The Charles A. Dana Center
at the University of Texas at Austin

IVY TECH COMMUNITY COLLEGE

2013

What Students Need to Know

Mathematics Concept Inventories for Community College Workforce Education Programs

A resource developed by the Charles A. Dana Center
at the University of Texas at Austin
and Ivy Tech Community College of Indiana

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Mathematics Concept Inventories for Community College Workforce Education Programs

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As always, we welcome your comments and suggestions for improvements. Please contact us at **dana-txshop@utlists.utexas.edu** or at the address above.

About the Charles A. Dana Center at The University of Texas at Austin

The Dana Center strengthens our nation's education systems to provide a reliable path to upward mobility for all students. Our work focuses on mathematics and science education, with an emphasis on strategies for improving student engagement, motivation, and persistence. We are dedicated to nurturing students' intellectual passions and ensuring that every student leaves school prepared for success in postsecondary education and the contemporary workplace—and for active participation in our modern democracy.

We advocate for high academic standards, and we collaborate with local partners to build the capacity of education systems to ensure that all students can master the content described in these standards. We help our partners adapt promising research to meet their local needs.

We develop innovative curricula, tools, protocols, instructional supports, and professional development systems that we implement through multiple channels, from the highly local and personal to the regional and national. We provide long-term technical assistance to school and district leadership teams, advise community colleges and states, and collaborate with national partners on work such as our Urban District Leadership Networks, Academic Youth Development project, and Advanced Mathematical Decision Making course.

We have significant experience and expertise in the following:

- Standards development and implementation, systemic reform, and district capacity building
- Education leadership, instructional coaching, and teaching
- K–14 course design and development, learning networks, and programs for bridging critical transitions
- Research, content development, and publishing

The Center was founded in 1991 at The University of Texas at Austin. Our staff of more than 60 researchers and education professionals has worked with dozens of school systems in nearly 20 states and with most of Texas's more than 1,000 school districts. We are committed to ensuring that the accident of where a student attends school does not limit the academic opportunities he or she can pursue. For more information about our programs and resources, see our homepage at **www.utdanacenter.org**.

About Ivy Tech Community College of Indiana

Ivy Tech Community College is the state's largest public postsecondary institution and the nation's largest singly accredited statewide community college system, serving nearly 200,000 students annually. Ivy Tech has campuses throughout Indiana. It serves as the state's engine of workforce development, offering affordable degree programs and training that are aligned with the needs of its community, along with courses and programs that transfer to other colleges and universities in Indiana. It is accredited by the Higher Learning Commission and a member of the North Central Association. For more information on Ivy Tech, see **www.ivytech.edu**.

About the development of this resource

In June 2012, the Mathematics Steering Committee at Ivy Tech Community College of Indiana—in an effort to develop preparatory mathematics courses for the college's programs that offer certificates, technical certificates, and/or associate's degrees in a wide range of workforce education disciplines—embarked on an ambitious data-collection effort to determine the prerequisite mathematics concepts that students need to be successful in each of these programs.

Leaders in the mathematics education community at Ivy Tech jointly developed and conducted surveys of program chairs and faculty within the Ivy Tech system to determine how various mathematical concepts (from a comprehensive list developed by the College) are relevant to various programs of study.

The Dana Center, recognizing that such an effort was a first for community college mathematics—and that as such, the survey results could be of great benefit to the community college mathematics education community—agreed to work with Ivy Tech to aggregate and analyze these data sets to create comprehensive mathematics concepts inventories that could be used by mathematics faculty at community colleges across the country. This joint effort resulted in this first edition of this resource.

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Alphabetical list of programs

Below are listed 34 Ivy Tech Community College of Indiana programs that offer certificates, technical certificates, and/or associate's degrees in a wide range of workforce education disciplines. This publication includes a two-page summary for each of these programs of study; each summary details which mathematics concepts (from a comprehensive list developed by Ivy Tech) are highly relevant, relevant, minimally relevant, or not relevant for that program of study; the determination of relevance was derived from survey responses from faculty and program chairs from campuses across the Ivy Tech system. These were then vetted at curriculum review meetings by the full faculty from each respective program.

This resource is intended to support a larger conversation in the field about what mathematics concepts a student should know to be certified in various programs.

What Students Need to Know: Mathematics Concept Inventories for Community College Workforce Education Programs …

… Is a resource for community college mathematics leaders and faculty who are working to reform mathematics content in workforce education programs.

This resource, developed in partnership with Ivy Tech Community College of Indiana, and made possible by a grant from The Carnegie Corporation of New York, features inventories of required mathematics concepts for a broad range of workforce education programs at the certificate and associate's degree levels.

We would be remiss if we did not note that the new *What Does It Really Mean to be College and Work Ready* report[1] from the National Center on Education and the Economy covers much of the same ground—for both mathematics and English literacy, but from a higher vantage point and with a broader approach. Specifically,[2] NCEE analyzed evidence "to determine reading, writing, and mathematical literacy knowledge and skills needed to succeed in … nine highly popular and diverse program areas":

Accounting
Automotive Technology
Biotech / Electrical Technology
Business
Computer Programming
Criminal Justice
Early Childhood Education
Information Technology
Nursing

This resource differs particularly in that it focuses on certificates, technical certificates, and/or associate's degrees in 34 of workforce education disciplines. NCEE's report focuses only on degree programs and course sequences that enable students to transfer to a 4-year institution. To access this excellent report, see www.ncee.org/college-and-work-ready.

[1] National Center on Education and the Economy. (2013, May). *What Does It Really Mean to be College and Work Ready?: The Mathematics Required of First Year Community College Students.* Washington, DC: Author. Retrieved July 1, 2013, via www.ncee.org/college-and-work-ready.

[2] Ibid, page 7.

