

CV Guarantee (Integrated Math 2 Honors/10th grade)

Big Idea: Factoring (Area Models, Factoring quadratics)			
Standard: <ul style="list-style-type: none"> ● A-APR.1 Factor a quadratic expression to reveal the zeros of the function it defines ● A-SSE.3a ● A-SSE.2 		Timeline: Unit 2: Semester 1	
Key Vocabulary:			
<ul style="list-style-type: none"> ● Area model ● Binomials ● Square 	<ul style="list-style-type: none"> ● Probability area model ● Area as a product ● Area as a sum 	<ul style="list-style-type: none"> ● Factoring ● Polynomial ● Rectangle 	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● I can identify a quadratic equation given different types of equations. ● I know when I need to factor out a common factor when given a quadratic equation. ● I know what binomials and polynomials are. 	<ul style="list-style-type: none"> ● I can distinguish between the area as a sum and the area as a product. ● Through the use of discovery, I can determine if the products of the terms in an area model are equal. 	<ul style="list-style-type: none"> ● I can complete an area model given some of the parts. ● I can use tiles to identify patterns for determining the dimensions of a completed area model. ● I can factor first with a common factor, and then use a quadratic factoring method. ● I can factor quadratic expressions with missing terms, not in standard form, and with more than one possible factored form. 	<ul style="list-style-type: none"> ● I can create an area model if given the factored form (product) of a quadratic expression. ● I can create an area model if given a quadratic expression (sum). ● I can solve for the zeros of a quadratic function.
Resources: <ul style="list-style-type: none"> ● CPM Integrated II Text ● All Things Algebra ● Desmos ● Delta Math ● VOCAB: quizlet 			

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Big Idea: Parallel and Perpendicular Relationships			
Standard: <ul style="list-style-type: none"> ● G-CO.9. Prove theorems about lines and angles. ● A-SS.1a Interpret parts of an expression, such as terms, factors, and coefficients. ● G-GPE.5 - Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). 		Timeline: Unit 3: Semester 1	
Key Vocabulary:			
<ul style="list-style-type: none"> ● Corresponding angles ● Alternate Interior Angles ● Equilateral ● Right Angle ● Parallel Slope ● Perpendicular Slope ● Point-Slope Form 	<ul style="list-style-type: none"> ● Complementary angles ● Transversal ● Congruent angles ● Venn Diagram ● Parallel Equations ● Perpendicular Equations ● Planes 	<ul style="list-style-type: none"> ● Supplementary angles ● Same Side Interior Angles ● Obtuse ● Acute ● Skew Lines ● segments 	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>I can identify corresponding, alternate interior, and same side interior angles</p> <p>I know that supplementary angles are two angles that add to 180 degrees</p> <p>I know that complementary angles are two angles that add to 90 degrees</p> <p>I can state the slope relationships of parallel and perpendicular lines</p>	<p>I can determine which angle relationships are congruent and which ones are supplementary given a visual diagram.</p> <p>I can determine solutions of angle measures given another angle given parallel lines and a transversal.</p> <p>I can identify skew lines given a 3 dimensional shape.</p> <p>I can determine if lines are parallel and perpendicular given their slopes</p>	<p>Given two parallel lines with a transversal, I can solve for missing angles</p> <p>I can write equations to solve for x, given an angle pair relationship.</p> <p>I can create a line that is parallel or perpendicular given a specific point and the slope of an original line.</p>	<p>I can make diagrams with all types of angles labeled</p> <p>I can sort polygons by their attributes.</p> <p>I can classify triangles by their angles and sides.</p> <p>I can prove two lines are parallel or perpendicular given angles definitions and points on the two respective lines.</p>
Resources: <ul style="list-style-type: none"> ● CPM Integrated II Text, ● Desmos ● Delta Math ● AllThingsAlgebra Curriculum 			

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Big Idea: Polygons and Circles

Standard:

- A-REI.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.
- G-GPE.1. Derive the equation of a circle given the center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
- G-SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

- G-C.2. Identify and describe relationships among inscribed angles, radii, and chords.
- G-C.5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Timeline: Chapter 10 (10 days)

Semester 2

Key Vocabulary:

- Graphing form of a circle
- General form of a circle
- Minor arc
- Major arc
- Parabola
- Semi circle
- Tangent line

- Arc
- Circumscribed circle
- Circumscribed angle
- Concentric circles
- Diameter
- Radius
- Incenter
- Inscribed angle

- Arc length
- Arc measure
- Center
- Central angle
- Chord
- Circle
- Circumference

Knowledge

- I can recite the formula for a circle
- I can understand the definition of a radian (Honors)
- I can know the difference between arc measure and arc length.

