

2017-2018 CPSD MATHEMATICS PACING GUIDE



Geometry

Canton Public School District
2017-2018 Pacing Guides

Frequently Asked Questions and Guidance

Frequently Asked Questions

1. Where are the district's pacing guides located? What is their purpose?

Pacing guides for the 2017-2018 school year can be found on Canton Public School District's website under Teacher Resources. Pacing guides have been developed for grades K-12 in English Language Arts, Mathematics, Science, and Social Studies.

The district's pacing guides:

- ensure that instruction addresses all of the Mississippi College and Career Readiness Standards for English Language Arts and Mathematics and the Curriculum Frameworks for Social Studies and Science;
- provide consistency district-wide for the pace, rigor, and equity of standards; and,
- address student mobility and the need for uniformity of instruction.

2. How were the pacing guides developed and by whom? What if I would like to suggest a change to the pacing guides?

The pacing guides were developed by teams of teachers with feedback from the district's content staff and administrators. District staff and teachers considered state standards and objectives, state assessment blueprints, and the district's calendar when developing the pacing guides.

ELA and Mathematics content staff will consider changes to the pacing guides twice yearly (at the end of the first semester and at the end of the second semester of each school year). Administrators should compile their teachers' suggestions and submit them to the district's content staff during the week prior to Thanksgiving Break during the first semester and the week prior to the end of the school year during the second semester. **Revisions will only be considered during these windows.** If warranted, changes will be made to the pacing guides prior to the next semester.

3. How are these pacing guides different from other pacing guides that we have used in the district?

These pacing guides are different because the standards are paced by term rather than by day or week. This gives teachers more flexibility in deciding how and when to teach standards. This format also emphasizes the best practice of recognizing that many standards are ongoing and should be taught throughout the year.

4. What is the best way to interpret the pacing guides?

The pacing guides were developed to be easily understood. Quick explanations for English Language Arts and Mathematics are found below:

English Language Arts

Many of the standards in the College and Career Readiness Standards for English Language Arts are ongoing; in fact, most of them are. With that fact considered, the pacing guides for ELA indicate at what point during the year standards should be introduced (**I**), practiced (**P**), assessed (**A**), and mastered (**M**). Some standards may be assessed during the year to determine students' progress even though they may not be expected to master the standard until later. This reinforces the concept that we should frequently conduct formative assessments to inform instruction and determine which students are in need of intervention. Teachers should use the **Scaffolding Document** to assist in planning lessons and interventions.

Mathematics

The mathematics pacing guides are composed of the standards set forth by the state of Mississippi's College and Career Readiness Standards. Several of these standards are presented during a nine week period for mastery. The district will assess these standards for mastery at the end of the nine week period. District assessments will be comprehensive; therefore, these standards will also be assessed within future district assessments. The Pacing Guides give teachers a list of standards to be covered within a nine week period. The guides do not dictate the order or cluster of how the standards will be taught. Teachers should also use the **Scaffolding Document** to assist in planning lessons. Please note that there are several new standards added to the MS CCRS for Mathematics this year. These standards may not be found in your textbooks; therefore, these standards will be integrated within the curriculum with other standards that can be clustered together.

5. Are the pacing guides stand-alone documents?

No. The pacing guides are part of a collection of instructional documents to assist teachers in planning instruction and assessments. The other documents that should be used throughout the school year are the Pacing Planning Tool, Quick Calendar, the College and Career Readiness Standards (or frameworks for subjects other than ELA and mathematics), and MDE's scaffolding documents for ELA and mathematics.

The Pacing Planning tool helps teachers make the broad vision of the standards more specific. The Quick Calendar provides teachers with a quick glance of what standards will be covered on any given day in a month. MDE's scaffolding documents for ELA and mathematics provide teachers with guidance on prerequisites for standard mastery, key concepts within standards, and examples of evidence of student mastery. These tools are excellent resources for planning lessons, developing assessments, and identifying points of intervention for struggling students.

The College and Career Readiness Standards and Curriculum Frameworks include the standards or objectives for each grade level as well as the standards or objectives for proceeding and following grade levels. The ELA and Mathematics College and Career Readiness Standards both contain glossaries of terms that are beneficial for teachers.

If you find that you need support in narrowing the focus of the pacing guides, please contact your principal. They have tools that can assist you in making the broad range of the term-based pacing guides more specific.

6. Will the district's assessments be aligned to the standards in the pacing guides?

Our district assessments are designed to provide a snapshot of the learning process throughout the school year. The district's assessments are aligned with the timing and content of the pacing guides. Standards will be assessed according to their appearance within the term indicated on the pacing guide. Ongoing standards will be assessed at multiple points throughout the year.

7. Whom should I contact if I need assistance with planning lessons using the pacing guides and supporting documents?

Teachers have several options for instructional support within the district. Building principals, instructional specialists, assistant principals, and district content coordinators are available to assist you with instructional planning.

