GeometryX: Introduction to Geometry

Presented by School Yourself

Quick Stats:

Course Length: 14 weeks (self-paced)
Estimated Effort: 4-6 hours/week
Prerequisites: Basic algebra (solving an equation for an unknown value)

Description

More than 2000 years ago, long before rockets were launched into orbit or explorers sailed around the globe, a Greek mathematician measured the size of the Earth using nothing more than a few facts about lines, angles, and circles. This course will start at the very beginnings of geometry, answering questions like "How big is an angle?" and "What are parallel lines?" and proceed up through advanced theorems and proofs about 2D and 3D shapes. Along the way, you'll learn a few different ways to find the area of a triangle, you'll discover a shortcut for counting the number of stones in the Great Pyramid of Giza, and you'll even come up with your own estimate for the size of the Earth.

In this course, you'll be able to choose your own path within each lesson, and you can jump between lessons to quickly review earlier material. GeometryX covers a standard curriculum in high school Geometry I, with significant CCSS (common core) alignment.

Lessons, Reviews, and Grading

- Each topic consists of 1 lesson and 1 review.
- Lessons are optional. Reviews are **required**.
- Lessons are interactive, and you can choose your own path. We highly recommend checking them out!
- Each lesson typically takes 5-20 minutes to complete.
- Reviews are sequences of questions. As you correctly answer them, they may get a little tougher.
- There is **no penalty** for wrong answers, and you can try as many times as you wish.
- Once you've mastered a topic, you'll receive credit and you can move on.
- Reviews can be completed at any time during the course, and in any order. All reviews are due by the end of the course.
- To pass GeometryX, you must complete at least **85%** of the reviews.

Mastering reviews

When you first start a review, your mastery bar will be empty:
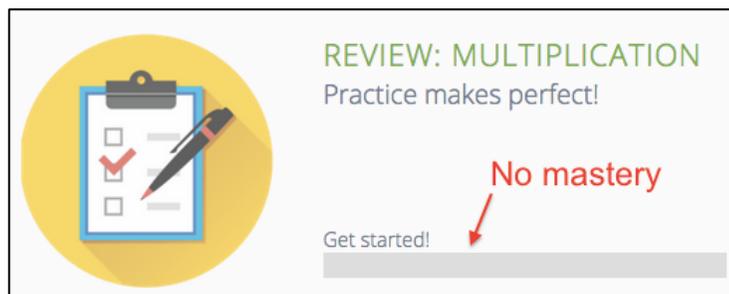

As you answer questions correctly, your mastery bar at the bottom of the screen will fill up:
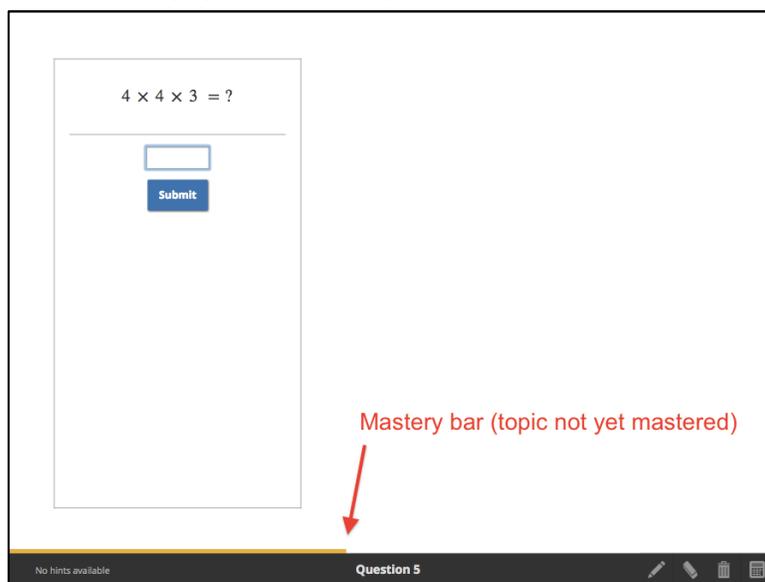
Once you have enough mastery, you receive credit for that topic and review, and you can quit the review:
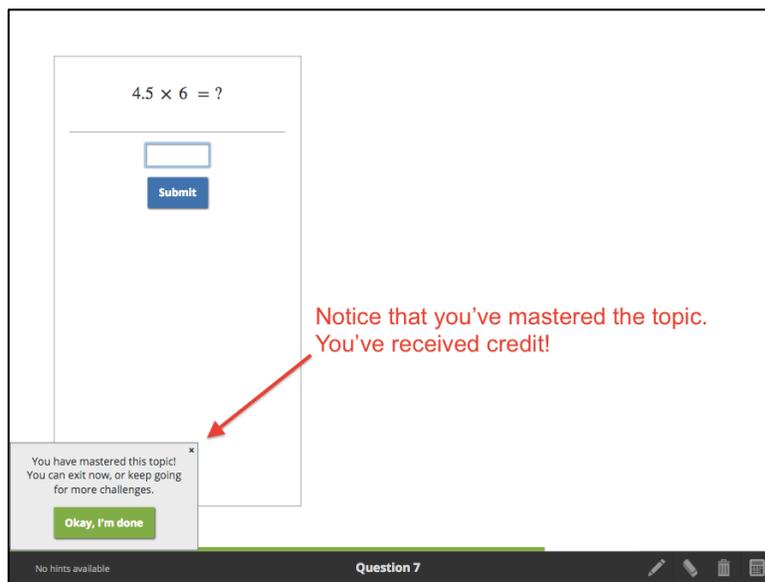
Your mastery bar will now indicate that you have achieved full credit for the review:
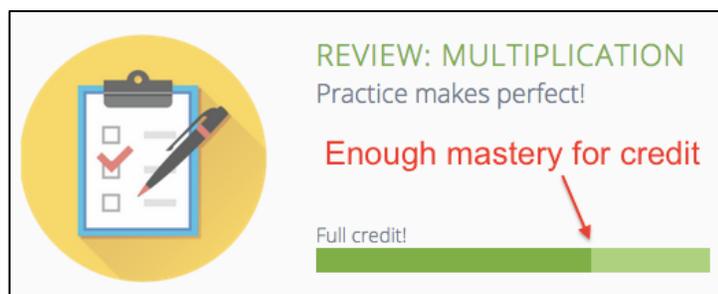
Outline

