



Standards By Design:

Seventh Grade and Eighth Grade for Mathematics



Acknowledgment

The Oregon Department of Education gratefully acknowledges the Indiana Department of Education for allowing the modification of some of their materials for use in this document.

Message to Students

Dear Student,

The world is changing quickly. For you to succeed in school, at work, and in the community, you will need more skills and knowledge than ever before. These days, “ready for college” and “ready for work” essentially mean the same thing: “ready for life.”

Getting in shape academically is one of the most important things you can do to prepare for a successful future. Your future starts with Oregon’s academic standards. This booklet explains what you should know and be able to do in each subject, at your grade level.

Please review this guide with your teachers and share it with your parents and family. To be ready for tomorrow, get in top academic shape today. You can use this guide year round to check your progress.



Message to Parents

Dear Parent,

Education is the building block of every student's future. To ensure all students have the opportunity to succeed, Oregon has adopted world-class academic standards in English/language arts, mathematics, science, social studies, the arts, health education, physical education and second languages. The academic content standards clearly outline what students should know and be able to do in each subject, at each grade level. Oregon's teachers are dedicated to helping all students meet these expectations.

Moreover, these standards are the cornerstone of the state's plan for improving student achievement. They provide a comprehensive blueprint for what we must do to support students every step of the way – from their earliest years through post-high school education. To be competitive in today's economy and to earn enough to support a family, all students need to continue their education beyond high school, whether at a two- or four-year college, in an apprenticeship program, or in the military.

How can you help your student meet these challenges? Learning occurs many places, not only in the classroom. Students spend far more time at home than they do in school. How they spend their time can make a real difference. Nothing will have a bigger impact on your student's success than your involvement in his or her education.

On the next page is a list of 12 things you can do to help ensure your child has the best education possible – from preschool to post-high school opportunities. We hope you will use this guide as a tool to help your child succeed today and in the future.

Sincerely,

A handwritten signature in black ink that reads "Susan Castillo". The signature is written in a cursive, flowing style.

Susan Castillo
Superintendent of Public Instruction

Twelve things parents can do to help students succeed

- 1. Promote education beyond high school.** Make sure your child knows you expect him or her to continue learning after high school – it's never too early to start raising these expectations. To keep our families, communities, and economy strong, all students need to keep learning.
- 2. Build relationships with your child's teachers.** Find out what each teacher expects of your child. Learn how you can help your child prepare to meet these expectations.
- 3. Read to your child.** Reading is the foundation for all learning and is one of the most important contributions you can make to your child's education. Read to your young child, encourage your older child to read to you, or spend time together as a family reading. All this helps your child develop strong reading habits and skills from the beginning and reinforces these habits and skills as your child grows.
- 4. Practice writing at home.** Letters, journal entries, e-mail messages, and grocery lists are all writing opportunities. Show that writing is an effective form of communication and that you write for a variety of purposes.
- 5. Make math part of everyday life.** Paying bills, cooking, gardening, and even playing games are all good ways to help your child understand and use mathematics skills. Show that there may be many ways to get to the right answer and encourage your child to explain his or her method.
- 6. Ask your child to explain his or her thinking.** Ask lots of "why" questions. Children should be able to explain their reasoning, how they came up with their answer, and why they chose one answer over another.
- 7. Expect that homework will be done.** Keep track of your child's homework assignments and regularly look at his or her completed work. Some teachers give parents a number to call for a recorded message of that day's homework; others put the assignments on the Internet. If your school doesn't offer these features, talk to the teacher about how you can get this important information. Even if there aren't specific assignments, stay informed about what your child is working on so that you can help at home.
- 8. Use the community as a classroom.** Feed your child's curiosity about the world 365 days a year. Use the library to learn more about the history of your town. A visit to a farmer's market can help your child picture our state's rich agricultural tradition. Take your young child to zoos and parks and your older child to museums and workplaces to show how learning connects to the real world.
- 9. Encourage group study.** Open your home to your child's friends for informal study sessions. Promote outside formal study groups through church, school organizations, or other groups. Study groups will be especially important as your child becomes older and more independent. The study habits your child learns now will carry over into college and beyond.
- 10. Spend time at school.** The best way to know what goes on in your child's school is to spend time there. If you're a working parent, this isn't easy, and you may not be able to do it very often. Even so, "once in awhile" is better than "never."
- 11. Start a college savings plan as soon as possible.** Investigate Oregon's College Savings Plan and other investment vehicles and contribute as much as you can.

