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PARENTS' GUIDE TO Student Success

8TH GRADE

This guide provides an overview of what your child will learn by the end of 8th grade in mathematics and English language arts/literacy. It focuses on the key skills your child will learn in these subjects, which will build a strong foundation for success in the other subjects he or she studies throughout the school year. This guide is based on the new Common Core State Standards, which have been adopted by more than 40 states. These K–12 standards are informed by the highest state standards from across the country. If your child is meeting the expectations outlined in these standards, he or she will be well prepared for high school.

WHY ARE ACADEMIC STANDARDS IMPORTANT?

Academic standards are important because they help ensure that all students, no matter where they live, are prepared for success in college and the workforce. They help set clear and consistent expectations for students, parents, and teachers; build your child's knowledge and skills; and help set high goals for all students.

Of course, high standards are not the only thing needed for our children's success. But standards provide an important first step — a clear roadmap for learning for teachers, parents, and students. Having clearly defined goals helps families and teachers work together to ensure that students succeed. Standards help parents and teachers know when students need extra assistance or when they need to be challenged even more. They also will help your child develop critical thinking skills that will prepare him or her for college and career.

HOW CAN I HELP MY CHILD?

You should use this guide to help build a relationship with your child's teacher. You can do this by talking to his or her teacher regularly about how your child is doing — beyond parent-teacher conferences.

At home, you can play an important role in setting high expectations and supporting your child in meeting them. If your child needs a little extra help or wants to learn more about a subject, work with his or her teacher to identify opportunities for tutoring, to get involved in clubs after school, or to find other resources.

THIS GUIDE INCLUDES

- **An overview of some of the key things your child will learn in English/literacy and math in 8th grade**
- **Ideas for activities to help your child learn at home**
- **Topics of discussion for talking to your child's teacher about his or her academic progress**

English Language Arts & Literacy

To prepare for bigger challenges in high school, 8th grade students must grapple with major works of fiction and nonfiction that extend across cultures and centuries. As they work diligently to understand precisely what an author or speaker is saying, students also must learn to question an author's or speaker's assumptions and assess the accuracy of his or her claims. They also must be able to report findings from their own research and analysis of sources in a clear manner.

A Sample of What Your Child Will Be Working on in 8th Grade

- Citing the evidence that most strongly supports an analysis of what is explicitly stated and/or implied from a book, article, poem, or play
- Analyzing where materials on the same topic disagree on matters of fact, interpretation, or point of view
- Learning how authors support their ideas through word choice, sentence and paragraph structure, and other methods
- Building writing around strong central ideas or points of view; supporting the ideas with sound reasoning and evidence, precise word choices, smooth transitions, and different sentence structures
- Planning and conducting research projects that include several steps and use many credible and documented print and digital sources
- Analyzing the purpose of information presented in diverse media (e.g., print, TV, web) and evaluating its social, political, or commercial motives
- Presenting findings and claims to others, emphasizing key points with relevant evidence and sound reasoning, adapting speech to the audience and the formality of the setting, and responding to questions and comments with relevant observations and ideas
- Using strong, active verbs to create a clear picture for the reader (e.g., *walk, skip, meander, lurch, limp*)
- Interpreting figures of speech (e.g., irony, puns) and developing a large vocabulary of general academic words and phrases

Talking to Your Child's Teacher

Keeping the conversation focused.

When you talk to the teacher, do not worry about covering everything. Instead, keep the conversation focused on the most important topics. In 8th grade, these include:

- Reading closely and drawing evidence from grade-level fiction and nonfiction works that most strongly supports an analysis of the material
- Developing a rich vocabulary of complex and sophisticated words and using them to speak and write more precisely and coherently

Ask to see a sample of your child's work. Ask the teacher questions such as: Is this piece of work satisfactory? How could it be better? Is my child on track? How can I help my child improve or excel in this area? If my child needs extra support or wants to learn more about a subject, are there resources to help his or her learning outside the classroom?

Mathematics

In 8th grade, your child will learn a number of skills and ideas that he or she must know and understand to be ready for college and career. Your child will continue to learn how to write and reason with algebraic expressions. Your child also will make a thorough study of linear equations with one and two variables. Building on previous work with relationships between quantities, your child will be introduced to the idea of a mathematical function. And your child will prepare for high school geometry by understanding congruence (same shape and size) and similarity of geometric figures.

