

# A Parent's Guide to Student Learning

*Examples of what your child will be learning at each grade level*

## GRADE 8

*Denver Public Schools has embraced the Colorado Academic Standards to ensure students are equipped for success in the 21st Century. These parent guides provide an overview of what your child will be learning in language arts, math, science and social studies, based on the academic standards, in each grade. They also describe ways you can help at home and include additional helpful resources.*



## Language Arts

### *Analyzing points of view, inference, multi-step research projects*

- Identify what a reading selection directly or explicitly says and draw inferences based on evidence from the text (an inference is a conclusion based on facts or circumstances rather than direct or explicit statement).
- Analyze where materials on the same topic disagree on matters of fact, interpretation or point of view.
- Analyze the purpose of information presented in diverse media (such as print, TV, web) and evaluate its social, political or commercial motives.
- Present 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.
- Build writing around strong central ideas or points of view; support the ideas with sound reasoning and evidence, precise word choices, smooth transitions and difference sentence structures.
- Plan and conduct research projects that include several steps and use many credible and documented print and digital sources.
- Interpret 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 (such as saying “as clear as mud” for something that isn’t clear).
- Use strong, active verbs to create a clear picture for the reader (such as walk, skip, meander, lurch, limp).

## Mathematics

### *Solving linear equations, working with functions, congruence, similarity*

- Solve linear equations and pairs of linear equations. A linear equation is an equation such as  $y=mx + b$  that makes a straight line when 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.
- Analyze statistical relationships by using a best-fit line.
- Understand 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  $(4,8)$ .
- Use functions to model relationships between quantities.
- Work with positive and negative exponents, square root and cube root symbols, and scientific notation.
- Understand the connections between proportional relationships, lines and linear equations.
- Graph proportional relationships and determine slope, or rate of change.
- Understand congruence (when shapes are of equal size and shape) and similarity (same shape but different sizes) using physical models, transparencies or geometry software.
- Understand the properties and relationships of rotations, reflections and translations, and explain their effects on 2-D figures.
- Understand and implement the Pythagorean Theorem (an equation relating the lengths of the sides of a right triangle:  $a^2+b^2=c^2$ ).



## Science

### *Understanding all matter is made of atoms, different forms of energy*

- Learn that all matter is made of atoms, which are far too small to see.
- Understand that elements have unique atoms and thus, unique properties. Atoms themselves are made of even smaller particles.
- Learn that atoms may stick together in well-defined molecules or be packed together in large arrangements. Different arrangements of atoms into groups compose all substances.
- Learn that physical characteristics and changes of solid, liquid and gas states can be explained using the particulate model (which states all matter is made up of particles that are moving all the time).
- Explain the relationships among mass, weight, volume and density.
- Learn that mixtures of substances can be separated based on their properties, such as boiling points, magnetic properties and densities.
- Identify and calculate the direction and the magnitude of forces that act on objects and explain results in objects' change of motion.
- Understand there are different forms of energy and those forms can be changed from one form to another — but total energy is conserved.
- Distinguish between physical and chemical changes, noting that mass is conserved during any change.
- Recognize that waves (electromagnetic, sound, seismic and water) have common traits and unique properties.

## Social Studies

### *Examining U.S. history from the American Revolution through Reconstruction*

- Formulate appropriate hypotheses about United States history based on a variety of historical sources and perspectives.
- Learn the historical eras, individuals, groups, ideas and themes from the origins of the American Revolution through Reconstruction.
- Use geographic tools to analyze patterns in human and physical systems. For example, consider human settlements near rivers.
- Analyze conflict and cooperation over space and resources. For example, various nations fought over the resources in the United States and individuals competed against each other in the California gold rush.
- Analyze why economic freedom, including free trade, is important for economic growth.
- Explain why nations often restrict trade by using quotas and tariffs.
- Learn to manage personal credit and debt.
- Analyze the benefits and costs of credit and debt.
- Analyze elements of continuity and change in the United States government and the role of citizens over time.
- Describe instances in which major political, social, economic and culture changes occurred in the United States and the reasons for the changes.
- Learn about the place of law in a constitutional system.
- Discuss the tensions between individual rights, state law and national law.



## You Play A Key Role

You do not have to be an expert to help your child with homework. The Colorado Academic Standards are focused on critical thinking. So asking your child these three simple questions can help develop deeper understanding:

- Ask “How do you know that?” to prompt your child to think critically about reaching an answer.
- Ask “Can you prove it?” to encourage your child to defend a solution or explain an alternate route.
- Ask “Can you use this in a real-world situation?” to spark thinking about using what’s learned in everyday life.

### Language arts

- Provide time and space for your child to read independently, without distractions such as TV.
- 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 child. 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?
- Visit museums, zoos, theaters, historical sites, aquariums and other educational places to help increase your child’s exposure to new knowledge and vocabulary.
- Be sure your child has a library card.
- Use technology to help build your child’s interest in reading. There are several websites where children can read books or articles online. The computer will help with words your child cannot read independently. Libraries also have computers your child can use to access those sites. Feel free to ask a librarian or teacher for suggestions.

### Math

- Ask your child to do an Internet search to determine how math is used in specific careers. This could lead to a good discussion and allow students to begin thinking about their future aspirations.
- 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 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.
- Analyze data with a scatterplot to decide whether exercise and obesity are related.
- Using different objects or containers (such as a soup can or shoebox), ask your child to estimate surface area and volume, and check the answer together.
- 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.”

## Want to learn more?

**Resources:** The DPS standards website provides additional information and parent resources on the academic standards and how you can help at home. Visit [standards.dpsk12.org](http://standards.dpsk12.org) to find the following resources:

#### DPS guides:

- Parent guides for all grade levels, including activities to help your child at home.
- Standards and students with special needs.
- Technology expectations by grade level.

#### These guides were developed using the following outside resources (also available on the DPS standards site):

- Colorado Department of Education grade-level expectations for all 10 Colorado Academic Standards.
- National PTA parent success guides, by grade level, in language arts and math (English and Spanish).
- Council of Great City Schools parent roadmaps, by grade level, in language arts and math (English and Spanish).

#### Questions:

For questions, please email [standards@dpsk12.org](mailto:standards@dpsk12.org).