12. Promote high standards for all. To ensure the academic success of our children, everyone must work toward the same goal. Discuss academic expectations with parents and other people in your community. Use your school and employee newsletters, athletic associations, booster clubs, a PTA or PTO meeting, or just a casual conversation to explain why academic standards are important and what they mean to you and your family. Share your tips for helping your own son or daughter succeed in school and encourage others to share their suggestions as well.

Remember: You are the most important influence on your child. Oregon's academic standards give you important tools to ensure your child gets the best education possible and is well prepared for the future.



Measuring Student Learning

Children develop at different rates. Some take longer and need more help to learn certain skills.

Assessments at the state level provide a measure of school accountability – assisting schools in their efforts to align curriculum and instruction with the state’s academic standards and reporting progress to parents and the public.

Assessments at the classroom level help teachers and parents understand how students are progressing and assist in identifying academic areas where students may need additional attention.

The Oregon Assessment of Knowledge and Skills (OAKS) consists of three broad areas:

1. Multiple Choice Tests present the student with a series of questions or problems. The student responds on an answer sheet and responses are scored by machine. These tests are required in grades 3-8 and high school/CIM for English Language Arts and mathematics and for grades 5, 8, and high school/CIM in science. An optional multiple choice test is also available for Social Sciences in grades 5, 8 and high school/CIM.

2. State Writing Assessments require students to give extended written responses to open-ended topics provided by the state in a supervised testing situation. Trained raters at state-run scoring sites judge student work using the state scoring guide. These performance assessments are required for grades 4, 7 and high school/CIM.

3. Classroom Work Samples are a series of formal classroom assessments available to Oregon teachers in grades 3 to high school/CIM that allow students to respond to locally provided topics or complex problems. Student work is rated by teachers in their own schools or districts using state scoring guides. Work samples are collected in Writing, Speaking, Mathematics Problem Solving, Scientific Inquiry and Social Science Analysis.

Who is required to take state assessments?

Third grade is the first time that many students will be taking a statewide assessment. Third grade students take tests in Reading/Literature and Mathematics that are delivered through TESA (Technology Enhanced State Assessment) a computerized adaptive testing system.

The table below lists the statewide assessment schedule, by grade.

Required Statewide Testing

	3	4	5	6	7	8	10/CIM
Reading/Literature	X	X	X	X	X	X	X
Writing		X			X		X
Mathematics	X	X	X	X	X	X	X
Science			X			X	X
Social Sciences (optional)			X			X	X

How is student performance measured on these assessments?

Content Standards describe what students in Oregon should learn. How well they learn the content is determined by Achievement Standards. These Achievement Standards, or “cut scores”, identify the score needed to demonstrate solid understanding of the Content Standards. The following table shows the current Achievement Standards in Reading/Literature and Mathematics for grades 3-8 and 10/CIM.

Grade	<u>Reading/Literature</u>		<u>Mathematics</u>		<u>Science</u>	
	Meet	Exceed	Meet	Exceed	Meet	Exceed
3	204	218	205	217	----	----
4	211	223	212	225	----	----
5	218	230	218	229	225	238
6	222	234	221	232	----	----
7	227	239	226	238	----	----
8	231	241	230	241	234	246
10/CIM	236	248	236	246	239	249

The state writing assessment and classroom work samples are scored using state scoring guides. As an assessment tool, scoring guides provide specific criteria to describe a range of possible student responses and a consistent set of guidelines to rate student work. For the state writing assessment, student work is scored by two different raters and their scores combined to create a “composite score.”

Since the scoring guide serves as the primary assessment tool to determine whether students have met the standards through a collection of work samples, teachers are asked to align their classroom assessments carefully to the criteria described on the scoring guide. **Composite scores are not required for classroom work samples.**

For more information on assessments, please visit <http://www.ode.state.or.us/search/results/?id=169>

Mathematics

Seventh Grade

Seventh grade mathematics students compute with negative numbers and exponents. They also start to work with increasingly abstract concepts in algebra and geometry. They model and represent direct variation in tables and graphs, and begin to solve linear equations and inequalities. In geometry, they study lines and angles and apply congruence and similarity to solve problems.

Eighth Grade

Eighth grade mathematics students become fluent with rational number arithmetic, including finding square and cube roots. They continue their study of linear relationships by computing slopes, intercepts and equations for lines. They also model situations with linear functions, and apply this to the analysis of bivariate data. In geometry they explore the Pythagorean theorem, and develop sophisticated techniques for determining congruence, similarity and missing sides and angles of triangles.