As the course progresses, more topics will become available. We recommend completing topics using the weekly schedule below, but you may complete topics in any order and at any time during the course. The outline may change during the course; should changes occur, the syllabus will be updated and you will be notified.

Week 1 **Lines and angles**	Lines, rays, and segments Angles and degrees Right, acute, and obtuse angles Parallel lines Perpendicular lines Naming angles Perpendicular bisectors
Week 2 **Related angles**	Combining angles Complementary, supplementary Coterminal angles Vertical angles Corresponding angles Alternate interior angles

	Alternate exterior angles
Week 3 **Triangles**	Introduction to polygons Congruence Equilateral, isosceles, scalene 180 degrees in a triangle Right, acute, obtuse triangles
Week 4 **Lines and rules** **for triangles**	Altitudes Medians of triangles Angles in isosceles triangles The triangle inequality Larger angles and longer sides
Week 5 **Triangle congruence** **and similarity**	Similarity Similar ratios SSS postulate SAS postulate ASA postulate AAS postulate The ambiguous case AA similarity
Week 6 **Polygons and quadrilaterals**	Perimeter Regular polygons Quadrilaterals Degrees in any polygon Opposite angles in parallelograms Opposite sides in parallelograms Diagonals in parallelograms Diagonals in rectangles Diagonals in rhombi Angles in trapezoids
Week 7 **Areas of polygons**	Introduction to area Rectangle area Parallelogram area Trapezoid area Triangle area Rhombus area
Week 8 **The Pythagorean theorem**	The Pythagorean theorem Pythagorean triples Distance formula Equilateral triangle area Heron's formula
Week 9 **Circles, ellipses,** **and their areas**	Circles Circumference Size of the Earth Ellipses Area of a circle Cavalieri's principle Ellipse area Combining shapes
Week 10 **Angles in circles**	Arcs and central angles Inscribed angles Inscribed angles on the diameter Circumscribed angles Arc length

	Sector area
Week 11 **Lines in circles**	Chords, tangents, secants Tangents to the same point Arcs between parallel chords Intersecting chords Cyclic quadrilaterals Intersecting secants Circles in triangles
Week 12 **Volume**	Introduction to solids Rectangular prism volume Volume for other prisms Cavalieri's principle in 3D Pyramid volume Cone volume Sphere volume
Week 13 **Surface area**	Prism surface area Cylinder surface area Pyramid surface area Cone surface area Sphere surface area Diagonal of a cube
Week 14 **Transformations**	Translation Rotation Reflection Dilation Preserving congruence Symmetry