ACCOUNTING

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Calculate measures of central tendency Calculate slope Collect and analyze data Determine, evaluate, and graph functions Evaluate expressions and formulas Graph linear equations Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Perform the set operations of union, intersection, and complementation Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve absolute value equations Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve linear equations Solve linear inequalities Solve percent problems Solve proportion problems Solve quadratic equations Solve systems of equations with three variables Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use scientific notation Use the order of operations (grouping symbols, exponents) Write linear equations from tables, graphs, and applications
minimally relevant	Graph linear inequalities Simplify radicals Solve absolute value inequalities
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution

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ACCOUNTING

not relevant	Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Operate within and between the U.S. customary and metric system Perform common constructions using a straightedge and compass Perform operations on matrices Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve radical equations Solve rational equations Solve right triangles Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities

AUTOMOTIVE TECHNOLOGY

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Calculate perimeters, areas, and volumes of basic geometric figures Collect and analyze data Evaluate expressions and formulas Find the angles of regular polygons Identify characteristics and properties of circles, triangles, and quadrilaterals Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate slope Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find trigonometric function values of any angle expressed in degree or radian Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions

AUTOMOTIVE TECHNOLOGY

not relevant	Graph quadratic functions Graph trigonometric functions Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Understand the concept of slope as a rate of change Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use scientific notation Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

AVIATION TECHNOLOGY

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Evaluate expressions and formulas Identify characteristics and properties of circles, triangles, and quadrilaterals Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve percent problems Solve proportion problems Solve right triangles Use scientific notation Use the order of operations (grouping symbols, exponents)
relevant	Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Collect and analyze data Convert between degree measure and radian measure Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform common constructions using a straightedge and compass Simplify rational expressions, including complex fractions Solve oblique triangles using the laws of sine and cosine Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use and apply properties of vectors Use proportion as applied to similar figures Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Write linear equations from tables, graphs, and applications

AVIATION TECHNOLOGY

not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distributions using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate z-scores and percentile ranks Compute probabilities Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Perform basic operations with complex numbers Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify radicals Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve financial applications including simple and compound interest Solve linear equations Solve linear inequalities Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use chi-square testing Use permutations, combinations, and other counting techniques Use the binomial and normal distribution to determine probabilities Use the properties of rational exponents Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities

BUILDING CONSTRUCTION MANAGEMENT

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Collect and analyze data Compute probabilities Convert between degree measure and radian measure Determine, evaluate, and graph functions Evaluate expressions and formulas Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Read and interpret tables and graphs Simplify radicals Simplify rational expressions including complex fractions Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve oblique triangles using the laws of sine and cosine Solve percent problems Solve proportion problems Solve radical equations Solve rational equations Solve right triangles Solve trigonometric equations Translate verbal expressions into algebraic symbols and vice-versa Understand the concept of slope as a rate of change Use and apply properties of vectors Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents) Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities

BUILDING CONSTRUCTION MANAGEMENT

not relevant	Add, subtract, multiply, and divide polynomial expressions
	Apply properties of integer exponents
	Apply the rules of hypothesis testing for one and two sample populations
	Approximate binomial distribution using normal distribution
	Calculate measures of central tendency
	Calculate measures of dispersion
	Calculate z-scores and percentile ranks
	Determine confidence intervals
	Determine correlation coefficients and predict using linear correlation
	Factor binomials, trinomials and four-term polynomials
	Graph circles, parabolas, ellipses, and hyperbolas
	Graph exponential and logarithmic functions
	Graph linear equations
	Graph linear inequalities
	Graph polynomial functions
	Graph quadratic functions
	Graph trigonometric functions
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Simplify algebraic expressions (distributive property, combine like terms)
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve linear equations
	Solve linear inequalities
	Solve polynomial equations
	Solve quadratic equations
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use scientific notation
	Use the binomial and normal distribution to determine probabilities
	Use tree diagrams
	Use Venn diagrams to illustrate properties of sets
	Write linear equations from tables, graphs, and applications

BUSINESS ADMINISTRATION

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Collect and analyze data Identify characteristics and properties of circles, triangles, and quadrilaterals Read and interpret tables and graphs Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Use permutations, combinations, and other counting techniques
relevant	Apply the rules of hypothesis testing for one and two sample populations Compute probabilities Evaluate expressions and formulas Graph linear equations Operate within and between the U.S. customary and metric system Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Understand the concept of slope as a rate of change Use proportion as applied to similar figures Use scientific notation Use the order of operations (grouping symbols, exponents)
minimally relevant	Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate z-scores and percentile ranks Determine, evaluate, and graph functions Find the angles of regular polygons Graph linear inequalities Graph quadratic functions Identify perfect squares and calculate square roots using a calculator Perform common constructions using a straightedge and compass Perform the set operations of union, intersection, and complementation Translate verbal expressions into algebraic symbols and vice versa Use the binomial and normal distributions to determine probabilities Use tree diagrams Use Venn diagrams to illustrate properties of sets

BUSINESS ADMINISTRATION

not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Approximate binomial distribution using normal distribution Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph polynomial functions Graph trigonometric functions Perform basic operations with complex numbers Perform operations on matrices Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities Write linear equations from tables, graphs, and applications

CHEMICAL TECHNOLOGY

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply the properties of logarithms to solve exponential and logarithmic equations Calculate measures of central tendency Calculate measures of dispersion Calculate slope Collect and analyze data Determine confidence intervals Determine correlation coefficients and predict using linear correlation Evaluate expressions and formulas Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve absolute value equations Solve an equation for a specified variable Solve linear equations Solve percent problems Solve proportion problems Solve rational equations Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use scientific notation Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate perimeters, areas, and volumes of basic geometric figures Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations

CHEMICAL TECHNOLOGY

not relevant	Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value inequalities Solve financial applications including simple and compound interest Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

