



Independent School District of Boise City Curriculum Map

Advanced Math Topics

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Scope and Sequence Summary

Linear Relations	August/Sept
Systems of Equations	September
Rational Functions	October
Polynomial Functions	Oct/November
Trigonometry	Dec/January
Exponential and Logarithmic	Jan/February
Statistics Topics	March to June

Scope and Sequence for Advanced Math Topics

Merrill: Advanced Mathematical Concepts

Key Curriculum: Workshop Statistics: Discovery with Data and the Graphing Calculator

1st Semester

Ch. 1: Linear Relations and Functions

Ch. 2: Systems of Equations and
Inequalities

Ch. 3: The Nature of Graphs

Ch. 4: Polynomial and Rational Functions

Ch. 5: The Trigonometric Functions

2nd Semester

Ch. 11: Exponential and Logarithmic
Functions

Statistics

Unit I: Exploring Data: Distributions

Unit II: Exploring Data: Comparisons and
Relationships

Unit III: Collecting Data

Unit IV: Randomness in Data

Unit V: Inference from Data: Principles

ADVANCED MATH TOPICS

Performance Objectives

- ❑ Identify domain and range of any relation or function
- ❑ Find composite functions
- ❑ Find and recognize inverse functions
- ❑ Graph linear equations and inequalities
- ❑ Write linear equations using point-slope form
- ❑ Solve systems of equations
- ❑ Add, subtract and multiply matrices
- ❑ Graph systems of inequalities
- ❑ Find maximum or minimum value of a function defined by a polygonal convex set
- ❑ Use linear programming procedures to solve problems
- ❑ Recognize the uniqueness of a linear programming problem solution
- ❑ Identify even or odd functions
- ❑ Identify and graph polynomial and absolute-value functions
- ❑ Determine asymptotes
- ❑ Find the derivative of a function
- ❑ Find the slope and the equation of a line tangent to the graph of a function
- ❑ Find the critical points of the graph of a function
- ❑ Determine the continuity or discontinuity of functions
- ❑ Identify the end behavior of graphs
- ❑ Determine roots of polynomial equations
- ❑ Apply the fundamental theorem of algebra
- ❑ Solve an graph quadratic equations and inequalities
- ❑ Analyze the discriminant of a quadratic equation
- ❑ Find the factors of polynomials
- ❑ Graph and determine all rational roots of a polynomial equation
- ❑ Determine the number of positive and negative real zeros of a polynomial function
- ❑ Solve radical and rational equations and inequalities
- ❑ Decompose a fraction into partial fractions
- ❑ Convert between radian and degree measures
- ❑ Find reference angles and coterminal angles
- ❑ Find linear and angular velocities
- ❑ Find the values of the six trigonometric functions of an angle
- ❑ Solve right triangles
- ❑ Find the exact values of the six trigonometric functions of special angles
- ❑ Solve non-right triangles and find their areas
- ❑ Use the exponential function $y=e^x$
- ❑ Evaluate expressions and solve equations involving logarithms
- ❑ Graph logarithmic equations and inequalities
- ❑ Solve exponential and logarithmic equations and inequalities
- ❑ Solve equations using natural logarithms
- ❑ Recognize the different classifications of variables
- ❑ Use bar graphs and dot plots to visually display data
- ❑ Use the graphing calculator to analyze data

- ❑ Construct and interpret stem plots and histograms of data
- ❑ Calculate the mean , median and mode to summarize data
- ❑ Explore the property of resistance
- ❑ Learn to calculate range, inter-quartile range and standard deviation of a data distribution
- ❑ Use the five-number summary to construct and interpret box plots
- ❑ Understand the empirical rule to interpret the value of standard deviations
- ❑ Calculate z-scores for comparing distributions of different variables
- ❑ Construct and compare side-by-side stem plots
- ❑ Describe the statistical tendency
- ❑ Determine outliers in modified box plots
- ❑ Produce two-way tables to summarize information
- ❑ Explore the concepts of marginal and conditional distributions of categorical variables
- ❑ Construct and interpret segmented bar graphs
- ❑ Use association, direction and strength to describe graphical displays
- ❑ Construct and interpret scatter plots as graphical displays of the relationship between two variables
- ❑ Use the correlation coefficient to describe the association between two variables
- ❑ Know the difference between association and causation
- ❑ Use regression lines to make predictions about data
- ❑ Distinguish between population and sample and parameter and statistic
- ❑ Simple random sampling using random number generators
- ❑ Explore the notion of probability through simulations
- ❑ Use normal curves as mathematical models for approximating distributions
- ❑ Use a table of standard normal probabilities to perform calculations
- ❑ Determine the sampling distribution of sample proportions
- ❑ Construct confidence intervals for proportions and means
- ❑ Determine the sampling distribution of sample means
- ❑ Examine the effects of sample size and population variability
- ❑ Apply the Central Limit theorem to draw inferences about populations
- ❑ Use the t-distribution to find critical values
- ❑ Perform calculations relevant to the tests of significance concerning population proportions and means
- ❑ Apply the t-test to find p-values for statistical inference
- ❑ Identify matched-pairs experimental design

