APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics Grade: Pre-Calculus

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

TIMELINE: Quarter 1

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Expressing Geometric Properties with Equations **Concept:** Translate between the geometric description and the equation for a conic section.	G-GPE.3 Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant. **I M**	I can derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.	Application	Ellipses Foci Hyperbolas

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Building Functions **Concept:** Build new functions from existing functions.	F-BF.4 Find inverse functions. b. Verify by composition that one function is the inverse of another. **I M** c. Read values of an inverse function from a graph or a table, given that the function has an inverse. **I M** d. Produce an invertible function from a non-invertible function by restricting the domain. **I M**	I can find inverse functions. I can verify by composition that one function is the inverse of another. I can read values of an inverse function from a graph or a table, given that the function has an inverse. I can produce an invertible function from a non-invertible function by restricting the domain.	Comprehension Comprehension Comprehension Application	Inverse function

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Trigonometric Functions **Concept:** Extend the domain of trigonometric functions using the unit circle.	F-TF.3 Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number. **I M**	I can use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$. I can use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.	Application Application	

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Trigonometric Functions **Concept:** Extend the domain of trigonometric functions using the unit circle.	F-TF.4 Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. **I M**	I can use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	Application	Periodicity

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Trigonometric Functions **Concept:** Model periodic phenomena with trigonometric functions.	F-TF.6 Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed. **I M**	I can determine that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	Application	

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Trigonometric Functions **Concept:** Model periodic phenomena with trigonometric functions.	F-TF.7 Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context. **I M**	I can use inverse functions to solve trigonometric equations that arise in modeling contexts. I can evaluate the solutions using technology, and interpret them in terms of the context.	Application Analysis	

Colorado SS:

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SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

RESOURCES AND NOTES FOR QUARTER 1:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

TIMELINE: Quarter 2

Strand: Similarity, Right Triangles, and Trigonometry **Content:** Apply trigonometry to general triangles.	G-SRT.9 Derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side. **I M**	I can derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Analysis	
Colorado SS:				
Strand: Similarity, Right Triangles, and Trigonometry **Content:** Apply trigonometry to general triangles.	G-SRT.10 Prove the Laws of Sines and Cosines and use them to solve problems. **I M**	I can prove the Laws of Sines and Cosines and use them to solve problems.	Analysis	Law of Cosines Law of Sines
Colorado SS:				
Strand: Similarity, Right Triangles, and Trigonometry **Content:** Apply trigonometry to general triangles.	G-SRT.11 Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces). **I M**	I can define and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Application	Law of Cosines Law of Sines Resultant force
Colorado SS:				

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics   Grade: Pre-Calculus

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Trigonometric Functions **Content:** Prove and apply trigonometric identities.	T-TF.9 Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems. **I M**	I can prove the addition and subtraction formulas for sine, cosine, and tangent. I can use formulas for sine, cosine, and tangent to solve problems.	Analysis Application	

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

RESOURCES AND NOTES FOR QUARTER 2 :

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

TIMELINE: Quarter 3

Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.6 Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network. **I M**	I can use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.	Application	Matrices

Colorado SS:

Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.7 Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled. **I M**	I can multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.	Comprehension	Matrices Scalars

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.8 Add, subtract, and multiply matrices of appropriate dimensions. **I M**	I can add, subtract, and multiply matrices of appropriate dimensions.	Comprehension	Matrices
Colorado SS:				
Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.9 Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties. **I M**	I can determine that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	Comprehension	Matrix multiplication
Colorado SS:				
Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.10 Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse. **I M**	I can determine that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.	Comprehension	Determinant Matrices Matrix
Colorado SS:				

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.12 Work with 2 × 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area. **I M**	I can work with 2 × 2 matrices as transformations of the plane. I can interpret the absolute value of the determinant in terms of area.	Comprehension Application	Determinant
Colorado SS:				
Strand: Reasoning with Equations and Inequalities **Concept:** Solve systems of equations.	A-REI.8 Represent a system of linear equations as a single matrix equation in a vector variable. **I M**	I can represent a system of linear equations as a single matrix equation in a vector variable.	Comprehension	Matrix Vector variable
Colorado SS:				
Strand: Reasoning with Equations and Inequalities **Concept:** Solve systems of equations.	A.REI.9 Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater). **I M**	I can find the inverse of a matrix if it exists. I can use the inverse to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).	Comprehension Application	Matrix
Colorado SS:				