COMPUTER INFORMATION SYSTEMS

highly relevant	Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Collect and analyze data Compute probabilities Evaluate expressions and formulas Identify characteristics and properties of circles, triangles, and quadrilaterals Perform operations on matrices Read and interpret tables and graphs Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents)
relevant	Add, subtract, multiply, divide fractions Apply properties of integer exponents Calculate measures of central tendency Calculate z-scores and percentile ranks Determine, evaluate, and graph functions Graph linear equations Graph linear inequalities Operate within and between the U.S. customary and metric system Perform basic operations with complex numbers Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve proportion problems Solve quadratic equations Solve rational equations Solve systems of equations with three variables Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use scientific notation Use tree diagrams

COMPUTER INFORMATION SYSTEMS

not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of dispersion Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify perfect squares and calculate square roots using a calculator Perform common constructions using a straightedge and compass Simplify radicals Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve radical equations Solve right triangles Solve systems of linear equations using various matrix methods Solve trigonometric equations Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

COMPUTER INFORMATION TECHNOLOGY

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Collect and analyze data Compute probabilities Determine, evaluate, and graph functions Evaluate expressions and formulas Find the angles of regular polygons Graph linear equations Graph linear inequalities Graph quadratic functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform operations on matrices Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve linear equations Solve linear inequalities Solve percent problems Solve polynomial equations Solve proportion problems Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of linear equations using various matrix methods Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures

COMPUTER INFORMATION TECHNOLOGY

relevant	Use scientific notation Use the order of operations (grouping symbols, exponents) Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Write linear equations from tables, graphs, and applications
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate z-scores and percentile ranks Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph polynomial functions Graph trigonometric functions Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform the set operations of union, intersection, and complementation Simplify rational expressions, including complex fractions Solve oblique triangles using the laws of sine and cosine Solve systems of equations with three variables Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use the binomial and normal distributions to determine probabilities Utilize trigonometric identities

CONSTRUCTION TECHNOLOGY

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Convert between degree measure and radian measure Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform common constructions using a straightedge and compass Read and interpret tables and graphs Solve an equation for a specified variable Solve oblique triangles using the laws of sine and cosine Solve percent problems Solve proportion problems Solve right triangles Solve trigonometric equations Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use and apply properties of vectors Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents) Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency

CONSTRUCTION TECHNOLOGY

not relevant	Calculate measures of dispersion
	Calculate z-scores and percentile ranks
	Collect and analyze data
	Compute probabilities
	Determine confidence intervals
	Determine correlation coefficients and predict using linear correlation
	Determine, evaluate, and graph functions
	Evaluate expressions and formulas
	Factor binomials, trinomials and four-term polynomials
	Graph circles, parabolas, ellipses, and hyperbolas
	Graph exponential and logarithmic functions
	Graph linear equations
	Graph linear inequalities
	Graph polynomial functions
	Graph quadratic functions
	Graph trigonometric functions
	Perform basic operations with complex numbers
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve financial applications including simple and compound interest
	Solve linear equations
	Solve linear inequalities
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use scientific notation
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use tree diagrams
	Use Venn diagrams to illustrate properties of sets
	Write linear equations from tables, graphs, and applications

CRIMINAL JUSTICE

highly relevant	Add, subtract, multiply, divide whole numbers Collect and analyze data Perform the set operations of union, intersection, and complementation Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Translate verbal expressions into algebraic symbols and vice versa Use proportion as applied to similar figures Use scientific notation Use the order of operations (grouping symbols, exponents) Use Venn diagrams to illustrate properties of sets
relevant	Add, subtract, multiply, divide fractions Apply the rules of hypothesis testing for one and two sample populations Operate within and between the U.S. customary and metric system Perform common constructions using a straightedge and compass Solve absolute value equations Solve percent problems Solve proportion problems Solve quadratic equations Understand the concept of slope as a rate of change Use permutations, combinations, and other counting techniques Use tree diagrams Write linear equations from tables, graphs, and applications
minimally relevant	Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Compute probabilities Determine, evaluate, and graph functions Evaluate expressions and formulas Identify characteristics and properties of circles, triangles, and quadrilaterals Perform operations on matrices Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve financial applications including simple and compound interest Solve linear equations Solve polynomial equations

CRIMINAL JUSTICE

minimally relevant	Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Use and apply properties of vectors Use the binomial and normal distributions to determine probabilities Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Calculate z-scores and percentile ranks Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Simplify radicals Solve absolute value inequalities Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve radical equations Solve trigonometric equations Use chi-square testing Use the properties of rational exponents Utilize trigonometric identities

DENTAL HYGIENE

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Collect and analyze data Determine, evaluate, and graph functions Evaluate expressions and formulas Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Use scientific notation Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator

DENTAL HYGIENE

not relevant	Perform basic operations with complex numbers
	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve an equation for a specified variable
	Solve linear equations
	Solve linear inequalities
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Solve trigonometric equations
	Translate verbal expressions into algebraic symbols and vice-versa
	Understand the concept of slope as a rate of change
	Use and apply properties of vectors
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use proportion as applied to similar figures
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use tree diagrams
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Use Venn diagrams to illustrate properties of sets
	Utilize trigonometric identities
	Write linear equations from tables, graphs, and applications

DESIGN TECHNOLOGY

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Evaluate expressions and formulas Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform common constructions using a straightedge and compass Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve linear equations Solve oblique triangles using the laws of sine and cosine Solve proportion problems Solve right triangles Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use and apply properties of vectors Use proportion as applied to similar figures Use scientific notation Use the order of operations (grouping symbols, exponents) Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Graph linear equations Solve percent problems
relevant	Add, subtract, multiply, and divide polynomial expressions Convert between degree measure and radian measure Solve quadratic equations Solve rational equations Utilize trigonometric identities

