverse Functions</b>	<p><i>The learner will be able to</i></p> <ul style="list-style-type: none"> <li>• define when a function is one-to-one.</li> <li>• use the definition to determine if a function is one-to-one.</li> <li>• use the horizontal test to determine if the graph of a function illustrates a one-to-one function.</li> <li>• define an inverse function.</li> <li>• determine the domain and range of inverse function.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of inverse functions.</p> <p><b>Performance Standards</b> The learner is able to apply the concepts of inverse functions to formulate and solve real-life problems with precision and accuracy.</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
	<ul style="list-style-type: none"> <li>• construct a table of values and using this to graph the inverse function.</li> <li>• solve problems involving inverse functions.</li> </ul>	
<b>3.1 One-to-One Functions</b>	<ul style="list-style-type: none"> <li>• define when a function is one-to-one</li> <li>• use the definition to determine if a function is one-to-one</li> <li>• use the horizontal line test to determine if the graph of a function illustrates a one-to-one function</li> </ul>	<ul style="list-style-type: none"> <li>• represents real-life situations using one-to-one functions</li> <li>• give examples of one-to-one functions</li> <li>• use the horizontal line test to determine if a function is one-to-one</li> </ul>
<b>3.2 Defining Inverse Functions</b>	<ul style="list-style-type: none"> <li>• define an inverse function</li> <li>• describe the condition for the existence of an inverse function</li> <li>• determine the inverse of a given function</li> <li>• apply the cancellation laws of inverse functions</li> <li>• determine if two functions are inverses of each other</li> </ul>	<ul style="list-style-type: none"> <li>• determines the inverse of a one-to-one function</li> <li>• follow the steps in finding the inverse of a function</li> <li>• explore functions that are inverses of each other</li> </ul>
<b>3.3 Domain and Range of an Inverse Function</b>	<ul style="list-style-type: none"> <li>• determine the domain and range of inverse function</li> <li>• compare the domain of a function and its inverse</li> </ul>	<ul style="list-style-type: none"> <li>• finds the domain and range of an inverse function</li> </ul>
<b>3.4 Graphing Inverse Functions</b>	<ul style="list-style-type: none"> <li>• represent an inverse function through its table of values and graphs</li> <li>• evaluate inverse functions on several numbers on its domain and write it on a table</li> <li>• illustrate how to graph the inverse functions using points taken from a table of values</li> <li>• compare the graph of the function and its inverse</li> </ul>	<ul style="list-style-type: none"> <li>• represents an inverse function through its: (a) table of values, and (b) graph</li> <li>• graphs inverse functions</li> </ul>

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<b>3.5 Applications of Inverse Functions</b>	<ul style="list-style-type: none"> <li>• illustrate how an inverse function be used to model a real life situation</li> <li>• solve problems involving inverse functions</li> </ul>	<ul style="list-style-type: none"> <li>• relates real life situations involving inverse functions</li> <li>• solves problems involving inverse functions</li> </ul>
<b>CHAPTER 4 Exponential Functions, Equations, and Inequalities</b>	<p>The learner will be able to</p> <ul style="list-style-type: none"> <li>• define an exponential function.</li> <li>• formulate exponential functions that will model real life problems.</li> <li>• graph exponential functions using table of values.</li> <li>• distinguish between exponential function, exponential equation and exponential inequality.</li> <li>• solve equations involving exponential functions using the one-to-one property.</li> <li>• solve exponential inequalities.</li> <li>• apply exponential functions to real life situations.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of exponential functions.</p> <p><b>Performance Standards</b> The learner is able to apply the concepts of exponential functions to formulate and solve real-life problems with precision and accuracy.</p>
<b>4.1 Defining Exponential Functions</b>	<ul style="list-style-type: none"> <li>• define an exponential function</li> <li>• determine the domain and range of an exponential function</li> <li>• manipulate exponential functions by applying the laws of exponents</li> </ul>	<ul style="list-style-type: none"> <li>• represents real-life situations using exponential functions</li> <li>• finds the domain and range of an exponential function</li> </ul>
