Geometry B
Poudre School District
Pacing Overview

Chapter 6: Relationships Within Triangles
8 Days
HS.G.CO.C.9, HS.G.CO.C.10, HS.G.CO.D.12, HS.G.C.A.3, HS.G.MG.A.1, HS.G.MG.A.3

Chapter 7: Quadrilaterals and Other Polygons
7 Days
HS.G.CO.C.11, HS.G.SRT.B.5, HS.G.MG.A.1, HS.G.MG.A.3

Chapter 4: Transformations, Chapter 8: Similarity, and Chapter 9: Right Triangles and Trigonometry
7 Days
HS.G.CO.A.5, HS.G.SRT.A.2, HS.G.SRT.A.3, HS.G.SRT.B.4, HS.G.SRT.B.5, HS.G.GPE.B.5, HS.G.GPE.B.6, HS.G.MG.A.1, HS.G.MG.A.3

Chapter 9: Right Triangles and Trigonometry
8 Days
HS.G.SRT.B.4, HS.G.SRT.C.6, HS.G.SRT.C.7, HS.G.SRT.C.8, HS.G.SRT.D.9, HS.G.SRT.D.10, HS.G.SRT.D.11, HS.G.MG.A.1, HS.G.MG.A.3

Chapter 11: Circumference, Area, and Volume
7 Days
HS.G.CO.A.1, HS.G.C.B.5, HS.G.GMD.A.1, HS.G.GMD.A.2, HS.G.GMD.A.3, HS.G.MG.A.1, HS.G.MG.A.2, HS.G.MG.A.3

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Chapter 10: Circles
9 Days
HS.G.CO.A.1, HS.G.CO.D.13, HS.G.C.A.1, HS.G.C.A.2, HS.G.C.A.3, HS.G.C.A.4, HS.G.GPE.A.1, HS.G.GPE.B.4, HS.G.MG.A.1, HS.G.MG.A.3

Chapter 12: Probability
Time Permitting
HS.A.APR.C.5, HS.S.CP.A.1, HS.S.CP.A.2, HS.S.CP.A.3, HS.S.CP.A.4, HS.S.CP.A.5, HS.S.CP.B.6, HS.S.CP.B.7, HS.S.CP.B.8, HS.S.CP.B.9

Review & Common Summative Assessment

■ Major Work of the Grade.
■ Supporting Work of the Grade.
■ Additional Work of the Grade.

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Chapter 6: Relationships Within Triangles
8 Days
HS.G.CO.C.9, HS.G.CO.C.10, HS.G.CO.D.12, HS.G.C.A.3, HS.G.MG.A.1, HS.G.MG.A.3

Chapter Summary				
Section	**Title**	**Level of Learning**	**Standard(s)**	**Pacing**
	Chapter Opener/Mathematical Practices			
6.1	Perpendicular and Angle Bisectors	Learning	HS.G.CO.C.9, HS.G.MG.A.1	2 days
6.2	Bisectors of Triangles	Learning	HS.G.CO.D.12, HS.G.C.A.3, HS.G.MG.A.1, HS.G.MG.A.3	1 day
6.3	Medians and Altitudes of Triangles	Learning	HS.G.CO.C.10	1 day
6.4	The Triangle Midsegment Theorem	Learning	HS.G.CO.C.10, HS.G.MG.A.1	0.5 day
6.5	Indirect Proof and Inequalities in One Triangle	Learning	HS.G.CO.C.10	1 day

Total: 5.5 days

Note: Additional days reserved for review and assessment.

