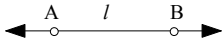
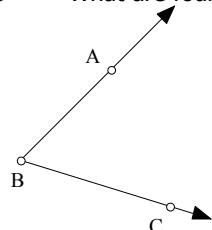


**SANTA ROSA CITY SCHOOLS  
CONTENT AND PERFORMANCE STANDARDS  
GEOMETRY**

***The Vocabulary of Geometry:***

<b>Enduring Understanding</b>	<b>ILLUSTRATIONS</b>
<p><b>GEOM1 The student will understand and use the vocabulary of geometry.</b></p> <p>GEOM1.1 The student will demonstrate meeting the standard in understanding and using the vocabulary of geometry by understanding the words and symbols of geometry.</p> <p>GEOM1.1 The student will demonstrate meeting the standard in understanding and using the vocabulary of geometry by understanding the significance of the three undefined terms: point, line and plane.</p> <p>GEOM1.1 The student will demonstrate meeting the standard in understanding and using the vocabulary of geometry by identifying, drawing and labeling geometric figures [e.g., points, lines, planes, segments, rays, angles, polygons, solids].</p>	<p>The following are illustrations of how the student might demonstrate meeting the standard.</p> <p>1.3 What are three possible names for the line shown?</p> <div style="text-align: center;">  </div> <p>1.3 What are four possible names for the angle shown?</p> <div style="text-align: center;">  </div>
<b>Important to Know and Do</b>	
<b>Worth Being Familiar With</b>	

***Deductive and Inductive Proof:***

<b>Enduring Understanding</b>	<b>ILLUSTRATIONS</b>
<p>GEOM 2.2 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by discovering, defining and predicting patterns in numerical sequences, geometric shapes and real world situations.</p> <p>GEOM 2.6 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by understanding and applying the theorems for triangle congruence in writing proofs and solving problems [i.e., SSS, SAS, ASA, AAS, HL, or corresponding parts].</p>	<p>2.1 State whether or not the conclusion is deducible: "If the three angles of a triangle are acute, then the triangle is acute. In triangle ABC, angle A and angle B are acute. Therefore, triangle ABC is acute."</p>

### Important to Know and Do

**GEOM 2 The student will demonstrate the ability to reason geometrically and to provide logical deductive and inductive proof.**

GEOM 2.3 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by stating the hypothesis, conclusion and converse of a conditional statement, determine if such a statement is true or false, and give a counterexample for a false statement.

GEOM 2.4 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by demonstrating familiarity with different types of proof [e.g. paragraph, two-column, indirect, flow and coordinate proofs].

GEOM 2.5 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by writing or completing a proof involving congruent or similar triangle or the Pythagorean Theorem.

GEOM 2.7 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by understanding and applying the AA Theorem and corresponding parts of similar triangles in writing proofs, solving problems and modeling situations to find lengths or angles.

### Worth Being Familiar With

GEOM 2.1 The student will demonstrate meeting the standard of reasoning geometrically and providing logical deductive and inductive proof by identifying and applying examples of inductive and deductive reasoning to reach conclusions about geometric situations.

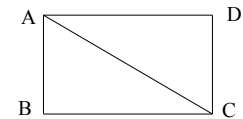
2.1 Find a formula for the  $n^{\text{th}}$  triangular number.

2.2 *(See Application Page)*

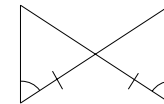
2.3 State the hypothesis, conclusion, and converse of this conditional statement:  
"If you have the will, then you have the ability."

2.4 Write a paragraph proof for the following:  
"If an obtuse angle is bisected, each of the two resulting angles are acute."