<b>4.2 Graphs of Exponential Functions</b>	<ul style="list-style-type: none"> <li>• represent an exponential function through its table of values and graph</li> <li>• evaluate an exponential function on several numbers on its domain and write the results on a table</li> <li>• illustrate how to graph exponential functions using points taken from a table of values</li> </ul>	<ul style="list-style-type: none"> <li>• represents an exponential function through its: (a) table of values, (b) graph, and (c) equation</li> <li>• determines the intercepts, zeroes, and asymptotes of an exponential function</li> <li>• graphs exponential functions</li> </ul>

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<b>4.3 Exponential Equations</b>	<ul style="list-style-type: none"> <li>• define an exponential equation</li> <li>• redefine the concept of one-to-one property on exponential functions</li> <li>• use one-to-one property in solving exponential equations</li> <li>• determine a solution to an exponential equation</li> <li>• verify the solution of an exponential equation</li> </ul>	<ul style="list-style-type: none"> <li>• distinguishes between exponential function, exponential equation, and exponential inequality</li> <li>• apply the one-to-one property in solving an exponential equation</li> <li>• solves exponential equations and inequalities</li> </ul>
<b>4.4 Exponential Inequalities</b>	<ul style="list-style-type: none"> <li>• solve inequalities involving exponential functions</li> <li>• determine the critical numbers of an exponential inequality</li> <li>• construct a table of signs using test numbers in between the critical numbers</li> <li>• construct a sign graph using the critical numbers as the dividing points on a real number line</li> <li>• use test numbers in between critical numbers to determine the sign of the inequality</li> <li>• use the results in the sign graph to find the solution to a exponential inequality</li> </ul>	<ul style="list-style-type: none"> <li>• distinguishes between exponential function, exponential equation, and exponential inequality</li> <li>• solves exponential equations and inequalities</li> </ul>
<b>4.5 Applications of Exponential Functions</b>	<ul style="list-style-type: none"> <li>• illustrate how real life situations can be modeled by an exponential function</li> <li>• solve problems involving exponential functions</li> </ul>	<ul style="list-style-type: none"> <li>• model real life situations with exponential functions</li> <li>• solves exponential equations and inequalities</li> <li>• solves problems involving exponential functions, equations, and inequalities</li> </ul>

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<b>CHAPTER 5</b> <b>Logarithmic Functions, Equations, and Inequalities</b>	<p><i>The learner will be able to</i></p> <ul style="list-style-type: none"> <li>• define an logarithmic function.</li> <li>• formulate logarithmic functions that will model real life problems.</li> <li>• graph logarithmic functions using a table of values.</li> <li>• solve equations involving logarithmic functions.</li> <li>• solve exponential equations using logarithms.</li> <li>• solve logarithmic inequalities.</li> <li>• apply logarithmic functions to real life situations.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of logarithmic functions.</p> <p><b>Performance Standards</b> The learner is able to apply the concepts of logarithmic functions to formulate and solve real-life problems with precision and accuracy</p>
<b>5.1 Logarithmic Functions</b>	<ul style="list-style-type: none"> <li>• define a logarithmic function</li> <li>• determine the domain and range of a logarithmic function</li> <li>• relate logarithmic function with exponential function</li> <li>• transform a logarithmic function to an exponential function</li> <li>• define the three variables <math>x</math>, <math>y</math>, and <math>b</math> in the logarithmic function</li> <li>• solve for the value of one of those variables given the other two</li> </ul>	<ul style="list-style-type: none"> <li>• represents real-life situations using logarithmic functions</li> <li>• finds the domain and range of a logarithmic function</li> </ul>
<b>5.2 Graphs of Logarithmic Functions</b>	<ul style="list-style-type: none"> <li>• represent a logarithmic function through its table of values and graph</li> <li>• evaluate logarithmic functions using several numbers on its domain and write its value on the table</li> <li>• illustrate how to graph exponential functions using points taken from a table of values</li> </ul>	<ul style="list-style-type: none"> <li>• represents a logarithmic function through its: (a) table of values, (b) graph, and (c) equation</li> <li>• determines the intercepts, zeroes, and asymptotes of logarithmic functions</li> <li>• graphs logarithmic functions</li> </ul>



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<b>5.3 Laws on Logarithms</b>	<ul style="list-style-type: none"> <li>• enumerate the three laws of logarithms</li> <li>• illustrate through examples how to apply the laws</li> <li>• use the law of logarithms to expand a logarithmic expression by writing it as a sum, difference or multiple of logarithmic expressions</li> <li>• use the laws of logarithms to express the expanded terms of logarithmic expression into a single logarithmic expression</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates the laws of logarithms.</li> </ul>