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Additional Activities/Resources	
Name	Location

Vocabulary		
altitude of a triangle	centroid	circumcenter
concurrent	equidistant	incenter
indirect proof	median of a triangle	midsegment of a triangle
orthocenter	point of concurrency	

Standards	
HS.G.CO.C.9	Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*
HS.G.CO.C.10	Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*
HS.G.CO.D.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).*Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*
HS.G.C.A.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
HS.G.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HS.G.MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

Chapter 7: Quadrilaterals and Other Polygons
7 Days
HS.G.CO.C.11, HS.G.SRT.B.5, HS.G.MG.A.1, HS.G.MG.A.3

Chapter Summary				
Section	**Title**	**Level of Learning**	**Standard(s)**	**Pacing**
	Chapter Opener/Mathematical Practices			
7.1	Angles of Polygons	Preparing	HS.G.CO.C.11	1 day
7.2	Properties of Parallelograms	Learning	HS.G.CO.C.11, HS.G.SRT.B.5	1 day
7.3	Proving That a Quadrilateral is a Parallelogram	Learning	HS.G.CO.C.11, HS.G.SRT.B.5, HS.G.MG.A.1	1 day
7.4	Properties of Special Parallelograms	Learning	HS.G.CO.C.11, HS.G.SRT.B.5, HS.G.MG.A.1, HS.G.MG.A.3	1 day
7.5	Properties of Trapezoids and Kites	Learning	HS.G.SRT.B.5, HS.G.MG.A.1	1 day

Total: 5 days

Note: Additional days reserved for review and assessment.

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Additional Activities/Resources	
Name	**Location**

Vocabulary		
base angles of a trapezoid	base of a trapezoid	diagonal
equiangular polygon	equilateral polygon	isosceles trapezoid
kite	legs of a trapezoid	midsegment of a trapezoid
parallelogram	rectangle	regular polygon
rhombus	square	trapezoid

Standards	
HS.G.CO.C.11	Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*
HS.G.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
HS.G.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HS.G.MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

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Chapter 4: Transformations, Chapter 8: Similarity, and Chapter 9: Right Triangles and Trigonometry
7 Days
HS.G.CO.A.5, HS.G.SRT.A.2, HS.G.SRT.A.3, HS.G.SRT.B.4, HS.G.SRT.B.5, HS.G.GPE.B.5, HS.G.GPE.B.6, HS.G.MG.A.1, HS.G.MG.A.3

Chapter Summary				
Section	Title	Level of Learning	Standard(s)	Pacing
Chapter 4: Transformations				
4.6	Similarity and Transformations	Learning	HS.G.CO.A.5, HS.G.SRT.A.2	0.5 day
Chapter 8: Similarity				
	Chapter Opener/Mathematical Practices			
8.1	Similar Polygons	Learning	HS.G.SRT.A.2, HS.G.MG.A.3	1 day
8.2	Proving Triangle Similarity by AA	Learning	HS.G.SRT.A.3, HS.G.SRT.B.5	0.5 day
8.3	Proving Triangle Similarity by SSS and SAS	Learning	HS.G.SRT.B.4, HS.G.SRT.B.5, HS.G.GPE.B.5, HS.G.MG.A.1	0.5 day
8.4	Proportionality Theorems	Learning	HS.G.SRT.B.4, HS.G.SRT.B.5, HS.G.GPE.B.6	1 day
Chapter 9: Right Triangles and Trigonometry				
9.3	Similar Right Triangles	Learning	HS.G.SRT.B.5	1 day

Total: 4.5 days

Note: Additional days reserved for review and assessment.

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Additional Activities/Resources	
Name	**Location**

Vocabulary		
geometric mean	similar figures	similarity transformation

Standards	
HS.G.CO.A.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.
HS.G.SRT.A.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.
HS.G.SRT.A.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
HS.G.SRT.B.4	Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
HS.G.SRT.B.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
HS.G.GPE.B.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).
HS.G.GPE.B.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.
HS.G.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HS.G.MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

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Chapter 9: Right Triangles and Trigonometry
8 Days
HS.G.SRT.B.4, HS.G.SRT.C.6, HS.G.SRT.C.7, HS.G.SRT.C.8, HS.G.SRT.D.9, HS.G.SRT.D.10, HS.G.SRT.D.11, HS.G.MG.A.1, HS.G.MG.A.3