A Sample of What Your Child Will Be Working on in 8th Grade

- Understanding slope, and relating linear equations in two variables to lines in the coordinate plane
- Solving linear equations (e.g., $-x + 5(x + \frac{1}{3}) = 2x - 8$); solving pairs of linear equations (e.g., $x + 6y = -1$ and $2x - 2y = 12$); and writing equations to solve related word problems
- Understanding functions as rules that assign a unique output number to each input number; using linear functions to model relationships
- Analyzing statistical relationships by using a best-fit line (a straight line that models an association between two quantities)
- Working with positive and negative exponents, square root and cube root symbols, and scientific notation (e.g., evaluating $\sqrt{36 + 64}$; estimating world population as 7×10^9)
- Understanding congruence and similarity using physical models, transparencies, or geometry software (e.g., given two congruent figures, show how to obtain one from the other by a sequence of rotations, translations, and/or reflections)
- Understanding and applying the Pythagorean Theorem ($a^2 + b^2 = c^2$) to solve problems

Talking to Your Child's Teacher

Keeping the conversation focused.

When you talk to the teacher, do not worry about covering everything. Instead, keep the conversation focused on the most important topics. In 8th grade, these include:

- Linear equations with one and two variables
- Functions
- Congruence and similarity of geometric figures

Ask to see a sample of your child's work. Ask the teacher questions such as: Is this piece of work satisfactory? How could it be better? Is my child on track? How can I help my child improve or excel in this area? If my child needs extra support or wants to learn more about a subject, are there resources to help his or her learning outside the classroom?

Help Your Child Learn at Home

Learning does not end in the classroom. Children need help and support at home to succeed in their studies. Try to create a quiet place for your child to study, and carve out time *every day* when your child can concentrate on reading, writing, and math uninterrupted by friends, brothers or sisters, or other distractions.

You should also try and sit down with your child at least once a week for 15 to 30 minutes while he or she works on homework. This will keep you informed about what your child is working on, and it will help you be the first to know if your child needs help with specific topics. By taking these small steps, you will be helping your child become successful both in and outside the classroom.

Additionally, here are some activities you can do with your child to support learning at home:

English Language Arts & Literacy

- Make time in everyone's busy schedule for family discussions about things going on around the world. Weekends can be a chance for everyone to catch up.
- Visit the campus of a local college with your teen. Begin talking about college early. What does he or she expect from college? What high school courses will your child need to pass to prepare for college?
- Make sure to keep books and magazines around the house that your child will enjoy reading and learning from. For a list of book recommendations, visit www.corestandards.org/assets/Appendix_B.pdf.

Mathematics

Ask your child to share with you any work he or she is doing in math class that strikes him or her as interesting. Some possibilities might include:

- Solving interesting problems involving cylinders and spheres, such as figuring out how much water fits inside a garden hose, or how many earths would fit inside the sun.
- Analyzing data with a scatterplot, for example to decide whether exercise and obesity are related.
- Solving "just for fun" algebra puzzles, such as: "I'm thinking of two numbers. The difference between the numbers is 40. Twice the smaller number is 20 more than the larger number. What are my numbers?"

For more information, the full standards are available at www.corestandards.org.

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SUPPORTING YOUR CHILD IN GRADE EIGHT

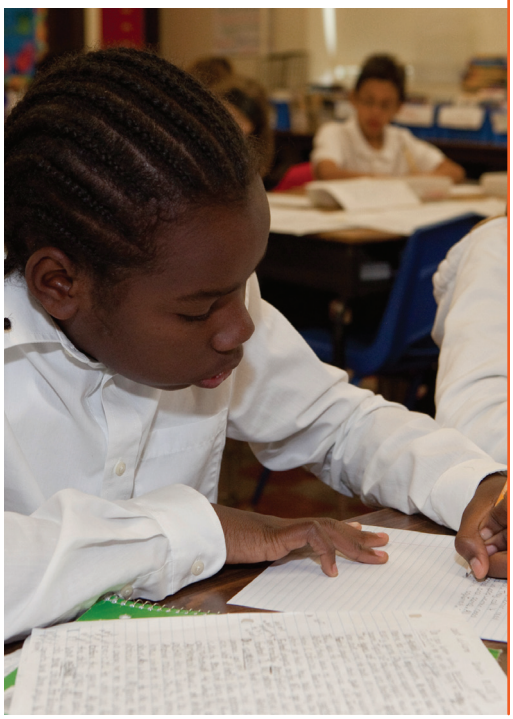
ENGLISH LANGUAGE ARTS

America's schools are working to provide higher quality instruction than ever before.

The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

In English language arts and literacy, this means three major changes. Students will continue reading and writing. But in addition to stories and literature, they will read more texts that provide facts and background knowledge in areas including science and social studies. They will read more challenging texts, and be asked more questions that will require them to refer back to what they have read. There will also be an increased emphasis on building a strong vocabulary so that students can read and understand challenging material.

