YOUR School

7th Grade Mathematics Curriculum Overview

Introduction

In Grade 7, the focus of mathematics content will be on four critical areas:

1. **Developing understanding of and applying proportional relationships**

   Students will solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease.

   Students will solve problems about scale drawings using what they know about ratios and proportions.

   Students will graph proportional relationships and begin to develop an understanding of slope as the steepness of a line.

2. **Developing understanding of operations with rational numbers and working with expressions and linear equations**

   Students will recognize fractions, decimals, and percents as different representations of numbers and will add, subtract, multiply, and divide numbers in a variety of forms.

   Students will understand rules for adding, subtracting, multiplying, and dividing with negative numbers by thinking about them in everyday contexts (amounts owed, temperatures below zero, etc.)

   Students will formulate expressions and equations in one variable and use these equations to solve problems.

3. **Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume**

   Students will solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects.

   Students will reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions.

4. **Drawing inferences about populations based on samples**

   Students will compare data distributions and address questions about differences between populations.

Quarterly Overview

While many of the mathematics topics are related and will be integrated throughout the school year, mathematics lesson topics will generally follow the schedule outlined below:

First Quarter

- Solve problems with ratios, proportions, and percents
- Solve problems involving scale drawings

Second Quarter

- Add, subtract, multiply, and divide whole numbers as well as fractions and decimals
- Add, subtract, multiply, and factor expressions that include variables

Third Quarter

- Solve problems using equations and inequalities
- Analyze data from sample populations and interpret random sample data
- Display data visually and compare data from different populations

Fourth Quarter

- Determine the probability of a chance event
- Analyze 2-dimensional and 3-dimensional figures
- Solve real-world problems involving area, volume, and surface area

Eight Mathematical Practices

Mathematics class is about much more than just "getting the right answer." The goal is not to turn students into human computers. Rather, the goal is to help shape students (eventually) into fully-functioning adults who can think critically, communicate effectively, use resources wisely, and problem-solve creatively. The eight Mathematical Practices are "habits of mind" that help students form a deep understanding of mathematics concepts, but also extend far beyond the walls of the math classroom.

Therefore, in our math class, your student will have many opportunities to:

1. Be a good problem-solver, and not give up when something doesn't work perfectly the first time.
2. Think about problems in lots of different ways.
3. Communicate effectively to show and explain their thinking and learn from the way others think.
4. Understand how the concepts they learn relate to the world around them.
5. Use mathematical tools skillfully and wisely to help in the problem-solving process.
6. Pay attention to important details, but also keep the big picture in mind.
7. Analyze complicated problems and break them down into simpler parts.
8. Identify helpful patterns and find effective shortcuts to be more efficient in problem-solving.

Students who enjoy and are successful in mathematics are those who embrace being creative problem-solvers and who approach mathematics with a sense of curiosity and adventure.

How to Support Student Learning at Home

You can help your student by reinforcing mathematical concepts at home. Sometimes that might mean going through flash cards for a few minutes a day, but the best mathematical support happens by highlighting the math that is already around you.

Play card games, Monopoly, and Scrabble. Have your student be the scorekeeper or banker.	**Children should drink 5-8 cups of water per day. Track how much water you drink for a week (in terms of cups, pints, and quarts).**	**On birthdays, figure out how many months (or weeks, or days) old the person is.**
Estimate how many M&Ms (or similar) will fit into a cup. Then fill it up and count to find out.	**Estimate how long something is. Then measure to find out.**	**Estimate how long something will take. Then test it out to see.**
Give your student an allowance or pay them for chores. Talk about pay rates, saving money, and spending money.	**Talk about meanings of percentages when you see "% off" sales or check the weather or track progress in computer games, ebooks, etc.**	**Talk about what decimals mean in the context of money. What's the difference between 1 cent and 0.01 cent?**
Highlight fractions everywhere. "What fraction of the people here are wearing hats?"	**Make recipes together and measure ingredients creatively. "We need 1 ½ cups of flour, but only have a ¼ cup measuring cup. What can we do?"**	**Make recipes. Double or halve the recipe. Have your student be in charge of reading the recipe and giving directions.**
Craft or scrapbook together. Measure lengths in fractions of inches.	**Build a project that requires measuring and cutting boards or other material.**	**Plant a garden. Discuss number of plants, spacing of plants, height and width of plants. Track rainfall with a rain gauge.**

Be relaxed and positive in these interactions, and your student will learn to relax and think positively about mathematics. Don't put too much emphasis on speed or correct answers. Instead, ask questions about how they thought about the topic and share your thoughts. Try to think about things in different ways. (And don't be surprised if you start to enjoy doing math with them too!)