Calculations and Estimations

CCG: Numbers :
Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

Seventh Grade

MA.07.CE.01

Model, and compare rational numbers with an emphasis on integers.

MA.07.CE.02

Express numbers greater than one in scientific and standard notation.

MA.07.CE.03

Use rates, ratios, and percents to solve problems.

MA.07.CE.04

Locate rational numbers (with an emphasis on integers) on a number line.

MA.07.CE.05

Interpret, model, and use percents greater than 100 and less than 1 to solve problems. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.CE.06

Determine the prime factorization of a number less than 1000 and express the prime factorization using exponents when applicable.

MA.07.CE.07

Use factors (including greatest common factor of two or more numbers), multiples (including least common multiple of two or more numbers), prime factorization, and relatively prime numbers to solve problems.

Eighth Grade

MA.08.CE.01

Compare numbers greater than one expressed in scientific notation.

MA.08.CE.02

Apply proportions to solve problems.

MA.08.CE.03

Locate rational numbers on a number line.

Material in *Italics* is eligible for statewide assessment. **Bold** text is for supporting classroom instruction and assessment.

MA.08.CE.04

Apply equivalent forms of rational numbers (including percents) to solve problems.

CCG: Computation and Estimation :
Compute fluently and make reasonable estimates.

Seventh Grade

MA.07.CE.08

Develop and analyze algorithms and compute with integers. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.CE.09

Multiply and divide fractions and mixed numbers.

MA.07.CE.10

Compute with squares and cubes, with an emphasis on finding area, surface area, and volume.

MA.07.CE.11

Solve problems involving percentages (including percent increase and decrease, interest rates, tax, discount, tips, and part-whole relationships).

MA.07.CE.12

Apply order of operations including exponents, to simplify calculations and evaluate expressions.

MA.07.CE.13

Develop and use strategies to estimate the results of integer computations and judge the reasonableness of results. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.CE.14

Use referent numbers in estimating answers to calculations with fractions and percents (e.g., $12 \times \frac{3}{8} < 6$, since $\frac{3}{8} < \frac{1}{2}$ and $\frac{1}{2}$ of 12 is 6).

Eighth Grade

MA.08.CE.05

Develop and analyze algorithms and compute with rational numbers. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.CE.06

Use order of operation rules, including exponents.

MA.08.CE.07

Develop and use strategies to estimate the results of rational number computations and judge the reasonableness of results. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.CE.08

Estimate square roots of whole numbers less than 100 and cube roots of whole numbers less than 1000 between two whole numbers.

CCG: Operations and Properties :
Understand meanings of operations and how they relate to one another.

Seventh Grade

MA.07.CE.15

Demonstrate the meaning of whole number exponents as repeated multiplication.

MA.07.CE.16

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Use inverse operations (addition and subtraction, multiplication and division) to solve problems and check solutions involving calculations with integers. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.CE.17

Apply the associative, commutative, and distributive properties to simplify computations with rational numbers (with an emphasis on integers).

MA.07.CE.18

Describe the effects of multiplying or dividing a number by a number between 0 and 1.

MA.07.CE.19

Apply the property of additive inverses to determine solutions of equations.

Eighth Grade

MA.08.CE.09

Demonstrate the meaning of square roots as lengths of the sides of squares and cube roots as lengths of edges of cubes.

MA.08.CE.10

Use the inverse operations of squares and square roots to solve problems and check solutions. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.CE.11

Apply the associative, commutative, and distributive properties to simplify computations with rational numbers.

MA.08.CE.12

Apply the property of multiplicative inverses to determine solutions of linear equations and inequalities.

Statistics and Probability

CCG: Statistics :

Select and use appropriate statistical methods to analyze data.

Seventh Grade

MA.07.SP.01

Find, use, and interpret measures of center and spread, including mean and interquartile range for given or derived data. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

Eighth Grade

MA.08.SP.01

Choose appropriate measures of central tendencies to describe given or derived data. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.SP.02

Estimate a line of best fit on a scatter plot and informally explain the meaning of the line and use the line to make predictions. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

CCG: Probability :

Understand and apply basic concepts of probability.

Seventh Grade

MA.07.SP.02

Material in *Italics* is eligible for statewide assessment. **Bold** text is for supporting classroom instruction and assessment.

