

## A SAMPLE OF WHAT YOUR CHILD WILL BE LEARNING

- Understanding and applying the concepts of ratios and unit rates, and using the correct language to describe them (for example, the ratio of wings to beaks in a flock of birds is 2 to 1, because for every 2 wings there is one beak)
- Building on knowledge of multiplication and division to divide fractions by fractions
- Using pairs of numbers, including negative numbers, as coordinates for locating or placing a point on a graph
- Writing and determining the value of expressions with whole-number exponents (such as  $15+3^2$ )
- Identifying and writing equivalent mathematical expressions by applying the properties of operations. For example, recognizing that  $1(3+x)$  is the same as  $6+2x$
- Understanding that solving an equation such as  $2+x=12$  means answering the question, “What number does  $x$  have to be to make this statement true?”
- Representing and analyzing the relationships between independent and dependent variables
- Solving problems involving area and volume

## MATHEMATICAL PRACTICES

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## TALK TO YOUR CHILD'S TEACHER

Keep conversations focused on concepts your child will be learning.

Ask to see a sample of your child's work and ask the teacher questions such as:

- Is my child at the level where he/she should be at this point of the school year?
- Where is my child excelling?
- 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?

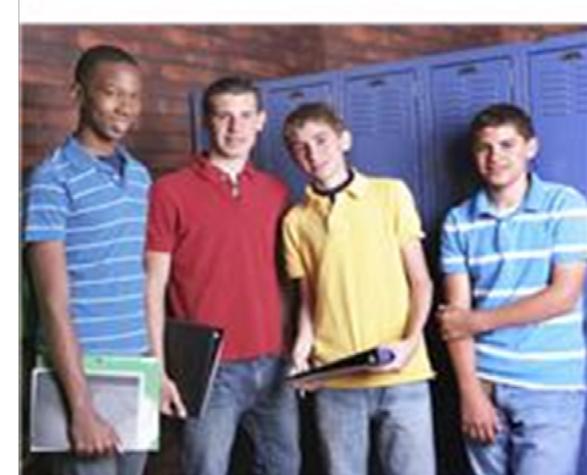
## ACTIVITIES FOR HOME TO SUPPORT LEARNING

- Ask your child to figure the amount of a 15% tip, or determine what percentage of weekly income goes to pay taxes.
- For a long-term project, help your child choose a stock and follow its value on the stock market using the newspaper or the Internet. Have your child calculate the stock's percent increase or decrease each month.
- Use store advertisements to engage your child in working with numbers. For example, if a store advertises 30% off, have your child estimate the dollar amount of the discount, as well as the sale price of an item.
- Use a scale diagram in a manual or a newspaper article to determine lengths, areas, distances, or other measures.
- Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that everyone can learn math.

## 7th Grade

## Parent Resource

### Mathematics



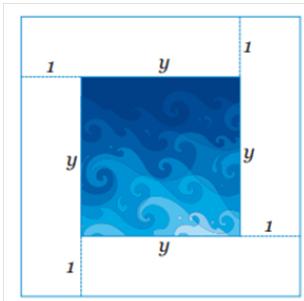
COMMON  
CORE  
STATE  
STANDARDS



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## EXAMPLES OF WORKING WITH EXPRESSIONS AND EQUATIONS

In expressing the number of one foot square tiles needed to border a square pool with a length of  $y$  (where  $y$  represents a whole number), students might write  $4y+1+1+1+1$ ,  $4y+4$ , or  $4(y+1)$ . All are different ways to express the same value.



Writing the same expression in different ways allows students to think through and solve real-world problems.

## EXAMPLES OF UNDERSTANDING RATIOS AND PROPORTIONS

Students will use diagrams to solve problems involving proportions. Students use diagrams and tables to think through and solve real-world problems involving ratios.

**Problem:** After a 20% discount, the price of a skateboard is \$148. What was the price before the discount?

**Solution:** After a 20% discount, the price is 80% of the original price. So 80% of the original price is \$148. Students use this information to find the value of 20% and 100% of the original price.

 $20\% + 20\% + 20\% + 20\% = 80\%$ $80\% = 4 \times 20\%$ $20\% = ?$	$80\% = 148$ $20\% = 80\% + 4$ $20\% = \$148 + 4$ $20\% = \$37$ $100\% = 20\% + 80\%$ $100\% = \$37 + \$148$ $\text{100\% = \$185}$
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Students will also learn to write and solve the equation representing this situation as  $0.8x=148$ .

## Expressions & Equations

### 6th Grade Mathematics

- Write and evaluate numerical expressions involving whole number exponents (such as  $5+3^2$ ).
- Read, write, and evaluate expressions in which letters stand for numbers. For example, "subtract  $y$  from 5" can be written  $5-y$ .
- Understand that solving an inequality or an equation such as  $2+x=12$  means answering the question, "What number does  $x$  have to be to make this statement true?"
- Represent two quantities that change in relationship to one another (for example, weight increasing along with height).

### 7th Grade Mathematics

- Re-write an expression in different forms to show different solutions to a problem or how quantities are related.
- Use variables to represent quantities and construct simple equations and inequalities (for example,  $5x+2>10$ ) to solve problems.
- Solve multi-step word problems involving positive and negative numbers.
- Understand that solving an inequality or an equation such as  $\frac{1}{4}(x+5)=21$  means answering the question, "What number does  $x$  have to be to make this statement true?"

### 8th Grade Mathematics

- Know and apply the properties of integer exponents (positive numbers, negative numbers, or 0) to write equivalent expressions (such as  $4^2 \cdot 4^3 = 4^5$ , where " $\cdot$ " means to multiply).
- Graph proportional relationships, identifying the unit rate as the slope (how steep or how flat a line is).
- Solve linear equations (equations that make a straight line when they are graphed, such as  $y=2x+1$ ).

## Ratios & Proportions

### 6th Grade Mathematics

- Understand the concept of a ratio and use the correct language to describe it.
- Understand the concept of a unit rate (the rate per unit, or a ratio with a denominator of 1) and use the correct language to describe it.
- Use ratio and rates to solve real-world problems.

### 7th Grade 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  $1/2$  a mile for every  $1/4$  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.

### 8th Grade Mathematics

- Understand the connections between proportional relationships, lines, and linear equations.
- Graph proportional relationships, interpreting the unit rate as the slope of the graph.
- Use physical models, transparencies, or other tools to show that similar objects have the same shape but different sizes (for example, a small square magnified into a larger square).