DESIGN TECHNOLOGY

minimally relevant	Determine, evaluate, and graph functions
	Factor binomials, trinomials and four-term polynomials
	Graph circles, parabolas, ellipses, and hyperbolas
	Graph trigonometric functions
	Perform operations on matrices
	Simplify radicals
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve polynomial equations
	Solve systems of equations with three variables
	Solve trigonometric equations
	Use the properties of rational exponents
	Apply the properties of logarithms to solve exponential and logarithmic equations
	Calculate measures of central tendency
	Calculate measures of dispersion
	Calculate z-scores and percentile ranks
	Collect and analyze data
	Graph polynomial functions
	Graph quadratic functions
	Perform basic operations with complex numbers
	Perform the set operations of union, intersection, and complementation
	Simplify rational expressions including complex fractions
	Solve absolute value inequalities
	Solve linear inequalities
	Solve radical equations
	Solve systems of linear equations using various matrix methods
	Use Venn diagrams to illustrate properties of sets
	Write linear equations from tables, graphs, and applications
not relevant	Apply the properties of complex numbers in rectangular and polar forms
	Apply the rules of hypothesis testing for one and two sample populations
	Approximate binomial distribution using normal distribution
	Compute probabilities
	Determine confidence intervals
	Determine correlation coefficients and predict using linear correlation
	Graph exponential and logarithmic functions
	Graph linear inequalities
	Solve financial applications including simple and compound interest
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use the binomial and normal distributions to determine probabilities
	Use tree diagrams

EARLY CHILDHOOD EDUCATION

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Collect and analyze data Identify characteristics and properties of circles, triangles, and quadrilaterals Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve percent problems Solve proportion problems Use proportion as applied to similar figures
relevant	Add, subtract, multiply, divide with negative numbers Calculate slope Compute probabilities Determine, evaluate, and graph functions Evaluate expressions and formulas Graph linear equations Graph linear inequalities Identify perfect squares and calculate square roots using a calculator Perform common constructions using a straightedge and compass Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve financial applications including simple and compound interest Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use permutations, combinations, and other counting techniques Use scientific notation Use the order of operations (grouping symbols, exponents) Use tree diagrams Use Venn diagrams to illustrate properties of sets Write linear equations from tables, graphs, and applications
minimally relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Calculate z-scores and percentile ranks Determine confidence intervals Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Graph circles, parabolas, ellipses, and hyperbolas Graph quadratic functions Solve linear equations Solve linear inequalities

EARLY CHILDHOOD EDUCATION

not relevant	Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Approximate binomial distribution using normal distribution Convert between degree measure and radian measure Determine correlation coefficients and predict using linear correlation Find trigonometric function values of any angle expressed in degrees or radians Graph exponential and logarithmic functions Graph polynomial functions Graph trigonometric functions Perform basic operations with complex numbers Perform operations on matrices Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities

EDUCATION

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate measures of central tendency Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Collect and analyze data Compute probabilities Evaluate expressions and formulas Find the angles of regular polygons Graph linear equations Graph linear inequalities Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve linear equations Solve percent problems Solve proportion problems Solve right triangles Understand the concept of slope as a rate of change Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents) Use Venn diagrams to illustrate properties of sets
minmally relevant	Add, subtract, multiply, and divide polynomial expressions Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate z-scores and percentile ranks Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph polynomial functions Graph quadratic functions

EDUCATION

minmally relevant	Graph trigonometric functions Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Simplify algebraic expressions (distributive property, combine like terms) Simplify rational expressions, including complex fractions Solve an equation for a specified variable Solve oblique triangles using the laws of sine and cosine Solve rational equations Solve trigonometric equations Use and apply properties of vectors Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities Write linear equations from tables, graphs, and applications
not relevant	Convert between degree measure and radian measure Find trigonometric function values of any angle expressed in degrees or radians Perform the set operations of union, intersection, and complementation Simplify radicals Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve financial applications including simple and compound interest Solve linear inequalities Solve polynomial equations Solve quadratic equations Solve radical equations Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Translate verbal expressions into algebraic symbols and vice versa Use chi-square testing Use permutations, combinations, and other counting techniques Use scientific notation Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams

ELECTRONICS & COMPUTER TECHNOLOGY

highly relevant	Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply the properties of logarithms to solve exponential and logarithmic equations Calculate slope Collect and analyze data Determine, evaluate, and graph functions Evaluate expressions and formulas Graph exponential and logarithmic functions Graph linear equations Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use and apply properties of vectors Use scientific notation Use the order of operations (grouping symbols, exponents) Write linear equations from tables, graphs, and applications
relevant	Add, subtract, multiply, and divide polynomial expressions Add, subtract, multiply, divide fractions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Calculate perimeters, areas, and volumes of basic geometric figures Convert between degree measure and radian measure Factor binomials, trinomials and four-term polynomials Find trigonometric function values of any angle expressed in degrees or radians Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine

ELECTRONICS & COMPUTER TECHNOLOGY

relevant	Solve percent problems Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities
minimally relevant	Apply the Pythagorean theorem Calculate measures of central tendency Graph circles, parabolas, ellipses, and hyperbolas Graph linear inequalities Graph polynomial functions Graph quadratic functions Perform operations on matrices Solve absolute value inequalities Use proportion as applied to similar figures Use the properties of rational exponents
not relevant	Apply properties of intersecting lines, transversals, and angles Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate z-scores and percentile ranks Compute probabilities Determine confidence intervals Determine correlation coefficients and predict using linear correlation Find the angles of regular polygons Perform common constructions using a straightedge and compass Perform the set operations of union, intersection, and complementation Solve financial applications including simple and compound interest Use chi-square testing Use permutations, combinations, and other counting techniques Use the binomial and normal distributions to determine probabilities Use tree diagrams Use Venn diagrams to illustrate properties of sets