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SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: The Complex Number System **Concept:** Perform arithmetic operations with complex numbers.	N-CN.3 Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers. **I M**	I can find the conjugate of a complex number. I can use conjugates to find moduli and quotients of complex numbers.	Comprehension Comprehension	Complex number Conjugate Moduli

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: The Complex Number System **Concept:** Represent complex numbers and their operations on the complex plane.	N-CN.4 Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number. **I M**	I can represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers). I can explain why the rectangular and polar forms of a given complex number represent the same number.	Comprehension Application	Complex numbers Polar form Rectangular form

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: The Complex Number System **Concept:** Represent complex numbers and their operations on the complex plane.	N-CN.4 Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number. **I M**	I can represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers). I can explain why the rectangular and polar forms of a given complex number represent the same number.	Comprehension Application	Complex numbers Polar form Rectangular form

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: The Complex Number System **Concept:** Represent complex numbers and their operations on the complex plane.	N-CN.5 Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(-1+\sqrt{3i})^3 = 8$ *because* (–1 + √3 i) *has modulus* 2 *and argument* 120°. **I M**	I can represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane. I can use properties of addition, subtraction, multiplication, and conjugation of complex numbers for computation. *For example,* $(-1+\sqrt{3i})^3 = 8$ *because* (–1 + √3 i) *has modulus* 2 *and argument* 120°.	Comprehension Application	Complex plane Conjugation

Colorado SS:

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SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: The Complex Number System **Concept:** Represent complex numbers and their operations on the complex plane.	N-CN.6 Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints. **I M**	I can calculate the distance between numbers in the complex plane as the modulus of the difference. I can calculate the midpoint of a segment as the average of the numbers at its endpoints.	Comprehension Comprehension	Complex plane Modulus
Colorado SS:				
Strand: The Complex Number System **Concept:** Use complex number in polynomial identities and equations.	N-CN.8 Extend polynomial identities to the complex numbers. *For example, rewrite* x^2+ 4 as (x + 2i)(x – 2i) **I M**	I can extend polynomial identities to the complex numbers. *For example, rewrite* x^2+ 4 as (x + 2i)(x – 2i)	Application	
Colorado SS:				

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

RESOURCES AND NOTES FOR QUARTER 3 :

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

TIMELINE: Quarter 4

Strand: Vector Quantities and Matrices **Concept:** Represent and model with vector quantities.	N-VM.1 Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., ***v***, |***v***|, ||***v***||, *v*). **I M**	I can recognize vector quantities as having both magnitude and direction. I can represent vector quantities by directed line segments. I can use appropriate symbols for vectors and their magnitudes (e.g., ***v***, |***v***|, ||***v***||, *v*).	Comprehension Comprehension Comprehension	Magnitude Vector quantities

Colorado SS:

Strand: Vector Quantities and Matrices **Concept:** Represent and model with vector quantities.	N-VM.2 Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point. **I M**	I can find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	Comprehension	Terminal point

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Vector Quantities and Matrices **Concept:** Represent and model with vector quantities.	N-VM.3 Solve problems involving velocity and other quantities that can be represented by vectors. **I M**	I can solve problems involving velocity and other quantities that can be represented by vectors.	Application	Velocity

Colorado SS:

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SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Vector Quantities and Matrices **Concept:** Perform operations on vectors.	N-VM.4 Add and subtract vectors. **I M** a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes. **I M** b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. **I M** c. Understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise. **I M**	I can add and subtract vectors. I can add vectors end-to-end, component-wise, and by the parallelogram rule. I can determine that the magnitude of a sum of two vectors is typically not the sum of the magnitudes. Given two vectors in magnitude and direction form, I can determine the magnitude and direction of their sum. I can determine vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. I can represent vector subtraction graphically by connecting the tips in the appropriate order. I can perform vector subtraction component-wise.	Comprehension Application Comprehension Application Comprehension Application Application	Component-wise Magnitude