Advanced Math Topics Syllabus: Semester One

Date	Event Sequence	Lecture/Discussion Topics	Assignments
Aug.-31		Introduction of Course	Read Pages 5-9
Sep-1		1-1: Relations and Functions	Page 10, #19-31 odd, 40-42, 48
Sep-2		1-2: Composition and Inverses of functions	Page 17; # 17-29 odd, 38, 40, 42
Sep-3		1-3: Linear Functions and Inequalities	Page 20; # 1-12 Calculators
Sep-4		1-3: Linear Functions and Inequalities	Page 25; # 14-16, 17-33 odd, 47
Sep-7	Labor Day Holiday	No School	
Sep-8		1-4: Distance and Slope	Page 34; # 16-20, 24, 25, 31, 38, 44
Sep-9		Quiz 1-1 to 1-3	Notes 1-5/1-6
Sep-10		1-5: Linear Equations	Page 40; # 15-29 odd, 33, 36, 40
Sep-11		1-6: Linear Equations	Page 46; #17-27 odd, 35, 40
Sep-14		Practice Test	Page 51; # 1-25 odd
Sep-15		Chapter 1 Review	Page 48; # 1-39 odd
Sep-16		Chapter 1 Test	Notes 2-1
Sep-17		2-1: Solving Systems	Page 60; # 17-27 odd, 37
Sep-18		2-2: Intro to Matrices	Page 68; # 17-39 odd, 54
Sep-21		2-3: Determinants and inverses	Page 75; # 13-15, 19-26, 41
Sep-22		2-2A / Mid-Chapter Review	Page 63; #1-18; Page 77; # 1-10
Sep-23		Quiz 2-1 - 2-3	Worksheet
Sep-24		2-4: Solving Systems using Matrices	Page 82; # 9-17 odd, 28
Sep-25		2-5: Solving Systems of Inequalities	Page 89; # 11, 12, 13, 16, 27
Sep-28		2-6: Linear Programming	Page 95; # 4-11, 15, 17, 29
Sep-29		Quiz 2-4/2-5	page 101; # 2-20 even
Sep-30		Practice Test	page 101; # 1-19 odd
Oct-1	State Workshop	No School	
Oct-2	State Workshop	No School	
Oct-5		Chapter 2 Review	Page 98; # 1-23 odd, 26
Oct-6		Chapter 2 Test	Notes 3-1
Oct-7		3-1: Symmetry	Page 113; # 5-13, 20-34, 51
Oct-8		3-2: Parent Graphs	Page 122; # 5-23, 39
Oct-9		3-3A Calculator/ Midchapter Review	Page 125; # 1-6 : Page 133; # 1-10
Oct-12		3-3: Inverse Functions and Relations	Page 129; # 5-11, 13-18, 19-24, 37
Oct-13		Quiz 3-1 to 3-2	Worksheet on Asymptotes
Oct-14		3-4: Rational Functions and Asymptotes	Page 139; # 5-12, 19-31 odd, 48
Oct-15		3-5: Graphs of Inequalities	Page 147; # 10, 12, 13, 15, 22-24, 41
Oct-16		Quiz 3-3 to 3-4	Page 148; # 1-6, Notes 3-6
Oct-19		3-6: Tangent to a Curve/Derivatives	Page 153; # 15-24, 29, 52
Oct-20		3-7: Critical Points	Page 162; # 11-25 odd, 40
Oct-21		Quiz 3-5 to 3-6	Notes 3-8/ Page 169; # 5-10
Oct-22		3-8: End behavior	Page 169; # 15-27 odd, 42
Oct-23		Practice Test	Page 175; # 1-20
Oct-26		Chapter 3 Review	Page 172; # 1-31 odd
Oct-27		Chapter 3 Review	
Oct-28		Chapter 3 Test	
Oct-29		Review for Quarter Test	
Oct-30		Quarter Test	
Nov-2		4-1: Polynomial Functions	Page 186; # 1-12(Calculator)/ Page 181; # 1-14
Nov-3		4-1: Polynomial Functions	Page 182; # 15-29 odd, 40, 49
Nov-4		4-2: Quadratic Equations	Page 192; # 1-14 all
Nov-5		4-2: Quadratic Equations	Page 192; # 16-26 even 27, 29, 43, 52
Nov-6	Building Inservice	No School	
Nov-9		Quiz 4-1 to 4-2	
Nov-10		4-3: Remainder Theorem	Page 199; # 1-9
Nov-11		4-3: Remainder Theorem	Page 199; # 10-30 even, 38
Nov-12		4-4: Find the Rational Zeroes	Page 205; # 1-10
Nov-13		4-4: Find all of the Zeroes	Page 205; # 12-24 even 37
Nov-16		Quiz 4-3 to 4-4	Page 213; # 1-8, skip 7
Nov-17		4-5: Locating Zeros	Page 213; # 9-27 odd, 35 (16, 18)
Nov-18		4-6: Rational Equations	Page 220; # 1-11 Quiz 4-5
Nov-19		4-6: Rational Inequalities	Page 220; # 12-24, 28, 43
Nov-20		4-7: Radical Equations	Page 228; # 1-7 Quiz 4-6
Nov-23		4-7: Radical Equations and Inequalities	Page 228; # 8-24 even, 33 (skip 14)
Nov-24		Chapter 4 Review	Page 233; # 1-25 quiz 4-7