What your child will be learning in grade eight English language arts and literacy



In grade eight, students will read major works of fiction and nonfiction from all over the world and from different time periods. They will continue to learn how to understand what they read and evaluate an author's assumptions and claims. They will also conduct research that will require the analysis of resources and accurate interpretation of literary and informational text. Activities in these areas will include:

- Identifying what a reading selection explicitly says and drawing inferences based on evidence from the text
- Analyzing the impact of specific word choices on meaning and tone, including analogies or allusions to other texts
- Evaluating the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient
- Connecting information and ideas efficiently and effectively in writing
- Analyzing the purpose of information presented in diverse media formats, such as video clips or interactive maps
- Participating in class discussions on various topics, texts, and issues by expressing ideas and building on the ideas of others
- Developing a large vocabulary of multi-use academic words and phrases
- Interpreting figures of speech, such as puns or verbal irony, in context

"Verbal irony" is when words are used to say something other than their usual meaning. For example, calling something "as clear as mud" in order to say something isn't clear at all.

Partnering with your child's teacher

Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you. Ask the teacher questions like:

- Is my child producing quality work?
- What are my child's strengths and weaknesses?
- What additional support or resources can I provide my child at home?

In grade eight, students will read a wide range of literature, including stories, plays, and poems. Additionally, they will read to learn information about history, the world, science, and other areas. Here are just a few examples of how your child will develop important reading skills across grade levels.

READING LITERATURE

Grade Seven Reading	Grade Eight Reading	Grade Nine Reading
• Students determine a theme or central idea of a text and analyze its development over the course of the text. Students also provide an objective summary of the text. • Students analyze how an author develops and contrasts the points of view of different characters or narrators in a text.	• Students determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot. Students also provide an objective summary of the text. • Students analyze how differences in the points of view of the characters and the audience or reader create such effects as suspense or humor.	• Students determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details. Students provide an objective summary of the text. • Students analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States.

READING FOR INFORMATION

Grade Seven Reading	Grade Eight Reading	Grade Nine Reading
• Students cite several pieces of evidence from the text to support analysis of what the text says explicitly as well as inferences drawn from the text. • Students compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (such as how the delivery of a speech affects the impact of the words).	• Students cite evidence from the text that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text. • Students evaluate the advantages and disadvantages of using different mediums (such as print or digital text, video, or multimedia) to present a particular topic or idea.	• Students cite strong and thorough evidence from the text to support an analysis of what the text says explicitly as well as inferences drawn from the text. • Students analyze various accounts of a subject told in different mediums (such as a person's life story recounted in print, video, and multimedia), determining which details are emphasized in each account.

As they progress through grade levels, students will be asked more questions that require them to cite details or information from increasingly challenging texts. This will encourage them to become observant and analytical readers.

Writing tasks in grade eight may include stories, essays, reports, and persuasive papers. Here are just a few examples of how your child will develop important writing skills across grade levels.

Grade Seven Writing	Grade Eight Writing	Grade Nine Writing
• Students introduce a topic clearly, previewing what is to follow, and develop the topic with relevant facts, definitions, concrete details, quotations, or other information. • Students provide a concluding statement or section that follows from and supports the information or explanation presented. • Students organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect. • Students use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. • Students use precise language and subject-specific vocabulary to inform about or explain the topic.	• Students introduce a topic clearly, previewing what is to follow, and develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information. • Students provide a concluding statement or section that follows from and supports the information or explanation presented. • Students organize ideas, concepts, and information into broader categories. • Students use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. • Students use precise language and subject-specific vocabulary to inform or explain the topic.	• Students introduce a topic and develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. • Students provide a concluding statement or section that follows from and supports the information or explanation presented (such as articulating implications or the significance of the topic). • Students organize complex ideas, concepts, and information to make important connections and distinctions. • Students use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. • Students use precise language and subject-specific vocabulary appropriate for the complexity of the topic.

Some writing guidelines may seem similar from year to year. However, with practice at each grade level, students continue to learn and apply the rules of standard written English and to strengthen and expand their vocabulary, use of language, and sophistication in the development and organization of ideas.

Helping your child learn outside of school

1. Provide time and space for your child to read independently. This time should be free from distractions such as television.
2. Ask your child what topics, events, or activities he or she likes. Then subscribe to magazines or look for books or other materials about those topics that would motivate your child to read.
3. It is also helpful when your child sees other people reading at home. You could share what you have read.
4. Make time for conversation at home. Discuss current events, shared interests, and future aspirations for education and career.
5. Visit museums, zoos, theaters, historical sites, aquariums, and other educational places to help increase your child's exposure to new knowledge and vocabulary.
6. Use technology to help build your child's interest in reading. There are several websites where students can read books or articles online. The computer will help with words the student cannot read independently. Libraries also have computers students can use to access those sites. Feel free to ask a librarian or teacher for suggestions.

