CV Guarantee (Integrated Math 2/10th grade)

Big Idea: Algebraic and Geometric Relationships(Angle relationships, attributes of polygons, linear relationships)

Standard:

- G-CO.9. Prove theorems about lines and angles.
- G-CO.10. Prove theorems about triangles
- G-GMD.6 CA Verify experimentally that in a triangle, angles opposite longer sides are larger, sides opposite larger angles are longer, and the sum of any two side lengths is greater than the remaining side length; apply these relationships to solve real-world and mathematical problems.
- A-SS.1a Interpret parts of an expression, such as terms, factors, and coefficients.
- F-IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

Timeline: Semester 1

Key Vocabulary:

- Corresponding angles
- Alternate Interior Angles
- Equilateral
- Right Angle
- Perimeter and area
- Scalene
- Isosceles
- Trapezoid
- Parallelogram
- Point
- Complementary angles
- Transversal
- Congruent angles
- Polygon
- Square and rectangle
- Rhombus
- Pentagon
- Perpendicular lines
- Skew lines
- Supplementary angles
- Same Side Interior Angles
- Parallel Lines
- Rigid transformation
- Obtuse
- Acute
- Kite
- Hexagon
- Line
- angle

Knowledge	Reasoning	Performance Skills	Product Examples
• I can identify corresponding, alternate interior, and same side interior angles • I know that supplementary angles are two angles that add to 180 degrees • I know that complementary angles are two angles that add to 90 degrees • I know what the names of different regular polygons are (up to six-sided shapes). • I know the formulas for area and perimeter of a polygon.	• I can distinguish between different types of triangles. • I can interpret key features of graphs and tables of a function. • I can distinguish the relationship between two quantities when given a function equation.	• Given two parallel lines with a transversal, I can solve for missing angles • I can write equations to solve for x, given an angle pair relationship. • I can find the area or perimeter of a polygon (up to six sides). • I can determine if a triangle can be drawn if given the three side lengths. • I can sketch graphs of linear functions given a table.	• I can make diagrams with all types of angles labeled • I can sort polygons by their attributes. • I can classify triangles by their angles and sides.

Resources:

- CPM Integrated II Text, Desmos, Geometry Squad Curriculum, All Things Algebra, VOCAB: quizlet, kahoot

Aug 12, 2024

CV Guarantee (Integrated Math 2/10th grade)

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: Semester 1

Key Vocabulary:

- Congruent
- Proofs- 2 column proofs
- Dilations
- Scale Factor
- Congruence statement
- Ratio
- Proportion
- Similarity conditions
- Congruence conditions
- SAS, SSS, HL, ASA, SAA, AA
- Image
- AA, SAS, SSS similarity

Knowledge	Reasoning	Performance Skills	Product Examples
• 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.	• 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.	• I can use two column tables to organize proofs of triangle congruence and similarity. • I can prove the converse of a theorem. • I can calculate unknown side lengths using a scale factor. • I can organize my reasoning in a flowchart or two column table to diagram a multi-step argument.	• 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 create a proof to show two triangles are similar. • I can perform dilations to determine the missing side lengths of similar figures.

Resources: CPM Integrated II Text, Desmos, Geometry Squad Curriculum, All Things Algebra

Aug 12, 2024

CV Guarantee (Integrated Math 2/10th grade)

Big Idea: Probability

Standard:
- 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: Semester 2

Key Vocabulary:

- Sample space
- Event
- Union
- Mean
- Standard Deviation
- Probability area model
- Fair game
- Intersection of events
- Median
- 2-way Tables
- Tree diagram
- Independent events
- Expected value
- Mode

Knowledge	Reasoning	Performance Skills	Product Examples
• 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.	• 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.	• 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.	• 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:
CPM Integrated II Text, Desmos, Geometry Squad Curriculum, VOCAB: frayer, quizlet

Aug 12, 2024

CV Guarantee (Integrated Math 2/10th grade)