Reasoning

- I can determine the equation of a circle graphed on coordinate axes.
- I will learn that the perpendicular bisector of a chord passes through the center of the circle and will learn new circle-related vocabulary, such as major and minor arcs.
- I can observe the relationships between inscribed angles and the arcs that they intercept

Performance Skills

- I can complete the square to write the equation of a circle in graphing form
- I can convert from radians to degrees
- I can complete the square to rewrite the equation of a circle from general form to graphing form

Product Examples

- Creating a circle/circles and labeling the majority of the vocabulary words listed above
- I can create a graph of a circle when given an equation in graphing form or general form

Resources:

- CPM Integrated II Text

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- All Things Algebra
- Desmos
- Delta Math
- VOCAB: quizlet

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Big Idea: Probability			
Standard: <ul style="list-style-type: none"> ● S-CP.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”). 		Timeline: Chapter 3 (7 days) , Semester 1	
Key Vocabulary:			
<ul style="list-style-type: none"> ● Sample space ● Event ● Union ● Mean ● Standard Deviation 	<ul style="list-style-type: none"> ● Probability area model ● Fair game ● Intersection of events ● Median ● 2-way Tables 	<ul style="list-style-type: none"> ● Tree diagram ● Independent events ● Expected value ● Mode 	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● I know the difference between an area model used for factoring and a probability area model. ● I understand what it means to have a fair game. ● I know the difference between an intersection and union. ● Students understand the definitions of mean, median, and mode. 	<ul style="list-style-type: none"> ● I can look at everyday problems and predict outcomes. ● I can use tree diagrams and area models as a way to represent and solve probability problems. ● I can decide which tool/strategy is best for the situation I am given. ● Students identify the central tendencies of data and explain which method produces the closest (most realistic) measures. 	<ul style="list-style-type: none"> ● I can create representations of problems involving probability. ● I can use a probability area model to represent a situation of chance. ● I can develop a complex tree diagram to model probabilities for events. ● Students can calculate the mean, median, mode and standard deviation of a set of data. 	<ul style="list-style-type: none"> ● I can draw a tree diagram to represent the information/data given. ● I can use a probability area model to represent a situation of chance.
Resources: <ul style="list-style-type: none"> ● CPM Integrated II Text ● All Things Algebra ● Desmos ● Delta Math ● VOCAB: quizlet 			

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Big Idea: Quadratic Functions			
Standard: <ul style="list-style-type: none"> ● F-IF.4, F-IF.5, F-IF.7, F-IF.7a, F-IF.8a, F-IF.9, F-BF.1a ● A-SSE.1a, A-SSE.1b, A-SSE.2, A-SSE.3a ● A-REI.4a, A-REI.4b ● A-CED.1, A-CED.2 		Timeline: Unit 4: Semester 1	
Key Vocabulary:			
Quadratic Function, Parabola, Solutions, Zeros, Upward opening, Vertex Form, Standard form Factored form, Graphing form, Y-intercept, Downward Opening, Parameters (a,h,k,d,f), Zero Product Property, Vertex, X-intercepts, Compressed vertically, Compressed horizontally, Stretch, Complete the Square, Square Root Solutions			
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● I can interpret and understand all the key vocabulary words listed above ● I can explain the zero product property ● I can identify the key characteristics of a parabola ● I can recognize a quadratic function given a table, graph, situation, or equation 	<ul style="list-style-type: none"> ● I can distinguish between the different forms of a quadratic function ● I can analyze a problem and choose which form I should use to write an equation ● I can interpret a graph in context 	<ul style="list-style-type: none"> ● I can solve quadratics by factoring and using the zero product property ● I can solve quadratics by completing the square ● I can solve quadratics by using the quadratic formula ● I can solve quadratics by graphing ● I can solve quadratics by taking the square root of each side ● I can write equations for quadratic functions ● I can graph quadratic functions 	<ul style="list-style-type: none"> ● Given an equation in standard form I can determine the steps I need to do in order to graph the function labeling all important points (vertex, x-intercepts, and y-intercept) without a graphing calculator. ● Given a graph with the zeros labeled, I can write an equation in factored form ● Given a graph with the vertex labeled, I can write the equation in graphing form.
Resources: <ul style="list-style-type: none"> ● CPM Integrated II Text ● All Things Algebra ● Desmos ● Delta Math ● VOCAB: quizlet 			

