

Geometry curriculum: the thirteen units and their skills

High school geometry as US schools teach it (Common Core HSG), in the usual order. Tick a unit when the child can do every skill in it without notes.

Unit	Skills	Weeks	Done
1. Foundations	Points, lines, planes; segments, midpoint, distance; angle pairs; basic constructions	2-3	[]
2. Reasoning and proof	Conditionals, converse, contrapositive; algebraic properties as reasons; two-column and paragraph proofs	2	[]
3. Parallel and perpendicular lines	Transversal angle pairs; proving lines parallel; slopes of parallel and perpendicular lines	3	[]
4. Transformations	Translations, reflections, rotations, compositions; rigid motions and congruence; symmetry; dilations	2-3	[]
5. Congruent triangles	Angle sum; SSS, SAS, ASA, AAS, HL; CPCTC; isosceles and equilateral theorems; coordinate proofs	3-4	[]
6. Relationships in triangles	Bisectors, medians, altitudes; circumcenter, incenter, centroid; triangle inequality; indirect proof	2-3	[]
7. Quadrilaterals and polygons	Angle sums; parallelogram tests; rectangles, rhombi, squares; trapezoids and kites	3	[]
8. Similarity	Proportions; similar polygons; AA, SSS, SAS similarity; side-splitter; indirect measurement	3	[]
9. Right triangles and trigonometry	Pythagorean theorem and converse; radicals; 45-45-90 and 30-60-90; sine, cosine, tangent; elevation and depression	3-4	[]
10. Circles	Tangents; arcs and chords; inscribed angles; chord, secant and tangent angles; segment lengths; equation of a circle	3	[]
11. Area and perimeter	Polygons, regular polygons and the apothem, circles, sectors, composite figures; changing dimensions	2	[]
12. Surface area and volume	Prisms, cylinders, pyramids, cones, spheres; cross-sections; Cavalieri; density problems	3	[]
13. Probability	Sample spaces; independent and dependent events; conditional probability; two-way tables	1-2	[]

The year, the tests, and the readiness check

Pace

Months	Units
August to October	1 to 3
November to January	4 to 6
February to March	7 to 9
April to May	10 to 12
Late May	13, if there is time

State tests

State	Test	What rides on it
New York	Regents Examination in Geometry	A Regents math exam toward the diploma; Advanced Regents needs Geometry
Florida	Geometry End-of-Course (B.E.S.T.)	30% of the course grade
Virginia	Geometry SOL	Verified credit
Tennessee, Ohio, Georgia	Geometry end-of-course	Counts in the course grade or graduation points
Texas, California, most others	None	The SAT's geometry questions (about 15%) are the external test

The algebra geometry uses every day: ten questions, no calculator

- Solve $3x + 15 = 2x + 40$
- Two supplementary angles are $4x$ and $x + 30$. Find x
- Simplify $\sqrt{50}$
- Simplify $\sqrt{12} \times \sqrt{3}$
- Distance between $(1, 2)$ and $(7, 10)$
- Midpoint of $(-3, 4)$ and $(5, -2)$
- Slope through $(2, 5)$ and $(6, 13)$, and the perpendicular slope
- Solve $4/x = 10/15$
- If $x^2 = 49$, $x = ?$
- Solve $x + y = 90$ and $x - y = 20$

Answers

1) 25 2) 30 3) $5\sqrt{2}$ 4) 6 5) 10 6) $(1, 1)$ 7) 2 and $-\frac{1}{2}$ 8) 6 9) 7 (or -7) 10) $x = 55$, $y = 35$

9 or 10: ready. 6 to 8: a fortnight on radicals, proportions and the distance formula before unit 5. 5 or fewer: the gap is in Algebra 1.

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