Virginia Applied Studies Curriculum Map

Mathematics

Time, Task and Resource Management - The student utilizes mathematical concepts to coordinate and plan daily activities. WRS: 1, 15, 16 MATH-TTRM

1 Recognize and Recall

- a Identify numbers 1- 60, days of the week, months of the year MATH-TTRM.1A
- b Respond to timer-based systems during daily activities MATH-TTRM.1B

2 Identify and Comprehend

- a Find a specified date on a calendar MATH-TTRM.2A
- b Access and follow a personalized daily schedule (e.g. visual, auditory) MATH-TTRM.2B
- c Identify the time using digital and/or analog clocks (hours, half hours minutes) MATH-TTRM.2C
- d Calculate elapsed time using digital or analog clocks MATH-TTRM.2D

3 Interpret and Understand

- a Prioritize activities, from a given set, to develop a personal daily, weekly, and/or monthly schedule MATH-TTRM.3A
- b Use digital and analog clocks at all intervals (hour, half-hour, minute) to comment on the time, estimate time needs, and solve real-life problems MATH-TTRM.3B
- c Demonstrate knowledge of equivalent units of time (i.e., 1 hour = 60 minutes; 1 day = 24 hours) MATH-TTRM.3C
- d Predict the length of time a given event will take MATH-TTRM.3D

4 Apply and Generalize

- a Utilize a calendar to plan for and participate in a variety of activities MATH-TTRM.4A
- b Use a calendar to coordinate events or activities with others MATH-TTRM.4B
- c Create a schedule to plan for, participate in and follow academic, work-related, and leisure activities (daily, weekly and monthly) MATH-TTRM.4C
- d Use clocks and watches or other electronics to understand time, predict, and prepare for events MATH-TTRM.4D

Data Sense - The student demonstrates ability to collect and use data to make informed decisions. WRS: 16 MATH-DATA

1 Recognize and Recall

- a Gather data by counting and tallying MATH-DATA.1A
- b With information provided, sort necessary from unnecessary data MATH-DATA.1B
- c Recognize that a graph provides information MATH-DATA.1C

2 Identify and Comprehend

- a Identify various forms of data collection (reflective of daily activities), using graphs MATH-DATA.2A
- b Categorize data to put in usable format MATH-DATA.2B
- c Insert data into a preconstructed template MATH-DATA.2C
- d Use graph data to answer questions MATH-DATA.2D
- e Compare two sets of data within a single data display MATH-DATA.2E

3 Interpret and Understand

- a Collect and organize data, using surveys, observations, measurements, or experiments MATH-DATA.3A
- b Determine most appropriate form of data representation MATH-DATA.3B
- c Given a model, interpret data on a graph in order to explain the information it provides MATH-DATA.3C
- d Interpret and explain information displayed in a graph, using the vocabulary more, less, fewer, greater than, less than, and equal to MATH-DATA.3D
- e Calculate and describe the mean, median, mode, and range of a set of data MATH-DATA.3E

4 Apply and Generalize

- a Given a problem situation, collect, organize, display, and draw conclusions from the data MATH-DATA.4A
- b Compile data to construct a simple graph and explain the data MATH-DATA.4B
- c Use data to make hypotheses about the information MATH-DATA.4C
- d Summarize data distributions on a graph or table MATH-DATA.4D
- e Analyze data from a variety of graphs to answer questions MATH-DATA.4E
- f Use calculations and descriptions of the mean, median, mode, and range of a set of data to solve real life problems MATH-DATA.4F

Mathematical Reasoning - The student uses mathematical principles and reasoning to accomplish tasks. WRS: 16 MATH-MR

1 Recognize and Recall

- a Count by twos, fives and tens MATH-MR.1A
- b Recognize wholes, halves, and one-quarters MATH-MR.1B
- c Discriminate between equal and unequal groups of objects MATH-MR.1C
- d Sort like and unlike items MATH-MR.1D
- e Locate a number on a number line MATH-MR.1E
- f Recognize the place value of a digit within a number MATH-MR.1F
- g Identify numbers 1- 100 in numerals MATH-MR.1G
- h Transpose numbers in written or typed format into a calculator MATH-MR.1H

i Transpose numbers in written or typed format into a software programs MATH-MR.1I

j Recall, repeat and protect identifying numbers (i.e., phone number, parent's phone number, address, and birthday) MATH-MR.1J

k Recognize use of software programs for mathematical use MATH-MR.1K

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2 Identify and Comprehend

a Solve real world division problems with equal and unequal groups of countable objects. Numbers used in the problems should be within 1000 without remainders MATH-MR.2A

b Partition sets or groups into equal shares MATH-MR.2B

c Describe the shares using fraction language MATH-MR.2C

d Identify when two amounts have equivalent values, including whole and rational numbers MATH-MR.2D