Chapter Summary				
Section	**Title**	**Level of Learning**	**Standard(s)**	**Pacing**
	Chapter Opener/Mathematical Practices			
9.1	The Pythagorean Theorem	Learning	HS.G.SRT.B.4, HS.G.SRT.C.8	0.5 day
9.2	Special Right Triangles	Preparing	HS.G.SRT.C.8, HS.G.MG.A.1	1 day
9.4	The Tangent Ratio	Learning	HS.G.SRT.C.6, HS.G.SRT.C.8	0.5 day
9.5	The Sine and Cosine Ratios	Learning	HS.G.SRT.C.6, HS.G.SRT.C.7, HS.G.SRT.C.8	0.5 day
9.6	Solving Right Triangles	Learning	HS.G.SRT.C.8, HS.G.MG.A.1, HS.G.MG.A.3	1 day
9.7	Law of Sines and Law of Cosines	Learning	HS.G.SRT.D.9, HS.G.SRT.D.10, HS.G.SRT.D.11, HS.G.MG.A.3	1 day *(time permitting)*

Total: 5.5 days

Note: Additional days reserved for review and assessment.

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Additional Activities/Resources	
Name	**Location**

Vocabulary		
angle of depression	angle of elevation	cosine
inverse cosine	inverse sine	inverse tangent
Law of Cosines	Law of Sines	Pythagorean triple
sine	solve a right triangle	standard position
tangent	trigonometric ratio	

Standards	
HS.G.SRT.B.4	Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
HS.G.SRT.C.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.
HS.G.SRT.C.7	Explain and use the relationship between the sine and cosine of complementary angles.
HS.G.SRT.C.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
HS.G.SRT.D.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.
HS.G.SRT.D.10	Prove the Laws of Sines and Cosines and use them to solve problems.
HS.G.SRT.D.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).
HS.G.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HS.G.MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

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Chapter 11: Circumference, Area, and Volume
7 Days
HS.G.CO.A.1, HS.G.C.B.5, HS.G.GMD.A.1, HS.G.GMD.A.2, HS.G.GMD.A.3, HS.G.MG.A.1, HS.G.MG.A.2, HS.G.MG.A.3

Chapter Summary				
Section	**Title**	**Level of Learning**	**Standard(s)**	**Pacing**
	Chapter Opener/Mathematical Practices			
11.1	Circumference and Arc Length	Learning	HS.G.GMD.A.1, HS.G.C.B.5, HS.G.CO.A.1	0.5 day
11.2	Areas of Circles and Sectors	Learning	HS.G.GMD.A.1, HS.G.MG.A.2, HS.G.C.B.5	0.5 day
11.3	Areas of Polygons	Preparing	HS.G.GMD.A.3	1 day
11.5	Volumes of Prisms and Cylinders	Learning	HS.G.GMD.A.1, HS.G.GMD.A.2, HS.G.GMD.A.3, HS.G.MG.A.1, HS.G.MG.A.2, HS.G.MG.A.3	0.5 day
11.6	Volumes of Pyramids	Learning	HS.G.GMD.A.1, HS.G.GMD.A.3, HS.G.MG.A.1	0.5 day
11.7	Surface Areas and Volumes of Cones	Learning	HS.G.GMD.A.1, HS.G.GMD.A.3	1 day
11.8	Surface Areas and Volumes of Spheres	Learning	HS.G.GMD.A.2, HS.G.GMD.A.3, HS.G.MG.A.1	1 day

Total: 5 days

Note: Additional days reserved for review and assessment.

Additional Activities/Resources	
Name	**Location**

Vocabulary		
apothem of a regular polygon	arc length	Cavalieri's Principle
center of a regular polygon	central angle of a regular polygon	chord of a sphere
circumference	density	great circle
lateral surface of a cone	net	population density
radian	radius of a regular polygon	sector of a circle
similar solids	volume	

Standards	
HS.G.CO.A.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
HS.G.C.B.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.
HS.G.GMD.A.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. *Use dissection arguments, Cavalieri's principle, and informal limit arguments*.
HS.G.GMD.A.2	Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
HS.G.GMD.A.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
HS.G.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HS.G.MG.A.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

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Standards (continued)	
HS.G.MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

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Chapter 10: Circles
9 Days
HS.G.CO.A.1, HS.G.CO.D.13, HS.G.C.A.1, HS.G.C.A.2, HS.G.C.A.3, HS.G.C.A.4, HS.G.GPE.A.1, HS.G.GPE.B.4, HS.G.MG.A.1, HS.G.MG.A.3