Nov-25	Early Release	Chapter 4 Review	Page 230; # 1-25 odd, 28
Nov-26	Thanksgiving Holiday	Chapter 4 Test	
Nov-27	Thanksgiving Holiday	Unit Circle	Page 244 #5-23 odd
Nov-30		5-1: Angles and their Measures	Page 245; # 24-58 even
Dec-1		5-2: Central Angles and Arcs	Page 251; # 16-32,even, 34-38
Dec-2		5-2: Central Angles and Arcs	Page 252; # 40-47 (Groups)
Dec-3		No School	
Dec-4		No School	
Dec-7		5-3: Circular Functions	Page 259; # 1-21 odd
Dec-8		5-3: Circular Functions	Page 260; # 22-40 even
Dec-9		5-4: Special Angles	Page 267 # 1-14 all,/Page 262 # 1-8
Dec-10		5-4: Special Angles	Page 267; # 16-34 even
Dec-11		Quiz 5-1 to 5-4	
Dec-14		5-5: Right Triangles	Page 273; #2-24 even
Dec-15		5-5: Right Triangles	Page 274; # 26, 27, 29-33 (Groups)
Dec-16		5-6: Law of Sines	Page 280; # 1, 3, 5-7, 9, 10, 12, 14
Dec-17		5-6: Law of Sines	Page 280; # 8, 11, 13, 15-24, 31
Dec-18	Early Release		
Dec-21	X-mas Holidays	No School	
Dec-22	X-mas Holidays	No School	
Dec-23	X-mas Holidays	No School	
Dec-24	X-mas Holidays	No School	
Dec-25	X-mas Holidays	No School	
Dec-28	X-mas Holidays	No School	
Dec-29	X-mas Holidays	No School	
Dec-30	X-mas Holidays	No School	
Dec-31	X-mas Holidays	No School	
Jan-1	X-mas Holidays	No School	
Jan-4		Review 5-1 to 5-6	
Jan-5		5-7: Law of Cosines	Page 285; # 2-17
Jan-6		5-7: Law of Cosines	Page 286; # 18-24 even 27, 28
Jan-7		5-8: Area of Triangles	Page 292; # 2-8 even, 12-20 even
Jan-8		5-8: Area of Triangles	Page 293; # 10, 22-30 even, 34
Jan-11		Review/ Quiz 5-7 and 5-8	Page 296; Odds or Evens
Jan-12		Review	Page 299; #1-25
Jan-13		Chapter 5 Test	
Jan-14			
Jan-15		Review for Semester	
Jan-18	President's Day	No School	
Jan-19		Review for Semester	
Jan-20	Semester Test		
Jan-21	Semester Test		
Jan-22	Semester Test		