e Comprehends math directional words MATH-MR.2E

f Recognize different types of patterns (shape, color, number) MATH-MR.2F

g Classify different types of patterns (i.e., A, B, A; A, B, B, A.; A, B, C) MATH-MR.2G

h Represent fractions as a number on a number line including mixed numbers MATH-MR.2H

i Recognize and identify multiple representations of a number MATH-MR.2I

j Build whole numbers using multiple representations MATH-MR.2J

k Identify place value of decimals MATH-MR.2K

l Sequence 1-100 MATH-MR.2L

m Count to 100 with one-to-one correspondence MATH-MR.2M

n Use a variety of calculators to solve basic mathematical functions MATH-MR.2N

o Identify personal or descriptive variables in multiple number formats, (i.e., Birthday = July 19 or 7/19, it is May 15, 2016 or 5/15/2016 or 5/15/16, or Phone: (804)555-5555 or 804-555-5555 or 555-5555) MATH-MR.2O

p Define math vocabulary (i.e., more than, less than, solve, estimate) MATH-MR.2P

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3 Interpret and Understand

a Understand inverse operations MATH-MR.3A

b Build decimals using multiple representations MATH-MR.3B

c Given a division problem, solve for the whole or a part MATH-MR.3C

d Describe lengths on a number line using fractions MATH-MR.3D

e Solve equivalence problems and determine if each person received an equal amount MATH-MR.3E

f Identify the output when given the input and a given function MATH-MR.3F

g Interpret and extend patterns MATH-MR.3G

h Compare two fractions (the fractions could be equivalent) by creating common denominators, or by comparing to a benchmark fraction (0, ½, 1, etc.) MATH-MR.3H

i Compare values of numbers 1-100,000 MATH-MR.3I

j Add and subtract numbers between 1 and 100 MATH-MR.3J

k Use a calculator to compute sums and differences when given mathematical problems MATH-MR.3K

l Use a software program to compute problems and order lists of numbers MATH-MR.3L

m Identify what mathematical whole number skills and prerequisites are necessary to achieve post-secondary goals (i.e., community college, vocation) MATH-MR.3M

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4 Apply and Generalize

a Use whole numbers and decimals to solve multiplicative comparison problems that describe a proportion in a real world application MATH-MR.4A

b Solve ratio problems in a real world application using fractions where the ratio describes a part-part relationship MATH-MR.4B

c Generate equivalent fractions, decimals, and percentages MATH-MR.4C

d Compare fractions, decimals, and percentages by using equivalencies or by comparing to a benchmark MATH-MR.4D

e Analyze the general form of a pattern and apply it/make predictions MATH-MR.4E

f Demonstrate problem solving that includes part-whole and ordering relationships MATH-MR.4F

g Solve real world problems using decimals MATH-MR.4G

h Recognize, order, and compare numbers through 100,000,000 MATH-MR.4H

i Multiply and divide whole numbers up to the thousandths place MATH-MR.4I

j Demonstrate understanding of how to use a calculator (which functions to choose) to solve mathematical problems requiring division and multiplication MATH-MR.4J

k Use a software program to analyze data MATH-MR.4K

l Complete practice activities specific to postsecondary goals (i.e., Take the whole number math portions of practice tests for college entrance exams or word problems related to vocation) MATH-MR.4L

Geometric and Spatial Reasoning - The student uses geometric properties to solve real-world problems. WRS: 16 MATH-GSR

1 Recognize and Recall

- a Sort 2-dimensional plane figures by a variety of basic properties (size, shape, angles, name) MATH-GSR.1A
- b Determine inside, outside, and edge of a given shape MATH-GSR.1B
- c Distinguish between a shorter or longer distance MATH-GSR.1C
- d Recognize when two figures are congruent by matching congruent sides and/or angles MATH-GSR.1D

2 Identify and Comprehend

- a Identify plane figures with more than four vertices MATH-GSR.2A
- b Find the area and perimeter of plane figures MATH-GSR.2B
- c Compare the steepness of two or more lines MATH-GSR.2C
- d Compare distances, lengths, areas and volumes on comparable items MATH-GSR.2D
- e Find the midpoint of a given line MATH-GSR.2E
- f Calculate slope (i.e., rise/run) by counting blocks on a coordinate plane MATH-GSR.2F
- g Identify the number of sides and angles on a plane figure MATH-GSR.2G
- h Identify the concept of middle for a variety of figures MATH-GSR.2H

3 Interpret and Understand

- a Determine whether to use perimeter or area based on a given real life situation MATH-GSR.3A
- b Construct a variety of figures that have similar area or perimeter MATH-GSR.3B
- c Measure a given line to determine length/distance (i.e., scale on a map) MATH-GSR.3C
- d Interpret a given problem to determine whether to calculate slope, midpoint, and distance MATH-GSR.3D