Compute experimental probabilities from a set of data and theoretical probabilities for single and simple compound events, using various methods (e.g., organized lists, tree diagrams, area models).

MA.07.SP.03

Determine probabilities of simple independent and dependent events.

MA.07.SP.04

Compare experimental probability of an event with the theoretical probability and explain any difference.

MA.07.SP.05

Determine all possible outcomes of a particular event or all possible arrangements of objects in a given set by applying various methods including tree diagrams and systematic lists.

Eighth Grade

MA.08.SP.03

Understand and use appropriate terminology to describe complementary and mutually exclusive events and determine their probabilities.

MA.08.SP.04

Apply theoretical probability to determine if an event or game is fair or unfair and pose and evaluate modifications to change the fairness. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

CCG: Collect and Display Data :

Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Seventh Grade

MA.07.SP.06

Formulate questions and design experiments or surveys to collect relevant data.

MA.07.SP.07

Identify situations in which it makes sense to sample and identify methods for selecting a sample (e.g., convenience sampling, responses to survey, random sampling) that are representative of a population. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.SP.08

Distinguish between random and biased samples and identify possible sources of bias in sampling.

MA.07.SP.09

Represent and interpret data using frequency distribution tables, box-and whisker-plots, stem-and-leaf plots, and single- and multiple- line graphs. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.SP.10

Determine the graphical representation of a set of data that best shows key characteristics of the data.

MA.07.SP.11

Recognize distortions of graphic displays of sets of data and evaluate appropriateness of alternative displays.

Eighth Grade

MA.08.SP.05

Collect and display data as lists, tables, and plots using appropriate technology (e.g., graphing calculators, computer software).

MA.08.SP.06

Material in *Italics* is eligible for statewide assessment. **Bold** text is for supporting classroom instruction and assessment.

Represent bivariate data in a scatter plot and identify relationships in the plot. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

CCG: Data Analysis and Predictions :
Develop and evaluate inferences and predictions that are based on data.

Seventh Grade

MA.07.SP.12

Analyze data from frequency distribution tables, box-and whisker-plots, stem-and-leaf plots using measures of center and spread and draw conclusions.

MA.07.SP.13

Predict and evaluate how adding data to a set of data affect measures of center.

MA.07.SP.14

Use observations about differences between two or more samples to make conjectures about the populations from which the samples were taken.

Eighth Grade

MA.08.SP.07

Estimate or predict the occurrence of future events using data.

Algebraic Relationships

CCG: Patterns and Functions :
Understand patterns, relations, and functions.

Seventh Grade

MA.07.AR.01

Represent, analyze and determine rules for finding patterns involving integers with tables, graphs, words, and when possible, symbolic rules. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

Eighth Grade

MA.08.AR.01

Represent, analyze and determine rules for finding patterns relating to linear functions, nonlinear functions and arithmetic sequences with tables, graphs, and symbolic rules. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.AR.02

Identify functions as linear or nonlinear from tables, graphs, or equations and contrast their properties. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.AR.03

Interpret the meaning of the rate of change and y-intercept of a linear relationship in a problem setting.

CCG: Algebraic Relationships :
Represent and analyze mathematical situations and structures using algebraic symbols.

Seventh Grade

MA.07.AR.02

Algebraically represent situations and solve problems involving linear equations and inequalities. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

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MA.07.AR.03

Evaluate algebraic expressions and formulas by substituting integers.

MA.07.AR.04

Interpret algebraic relationships represented by two-column tables, number lines and coordinate graphs (four quadrants).

MA.07.AR.05

Graph linear equations on a coordinate grid by making a table using integer coordinates.

Eighth Grade

MA.08.AR.04

Represent and solve equations of the form $ax+b=c$ or $k(ax+ b) = c$.

MA.08.AR.05

Approximate solutions of systems of linear equations from a graph.

MA.08.AR.06

Recognize and generate equivalent symbolic forms for algebraic expressions with an emphasis on linear relationships. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.AR.07

Evaluate algebraic expressions and formulas, including expressions involving exponents and parentheses, by substituting rational numbers.

MA.08.AR.08

Translate between and interpret linear relationships represented by words, symbols, tables, and graphs.

MA.08.AR.09

Determine the slope and x- and y-intercepts given the graph of a linear equation.

MA.08.AR.10

Graph a linear equation given the slope and an initial value (y-intercept).