ENERGY TECHNOLOGY

relevant	Add, subtract, multiply, and divide polynomial expressions
	Add, subtract, multiply, divide fractions
	Add, subtract, multiply, divide whole numbers
	Add, subtract, multiply, divide with negative numbers
	Apply properties of integer exponents
	Apply properties of intersecting lines, transversals, and angles
	Apply the properties of logarithms to solve exponential and logarithmic equations
	Apply the Pythagorean theorem
	Approximate binomial distribution using normal distribution
	Calculate perimeters, areas, and volumes of basic geometric figures
	Calculate slope
	Calculate z-scores and percentile ranks
	Collect and analyze data
	Compute probabilities
	Determine correlation coefficients and predict using linear correlation
	Determine, evaluate, and graph functions
	Evaluate expressions and formulas
	Factor binomials, trinomials and four-term polynomials
	Find the angles of regular polygons
	Find trigonometric function values of any angle expressed in degrees or radians
	Graph circles, parabolas, ellipses, and hyperbolas
	Graph linear equations
	Graph linear inequalities
	Graph polynomial functions
	Graph quadratic functions
	Graph trigonometric functions
	Identify characteristics and properties of circles, triangles, and quadrilaterals
	Identify perfect squares and calculate square roots using a calculator
	Operate within and between the U.S. customary and metric system
	Perform basic operations with complex numbers
	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Read and interpret tables and graphs
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions

ENERGY TECHNOLOGY

relevant	Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve financial applications including simple and compound interest Solve linear equations Solve polynomial equations Solve proportion problems Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Understand the concept of slope as a rate of change Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use scientific notation Use the binomial and normal distributions to determine probabilities Use the order of operations (grouping symbols, exponents) Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities Write linear equations from tables, graphs, and applications
not relevant	Apply the properties of complex numbers in rectangular and polar forms Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Calculate measures of dispersion Convert between degree measure and radian measure Determine confidence intervals Graph exponential and logarithmic functions Perform the set operations of union, intersection, and complementation Solve an equation for a specified variable Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve percent problems Translate verbal expressions into algebraic symbols and vice versa Use Venn diagrams to illustrate properties of sets

ENVIRONMENTAL DESIGN

highly relevant	Add, subtract, multiply, divide whole numbers Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph quadratic functions Graph trigonometric functions Perform basic operations with complex numbers Perform the set operations of union, intersection, and complementation Simplify radicals Simplify rational expressions, including complex fractions Solve absolute value equations Solve linear equations Solve radical equations Solve rational equations Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Use and apply properties of vectors Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use Venn diagrams to illustrate properties of sets Write linear equations from tables, graphs, and applications
relevant	Solve quadratic equations Solve right triangles Use chi-square testing Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
minimally relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians

ENVIRONMENTAL DESIGN

minimally relevant	Graph circles, parabolas, ellipses, and hyperbolas Graph polynomial functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform common constructions using a straightedge and compass Perform operations on matrices Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve absolute value inequalities Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use scientific notation
not relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the rules of hypothesis testing for one and two sample populations Calculate slope Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Evaluate expressions and formulas Operate within and between the U.S. customary and metric system Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Solve trigonometric equations Use the order of operations (grouping symbols, exponents) Utilize trigonometric identities

HEALTH CARE SUPPORT

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Evaluate expressions and formulas Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve percent problems Solve proportion problems Use proportion as applied to similar figures
relevant	Add, subtract, multiply, divide with negative numbers Identify perfect squares and calculate square roots using a calculator Perform common constructions using a straightedge and compass Solve financial applications including simple and compound interest Understand the concept of slope as a rate of change
minimally relevant	Apply properties of intersecting lines, transversals, and angles Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Calculate perimeters, areas, and volumes of basic geometric figures Collect and analyze data Compute probabilities Determine, evaluate, and graph functions Perform the set operations of union, intersection, and complementation Solve an equation for a specified variable Solve linear equations Solve rational equations Use chi-square testing Use permutations, combinations, and other counting techniques Use scientific notation Use the binomial and normal distributions to determine probabilities Use the order of operations (grouping symbols, exponents) Use tree diagrams Use Venn diagrams to illustrate properties of sets
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate slope Calculate z-scores and percentile ranks Convert between degree measure and radian measure Determine confidence intervals

HEALTH CARE SUPPORT

not relevant	Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Perform basic operations with complex numbers Perform operations on matrices Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Translate verbal expressions into algebraic symbols and vice versa Use and apply properties of vectors Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities Write linear equations from tables, graphs, and applications

HEALTH INFORMATION TECHNOLOGY

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Determine confidence intervals Determine correlation coefficients and predict using linear correlation Evaluate expressions and formulas Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform the set operations of union, intersection, and complementation Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use scientific notation Use the binomial and normal distributions to determine probabilities Use the order of operations (grouping symbols, exponents) Use tree diagrams Use Venn diagrams to illustrate properties of sets

HEALTH INFORMATION TECHNOLOGY

not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Convert between degree measure and radian measure Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities Write linear equations from tables, graphs, and applications

HOSPITALITY ADMINISTRATION

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa
relevant	Calculate perimeters, areas, and volumes of basic geometric figures Collect and analyze data Evaluate expressions and formulas Solve financial applications including simple and compound interest
minimally relevant	Add, subtract, multiply, divide with negative numbers Calculate measures of central tendency Calculate z-scores and percentile ranks Compute probabilities Determine, evaluate, and graph functions Graph linear equations Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform the set operations of union, intersection, and complementation Solve an equation for a specified variable Understand the concept of slope as a rate of change Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use Venn diagrams to illustrate properties of sets Write linear equations from tables, graphs, and applications
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate slope Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians

HOSPITALITY ADMINISTRATION

not relevant	Graph circles, parabolas, ellipses, and hyperbolas
	Graph exponential and logarithmic functions
	Graph linear inequalities
	Graph polynomial functions
	Graph quadratic functions
	Graph trigonometric functions
	Perform basic operations with complex numbers
	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve linear equations
	Solve linear inequalities
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Solve trigonometric equations
	Use and apply properties of vectors
	Use chi-square testing
	Use scientific notation
	Use the binomial and normal distributions to determine probabilities
	Use the order of operations (grouping symbols, exponents)
	Use the properties of rational exponents
	Use tree diagrams
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Utilize trigonometric identities

