

# Grade 8 Content Standards – Math (Geometry)

| Standard                                                                                                                                                                               | CST              | CHSEE | Framework Emphasis | Algebra Readiness | Essential Standards | Essential Standards |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------|--------------------|-------------------|---------------------|---------------------|----|
|                                                                                                                                                                                        |                  |       |                    |                   |                     | S1                  | S2 |
| <b>Geometry</b>                                                                                                                                                                        | <b>65 / 100%</b> |       |                    |                   |                     |                     |    |
| 1.0 Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.                                 | 2                |       | ☆                  |                   | ✓                   | F                   | R  |
| 2.0 Students write geometric proofs, including proofs by contradiction.                                                                                                                | 3                |       | ☆                  |                   | ✓                   | F                   | R  |
| 3.0 Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.                                                                  | 4                |       | ☆                  |                   | ✓                   | F                   | R  |
| 4.0 Students prove basic theorems involving congruence and similarity.                                                                                                                 | 5                |       | ☆                  |                   | ✓                   | F                   | R  |
| 5.0 Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.                                        | 2                |       |                    |                   |                     |                     |    |
| 6.0 Students know and are able to use the triangle inequality theorem.                                                                                                                 | 1                |       |                    |                   |                     |                     |    |
| 7.0 Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.                  | 5 2/3**          |       | ☆                  |                   | ✓                   | F                   | R  |
| 8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.                            | 4                |       | ☆                  |                   | ✓                   |                     | F  |
| 9.0 Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders. | 2                |       |                    |                   |                     |                     |    |
| 10.0 Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.                                       | 4                |       | ☆                  |                   | ✓                   |                     | F  |
| 11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.                                                       | 1                |       |                    |                   |                     |                     |    |
| 12.0 Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.                                     | 5                |       | ☆                  |                   | ✓                   |                     | F  |

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|                                                                                                                                                                                                                                                                           |       |  |   |  |   |   |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--|---|--|---|---|---|
| 13.0 Students prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles.                                                                                                                          | 2     |  |   |  |   |   |   |
| 14.0 Students prove the Pythagorean theorem.                                                                                                                                                                                                                              | 1/3** |  | ☆ |  | ✓ | F | R |
| 15.0 Students use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles.                                                                                                                                                     | 2     |  |   |  |   |   |   |
| 16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.                                                                          | 4     |  | ☆ |  | ✓ |   | F |
| 17.0 Students prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.                                                                                           | 3     |  | ☆ |  | ✓ |   | F |
| 18.0 Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, $\tan(x) = \sin(x)/\cos(x)$ , $(\sin(x))^2 + (\cos(x))^2 = 1$ . | 3     |  | ☆ |  | ✓ |   | F |
| 19.0 Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.                                                                                                                            | 3     |  |   |  |   |   |   |
| 20.0 Students know and are able to use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles.                                                                                        | 1     |  |   |  |   |   |   |
| 21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.                                                                                                    | 5     |  | ☆ |  | ✓ |   | F |
| 22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.                                                                                                                          | 3     |  | ☆ |  | ✓ |   | F |

\*\* Fractional values indicate rotated standards (e.g., 1/2 = rotated every two years)



Identifies the key standards according to Mathematics Framework for California Public Schools.

First Benchmark Test = 30 question

Second Benchmark Test = 58 questions