<b>5.4 Common and Natural Logarithms</b>	<ul style="list-style-type: none"> <li>• introduce the two special types of logarithmic functions</li> <li>• use a calculator to evaluate logarithmic numbers</li> <li>• apply the properties of common and natural logarithms</li> </ul>	<ul style="list-style-type: none"> <li>• recognize and differentiate between common and natural logarithm</li> <li>• evaluate logarithmic numbers using a calculator</li> <li>• familiarize the properties of common and natural logarithms and use this to evaluate expressions involving logarithmic values</li> </ul>
<b>5.5 Logarithmic Equations</b>	<ul style="list-style-type: none"> <li>• apply the laws of logarithms in solving the equation</li> <li>• recall the concept of one-to-one property on logarithmic functions and the one-to-one property of exponential functions</li> <li>• use one-to-one property in solving logarithmic equations</li> <li>• determine a solution to logarithmic equations</li> <li>• verify the solution of the exponential equation</li> </ul>	<ul style="list-style-type: none"> <li>• distinguishes logarithmic function, logarithmic equation, and logarithmic inequality</li> <li>• apply the one-to-one property in solving an logarithmic equations</li> <li>• solves logarithmic equations and inequalities</li> </ul>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
	<ul style="list-style-type: none"> <li>• check for any extraneous solutions.</li> <li>• solve exponential equations using logarithms</li> </ul>	<ul style="list-style-type: none"> <li>• solve exponential equations using logarithms</li> </ul>
<b>5.6 Solving Exponential Equations Using Logarithms</b>	<ul style="list-style-type: none"> <li>• verify the solution of the exponential equation</li> <li>• check for any extraneous solutions</li> <li>• solve exponential equations using logarithms</li> </ul>	<ul style="list-style-type: none"> <li>• solves logarithmic equations and inequalities</li> </ul>
<b>5.7 Logarithmic Inequalities</b>	<ul style="list-style-type: none"> <li>• solve inequalities involving logarithmic functions</li> <li>• solve logarithmic inequality using varied methods. (e.g., transformation to exponential function, use of critical numbers, and so on)</li> <li>• verify the solution to the logarithmic inequality</li> </ul>	<ul style="list-style-type: none"> <li>• solves logarithmic equations and inequalities</li> </ul>
<b>5.8 Applications of Logarithmic Functions</b>	<ul style="list-style-type: none"> <li>• illustrate how real life situations can be modeled by a logarithmic function</li> <li>• solve problems involving logarithmic functions</li> </ul>	<ul style="list-style-type: none"> <li>• solves problems involving logarithmic functions, equations, and inequalities</li> </ul>
<b>CHAPTER 6 Simple and Compound Interest</b>	<p><b>Chapter Objectives</b> At the end of this chapter, the student shall be able to investigate, analyze and solve problems involving simple and compound interests as they are applied in real-life problems using appropriate business tools.</p>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of simple and compound interests.</p> <p><b>Performance Standards</b> The learner will be able to investigate, analyze and solve problems involving simple and compound interests using appropriate business and financial instruments.</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
<b>6.1 Simple Interest</b>	<ul style="list-style-type: none"> <li>• define simple interest and other related terms.</li> <li>• illustrate simple interest.</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates simple and compound interests</li> <li>• solves problems involving simple and compound interests</li> </ul>
<b>6.2 Maturity Value</b>	<ul style="list-style-type: none"> <li>• define maturity value</li> <li>• illustrate maturity value</li> </ul>	<ul style="list-style-type: none"> <li>• computes interest, maturity value, future value, and present value in simple interest and compound interest environment</li> <li>• solves problems involving simple and compound interests</li> </ul>
<b>6.3 Compound Interest and Compound Amount</b>	<ul style="list-style-type: none"> <li>• define compound interest and other related terms</li> <li>• illustrate compound interest and compound amount</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates simple and compound interests</li> <li>• computes interest, maturity value, future value, and present value in simple interest and compound interest environment</li> </ul>
<b>6.4 Calculating the Present Value in a Compound Interest</b>	<ul style="list-style-type: none"> <li>• define the present value in compound interest</li> <li>• apply the formula in solving real-life problems</li> </ul>	<ul style="list-style-type: none"> <li>• solves problems involving simple and compound interests</li> </ul>