HUMAN SERVICES

highly relevant	Solve percent problems Solve proportion problems
relevant	Add, subtract, multiply, divide whole numbers Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Collect and analyze data Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve an equation for a specified variable Solve financial applications including simple and compound interest
minimally relevant	Add, subtract, multiply, divide fractions Perform operations on matrices Simplify algebraic expressions (distributive property, combine like terms) Solve absolute value equations Solve linear equations Solve systems of linear equations using various matrix methods Translate verbal expressions into algebraic symbols and vice versa Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Evaluate expressions and formulas Factor binomials, trinomials and four-term polynomials

HUMAN SERVICES

not relevant	Find the angles of regular polygons
	Find trigonometric function values of any angle expressed in degrees or radians
	Graph circles, parabolas, ellipses, and hyperbolas
	Graph exponential and logarithmic functions
	Graph linear equations
	Graph linear inequalities
	Graph polynomial functions
	Graph quadratic functions
	Graph trigonometric functions
	Identify characteristics and properties of circles, triangles, and quadrilaterals
	Identify perfect squares and calculate square roots using a calculator
	Perform basic operations with complex numbers
	Perform common constructions using a straightedge and compass
	Perform the set operations of union, intersection, and complementation
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value inequalities
	Solve linear inequalities
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve trigonometric equations
	Understand the concept of slope as a rate of change
	Use and apply properties of vectors
	Use chi-square testing
	Use scientific notation
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use tree diagrams
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Use Venn diagrams to illustrate properties of sets
	Utilize trigonometric identities
	Write linear equations from tables, graphs, and applications

INDUSTRIAL TECHNOLOGY

highly relevant	Apply the properties of logarithms to solve exponential and logarithmic equations Calculate perimeters, areas, and volumes of basic geometric figures Calculate z-scores and percentile ranks Compute probabilities Evaluate expressions and formulas Graph linear inequalities Graph quadratic functions Identify characteristics and properties of circles, triangles, and quadrilaterals Operate within and between the U.S. customary and metric system Solve absolute value inequalities Solve financial applications including simple and compound interest Use the binomial and normal distributions to determine probabilities Use tree diagrams
relevant	Add, subtract, multiply, divide with negative numbers Add, subtract, multiply, divide whole numbers Apply properties of integer exponents Convert between degree measure and radian measure Determine, evaluate, and graph functions Graph linear equations Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Solve linear equations Solve proportion problems Solve rational equations Solve trigonometric equations Use the properties of rational exponents
minimally relevant	Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Graph exponential and logarithmic functions Graph polynomial functions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve an equation for a specified variable Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve percent problems Solve polynomial equations

INDUSTRIAL TECHNOLOGY

minimally relevant	Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Understand the concept of slope as a rate of change Use chi-square testing Use scientific notation Use the order of operations (grouping symbols, exponents) Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle Write linear equations from tables, graphs, and applications
not relevant	Add, subtract, multiply, and divide polynomial expressions Add, subtract, multiply, divide fractions Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Calculate measures of dispersion Calculate slope Collect and analyze data Determine confidence intervals Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph trigonometric functions Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve absolute value equations Solve quadratic equations Solve radical equations Translate verbal expressions into algebraic symbols and vice versa Use and apply properties of vectors Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities

INFORMATION SECURITY

highly relevant	Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Collect and analyze data Compute probabilities Evaluate expressions and formulas Perform basic operations with complex numbers
relevant	Add, subtract, multiply, divide fractions Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Calculate measures of dispersion Calculate slope Calculate z-scores and percentile ranks Convert between degree measure and radian measure Determine confidence intervals Determine, evaluate, and graph functions Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph linear equations Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system
minimally relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Approximate binomial distribution using normal distribution Factor binomials, trinomials and four-term polynomials Graph circles, parabolas, ellipses, and hyperbolas Graph linear inequalities Graph polynomial functions Graph quadratic functions Read and interpret tables and graphs Solve percent problems Understand the concept of slope as a rate of change Use the order of operations (grouping symbols, exponents) Use tree diagrams

INFORMATION SECURITY

not relevant	Determine correlation coefficients and predict using linear correlation
	Graph exponential and logarithmic functions
	Graph trigonometric functions
	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve an equation for a specified variable
	Solve financial applications including simple and compound interest
	Solve linear equations
	Solve linear inequalities
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve proportion problems
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Solve trigonometric equations
	Translate verbal expressions into algebraic symbols and vice versa
	Use and apply properties of vectors
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use proportion as applied to similar figures
	Use scientific notation
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Use Venn diagrams to illustrate properties of sets
	Utilize trigonometric identities
	Write linear equations from tables, graphs, and applications

LIBRARY TECHNICAL ASSISTANT

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Collect and analyze data Read and interpret tables and graphs Solve percent problems
relevant	Operate within and between the U.S. customary and metric system Solve financial applications including simple and compound interest
minimally relevant	Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Compute probabilities Determine, evaluate, and graph functions Graph linear equations Perform common constructions using a straightedge and compass Use Venn diagrams to illustrate properties of sets
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Calculate slope Calculate z-scores and percentile ranks Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Evaluate expressions and formulas Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers

LIBRARY TECHNICAL ASSISTANT

not relevant	Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve an equation for a specified variable Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve proportion problems Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use scientific notation Use the binomial and normal distributions to determine probabilities Use the order of operations (grouping symbols, exponents) Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Utilize trigonometric identities Write linear equations from tables, graphs, and applications