Canton Public Schools'
Geometry Pacing Guide, 2017 – 2018

1st 9 Weeks

Standard	Standard Description	Holt Lesson
Congruence (G-CO)		
Experiment with transformations in the plane.		
G.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	1-1, 1-4 3-1
G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	1-7
Understand congruence in terms of rigid motions		
G.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	4-1
G-CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Integrated
G.CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	4-5 - 4-6
Prove geometric theorems		
G.CO.9	Prove theorems about lines and angles. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</i>	2-1 - 2-7 3-2 - 3-4
G.CO.10	Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</i>	4-2 - 4-3 4-9
Make geometric constructions		
G.CO.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). <i>Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</i>	1-2 - 1-3
Seeing Structure in Expressions (A-SSE)		

Interpret the structure of expressions.		
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.* a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.</i>	1-5
Expressing Geometric Properties with Equations (G-GPE)		
Use coordinates to prove simple geometric theorems algebraically.		
G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. <i>For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.</i>	4-8
G.GPE.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	3-6
G.GPE.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula*	1-6
Similarity, Right Triangles, and Trigonometry (G-SRT)		
Prove theorems involving similarity.		
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	4-4 - 4-7

Holt Chapters 1 - 4

2nd 9 Weeks

Standard	Standard Description	Holt Lesson
Congruence (G-CO)		
Experiment with transformations in the plane.		
G.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	7-6
Prove geometric theorems		
G.CO.9	Prove theorems about lines and angles. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</i>	5-1
G.CO.10	Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</i>	5-3 - 5-6
G.CO.11	Prove theorems about parallelograms. <i>Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</i>	6-1 - 6-5
Circles (G-C)		
Understand and apply theorems about circles.		
G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of a quadrilateral inscribed in a circle.	
Similarity, Right Triangles, and Trigonometry (G-SRT)		
Understand similarity in terms of similarity transformations.		
G.SRT.1	Verify experimentally the properties of dilations given by a center and a scale factor: <ol style="list-style-type: none"> a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor. 	7-2
G.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	7-1
G-SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Integrated
Prove theorems involving similarity.		
G.SRT.4	Prove theorems about triangles. <i>Theorems include: a line parallel to one side of a triangle divides the other two</i>	Ext. 7-3

	<i>proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.</i>	
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	6-6, 7-3 - 7-5
Define trigonometric ratios and solve problems involving right triangles.		
G.SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	5-8, 8-1 - 8-2
G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	Ext. 8-2
G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*	5-7, 8-3 - 8-4
Apply trigonometry to general triangles		
G.SRT.10	Prove the Laws of Sines and Cosines and use them to solve problems.	8-5
Circles (G-C)		
Understand and apply theorems about circles		
G.C.1	Prove that all circles are similar.	7-2
Expressing Geometric Properties with Equations (G-GPE)		
Use coordinates to prove simple geometric theorems algebraically.		
G.GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Ext. 7.6

Holt Chapters 5 - 8

3rd 9 Weeks

Standard	Standard Description	Holt Lesson
Congruence (G-CO)		
Experiment with transformations in the plane.		
G.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	9-1 - 9-7
G.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	9-5
G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	9-1 - 9-5
G.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	9-1 - 9-6
Understand congruence in terms of rigid motions		
G.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	9-1 - 9-4
G-CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Integrated
Geometric Measurement and Dimension (G-GMD)		
Explain volume formulas and use them to solve problems.		
G.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i>	10-2, 11-3
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	10-3 11-2 - 11-4
Visualize relationships between two-dimensional and three-dimensional objects.		
G.GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	EXT. 9-5 11-1
Seeing Structure in Expressions (A-SSE)		
Interpret the structure of expressions.		
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.*	10-1

	<p>a. Interpret parts of an expression, such as terms, factors, and coefficients.</p> <p>b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.</i></p>	
Expressing Geometric Properties with Equations (G-GPE)		
Use coordinates to prove simple geometric theorems algebraically.		
G.GPE.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula*	10-4 - 10-5
Modeling with Geometry (G-MG)		
Apply geometric concepts in modeling situations		
G.MG.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	11-2
G.MG.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*	11-2
G-MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*	Integrated

Holt Chapters 9 - 11

4th 9 Weeks

Standard	Standard Description	Holt Lesson
Circles (G-C)		
Understand and apply theorems about circles		
G.C.1	Prove that all circles are similar.	
G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. <i>Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.</i>	12-1 - 12-2 12-4 -12-6
G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of a quadrilateral inscribed in a circle.	
Find arc lengths and areas of sectors of circles.		
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	12-3 -
Congruence (G-CO)		
Making geometric constructions.		
G.CO.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). <i>Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</i>	12-1-12-2 12-4
G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	12-4
Expressing Geometric Properties with Equations (G-GPE)		
Translate between the geometric description and the equation for a conic section.		
C.GPE.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	12-7

Holt Chapter 12