MA.08.AR.11

Recognize and graph the solutions of linear inequalities on a number line. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.AR.12

Graph simple quadratic equations ($y=kx^2$ or $y=kx^2+b$) by generating a table of values for a given equation.

MA.08.AR.13

Identify and describe the effects of changing the slope or y-intercept on the graph of a linear relationship of the form $y=kx$ or $y=kx+b$. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

CCG: Modeling :

Use mathematical models to represent and understand quantitative relationships.

Seventh Grade

MA.07.AR.06

Model situations, make predictions and inferences, and solve problems using linear equations.

MA.07.AR.07

Recognize and represent direct variation using tables, graphs, and equations.

MA.07.AR.08

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Identify and sketch a graph that models a given situation. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

Eighth Grade

MA.08.AR.14

Model situations, make predictions and inferences, and solve problems using linear equations and inequalities.

MA.08.AR.15

Recognize and represent direct variation using tables, graphs, and equations. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.AR.16

Determine when data represented in a table or graph represents a linear or nonlinear relationship.

CCG: Change :
Analyze change in various contexts.

Seventh Grade

MA.07.AR.09

Identify and describe how a change in one variable relates to a change in a second variable. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

Eighth Grade

MA.08.AR.17

Understand that the rate of change in a linear function is constant and is equal to the slope of its graphed line.

MA.08.AR.18

Determine the slope of a line given two points on the line.

MA.08.AR.19

Analyze the nature of change in quantities in linear relationships represented by graphs, tables, or formulas.

Measurement

CCG: Units and Tools :
Understand measurable attributes of objects and the units, systems and processes of measurement.

Seventh Grade

MA.07.ME.01

Select the most appropriate unit to measure surface area and volume.

MA.07.ME.02

Convert from a measurement expressed in one unit within a system to another using a different unit within the same system to measure surface and volume.

Eighth Grade

MA.08.ME.01

Determine an appropriate scale for representing an object in a scale drawing.

MA.08.ME.02

Carry out unit conversions between the metric and U.S. customary systems of measurement given conversion ratios (e.g., 1 in = 2.54 cm).

MA.08.ME.03

Material in *Italics* is eligible for statewide assessment. **Bold** text is for supporting classroom instruction and assessment.

Convert between units for large and small numbers in the metric system (e.g., mega- to kilo-).

CCG: Direct & Indirect Measurement :
Apply appropriate techniques, tools, and formulas to determine measurements.

Seventh Grade

MA.07.ME.03

Develop and use strategies and formulas for calculating surface area and volume of right prisms, pyramids, and cylinders. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.ME.04

Develop strategies for determining approximate volumes of irregular shapes.

MA.07.ME.05

Determine surface area and volume of three-dimensional block constructions, given a two-dimensional representation.

MA.07.ME.06

Compare and contrast the formulas for surface area and volume of prisms and pyramids.

MA.07.ME.07

Create examples of rectangular prisms having the same volume, but different surface areas.

MA.07.ME.08

Describe what happens to the surface area and volume of a solid when its shape is changed.

MA.07.ME.09

Use referents to make estimates of surface area and volume and evaluate the reasonableness of the estimate. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

Eighth Grade

MA.08.ME.04

Calculate and analyze changes in area and volume in relation to changes in linear measures of figures.

MA.08.ME.05

Analyze how changes in surface area and volume of a solid affect the dimensions of the solid.

MA.08.ME.06

Solve problems involving rates and derived measurements for such attributes as speed, velocity, and density.

MA.08.ME.07

Determine actual distances from scale drawings, blueprints, and maps and solve problems involving scale factors.

Geometry

CCG: Properties and Relationships :
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships

Seventh Grade

MA.07.GM.01

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Determine defining properties that characterize classes of quadrilaterals including side and angle measurements and their component parts (e.g., altitudes, medians, diagonals, bisectors). (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.07.GM.02

Identify parallel and intersecting lines and pairs of angles formed (right, vertical, adjacent) by parallel lines cut by a transversal and determine their measure.

MA.07.GM.03

Use proportional reasoning, drawings, models or technology to demonstrate congruence and similarity of polygons with an emphasis on quadrilaterals.

MA.07.GM.04

Determine the measures of missing sides and angles in congruent quadrilaterals and their component parts.

Eighth Grade

MA.08.GM.01

Determine defining properties that characterize classes of triangles including side and angle measurements and their component parts (e.g., angle bisectors, altitudes, medians). (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.GM.02

Use proportional reasoning, drawings, models or technology to demonstrate similarity and congruence of polygons with an emphasis on triangles.