Advanced Math Topics Syllabus: Semester TWO

Date	Event Sequence	Lecture/Discussion Topics	Assignments
Jan-25	District Inservice	No School	
Jan-26		11-1: Rational Exponents	Page 602; # 14-52 even
Jan-27		11-2: Exponential Functions	Page 611; # 17-33 odd, 39, 41, 42
Jan-28		11-3: The Number e	Page 617; # 13-23 odd, 25-28, 31, 32
Jan-29		11-4: Logarithmic Functions	Page 626; # 19-26/ Quiz 11-1 to 11-2
Feb-1		11-4: Logarithmic Functions	Page 626; # 40-56 even, 62
Feb-2		Quiz 11-1 to 11-4	
Feb-3		11-5: Common Logarithms/ 11-6: Equations	Page 632 # 17-22/ Page 639; # 1-15
Feb-4		11-6: Logarithmic and Exponential Equations	Page 632; # 23-28/ page 639; # 16-36 even
Feb-5		11-7: Natural Logarithms	Page 643; # 1-9, 13-30
Feb-8		Story Problems	P633; #40,41/ P640;#42,43,44/ P644;#31-36
Feb-9		Review	Page 649; # 1-25
Feb-10		Review	Page 646; # 1-47 odd (skip 27, 29), 48
Feb-11		Chapter 11 Test	
Feb-12		TI- Calculator Introduction	
Feb-15	President's Day Holiday	No School	
Feb-16		Topic One/ SAT Practice	
Feb-17		Data and Variables	
Feb-18		Topic One Homework	1-9, 1-10, 1-16
Feb-19		Topic Two/SAT practice	
Feb-22		Data, Variables, and Calculators	
Feb-23		Topic 2 Homework	2-5, 2-7, 2-9
Feb-24		Topic 3/SAT practice	
Feb-25		Displaying and Describing Distributions	
Feb-26		Topic 3 Homework	3-6, 3-11, 3-16
Mar-2		Topic 4/ SAT Practice	
Mar-3		Measures of Center	
Mar-4		Topic 4 Homework	4-5, 4-10, 4-13
Mar-5		Topic 5/SAT practice	
Mar-6		Measures of Spread	
Mar-9		Topic 5 Finish	
Mar-10		Topic 5 Homework	5-8, 5-10, 5-14
Mar-11		Topic 6/ SAT Practice	
Mar-12		Comparing Distributions I: Quantitative Variables	
Mar-13		Topic 6 Homework	6-5, 6-10, 6-19
Mar-16		Topic 7/ SAT Practice	
Mar-17		Comparing Distributions II: Categorical Variables	
Mar-18		Topic 7 Homework	7-7, 7-9, 7-14
Mar-19		Topic 7 Homework/ Start Topic 8	
Mar-20		Topic 8/ SAT Practice	
Mar-23		Graphical Displays of Association	
Mar-24		Topic 8 Homework	8-7, 8-9, 8-18
Mar-25		Topic 9/ SAT Practice	
Mar-26		Correlation Coefficient	
Mar-27		Topic 9 Homework	9-7, 9-9, 9-15
Mar-30	Spring Break	No School	
Mar-31	Spring Break	No School	
Apr-1	Spring Break	No School	
Apr-2	Spring Break	No School	
Apr-3	Spring Break	No School	
Apr-6		Topic 10/ SAT Practice	
Apr-7		Least Squares Regression	
Apr-8		Topic 10 Homework	10-5, 10-6, 10-9
Apr-9		Topic 12/ SAT Practice	
Apr-10		Sampling	
Apr-13		Topic 12 Homework	12-7, 12-11, 12-18
Apr-14		Topic 14/ SAT Practice	
Apr-15		Probability	
Apr-16		Topic 14 Homework	14-6, 14-11, 14-12
Apr-17		Topic 14 Homework finish	
Apr-20		Topic 15/ SAT Practice	
Apr-21		Normal Distributions	

