

# Geometry

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# Geometry PK Correlation

Geometry Mathnasium Material NT Correlation

Unit 1:

## Section 1.1 Symmetry

- Line Symmetry - PK3514
- Point Symmetry -
- Rotational Symmetry - PK3104
- Translational Symmetry - PK3104

## Section 1.2 So, What's the Point

- Definition of a point - PK824
- Definition of a plane - PK824
- Definition of a line - PK824
- Definition of a segment - PK824
- Definition of a ray - PK824
- Union/Intersection - PK824
- Locus of Points/Endpoints - FO2160

## Section 1.3 Nspire Intro

## Section 1.4 Transformations

- Isometries {Translation PK3509, Rotation PK3510, Reflection PK3511, Dilation PK3512}
- Dilations
- Pre-image/image (Steps to transformation) - PK3581

## Section 1.5 Transformations by Hand

- Translating by vectors
- Reflecting across lines - PK3584
- Rotating around a central point
- Dilating from point - PK3583

## Unit 2: Transformations with Coordinates

### Section 2.1 Transformations

- Graphing points/ translating points - PK3509
- Reflecting, rotating, dilating on the graph - PK3511, PK3512

### Section 2.2 Things I Learned in Algebra

- Midpoints - PK3434
- Length of segments - PK3435
- Slopes of lines - PK3408

### Section 2.3 More Geometry and Algebra!

- Altitudes - PK3552
- Perpendicular Bisectors - PK3552
- Medians - PK3552

### Section 2.4 One Magic Moment, One Magical Point

- Solving systems of linear equations/finding the intersection of lines - {Substitution PK3417, Elimination PK3418, Graphing PK3416, Problem-Solving PK3452}
- Reflecting points over oblique lines - PK3584
- Determining medians/perpendicular bisectors on shapes graphically
- Distance between two lines -

## Unit 3: Congruent Triangles

### Section 3.1 It's Only Logical

- Conditional Statements - PK3530

### Section 3.2 Three is a Magic Number

- AAS, SAS, SSS, ASA - PK4571, PK4570
- Describing transformations

### Section 3.3 Congruent Triangles

- Vertical Angles - PK3580, PK3572, PK3573

- Reflexive Property - PK3533
- Transitive Property - PK3533
- Two-column proofs - PK3533

#### Section 3.4 Supps and Comps

- Complementary angles - PK3507
- Supplementary angles - PK3507
- Corresponding supp/comp proof reasons

#### Section 3.5 Addition and Subtraction

- Addition theorem - PK3566
- Subtraction theorem

#### Section 3.6 Multiplication and Division

- Multiplication theorem
- Division theorem

### Unit 4: Constructions

#### Section 4.1: The Basics

- Copying a segment - FO0023
- Adding segments - FO0023
- Copying an angle - FO0023
- Bisecting an angle - FO0023
- Constructing SSS triangle
- Triangle Inequality Theorem

#### Section 4.2: Constructing Perpendiculars

- Constructing a perpendicular bisector - FO0023
- Construct a perpendicular to a segment - FO0023
- Construct a perpendicular to a line through a point not on the line

#### Section 4.3 Points of Concurrency

- Point of concurrency - PK3559
- Incenter - PK3559
- Circumcenter - PK3559
- Centroid - PK3559

- Orthocenter - PK3559

## Unit 5: Proving Triangles Congruent is Not the Goal, It's the Process

### Section 5.1: The End of CPCTC

- "CPCTC" - PK3573 (page 6)
- Circles - Congruent Radii

### Section 5.2: Turn It Up To 11: Draw a line & overlapping triangles

### Section 5.3: Classify Triangles

- The sum of triangle angles equals 180
- Equilateral, Isosceles, Scalene - PK3099
- Acute, Right, Obtuse Triangles - FO111
- The longest side is opposite the largest angle

### Section 5.4: My Favorite Theorems

- Isosceles - base angle/base sides
- Isosceles - angle bisector = median = altitude