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Big Idea: Right Triangle Trig			
Standard: <ul style="list-style-type: none"> ● G-SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. ● G-SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. 		Timeline: Introduced in Chapter 3.2 Chapter 4 Chapter 6	
Key Vocabulary:			
<ul style="list-style-type: none"> ● Sine ● Cosine ● Tangent ● Approximate form 	<ul style="list-style-type: none"> ● Slope ratio ● Slope angle ● Reference angle ● Exact form 	<ul style="list-style-type: none"> ● Right angle ● Hypotenuse ● Long leg ● Short leg 	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● I can identify the hypotenuse of a right triangle ● I can identify the short leg and long leg of a right triangle ● I can identify the side opposite and adjacent to an angle ● I can identify the reference angle ● I can recognize a right triangle, a 30-60-90 triangle, and a 45-45-90 triangle 	<ul style="list-style-type: none"> ● I can understand which tool to use based on the information given ● I can memorize Pythagorean triples such as 3,4,5 and 6,8,10 and 5,12,13 so that I do not need to use the Pythagorean theorem every time I need to find the 3rd side of a right triangle 	<ul style="list-style-type: none"> ● I can use sine, cosine, and tangent to solve for missing sides of right triangles ● I can use the inverse of sine, cosine, and tangent to solve for the missing angles of a right triangle ● I can use the patterns of special right triangles to determine 2 missing sides of a right triangle in exact form 	<ul style="list-style-type: none"> ● I can find missing sides and angles for right triangles using SOH CAH TOA, special right triangles, the Pythagorean theorem, and Pythagorean triples ● I can measure the height of real world objects using the tangent ratio and a clinometer
Resources:			
<ul style="list-style-type: none"> ● CPM Integrated II Text ● All Things Algebra ● Desmos ● Delta Math ● VOCAB: quizlet 			

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Big Idea: Triangles: Congruency, Similarity & Dilations

Standard:

- G-SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
- G-SRT.1a Verify experimentally the properties of dilations given by a center and a scale factor.
- G-SRT.1b Verify experimentally the properties of dilations given by a center and a scale factor.

- G-SRT.2 Given two figures use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
- G-SRT.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Timeline: Chap 2 (12 days), Semester 1

Key Vocabulary:

- Congruent
- Flow Chart Proof
- Dilations
- Scale Factors

- Congruence statement
- Ratio
- Proportion
- Similarity conditions

- Congruence conditions
- SAS, SSS, HL, ASA, SAA
- AA
- image

Knowledge

- I can describe rigid transformations
- I can name the congruence relationships for triangles.
- I know the characteristics of that the image shares with the original.
- I know the conditions for determining triangle similarity.

Reasoning

- I will construct viable arguments that prove triangles are congruent.
- I can recognize the converse relationship between conditional statements.
- I can investigate the relationship between the truth of a statement and its converse.
- I can critique other's reasoning as I work with similar triangle proofs.

Performance Skills

- I can use flowcharts to organize proofs of triangle congruence.
- I can prove the converse of a theorem.
- I can use a tool to dilate shapes and make use of structure to discover the properties of dilations.
- I can calculate unknown side lengths using a scale factor.
- I can organize my reasoning in a flowchart to diagram a multi-step argument.

Product Examples

- I can create a dilation of a picture at a given scale factor.
- I can create a proof to show two triangles are congruent.
- I can perform dilations to determine the missing side lengths of similar figures.