Additional Resources

For more information on the Common Core State Standards for English language arts and literacy, go to http://www.corestandards.org/about-the-standards/key-points-in-english-language-arts or http://www.commoncoreworks.org.

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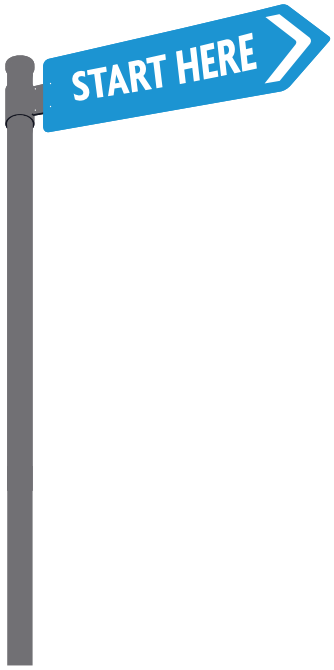
SUPPORTING YOUR CHILD IN GRADE EIGHT

MATHEMATICS



America's schools are working to provide higher quality instruction than ever before.

The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

In mathematics, this means three major changes. Teachers will concentrate on teaching a more focused set of major math concepts and skills. This will allow students time to master important ideas and skills in a more organized way throughout the year and from one grade to the next. It will also call for teachers to use rich and challenging math content and to engage students in solving real-world problems in order to inspire greater interest in mathematics.

What your child will be learning in grade eight mathematics

In grade eight, students take their understanding of unit rates and proportional relationships to a new level, connecting these concepts to points on a line and ultimately using them to solve linear equations that require them to apply algebraic reasoning as well as knowledge of the properties of operations. Students will also expand their understanding of numbers beyond rational numbers to include numbers that are irrational—meaning that they cannot be written as a simple fraction, such as the square root of 2 or $\sqrt{2}$. Activities in these areas will include:

- Understanding that every *rational* number (such as ½, 0.3, 2, or -2) can be written as a decimal, but that the decimal form of an *irrational* number (such as $\sqrt{2}$) is both non-repeating and infinite
- Applying the properties of exponents to generate equivalent numerical expressions
- Determining the value of square roots of small perfect squares (such as $\sqrt{49}= 7$) and cube roots of small perfect cubes (such as $\sqrt[3]{64}=4$)
- Graphing proportional relationships and interpreting the unit rate as the *slope* (how steep or flat a line is)
- Solving and graphing one- and two-variable linear equations
- Understanding that a *function* is a rule that assigns to each value of x exactly one value of y, such as y=2x, a rule that would yield such ordered pairs as (-2,-4), (3,6), and (4,8)
- Comparing the properties of two functions represented in different ways (in a table, graph, equation, or description)
- Determining *congruence* (when shapes are of equal size and shape) and *similarity* (same shape but different sizes)
- Learning and applying the Pythagorean Theorem (an equation relating the lengths of the sides of a right triangle: $a^2 + b^2 = c^2$)
- Solving problems involving the volume of cylinders, cones, and spheres

A linear equation is an equation such as y = mx + b that makes a straight line when it is graphed. Students learn that the values of **(x,y)** *on the graph are the solutions of the equation, and* **m** *is the slope of the line.*

Partnering with your child's teacher

Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you. Ask the teacher questions like:

- Where is my child excelling? How can I support this success?
- What do you think is giving my child the most trouble? How can I help my child improve in this area?
- What can I do to help my child with upcoming work?

Here are just a few examples of how students will learn about and work with expressions and equations in grade eight.

Grade Seven Mathematics	Grade Eight Mathematics	High School Mathematics
• Re-write an expression in different forms to show how quantities are related • Use variables to represent quantities and construct simple equations and inequalities to solve problems • Solve multi-step word problems involving positive and negative numbers • Understand that solving an inequality or an equation such as ¼ (x+5) = 21 means answering the questions, *what number does x have to be to make this statement true?*	• Understand the connections between proportional relationships, lines, and linear equations • Use linear equations to graph proportional relationships, interpreting the unit rate as the slope of the graph • Know and apply the properties of integer exponents (positive numbers, negative numbers, or 0) to write equivalent expressions (such as $4^2 \bullet 4^3 = 4^5$)	• Solve quadratic equations (equations that include the square of a variable, such as $5x^2-3x+3=0$) • Use the structure of an expression to identify ways to rewrite it. For example, $x^4-y^4=(x^2)^2-(y^2)^2$

"•" is a multiplication symbol students use in grade eight

Students interpret and compare linear relationships represented in different ways, making the connection between equations, tables of values, and graphs.