<b>CHAPTER 7 Simple and General Annuities</b>	<p><b>Chapter Objectives</b> At the end of this chapter, the student shall be able to investigate, analyze, and solve problems involving simple and general annuities as they are applied in real-life problems.</p>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of simple and general annuities.</p> <p><b>Performance Standards</b> The learner will be able to investigate, analyze, and solve problems involving simple and general annuities using appropriate business and financial instruments.</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
<b>7.1 Present and Future Values of Ordinary Annuities</b>	<ul style="list-style-type: none"> <li>• differentiate simple and general annuities</li> <li>• differentiate the different types of simple annuities</li> </ul>	<ul style="list-style-type: none"> <li>• illustrate simple and general annuities</li> <li>• finds the future value and present value of simple annuities</li> <li>• calculates the fair market value of a cash flow stream that includes an annuity</li> </ul>
<b>7.2 Future and Present Values of Annuity Due</b>	<ul style="list-style-type: none"> <li>• define annuity due</li> <li>• discuss the example problems and their solutions of annuity due</li> </ul>	<ul style="list-style-type: none"> <li>• finds the future value and present value of simple annuities</li> <li>• calculates the fair market value of a cash flow stream that includes an annuity</li> </ul>
<b>7.3 Deferred Annuity</b>	<ul style="list-style-type: none"> <li>• define deferred annuity and deferred period</li> <li>• illustrate the time diagram of deferred annuity</li> </ul>	<ul style="list-style-type: none"> <li>• calculates the present value and period of deferral of a deferred annuity</li> </ul>
<b>7.4 General Annuities</b>	<ul style="list-style-type: none"> <li>• define general annuities</li> <li>• differentiate general annuities from simple annuities</li> </ul>	<ul style="list-style-type: none"> <li>• distinguishes between simple and general annuities.</li> <li>• finds the future value and present value of general annuities.</li> <li>• calculates the fair market value of a cash flow stream that includes an annuity.</li> </ul>
<b>CHAPTER 8 Stocks and Bonds</b>	<p><b>Chapter Objectives</b> <i>At the end of this chapter, the student shall be able to</i></p> <ul style="list-style-type: none"> <li>• illustrate stocks and bonds.</li> <li>• distinguish between stocks and bonds.</li> <li>• describe the different markets for stocks and bonds.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of basic concepts of stocks and bonds.</p> <p><b>Performance Standards</b> The learner will be able to use appropriate financial</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
	<ul style="list-style-type: none"> <li>• analyze the different market indices for stocks and bonds.</li> <li>• apply the appropriate formula to solve real-life problems.</li> </ul>	instruments involving stocks and bonds in formulating conclusions and making decisions.
<b>8.1 Stocks</b>	<ul style="list-style-type: none"> <li>• define stock and other related terms.</li> <li>• illustrate stocks</li> </ul>	<ul style="list-style-type: none"> <li>• illustrate stocks</li> </ul>
<b>8.2 Market Indices for Stocks</b>	<ul style="list-style-type: none"> <li>• define market indices, stock yields, current yield, price-earnings ratio and earnings per share, and rate of return on a stock investment</li> </ul>	<ul style="list-style-type: none"> <li>• describes the different markets for stocks.</li> <li>• analyzes the different market indices for stocks.</li> </ul>
<b>8.3 Bonds and Their Market Indices</b>	<ul style="list-style-type: none"> <li>• define bonds and other related terms</li> <li>• define market indices for bonds, bond yields, current yield, and approximate yield to maturity</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates bonds</li> <li>• distinguishes between stocks and bonds</li> <li>• describes the different markets for bonds</li> <li>• analyzes the different market indices for bonds</li> <li>• interprets the theory of efficient markets</li> </ul>
<b>CHAPTER 9 Loans and Amortization</b>	<p><b>Chapter Objectives</b> At the end of this chapter, the student shall be able to investigate, analyze and solve problems involving loans, amortization and mortgage as they are applied in real-life problems using appropriate financial methods.</p>	<p><b>Content Standards</b> The learner demonstrates understanding of basic concepts of business and consumer loans.</p> <p><b>Performance Standards</b> The learner will be able to decide wisely on the appropriateness of business or consumer loan and its proper utilization.</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