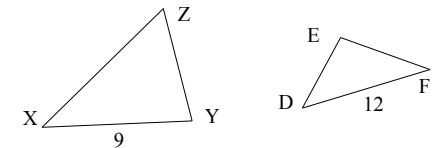
2.5 Write a proof for the following:  
Given:  $AB \cong CD$  and  $AB \parallel CD$   
Prove:  $\triangle ABC \cong \triangle CDA$



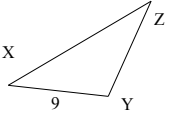
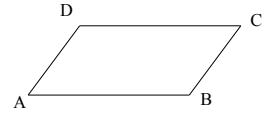
2.6 State the postulate or theorem that can be used to conclude that these triangles are congruent.



2.7 In the figure below,  $\triangle DEF \sim \triangle XYZ$ . Find the lengths of XZ and YZ.

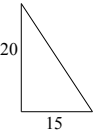
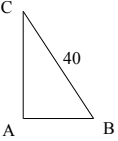


**Properties of Angles, Polygons, and Solids:**

Enduring Understanding	ILLUSTRATIONS
<p><b>GEOM 3 The student will understand and apply the properties of angles, polygons, and solids.</b></p> <p>GEOM 3.1 The student will demonstrate meeting the standard in the properties on angles, polygons, and solids by finding and using the measures of sides and of interior and exterior angles to classify figures [isosceles, obtuse, convex, etc.] and to solve problems.</p> <p>GEOM 3.3 The student will demonstrate meeting the standard in the properties on angles, polygons, and solids by using angle relationships to find unknown angle measures, to prove lines are perpendicular, or to prove lines are parallel. Angle relationships include: interior, exterior, supplementary, complementary, vertical, angles formed by perpendicular lines, and angles formed by parallel lines cut by transversals.</p> <p>GEOM 3.5 The student will demonstrate meeting the standard in the properties on angles, polygons, and solids by using area formulas to solve problems involving both regular and irregular polygons.</p> <p>GEOM 3.7 The student will demonstrate meeting the standard in the properties on angles, polygons, and solids by applying ratios and proportions to similar polygons and polyhedrons for determining lengths, areas or volumes, and determining how changes in the dimensions of an object affect the object's perimeter, area and/or volume.</p>	<p>3.1 Determine the degree measure of a central angle in a regular octagon.</p> <p>3.2 Determine the range of possible lengths of XZ.</p>  <p>3.3 If AD is parallel to BC, name all the pairs of angles that must be congruent.</p> 
Important to Know and Do	<p>3.4 What is the most descriptive name for quadrilateral WXYZ with the following vertices: <math>W = (-3, -7)</math>, <math>X = (-9, 1)</math>, <math>Y = (3, 9)</math>, and <math>Z = (9, 1)</math>?</p> <p>3.5 The perimeter of a regular polygon is 24 units and the apothem is 3 units. Find the area of the polygon.</p> <p>3.6 Find the area of the paper used to construct a regular hexagonal kite with sides 15 inches and the long diagonal of 33 inches.</p>

<b>Worth Being Familiar With</b>	3.7 The ratio of the areas of two similar pentagons is 8:18. Find the ratio of their corresponding sides and the ratios of their perimeters.
GEOM 3.6 The student will demonstrate meeting the standard in the properties on angles, polygons, and solids by applying geometric shapes to a variety of real-life problems and recognizing appropriate situations for the use of particular formulas.	3.8 If the height of a pyramid is 21 meters and the pyramid's base is an equilateral triangle with sides measuring 8 meters, what is the pyramid's volume?
	3.8 <i>(See Application Page)</i>