Resources:

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Big Idea: Volume, Surface Area, and Ratios of Solids			
Standard: <ul style="list-style-type: none"> ● F-IF.7a. Graph linear and quadratic functions and show intercepts, maxima, and minima. ● G-GMD.1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. ● G-GMD.3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems. 		<ul style="list-style-type: none"> ● G-GMD.5 Know that the effect of a scale factor k greater than zero on length, area, and volume is to multiply each by k, k^2, and k^3, respectively; determine length, area and volume measures using scale factors ● STANDARD <p>Timeline: Chapter 11 (7-10 days)</p>	
Key Vocabulary:			
<ul style="list-style-type: none"> ● Volume ● Cylinder ● Cone ● Pyramid ● Apex ● Cube ● Edge ● Face 	<ul style="list-style-type: none"> ● Solid ● Sphere ● Surface area ● Prism (rectangular and triangular) ● Lateral face ● Lateral Surface area ● Ratio 	<ul style="list-style-type: none"> ● Similar Solids ● 3 dimensional ● Slant height ● Base ● Oblique cylinder ● Tetrahedron ● Regular polygon ● Perimeter 	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● I can identify, understand and use the above vocab words in context ● I can know the formula for volume and surface area of rectangular prisms ● I can understand that volume is the inside of a 3D shape and surface area deals with the outside of a 3D shape ● I can name 3D solids 	<ul style="list-style-type: none"> ● I can understand that the volume of a cylinder or prism remains constant if the solid is oblique ● Students will describe the features of a pyramid and name a pyramid by the shape of its base. ● I can justify that the volume of a pyramid is one-third of the volume of a prism with the same base and height, understanding that the volume does not change if the pyramid is oblique 	<ul style="list-style-type: none"> ● I can calculate the surface area and volume of non-rectangular prisms and cylinders ● I can calculate the surface area and volume of a sphere ● I can calculate the volume of a pyramid and ● I can compute the volume and surface area of a cone. ● I can solve application problems involving cones. ● Students will calculate the total surface area of a pyramid 	<ul style="list-style-type: none"> ● I can solve application problems and equations involving surface area and volume for 3D solids.
Resources:			
<ul style="list-style-type: none"> ● CPM Integrated II Text 			

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- All Things Algebra
- Desmos
- Delta Math
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Big Idea: Conditional Probability and Applications

Standard:

- S-CP.3. Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A , and the conditional probability of B given A is the same as the probability of B .
- S-CP.4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities

- S-CP.5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
- S-CP.6. Find the conditional probability of A given B as the fraction of B 's outcomes that also belong to A , and interpret the answer in terms of the model.
- S-CP.7. Apply the Addition Rule and interpret the answer in terms of the model.
- S-CP.8. Apply the general Multiplication Rule in a uniform probability model
- S-MD.7. Analyze decisions and strategies using probability concept.

Timeline: Chapter 7.2 (5-7 days), 2nd semester

Key Vocabulary:

- Mutually exclusive
- Probability
- Addition Rule
- Sample space

- Association
- Conditional probability
- Two way tables

- Independent events
- Multiplication rule
- Outcomes
- Probability area model

Knowledge

- I will begin to develop the concept of conditional probability.
- I will be able to understand and apply the vocabulary words listed above in the context of a problem

Reasoning

- I can connect my understanding of independence with the mathematical definition, and will compare independent events with mutually exclusive events.
- I can connect independence to the association of two variables
- I can determine if two categorical variables, presented in a two-way table, are associated.

Performance Skills

- I can calculate conditional probabilities from data arranged in relative frequency (probability) two-way tables as opposed to frequency (count) two-way tables.
- I will practice using both area models and two-way tables as methods for displaying probabilities.
- I can apply the multiplication rule
- I can apply independence to various situations

Product Examples

- I can complete a two way table
- I can complete a probability area model
- I can read a two way table and a probability area model to interpret and analyze data

Resources:

- CPM Integrated II Text
- All Things Algebra

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- Desmos
- Delta Math
- VOCAB: quizlet

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