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Vector Quantities and Matrices **Concept:** Perform operations on vectors.	N-VM.5 Multiply a vector by a scalar. **I M** a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$. **I M** b. Compute the magnitude of a scalar multiple *cv* using $\|\|cv\|\| = \|c\|v$. Compute the direction of *cv* knowing that when $\|c\|v \neq 0$, the direction of *cv* is either along *v* (for $c > 0$) or against *v* (for $c < 0$). **I M**	I can multiply a vector by a scalar. I can represent scalar multiplication graphically by scaling vectors and possibly reversing their direction. I can perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$. I can compute the magnitude of a scalar multiple *cv* using $\|\|cv\|\| = \|c\|v$. I can compute the direction of *cv* knowing that when $\|c\|v \neq 0$, the direction of *cv* is either along *v* (for $c > 0$) or against *v* (for $c < 0$).	Comprehension Application Application Comprehension Comprehension	Component-wise Scalar

Colorado SS:

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SUBJECT: Mathematics Grade: Pre-Calculus

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Vector Quantities and Matrices **Concept:** Perform operations on matrices and use matrices in applications.	N-VM.11 Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors. **I M**	I can multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. I can work with matrices as transformations of vectors.	Comprehension Application	Matrix

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Conditional Probability and the Rules of Probability **Concept:** Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S-CP.8 Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model. **I M**	I can apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B). I can interpret the answer in terms of the uniform probability model.	Comprehension Application	Uniform probability model

Colorado SS:

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SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S-CP.9 Use permutations and combinations to compute probabilities of compound events and solve problems. **I M**	I can use permutations and combinations to compute probabilities of compound events. I can use permutations and combinations to solve problems.	Comprehension Application	Combinations Compound events Permutation

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Calculate expected values and use them to solve problems.	S-MD.1 Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions. **I M**	I can define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space. I can graph the corresponding probability distribution using the same graphical displays as for data distributions.	Application Comprehension	Data distributions Probability distribution Random variable Sample space

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Calculate expected values and use them to solve problems.	S-MD.2 Calculate the expected value of a random variable; interpret it as the mean of the probability distribution. **I M**	I can calculate the expected value of a random variable. I can interpret the expected value as the mean of the probability distribution.	Comprehension Application	Probability distribution Random variable

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Calculate expected values and use them to solve problems.	S-MD.3 Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.* **I M**	I can develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated. I can find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*	Analysis Application	Probability distribution Random variable Sample space Theoretical probabilities

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Calculate expected values and use them to solve problems.	S-MD.4 Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?* **I M**	I can develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically. I can find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*	Analysis Application	Empirical Probability distribution Random variable Sample space

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Use probability to evaluate outcomes of decisions.	S-MD.5 Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. **I M** a. Find the expected payoff for a game of chance. *For example, find the expected winnings from a state lottery ticket or a game at a fast food restaurant.* **I M** b. Evaluate and compare strategies on the basis of expected values. *For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.* **I M**	I can weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. I can find the expected payoff for a game of chance. (*For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.)* I can evaluate and compare strategies on the basis of expected values. (*For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.)*	Analysis Application Analysis	Expected values

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics Grade: Pre-Calculus

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Use probability to evaluate outcomes of decisions.	S-MD.6 Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator). **I M**	I can use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Application	

Colorado SS:

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary
Strand: Using Probability to Make Decisions **Concept:** Use probability to evaluate outcomes of decisions.	S-MD.7 Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game). **I M**	I can analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	Analysis	

Colorado SS:

APPROVED FACILITY SCHOOLS CURRICULUM DOCUMENT

SUBJECT: Mathematics **Grade: Pre-Calculus**

Strand/Concept	Student Expectation	Student Friendly Learning Objective	Level of Thinking	Academic Vocabulary

RESOURCES AND NOTES FOR QUARTER 4 :