4 Apply and Generalize

- a Describe attributes of plane figures and apply those attributes to draw basic conclusions (i.e., I know this is a square so the angles must be 90°) MATH-GSR.4A
- b Apply formulas for perimeter and area of a given shape to solve for unknown real-world values MATH-GSR.4B
- c Find the slope, midpoint, and distance to solve real life problems in a variety of ways MATH-GSR.4C
- d Demonstrate understanding of spatial planning and reasoning MATH-GSR.4D

Measurement - The student uses different systems of measurement to solve

1 Recognize and Recall

- a Determine how objects compare to one another based on length and height MATH-MEAS.1A

real-world problems.
WRS:16 MATH-MEAS

- b Recognize tools used to measure mass/weight MATH-MEAS.1B
- c Compare two items based on relative weight MATH-MEAS.1C
- d Compare which container can hold more or less of a given substance MATH-MEAS.1D
- e Recognize tools used to measure temperature MATH-MEAS.1E
- f Compare the relative temperature with the terms cold, warm, or hot MATH-MEAS.1F
- g Recognize multiple ways to measure various items or elements such as weight, height, volume, temperature, etc. MATH-MEAS.1G
- h Recognize tools used to measure liquid, solid, temperature and other physical attributes of objects MATH-MEAS.1H
- i Recognize the type of measurement used by the designation of measurement MATH-MEAS.1I
- j Recognize approximate size of common items by type and amount of measurement used MATH-MEAS.1J
- k Recognize equivalent measures MATH-MEAS.1K

2 Identify and Comprehend

- a Measure a given object using a ruler to the nearest half-unit MATH-MEAS.2A
- b Determine the weight of a given object or objects using a scale MATH-MEAS.2B
- c Measure volume in containers through given unit (i.e., cups, pints, quarts, gallons) MATH-MEAS.2C
- d Using a thermometer, determine the temperature in Celsius and Fahrenheit MATH-MEAS.2D
- e Identify smaller and larger units of measure in customary system MATH-MEAS.2E
- f Identify smaller and larger units of measure in metric system MATH-MEAS.2F
- g Identify the most appropriate unit of measurement to solve a problem MATH-MEAS.2G
- h Recognize that there are multiple ways to measure a given object MATH-MEAS.2H
- i Read and comprehend measurement vocabulary and what symbols go with which measurement tools MATH-MEAS.2I
- j Recognize freezing and boiling temperatures in both customary and metric systems MATH-MEAS.2J

3 Interpret and Understand

- a Determine length by drawing a non-scale model and utilizing basic operations to solve for length (i.e., length of a trip) MATH-MEAS.3A
- b Measure a given object to its exact length MATH-MEAS.3B
- c Estimate the weight of an object, then through measurement, compare and contrast the weights of two given objects MATH-MEAS.3C
- d Compare volume of two given figures MATH-MEAS.3D

e Determine the implication of relative temperature values on daily life (i.e., it is 60° so long sleeves may be appropriate) MATH-MEAS.3E

f Recognize equivalent measures within the standard measurement system MATH-MEAS.3F

g Apply knowledge of equivalent measures within the metric measurement system MATH-MEAS.3G

4 Apply and Generalize

a Apply various methods (i.e., distance formula) to determine the length of an unknown value without using a ruler. MATH-MEAS.4A

b Through estimation, compare and contrast the weights of two given objects MATH-MEAS.4B

c Given a problem involving mass, predict the number of units required for an item of different magnitude MATH-MEAS.4C

d Determine the shape of a given real-world figure and then locate the correct formula to determine volume of the given figure MATH-MEAS.4D

e Determine temperature change (including moving from negative to positive temperatures) in a given real world situation MATH-MEAS.4E

f Convert various measures into other appropriate units of measurement MATH-MEAS.4F

g Estimate appropriate measures between customary and metric measurement systems MATH-MEAS.4G

Money Management - The student uses money appropriately to purchase goods and services, plan a personal budget, and make financial decisions. MATH-MONEY