Chapter Summary				
Section	Title	Level of Learning	Standard(s)	Pacing
	Chapter Opener/Mathematical Practices			
10.1	Lines and Segments That Intersect Circles	Learning	HS.G.CO.A.1, HS.G.C.A.2, HS.G.C.A.4	1 day
10.2	Finding Arc Measures	Learning	HS.G.C.A.1, HS.G.C.A.2	1 day
10.3	Using Chords	Learning	HS.G.C.A.2, HS.G.MG.A.3	1 day
10.4	Inscribed Angles and Polygons	Learning	HS.G.CO.D.13, HS.G.C.A.2, HS.G.C.A.3	1 day
10.5	Angle Relationships in Circles	Learning	HS.G.C.A.2	1 day (skip)
10.6	Segment Relationships in Circles	Learning	HS.G.C.A.2, HS.G.MG.A.1	1 day (skip)
10.7	Circles in the Coordinate Plane	Learning	HS.G.GPE.A.1, HS.G.GPE.B.4	1 day

Total: 7 days

Note: Additional days reserved for review and assessment.

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Additional Activities/Resources	
Name	**Location**

Vocabulary		
adjacent arcs	center of a circle	central angle of a circle
chord of a circle	circle	circumscribed angle
circumscribed circle	common tangent	concentric circles
congruent arcs	congruent circles	diameter
external segment	inscribed angle	inscribed polygon
intercepted arc	major arc	measure of a major arc
measure of a minor arc	minor arc	point of tangency
radius of a circle	secant	secant segment
segments of a chord	semicircle	similar arcs
standard equation of a circle	subtend	tangent of a circle
tangent circles	tangent segment	

Standards	
HS.G.CO.A.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
HS.G.CO.D.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
HS.G.C.A.1	Prove that all circles are similar.
HS.G.C.A.2	Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
HS.G.C.A.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
HS.G.C.A.4	Construct a tangent line from a point outside a given circle to the circle.
HS.G.GPE.A.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

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Standards (continued)	
HS.G.GPE.B.4	Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*
HS.G.MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HS.G.MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

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Chapter 12: Probability
Time Permitting
HS.A.APR.C.5, HS.S.CP.A.1, HS.S.CP.A.2, HS.S.CP.A.3, HS.S.CP.A.4, HS.S.CP.A.5, HS.S.CP.B.6, HS.S.CP.B.7, HS.S.CP.B.8, HS.S.CP.B.9

Chapter Summary				
Section	**Title**	**Level of Learning**	**Standard(s)**	**Pacing**
	Chapter Opener/Mathematical Practices			
12.1	Samples Spaces and Probability	Learning	HS.S.CP.A.1	0.5 day
12.2	Independent and Dependent Events	Learning	HS.S.CP.A.1, HS.S.CP.A.2, HS.S.CP.A.3, HS.S.CP.A.5, HS.S.CP.B.6, HS.S.CP.B.8	1 day
12.3	Two-Way Tables and Probability	Learning	HS.S.CP.A.4, HS.S.CP.A.5	1 day
12.4	Probability of Disjoint and Overlapping Events	Learning	HS.S.CP.A.1, HS.S.CP.B.7	0.5 day
12.5	Permutations and Combinations	Learning	HS.A.APR.C.5, HS.S.CP.B.9	1 day
12.6	Binomial Distributions	Learning	HS.S.CP.B.9	1 day

Total: 5 days

Note: Additional days reserved for review and assessment.

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Additional Activities/Resources	
Name	**Location**

Vocabulary

Standards	
HS.A.APR.C.5	Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.
HS.S.CP.A.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").
HS.S.CP.A.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
HS.S.CP.A.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.
HS.S.CP.A.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. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
HS.S.CP.A.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*
HS.S.CP.B.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.
HS.S.CP.B.7	Apply the Addition Rule, P(A or B) = P(A) + P(B) - P(A and B), and interpret the answer in terms of the model.
HS.S.CP.B.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.
HS.S.CP.B.9	Use permutations and combinations to compute probabilities of compound events and solve problems.