<b>9.1 Loans</b>	<ul style="list-style-type: none"> <li>• define loans, term of the loan, and collateral</li> <li>• calculate the amount due and interest on a promissory note</li> <li>• compute annual percentage rate</li> <li>• apply appropriate formula in solving real-life problems</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates business and consumer loans.</li> <li>• distinguishes between business and consumer loans</li> </ul>
<b>9.2 Amortization</b>	<ul style="list-style-type: none"> <li>• define amortization, amortization schedule, principal repaid and outstanding balance</li> <li>• illustrate the different parts of an amortization schedule</li> <li>• apply appropriate formula in solving amortization problems</li> </ul>	<ul style="list-style-type: none"> <li>• solves problems involving business and consumer loans (amortization, mortgage)</li> </ul>
<b>9.3 Mortgage</b>	<ul style="list-style-type: none"> <li>• define mortgage, mortgage amount and closing costs, monthly payments and interests, and refinancing</li> <li>• determine whether a lender is qualified for a mortgage using debt-to-income ratio</li> <li>• calculate mortgage amount and closing costs</li> <li>• determine the breakeven point for refinancing</li> </ul>	<ul style="list-style-type: none"> <li>• solves problems involving business and consumer loans (amortization, mortgage)</li> </ul>
<b>CHAPTER 10 Simple and Compound Propositions</b>	<p><b>Chapter Objectives</b> The learner can formulate simple and compound propositions based on real-life situations, write them in symbol forms, and construct their truth tables. The learner can formulate a conditional proposition based on real life experiences and accordingly expresses it to its inverse, converse, and contrapositive form.</p>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of propositional logic.</p> <p><b>Performance Standards</b> The learner is able to judiciously apply logic in real-life arguments.</p>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
<b>10.1 Propositions</b>	<ul style="list-style-type: none"> <li>• formulate various declarative statements as well as other forms of statement based from real-life events</li> <li>• determine which statements are considered propositions and which are not</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates a proposition</li> </ul>
<b>10.2 Simple and Compound Propositions</b>	<ul style="list-style-type: none"> <li>• formulate simple and compound propositions from real-life events</li> <li>• correctly use the different logical operators in joining simple propositions together to form compound propositions</li> </ul>	<ul style="list-style-type: none"> <li>• distinguishes between simple and compound propositions</li> </ul>
<b>10.3 Symbolizing Propositions</b>	<ul style="list-style-type: none"> <li>• symbolize simple and compound propositions formulated from real-life events</li> <li>• correctly use each logical operator symbol in joining component simple propositions present in a compound proposition</li> </ul>	<ul style="list-style-type: none"> <li>• symbolizes propositions</li> <li>• performs the different types of operations on propositions</li> </ul>
<b>10.4 Truth Values of Propositions</b>	<ul style="list-style-type: none"> <li>• determine all possible combination of truth values of the different component simple propositions present in a compound proposition</li> <li>• correctly give the truth values of a compound proposition with respect to the truth values of the component simple propositions and the logical operators used</li> <li>• generate the truth table of a given compound proposition</li> </ul>	<ul style="list-style-type: none"> <li>• determines the truth values of propositions</li> </ul>
<b>10.5 Forms of Conditional Propositions</b>	<ul style="list-style-type: none"> <li>• demonstrate understanding of the three variant forms of a given conditional proposition by being able to correctly give its converse, inverse, and contrapositive both in text and in symbolic form</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates the different forms of conditional propositions</li> </ul>

Chapter Number and Title Chapter Title/Lesson Title/Topic	Objectives	Learning Competencies
<b>Chapter 11 Special Forms of Propositions</b>	<p><b>Chapter Objectives</b> <i>The learner is able to</i></p> <ul style="list-style-type: none"> <li>• identify the different forms of tautological propositions and verify them via a truth table.</li> <li>• identify what type of fallacy is committed in a given fallacious proposition.</li> <li>• formulate examples of the different kinds of syllogism from real-life situations or events.</li> <li>• express in standard categorical syllogisms arguments in non-standard forms.</li> <li>• correctly use a Venn diagram in evaluating the validity or invalidity of a given categorical syllogism.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of syllogisms and fallacies.</p> <p><b>Performance Standards</b> The learner is able to judiciously apply logic in real-life arguments.</p>