Big Idea: Right Triangle Trigonometry

Standard:	**Timeline:**
• 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.	Semester 1 and Semester 2

Key Vocabulary:

• Sine • Cosine • Tangent • Approximate form	• Slope ratio • Slope angle • Reference angle • Exact form	• Right angle • Hypotenuse • Long leg • Short leg

Knowledge	**Reasoning**	**Performance Skills**	**Product Examples**
• 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	• 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	• 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	• 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 solve a right triangle given one angle (other than the right angle) or one side. • I can measure the height of real world objects using the tangent ratio and a clinometer

Resources:
CPM Integrated II Text, Desmos, All Things Algebra, Geometry Squad Curriculum, VOCAB: foldables in interactive notebook, quizlet, quizzizz

Aug 12, 2024

CV Guarantee (Integrated Math 2/10th grade)

Big Idea: Factoring Polynomials

Standard:
- A-SSE.B.3.A Factor a quadratic expression to reveal the zeros of the function it defines.

Timeline: Semester 1

Key Vocabulary:

- Perfect Square
- Binomials
- Square
- a=1
- Degrees
- Quadratic
- Difference of two squares
- Factor by Grouping
- GCF
- a>1
- Area model
- Equation
- Factoring
- Polynomials
- Trinomials
- ax^2+bx+c
- expression

Knowledge	Reasoning	Performance Skills	Product Examples
• I can identify a quadratic expression • I can identify the a, b, and c in a quadratic expression • I know when I need to factor out a common factor when given a quadratic expression • I know what binomials, trinomials and polynomials are.	• 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.	• 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.	• I can factor a trinomial into two equivalent binomials when a=1 • I can factor a trinomial into two binomials when a>1 • I can solve for the zeros of a quadratic function by using the zero product property (factoring).

Resources:
CPM Integrated II Text, All Things Algebra, Desmos, Geometry Squad Curriculum, VOCAB: quizlet, quizzizz

CV Guarantee (Integrated Math 2/10th grade)

Big Idea: Quadratic Functions

Standard:	**Timeline:**
• 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	Semester 1

Key Vocabulary:

• Quadratic Function • Parabola • Quadratic Web • Zeros • Upward opening	• 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

Knowledge	Reasoning	Performance Skills	Product Examples
• 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	• I can distinguish between the different forms for a quadratics function • I can analyze a problem and choose which form I should use to write an equation • I can interpret a graph in context	• 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	• 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:
CPM Integrated II Text, All Things Algebra, Desmos, Geometry Squad Curriculum, VOCAB: quizlet, quizzizz

CV Guarantee (Integrated Math 2/10th grade)

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: 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	Reasoning	Performance Skills	Product Examples
• 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.	• 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	• 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 • I can derive formulas and use them to find arc lengths and areas of a sector	• 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 • I can find the area and circumference of a circle. • I can find the arc length and sector area of a circle.

Resources: CPM Integrated II Text, All Things Algebra, Desmos, Geometry Squad Curriculum, VOCAB: quizlet, quizzizz

Aug 12, 2024

CV Guarantee (Integrated Math 2/10th grade)

Big Idea: Volume, Surface Area, and Ratios of Solids

Standard:

- 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.
- 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

Timeline: Semester 2

Key Vocabulary:

- Volume
- Cylinder
- Cone
- Pyramid
- Apex
- Cube
- Edge
- Face
- Solid
- Sphere
- Surface area
- Prism (rectangular and triangular)
- Lateral face
- Lateral Surface area
- Ratio
- Similar Solids
- 3 dimensional
- Slant height
- Base
- Oblique cylinder
- Tetrahedron
- Regular polygon
- Perimeter

Knowledge	Reasoning	Performance Skills	Product Examples
• 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	• 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	• 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	• I can solve application problems and equations involving surface area and volume for 3D solids.

Resources: CPM Integrated II Text, All Things Algebra, Desmos, Geometry Squad, Vocab: Quizlet, Kahoot, Quizzizz

Aug 12, 2024