MACHINE TOOL TECHNOLOGY

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Evaluate expressions and formulas Find the angles of regular polygons Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Perform common constructions using a straightedge and compass Read and interpret tables and graphs Solve an equation for a specified variable Solve linear equations Solve percent problems Solve proportion problems Solve right triangles Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents) Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
relevant	Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Convert between degree measure and radian measure Find trigonometric function values of any angle expressed in degrees or radians Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Solve financial applications including simple and compound interest Solve oblique triangles using the laws of sine and cosine Solve trigonometric equations Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use scientific notation Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities

MACHINE TOOL TECHNOLOGY

not relevant	Add, subtract, multiply, and divide polynomial expressions
	Apply the properties of logarithms to solve exponential and logarithmic equations
	Apply the rules of hypothesis testing for one and two sample populations
	Approximate binomial distribution using normal distribution
	Calculate measures of central tendency
	Calculate measures of dispersion
	Calculate slope
	Calculate z-scores and percentile ranks
	Collect and analyze data
	Compute probabilities
	Determine confidence intervals
	Determine correlation coefficients and predict using linear correlation
	Determine, evaluate, and graph functions
	Factor binomials, trinomials and four-term polynomials
	Graph circles, parabolas, ellipses, and hyperbolas
	Graph exponential and logarithmic functions
	Graph linear equations
	Graph linear inequalities
	Graph polynomial functions
	Graph quadratic functions
	Graph trigonometric functions
	Perform basic operations with complex numbers
	Perform operations on matrices
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve linear inequalities
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Use and apply properties of vectors
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use tree diagrams
	Write linear equations from tables, graphs, and applications

MEDICAL ASSISTING

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply the rules of hypothesis testing for one and two sample populations Calculate measures of central tendency Calculate measures of dispersion Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Determine confidence intervals Determine, evaluate, and graph functions Evaluate expressions and formulas Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Understand the concept of slope as a rate of change Use scientific notation Use the order of operations (grouping symbols, exponents) Use tree diagrams
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Approximate binomial distribution using normal distribution Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Convert between degree measure and radian measure Determine correlation coefficients and predict using linear correlation Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions

MEDICAL ASSISTING

not relevant	Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

MEDICAL LABORATORY TECHNICIAN

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply the properties of logarithms to solve exponential and logarithmic equations Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Determine confidence intervals Determine correlation coefficients and predict using linear correlation Evaluate expressions and formulas Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve linear equations Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Use chi-square testing Use permutations, combinations, and other counting techniques Use scientific notation Use the binomial and normal distributions to determine probabilities Use tree diagrams
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Convert between degree measure and radian measure Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations

MEDICAL LABORATORY TECHNICIAN

not relevant	Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Read and interpret tables and graphs Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve financial applications including simple and compound interest Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Understand the concept of slope as a rate of change Use and apply properties of vectors Use proportion as applied to similar figures Use the order of operations (grouping symbols, exponents) Use the properties of rational exponents Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

OFFICE ADMINISTRATION

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Calculate measures of central tendency Collect and analyze data Identify perfect squares and calculate square roots using a calculator Operate within and between the U.S. customary and metric system
relevant	Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Simplify rational expressions, including complex fractions Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Solve rational equations Translate verbal expressions into algebraic symbols and vice versa Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Evaluate expressions and formulas Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities

OFFICE ADMINISTRATION

not relevant	Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify radicals Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Understand the concept of slope as a rate of change Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use scientific notation Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

PARALEGAL STUDIES

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Calculate measures of central tendency Collect and analyze data Compute probabilities Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Solve financial applications including simple and compound interest Solve linear equations Solve percent problems Solve proportion problems Use the binomial and normal distributions to determine probabilities Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Evaluate expressions and formulas Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals

PARALEGAL STUDIES

not relevant	Identify perfect squares and calculate square roots using a calculator
	Perform basic operations with complex numbers
	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve an equation for a specified variable
	Solve linear inequalities
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Solve trigonometric equations
	Translate verbal expressions into algebraic symbols and vice versa
	Understand the concept of slope as a rate of change
	Use and apply properties of vectors
	Use permutations, combinations, and other counting techniques
	Use proportion as applied to similar figures
	Use the properties of rational exponents
	Use tree diagrams
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Use Venn diagrams to illustrate properties of sets
	Utilize trigonometric identities
	Use chi-square testing
	Use scientific notation
	Write linear equations from tables, graphs, and applications

PARAMEDIC SCIENCE

highly relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Evaluate expressions and formulas Operate within and between the U.S. customary and metric system
relevant	Add, subtract, multiply, and divide polynomial expressions Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Calculate measures of central tendency Calculate measures of dispersion Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Determine confidence intervals Factor binomials, trinomials and four-term polynomials Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Read and interpret tables and graphs Solve an equation for a specified variable Solve financial applications including simple and compound interest Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and viceversa Understand the concept of slope as a rate of change Use the order of operations (grouping symbols, exponents)
not relevant	Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Convert between degree measure and radian measure Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions

PARAMEDIC SCIENCE

not relevant	Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify algebraic expressions (distributive property, combine like terms) Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use scientific notation Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

RESPIRATORY CARE

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Collect and analyze data Evaluate expressions and formulas Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve linear equations Solve linear inequalities Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Use scientific notation Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions

RESPIRATORY CARE

not relevant	Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Simplify radicals Simplify rational expressions, including complex fractions Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value equations Solve absolute value inequalities Solve financial applications including simple and compound interest Solve oblique triangles using the laws of sine and cosine Solve polynomial equations Solve quadratic equations Solve radical equations Solve rational equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Understand the concept of slope as a rate of change Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

SURGICAL TECHNOLOGY

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Operate within and between the U.S. customary and metric system Read and interpret tables and graphs Simplify algebraic expressions (distributive property, combine like terms) Solve an equation for a specified variable Solve linear equations Solve linear inequalities Solve percent problems Solve proportion problems Use scientific notation Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Add, subtract, multiply, divide with negative numbers Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Evaluate expressions and formulas Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degree or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions

SURGICAL TECHNOLOGY

not relevant	Graph trigonometric functions
	Identify characteristics and properties of circles, triangles, and quadrilaterals
	Identify perfect squares and calculate square roots using a calculator
	Perform basic operations with complex numbers
	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve financial applications including simple and compound interest
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Solve trigonometric equations
	Translate verbal expressions into algebraic symbols and vice versa
	Understand the concept of slope as a rate of change
	Use and apply properties of vectors
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use proportion as applied to similar figures
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use tree diagrams
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Use Venn diagrams to illustrate properties of sets
	Utilize trigonometric identities
	Write linear equations from tables, graphs, and applications

THERAPEUTIC MASSAGE

relevant	Add, subtract, multiply, divide fractions Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Evaluate expressions and formulas Operate within and between the U.S. customary and metric system Solve an equation for a specified variable Solve percent problems Solve proportion problems Translate verbal expressions into algebraic symbols and vice versa Use the order of operations (grouping symbols, exponents)
not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply properties of intersecting lines, transversals, and angles Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Apply the Pythagorean theorem Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate perimeters, areas, and volumes of basic geometric figures Calculate slope Calculate z-scores and percentile ranks Collect and analyze data Compute probabilities Convert between degree measure and radian measure Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Factor binomials, trinomials and four-term polynomials Find the angles of regular polygons Find trigonometric function values of any angle expressed in degrees or radians Graph circles, parabolas, ellipses, and hyperbolas Graph exponential and logarithmic functions Graph linear equations Graph linear inequalities Graph polynomial functions Graph quadratic functions Graph trigonometric functions Identify characteristics and properties of circles, triangles, and quadrilaterals Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers

THERAPEUTIC MASSAGE

not relevant	Perform common constructions using a straightedge and compass
	Perform operations on matrices
	Perform the set operations of union, intersection, and complementation
	Read and interpret tables and graphs
	Simplify algebraic expressions (distributive property, combine like terms)
	Simplify radicals
	Simplify rational expressions, including complex fractions
	Solve 2 x 2 systems of equations graphically and by substitution and elimination
	Solve absolute value equations
	Solve absolute value inequalities
	Solve financial applications including simple and compound interest
	Solve linear equations
	Solve linear inequalities
	Solve oblique triangles using the laws of sine and cosine
	Solve polynomial equations
	Solve quadratic equations
	Solve radical equations
	Solve rational equations
	Solve right triangles
	Solve systems of equations with three variables
	Solve systems of linear equations using various matrix methods
	Solve trigonometric equations
	Understand the concept of slope as a rate of change
	Use and apply properties of vectors
	Use chi-square testing
	Use permutations, combinations, and other counting techniques
	Use proportion as applied to similar figures
	Use scientific notation
	Use the binomial and normal distributions to determine probabilities
	Use the properties of rational exponents
	Use tree diagrams
	Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle
	Use Venn diagrams to illustrate properties of sets
	Utilize trigonometric identities
	Write linear equations from tables, graphs, and applications

VISUAL COMMUNICATIONS

highly relevant	Add, subtract, multiply, divide whole numbers Add, subtract, multiply, divide with negative numbers Apply properties of intersecting lines, transversals, and angles Identify characteristics and properties of circles, triangles, and quadrilaterals
relevant	Add, subtract, multiply, divide fractions Apply the Pythagorean theorem Calculate perimeters, areas, and volumes of basic geometric figures Collect and analyze data Graph linear equations Operate within and between the U.S. customary and metric system Solve an equation for a specified variable Solve percent problems Solve proportion problems Use scientific notation
minimally relevant	Apply the rules of hypothesis testing for one and two sample populations Approximate binomial distribution using normal distribution Calculate measures of central tendency Calculate measures of dispersion Calculate slope Calculate z-scores and percentile ranks Compute probabilities Determine confidence intervals Determine correlation coefficients and predict using linear correlation Determine, evaluate, and graph functions Evaluate expressions and formulas Find the angles of regular polygons Graph circles, parabolas, ellipses, and hyperbolas Graph linear inequalities Identify perfect squares and calculate square roots using a calculator Perform basic operations with complex numbers Simplify algebraic expressions (distributive property, combine like terms) Simplify rational expressions, including complex fractions Solve absolute value equations Solve financial applications including simple and compound interest Solve polynomial equations Solve quadratic equations Solve rational equations Translate verbal expressions into algebraic symbols and vice versa Use the order of operations (grouping symbols, exponents)

VISUAL COMMUNICATIONS

not relevant	Add, subtract, multiply, and divide polynomial expressions Apply properties of integer exponents Apply the properties of complex numbers in rectangular and polar forms Apply the properties of logarithms to solve exponential and logarithmic equations Convert between degree measure and radian measure Factor binomials, trinomials and four-term polynomials Find trigonometric function values of any angle expressed in degrees or radians Graph exponential and logarithmic functions Graph polynomial functions Graph quadratic functions Graph trigonometric functions Perform common constructions using a straightedge and compass Perform operations on matrices Perform the set operations of union, intersection, and complementation Read and interpret tables and graphs Simplify radicals Solve 2 x 2 systems of equations graphically and by substitution and elimination Solve absolute value inequalities Solve linear equations Solve linear inequalities Solve oblique triangles using the laws of sine and cosine Solve radical equations Solve right triangles Solve systems of equations with three variables Solve systems of linear equations using various matrix methods Solve trigonometric equations Understand the concept of slope as a rate of change Use and apply properties of vectors Use chi-square testing Use permutations, combinations, and other counting techniques Use proportion as applied to similar figures Use the binomial and normal distributions to determine probabilities Use the properties of rational exponents Use tree diagrams Use trigonometric tables and calculators to find sine, cosine, and tangent of an angle and use the inverse functions to find an angle Use Venn diagrams to illustrate properties of sets Utilize trigonometric identities Write linear equations from tables, graphs, and applications

The Charles A. Dana Center
at the University of Texas at Austin