# D91 Pathway to the Common Core Standards
## Mathematics

**In grade six**, your child will learn the concept of rates and ratios and use these tools to solve word problems. Students will work on quickly and accurately dividing multi-digit whole numbers and adding, subtracting, multiplying, and dividing multi-digit decimals. Students will extend their previous work with fractions and decimals to understand the concept of rational numbers—any number that can be made by dividing one integer by another, such as ., 0.75, or 2. Students will also learn how to write and solve equations—mathematical statements using symbols, such as $20+x = 35$—and apply these skills in solving multi-step word problems. Activities in these areas will include:

• 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 1 beak)
• Building on knowledge of multiplication and division to divide fractions by fractions
• Understanding that positive and negative numbers are located on opposite sides of 0 on a number line
• 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 $15+32$)
• Identifying and writing equivalent mathematical expressions by apply-ing the properties of operations. For example, recognizing that $2 (3+x)$ is the same as $6+2x$
• Understanding that solving an equation such as $2+x = 12$ means answer-ing 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

### *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 fractions in grade six.*

| Grade Five Mathematics | Grade Six Mathematics | Grade Seven Mathematics |
|---|---|---|
| • Add and subtract fractions with different denominators (bottom numbers)<br><br>• Multiply a fraction by a whole number or another fraction<br><br>• Divide fractions by whole numbers and whole numbers by fractions to solve word problems | • Divide fractions by fractions using models and equations to represent the problem<br><br>• Solve word problems involving division of fractions by fractions | • Add, subtract, multiply, and divide rational numbers in any form, including whole numbers, fractions, and decimals)<br><br>• Solve multi-step problems involving positive and negative rational numbers |

*Example of a problem involving the division of fractions.*

Ann has 3 ½ lbs of peanuts for the party. She wants to put them in small bags each containing ½ lb. How many small bags of peanuts will she have?

Students use their knowledge of fractions to see that there are 7 halves in 3 ½ lbs, so there will be 7 bags of peanuts.

*Here are just a few examples of how students will develop an understanding of ratios and proportions in grade six.*

| Grade Five Mathematics | Grade Six Mathematics | Grade Seven Mathematics |
|---|---|---|
| • Explain why a fraction is equal to another fraction<br><br>• Interpret multiplication as scaling (resizing) | • Understand the concept of a ratio and use the correct language to describe it<br><br>• 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<br><br>• Use ratio and rates to solve real-world problems | • Analyze proportional relationships and use them to solve real-world problems<br><br>• Calculate the unit rates associated with ratios of fractions, such as the ratio of ½ a mile for every ¼ of an hour<br><br>• Recognize and represent proportional relationships in various ways, including using tables, graphs, and equations<br><br>• Identify the unit rate in tables, graphs, equations, and verbal descriptions of proportional relationships |

*Example of a problem involving ratios*

A slime mixture is made by mixing glue and liquid laundry starch in a ratio of 3 to 2. How much glue and how much starch are needed to make 90 cups of slime?

**Glue**          **Starch**

| Parts | Quantities |
|---|---|
| 5 parts | 90 cups |
| 1 part | 90/5 =18 cups |
| 2 parts | 2x18=36 cups |
| 3 parts | 3x18=54 cups |

Using knowledge of ratios and proportions, students see that if each cup of slime is made up of 3 parts glue and 2 parts starch, there are 5 parts in each cup. They can then compute the quantity of one, two, and three parts of 90 cups to determine the exact amounts of glue and starch needed.

1. Ask your child to calculate the unit rates of items purchased from the grocery store. For example, if 2 pounds of flour cost $3.00, how much does flour cost per pound?

2. Have your child determine the amount of ingredients needed when cooking. For example, if a recipe calls for 8 cups of rice to serve 4 people, how many cups of rice do you need to serve 6 people?

3. Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that everyone can learn math.

4. 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.

**Council of the Great City Schools**