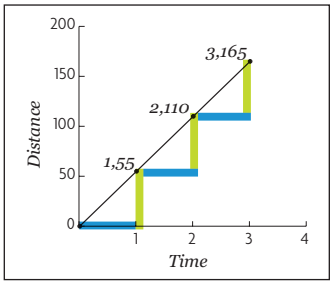
Problem: Two cars are traveling from point A to point B. Their speeds are represented on a graph and in a table. Which car is traveling faster?

Solution: Even though car #1 starts out ahead by 4 miles, students identify the rate of change—or slope—of the equations presented in the table and graph as equal (55 miles per hour), meaning that both cars are travelling at the same speed.

Car # 1
$y=55x + 4$

Time (x)	Distance (y)
1	59
2	114
3	169

Car # 2
$y=55x$



Here are just a few examples of how an understanding of rates, ratios, and proportions will help students learn about and work with functions in grade eight and high school.

Grade Seven Mathematics	Grade Eight Mathematics	High School Mathematics
• Analyze proportional relationships and use them to solve real-world problems • Calculate the unit rates associated with ratios of fractions, such as the ratio of ½ a mile for every ¼ of an hour • Recognize and represent proportional relationships in various ways, including using tables, graphs, and equations • Identify the unit rate in tables, graphs, equations, and verbal descriptions of proportional relationships	• Understand that a function is a rule that assigns to each input exactly one output, and the graph of a function is the set of ordered pairs consisting of an input and the corresponding output • Compare the properties of two functions each represented in a different way (for example, in a table, graph, equation, or description) • Determine the rate of change and initial value of a function based on a description of a proportional relationship or at least two given (x,y) values	• Calculate and interpret the average rate of change of a function over a given interval • Understand and use function notation (for example, f(x) denotes the output of f corresponding to the input x) • For a function that models a relationship between two quantities, interpret key features of graphs and tables, including intercepts, intervals where the function is increasing or decreasing, relative maximums and minimums, etc.

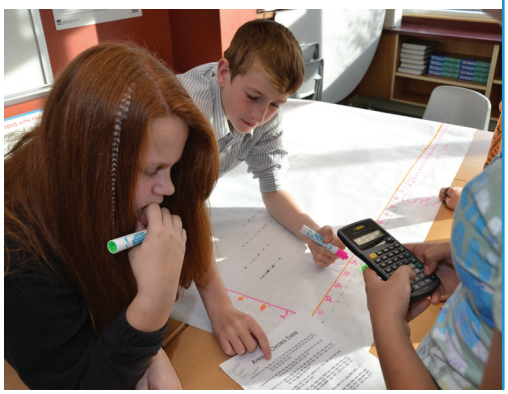
Students apply their understanding of rates and ratios to analyze pairs of inputs and outputs and to identify rates of change and specific values at different intervals.

This table shows the height of a tree, in inches, in the months after it was planted.

Month	Height, in inches
3	51
5	54
9	60
11	63

Given these sets of values, students determine that the rate of change is constant: a tree replanted as a sapling grows 3 inches every 2 months, which is 3/2—or 1.5—inches each month. Therefore, students can compute the tree's height when it was replanted by taking its height at month 3 (51 inches) and subtracting 3 months of growth: $51 - 3/2 \cdot 3 = 51 - 4.5 = 46.5$ inches.

Helping your child learn outside of school



1. Ask your child to do an Internet search to determine how mathematics is used in specific careers. This could lead to a good discussion and allow students to begin thinking about their future aspirations.
2. Have your child use magazines, clip art, and other pictures to find and describe examples of *similar* and *congruent* figures
3. Using different objects or containers (such as a can of soup or a shoebox), ask your child to estimate surface area and volume, and check the answer together.
4. Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that everyone can learn math.
5. Prompt your child to face challenges positively and to see mathematics as a subject that is important. Avoid statements like "*I wasn't good at math*" or "*Math is too hard*."
6. Praise your child when he or she makes an effort, and share in the excitement when he or she solves a problem or understands something for the first time.

Additional Resources

For more information on the Common Core State Standards for mathematics, go to http://www.corestandards.org/about-the-standards/key-points-in-mathematics or http://www.commoncoreworks.org.

For more information on the standards in mathematics related to ratio and proportion and expressions and equations, go to http://commoncoretools.me/category/progressions/.

For math games and challenges to do at home, go to http://www.figurethis.org/download.htm, www.24game.com, and http://www.kenken.com/play_now.