### Section 5.5: RHL

- RHL Proof

## Unit 6: The Next Chapter

### Section 6.1: The Questions of Mathematics

- If two angles supp and comp  $\rightarrow$  rt angles

### Section 6.2: No Picture? Then Make a Picture

- Draw it out

### Section 6.3: Perpendicular Bisector and Equidistance

- If a pt is on the perp bisector, it is central to the endpoints

- If two points are equidistant to the endpoints of a seg -> they form the perp bisector

#### Section 6.4: If It's Not This, Then It's Got To Be This 404

- Proof by Contradiction

### Unit 7: Lines, Angles, Quads

#### Section 7.1: Parallel Lines

- Transversal
- Alternate Interior Angles, Alternate Exterior Angles, Corresponding Angles, Same Same Interior Angles - FO272

#### Section 7.2: Parallel Lines Keep Going

- Constructing parallel lines

#### Section 7.3: Quadrilaterals

- Definition of a quadrilateral
- Properties of a parallelogram
- Properties of a kite
- Properties of a rectangle
- Properties of a rhombus
- Properties of a square
- properties of a trapezoid
- Properties of a isosceles trapezoid - PK3099

#### Section 7.4: More Quadrilaterals

- Solving problems involving properties of quads

#### Section 7.5: It looks like a parallelogram

- Properties of a parallelogram
  - Both pairs of opposite sides are parallel
  - Both pairs of opposite sides are congruent
  - Both diagonals bisected
  - Same pair of opposite sides and congruent = parallelogram
  - The sum of angles in quadrilaterals is 360.

#### Section 7.6: Special Quads

- Solving problems using obscure properties of quads.

## Unit 8: Similarity

### Section 8.1: Dilations

### Section 8.2: Dilations pt. Deux

### Section 8.3: Similarity

### Section 8.4: Proving Similar Triangles

### Section 8.5: Proportions Without Similar Triangles

## Unit 9: Right Triangles

### Section 9.1: Rt Triangle inside a Rt Triangle

### Section 9.2: Pythagorean Theorem - PK3363

### Section 9.3: Right Triangle Families - PK3363

### Section 9.4: Rt Triangles in 3D Figures -

### Section 9.5: Special Right Triangles - PK3561

### Section 9.6: Right Triangle Trigonometry - PK3916

### Law of Cosines - PK3914, PK3915

### Law of Sines - PK3913, PK3915

## Unit 10: Polygons

### Section 10.1: Polygon Formulas - PK3501, PK3550, PK3551

Section 10.2: What is Regular? - PK3501

Section 10.3: Constructing of Regular Polygons - FO 023 (page 29)

Section 10.4: Tessellations - FO 194

## Unit 11: Circles

Section 11.1: Chords of Circles - PK3562

Section 11.2: From the Center to the Arc

Section 11.3: Tangents - PK3569

Section 11.4: Angle-Arc Relationships - PK3568

Section 11.5: Arcs have Length and Measure - PK3588

Section 11.6: Power of the Poin

## Unit 12: Area

Section 12.1: Area Basics - PK3089

Section 12.2: More Area Formulas - PK3362(Rectangles), PK3364(Triangles), PK3365(Circles), PK3523(Parallelograms), PK3524(Trapezoids)

Section 12.3: Regular Polygons - PK3590

Section 12.4: Sectors of Circles - PK3588

Section 12.5: Ratios of Areas - PK3582

## Unit 13: 3D

Section 13.1: Lines and Planes in Space - PK0804 (skew lines)

Section 13.2: If You Look At It That Way - ???

Section 13.3: Cross-Sections of 3D Objects - FO 242, FO 188



## Unit 14: Surface Area and Volume

Section 14.1: Surface Area - PK3527, PK3595

Section 14.2: SA of Cylinders and Cones - PK3527, PK3595

Section 14.3: Volume Basics - PK3528, PK3596

Section 14.4: Volumes with an Apex - PK3528, PK3596

Section 14.5: Spheres - PK3555

Unit 15: Modeling - Difficult to find any Mathnasium material with geometric modeling. PK3534 and PK3535 have some geometric problem-solving

Section 15.1: Intro to Modeling

Section 15.2: Art Gallery Watchmen

Section 15.3: Packaging and Packing

Section 15.4: Airports

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