MA.08.GM.03

Determine the measures of corresponding sides and angles of congruent and similar triangles and their component parts.

MA.08.GM.04

Use similar triangles to measure distances indirectly (e.g., flagpole and shadow).

MA.08.GM.05

Use the Pythagorean theorem to determine if triangles are right triangles and determine the lengths of missing sides in right triangles.

MA.08.GM.06

Investigate triangles and their components parts and draw conclusion about their properties.

MA.08.GM.07

Create and critique inductive and deductive arguments to verify the pythagorean theorem.

MA.08.GM.08

Justify conclusions that two triangles are or are not congruent and are or are not similar.

<p>CCG: Modeling : Use visualization, spatial reasoning, and geometric modeling to solve problems.</p>

Seventh Grade

MA.07.GM.05

Model, sketch, and label prisms, pyramids, cylinders, and quadrilaterals with specified side lengths or angle measures.

MA.07.GM.06

Use two-dimensional representation of three-dimensional objects, including nets, to solve problems involving surface area and volume.

Eighth Grade

MA.08.GM.09

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Draw to scale two-dimensional representations of rectangular prisms and triangles with specified side lengths or angle measures.

MA.08.GM.10

Construct and read drawings and models made to scale. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

CCG: Coordinate Geometry :
Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Seventh Grade

MA.07.GM.07

Identify properties of quadrilaterals and their component parts on a coordinate graph.

Eighth Grade

MA.08.GM.11

On a coordinate plane, determine the relative placement (e.g., intersecting, parallel, perpendicular) of two lines.

MA.08.GM.12

Determine the distance between two points on a coordinate graph using right triangles and the Pythagorean theorem.

CCG: Transformations and Symmetry :
Apply transformations and use symmetry to analyze mathematical situations.

Seventh Grade

MA.07.GM.08

Determine the image of a point (with integer coordinates) on a graph under translations and reflections.

Eighth Grade

MA.08.GM.13

Classify transformations based on whether they produce congruent or similar non-congruent figures (e.g., compare pairs of shapes where the image has been transformed, identify the type of translation and use angles, diagonals and lines of symmetry to determine congruence).

MA.08.GM.14

Identify and sketch the figure that is the result of a given rotation, translation, reflection or dilation or a combination of two transformations. (Some of the skills and concepts in the preceding standard are assessed at the classroom level and others at the state level. See the Oregon Standards Newspaper for specifics.)

MA.08.GM.15

Know properties of dilated images.

MA.08.GM.16

Determine the effects of a transformation on linear and area measurements of the original figure.

Mathematical Problem Solving

CCG: Conceptual Understanding :
Select, apply, and translate among mathematical representations to solve problems.

Seventh Grade

MA.07.PS.01

Material in *Italics* is eligible for statewide assessment. **Bold** text is for supporting classroom instruction and assessment.

Interpret the concepts of a problem-solving task and translate them into mathematics.
Eighth Grade
MA.08.PS.01

Interpret the concepts of a problem-solving task and translate them into mathematics.

CCG: Processes and Strategies :
Apply and adapt a variety of appropriate strategies to solve problems.

Seventh Grade
MA.07.PS.02

Choose strategies that can work and then carry out the strategies chosen.

Eighth Grade
MA.08.PS.02

Choose strategies that can work and then carry out the strategies chosen.

CCG: Verification :
Monitor and reflect on the process of mathematical problem solving.

Seventh Grade
MA.07.PS.03

Produce identifiable evidence of a second look at the concepts/strategies/calculations to defend a solution.

Eighth Grade
MA.08.PS.03

Produce identifiable evidence of a second look at the concepts/strategies/calculations to defend a solution.

CCG: Communication :
Communicate mathematical thinking coherently and clearly. Use the language of mathematics to express mathematical ideas precisely.

Seventh Grade
MA.07.PS.04

Use pictures, symbols, and/or vocabulary to convey the path to the identified solution.

Eighth Grade
MA.08.PS.04

Use pictures, symbols, and/or vocabulary to convey the path to the identified solution.

CCG: Accuracy :
Accurately solve problems that arise in mathematics and other contexts.

Seventh Grade
MA.07.PS.05

Accurately solve problems using mathematics.

Eighth Grade
MA.08.PS.05

Accurately solve problems using mathematics.