1 Recognize and Recall

a Recognize available forms of currency: cash, credit, debit, check book MATH-MONEY.1A

b Discriminate values of commonly used coins MATH-MONEY.1B

c Discriminate between commonly used bills MATH-MONEY.1C

d Arrange multiple representations of money values. (e.g., 25 cents = 25 pennies, or 2 dimes and a nickel) MATH-MONEY.1D

e Recognize real or model ATM and credit cards MATH-MONEY.1E

f Pay for simple purchases using debit or credit card MATH-MONEY.1F

g Pay for purchases using next dollar strategy MATH-MONEY.1G

2 Identify and Comprehend

a Identify value of commonly used coins and bills MATH-MONEY.2A

b Find sums and differences of money with like units (all nickels, all dollar bills, etc.) MATH-MONEY.2B

c Identify patterns associated with making change from whole number values (subtraction with regrouping) MATH-MONEY.2C

d Counts a variety of combinations of coins and bills up to five dollars MATH-MONEY.2D

e Compares values of two or more products to identify which is more and less expensive MATH-MONEY.2E

f Pays for simple choice purchases independently in at least 3 different environments MATH-MONEY.2F

g Understands association between ATM cards and credit cards and payment MATH-MONEY.2G

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3 Interpret and Understand

a Find products and quotients of money with like units (all nickels, all dollar bills, etc.) MATH-MONEY.3A

b Apply concepts for making change in the most efficient manner (i.e., using 2 quarters and 2 dimes as opposed to 70 pennies MATH-MONEY.3B

c Investigate patterns for making change with mixed number values up to thousands of dollars (subtraction with re-grouping and division) MATH-MONEY.3C

d Counts a variety of combinations of coins and bills up to fifty dollars MATH-MONEY.3D

e Counts and records values of coins and bills to find sum of money MATH-MONEY.3E

f Makes change from given amount of money MATH-MONEY.3F

g Use a calculator to compute sums and differences when given a word problem relating to money and purchase with an ATM and credit card MATH-MONEY.3G

h Use a software program to compute problems and order lists of values MATH-MONEY.3H

i Use software template to populate values in a simple budget MATH-MONEY.3I

j Locate, select, and purchase necessary items such as food and/or personal care items MATH-MONEY.3J

k Explain the steps for opening and maintaining a checking account MATH-MONEY.3K

l Stores and responsibly manages checks, cards and cash MATH-MONEY.3L

m Explain the steps for opening and maintaining a savings account MATH-MONEY.3M

n Calculate tip/tax/discount using percentages (including percent of increase, percent of decrease) MATH-MONEY.3N

o Calculate interest rates on loans MATH-MONEY.3O

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4 Apply and Generalize

a Find sums, differences, products, and quotients of money with mixed units MATH-MONEY.4A

b Identify qualifications to obtain credit or bank account MATH-MONEY.4B

c Analyze credit card features and their impact on personal financial planning MATH-MONEY.4C

d Compare and contrast terms and conditions of various sources of consumer credit MATH-MONEY.4D

e Finds total from a list of items and services to adjust and prioritize spending based on available funds or estimated costs associated with independent living (grocery list, bills) MATH-MONEY.4E

f Interpret and analyze interest rates on purchases made with a credit card MATH-MONEY.4F

g Interpret and analyze purchases made with ATM cards based on real or model banking account information MATH-MONEY.4G

h Express preferred method of payment for a variety of large and small purchases for needs and wants MATH-MONEY.4H

i Use online tools and banking to monitor account (e.g., personal checking and/or savings; returns/investments accounts) MATH-MONEY.4I

j Comparison shops based on multiple factors MATH-MONEY.4J

k Explains benefits and costs of using a line of credit; Avoids opening multiple lines of credit MATH-MONEY.4K

Ratios and Proportions - The student uses proportions to solve real-world problems. WRS:16 MATH-RATIO

1 Recognize and Recall

a Compare numbers and determine which is greater or smaller MATH-RATIO.1A

b Define percent as part of a whole, where the whole is 100 MATH-RATIO.1B

2 Identify and Comprehend

a Identify parts of a ratio MATH-RATIO.2A

b Represent or model percentages MATH-RATIO.2B

c Compare and contrast percentages using models MATH-RATIO.2C

3 Interpret and Understand

a Calculate, compare, and contrast unit rates (per mile, per ounce, per gallon, etc.). [The concept of per.] MATH-RATIO.3A

b Solve rate division problems involving constant speed and pricing. Numbers used in the problems should include whole numbers and decimals MATH-RATIO.3B

c Calculate the percent of a number (tip, tax, interest, discount, etc.) MATH-RATIO.3C

d Determine the total amount based on tip, tax, interest, discount, etc. MATH-RATIO.3D

4 Apply and Generalize

a Explore the multiplicative relationships between the parts of a ratio to make predictions (e.g., if x/y = ¼ then y = 4x; if it takes x minutes to do this one task how long will it take to do 20 tasks) MATH-RATIO.4A

b Determine the percent increase and the percent decrease MATH-RATIO.4B

c Apply and construct concepts of percentage to graphical representations MATH-RATIO.4C

d Construct circle graphs using percentage data MATH-RATIO.4D

e Estimate total costs of purchases, taxes and/or tips MATH-RATIO.4E