<b>11.1 Tautology</b>	<ul style="list-style-type: none"> <li>• identify the different forms of tautological propositions</li> <li>• construct a truth table showing why a given proposition is a tautology</li> <li>• formulate own examples of tautological propositions from real-life situations</li> <li>• provide a context in words for a given proposition written in symbol form</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates different types of tautologies.</li> </ul>
<b>11.2 Fallacy</b>	<ul style="list-style-type: none"> <li>• illustrate the different types of fallacy</li> <li>• give own examples of a fallacious proposition from real life situations and identify them according to type</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates different types of fallacies</li> </ul>
<b>11.3 Evaluation of Functions</b>	<ul style="list-style-type: none"> <li>• illustrate the different types of categorical syllogism</li> <li>• evaluate the validity of a categorical syllogism using Venn diagram</li> </ul>	<ul style="list-style-type: none"> <li>• determines the validity of categorical syllogisms</li> </ul>



Chapter Number and Title Chapter Title/Lesson Title/Topic	Objectives	Learning Competencies
	<ul style="list-style-type: none"> <li>• give own examples of a categorical syllogism from real-life situations and classify them according to type.</li> </ul>	
<b>11.4 Operations on Functions</b>	<ul style="list-style-type: none"> <li>• transform real-life arguments to standard categorical syllogisms</li> <li>• evaluate the validity of real-life arguments using Venn diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• establishes the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies</li> </ul>
<b>CHAPTER 12 Methods of Proof and Mathematical Statements</b>	<p><b>Chapter Objectives</b> <i>The learner is able to</i></p> <ul style="list-style-type: none"> <li>• differentiate between direct proof and indirect proof in terms of the steps to be performed and goals to be attained.</li> <li>• identify relevant data to be shown or produced in disproving proposition by counterexample.</li> <li>• internalize the rules of inference and rules of replacement and use them correctly in establishing the validity of arguments.</li> <li>• use direct proof in proving the truth or falsity of a given mathematical statement.</li> </ul>	<p><b>Content Standards</b> The learner demonstrates understanding of key concepts of key methods of proof and disproof.</p> <p><b>Performance Standards</b> The learner is able to appropriately apply a method of proof and disproof in real-life situations.</p>
<b>12.1 Proof by Direct Method</b>	<ul style="list-style-type: none"> <li>• identify the rule of inference that justifies a given argument</li> <li>• perform the steps in establishing the validity of arguments using direct method</li> <li>• correctly use each rule of inference in deducing a proposition</li> <li>• correctly use the rules of inference and rules of replacement in constructing proofs</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates the different methods of proof (direct)</li> </ul>

<i>Chapter Number and Title Chapter Title/Lesson Title/Topic</i>	<i>Objectives</i>	<i>Learning Competencies</i>
<b>12.2 Proof by Indirect Method</b>	<ul style="list-style-type: none"> <li>• identify the goal and perform the steps in establishing the validity of arguments using indirect method</li> <li>• correctly use the rules of inference in deducing propositions, and rules of replacement in transforming propositions to their equivalent and workable forms</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates the different methods of proof (indirect)</li> </ul>
<b>12.3 Disproof by Indirect Proof</b>	<ul style="list-style-type: none"> <li>• systematically yield a set (or sets) of truth values of the component propositions consisted in a conditional compound proposition that shows why it is false</li> <li>• correctly use indirect proof to establish the invalidity of a given invalid argument</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates the different methods of disproof (indirect)</li> </ul>
<b>12.4 Disproof by Counter-example</b>	<ul style="list-style-type: none"> <li>• identify the appropriate data that could be shown as counterexample that proves the falsity of a particular claim</li> </ul>	<ul style="list-style-type: none"> <li>• illustrates the different methods of disproof (counterexample)</li> </ul>
<b>12.5 Proof of Mathematical Statements</b>	<ul style="list-style-type: none"> <li>• identify the property of numbers and operations involved in a mathematical statement</li> <li>• use the property of numbers and operations involved in representing the problem situation mathematically (i.e., forming equations)</li> <li>• manipulate the equations so formed to yield the desired result</li> </ul>	<ul style="list-style-type: none"> <li>• justifies mathematical and real-life statements using the different methods of proof and disproof</li> </ul>