***Pythagorean Theorem and Basic Trigonometry:***

<b>Enduring Understanding</b>	<b>ILLUSTRATIONS</b>
<p><b>GEOM 4 The student will understand and apply the Pythagorean Theorem and basic trigonometry.</b></p> <p>GEOM 4.1 The student will demonstrate meeting of applying the Pythagorean Theorem and basic trigonometry by applying the Pythagorean Theorem to determine right triangles and finding an unknown side in a triangle</p>	<p>4.1 Find the missing side in this right triangle.</p> 
<b>Important to Know and Do</b>	
<p>GEOM 4.2 The student will demonstrate meeting of applying the Pythagorean Theorem and basic trigonometry by using the properties of 45-45-90 degree and 30-30-90 degree triangles to solve problems.</p> <p>GEOM 4.3 The student will demonstrate meeting of applying the Pythagorean Theorem and basic trigonometry by defining the trigonometric ratios of sine, cosine, and tangent and using these ratios to determine unknown length of a right triangle.</p> <p>GEOM 4.4 The student will demonstrate meeting of applying the Pythagorean Theorem and basic trigonometry by applying trigonometric ratios in a given context to determine a length that cannot be measured directly.</p>	<p>4.2 The perimeter of a square is 44 square units. Find the length of a diagonal.</p> <p>4.3 In right triangle ABC, angle B is 27 degrees, find the length of side AB to the nearest .01.</p> 
<b>Worth Being Familiar With</b>	
	<p>4.4 To an observer on a cliff 360 meters above sea level, the angle of depression of a ship is 28 degrees. What is the horizontal distance between the ship and the observer?</p>

**Coordinate Geometry:**

Enduring Understanding	ILLUSTRATIONS
	5.1 Draw an obtuse triangle. Construct the bisector of each angle.
Important to Know and Do	
<p><b>GEOM 5 The student will understand constructions, applications in coordinate geometry and transformations.</b></p> <p>GEOM 5.1 The student will demonstrate understanding of constructions, applications in coordinate geometry and transformations by identifying and constructing basic elements of geometric figures [e.g., altitudes, midpoints, angle bisectors, perpendiculars and parallel lines] using a compass and straightedge.</p> <p>GEOM 5.3 The student will demonstrate understanding of constructions, applications in coordinate geometry and transformations by calculating midpoints, lengths of segments [distance formula] and slopes of lines.</p> <p>GEOM 5.4 The student will demonstrate understanding of constructions, applications in coordinate geometry and transformations by identifying and/or sketching examples of symmetry, reflections, rotations, dilations, translations, and tessellations.</p>	<p>5.2 To design a triangular hang glider it is important to connect the central cable to the center of gravity. Determine this point from the given diagram.</p> <p>5.3 Show that a triangle with vertices at <math>(8,4)</math>, <math>(3,5)</math>, and <math>(4,10)</math> is a right triangle by using the distance formula and slopes.</p> <p>5.4 Sketch an octagon with exactly two lines of symmetry.</p>
Worth Being Familiar With	
GEOM 5.2 The student will demonstrate understanding of constructions, applications in coordinate geometry and transformations by understanding and determining the centroid [e.g., center of mass or gravity].	

**Properties of Circles:**

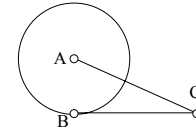
Enduring Understanding	ILLUSTRATIONS
<p><b>GEOM 6 The student will understand and apply properties of circles.</b></p> <p>GEOM 6.2 The student will demonstrate understanding and application of the properties of circles by calculating circumference and area of circles.</p>	6.1 The radius of circle A is 8 cm. Tangent segment BC is 15 cm. Find the length of segment AC.

**Important to Know and Do**

GEOM 6.1 The student will demonstrate understanding and application of the properties of circles by solving problems involving intersecting chords and tangents, inscribed angles and polygons, circumscribed polygons.

GEOM 6.3 The student will demonstrate understanding and application of the properties of circles by knowing the definition of pi, including its irrational property in comparison to common approximations, such as, 3.14 or 22/7

**Worth Being Familiar With**



- 6.2 Find the circumference and area of a circle whose radius is 9.8 units.
- 6.3 Which ratio is equivalent to  $\pi$ ?
- a)  $\pi$  is the radius/circumference.
  - b)  $\pi$  is the circumference/diameter.
  - c)  $\pi$  is the area/circumference.
  - d)  $\pi$  is the radius/diameter.