Richmond Public Schools
Curriculum Framework
Grade 6 Honors (6/7)

Strand: Measurement and Geometry

6.5 The student will
a)   multiply and divide fractions and mixed numbers;*
b)   solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions and mixed numbers; and
c)   solve multistep practical problems involving addition, subtraction, multiplication, and division of decimals.
*On the state assessment, items measuring this objective are assessed without the use of a calculator.
7.2 The student will solve practical problems involving operations with rational numbers.

Suggested Pacing

Related Standards

Spiral Down: 4th Grade: ● SOL 4.4 d ● SOL 4.5 c ● SOL 4.6 b 5th Grade: ● SOL 5.4 ● SOL 5.5 ● SOL 5.6	Spiral Up: 8th Grade: ● SOL 8.4

Essential Questions	Common Misconceptions
● How can I use fractions/decimals in real-life? ● How are models used to show display operations on fractions and decimals? ● What strategies can be used to solve estimation problems with fractions and decimals? ● What information and strategies would I use to solve multi-step word problems?	● Multiplying Fractions: students confuse the process for multiplying fractions with cross-multiplication ● Dividing Fractions: changing division to multiplying by the reciprocal; students forget to flip the second fraction ● Reading: which words in a word problem imply which operations

Understanding the Standard	Essential Knowledge and Skills

SOL 6.5:

- A fraction can be expressed in simplest form (simplest equivalent fraction) by dividing the numerator and denominator by their greatest common factor.

- When the numerator and denominator have no common factors other than 1, then the fraction is in simplest form.

- Addition and subtraction are inverse operations as are multiplication and division.

- Models for representing multiplication and division of fractions may include arrays, paper folding, repeated addition, repeated subtraction, fraction strips, fraction rods, pattern blocks, and area models.

- It is helpful to use estimation to develop computational strategies.

  - Example: $2\frac{7}{8} \cdot \frac{3}{4}$ is about $\frac{3}{4}$ of 3, so the answer is between 2 and 3.

- When multiplying a whole number by a fraction such as $3 \cdot \frac{1}{2}$, the meaning is the same as with multiplication of whole numbers: 3 groups the size of $\frac{1}{2}$ of the whole.

- When multiplying a fraction by a fraction such as $\frac{2}{3} \cdot \frac{3}{4}$, we are asking for part of a part.

- When multiplying a fraction by a whole number such as $\frac{1}{2} \cdot 6$, we are trying to determine a part of the whole.

- A multistep problem is a problem that requires two or more steps to solve.

- Different strategies can be used to estimate the result of computations and judge the reasonableness of the result.

  - Example: What is an approximate answer for 2.19 ÷ 0.8? The answer is around 2 because
    2.19 ÷ 0.8 is about 2 ÷ 1 = 2.

- Understanding the placement of the decimal point is important when determining quotients of decimals. Examining patterns with successive decimals provides meaning, such as dividing the dividend by 6, by 0.6, and by 0.06.

SOL 6.5:
- Demonstrate/model multiplication and division of fractions (proper or improper) and mixed numbers using multiple representations. (a)
- Multiply and divide fractions (proper or improper) and mixed numbers. Answers are expressed in simplest form. (a)
- Solve single-step and multistep practical problems that involve addition and subtraction with fractions (proper or improper) and mixed numbers, with and without regrouping, that include like and unlike denominators of 12 or less. Answers are expressed in simplest form. (b)
- Solve single-step and multistep practical problems that involve multiplication and division with fractions (proper or improper) and mixed numbers that include denominators of 12 or less. Answers are expressed in simplest form. (b)
- Solve multistep practical problems involving addition, subtraction, multiplication and division with decimals. Divisors are limited to a three-digit number, with decimal divisors limited to hundredths. (c)

SOL 7.2:
- Solve practical problems involving addition, subtraction, multiplication, and division with rational numbers expressed as integers, fractions (proper or improper), mixed numbers, decimals, and percents. Fractions may be positive or negative. Decimals may be positive or negative and are limited to the thousandths place.

- Solving multistep problems in the context of practical situations enhances interconnectedness and proficiency with estimation strategies.

- Examples of practical situations solved by using estimation strategies include shopping for groceries, buying school supplies, budgeting an allowance, and sharing the cost of a pizza or the prize money from a contest.

SOL 7.2:

- The set of rational numbers includes the set of all numbers that can be expressed as fractions in the form $\frac{a}{b}$ where a and b are integers and b does not equal zero. The decimal form of a rational number can be expressed as a terminating or repeating decimal. A few examples of rational numbers are: $\sqrt{25}$, $\frac{1}{4}$, -2.3, 82, 75%, $4.\overline{59}$.

- Proper fractions, improper fractions, and mixed numbers are terms often used to describe fractions. A proper fraction is a fraction whose numerator is less than the denominator. An improper fraction is a fraction whose numerator is equal to or greater than the denominator. An improper fraction may be expressed as a mixed number. A mixed number is written with two parts: a whole number and a proper fraction (e.g., $3\frac{5}{8}$). A fraction can have a positive or negative value.

- Solving problems in the context of practical situations enhances interconnectedness and proficiency with estimation strategies. Practical problems involving rational numbers in grade seven provide students the opportunity to use problem solving to apply computation skills involving positive and negative rational numbers expressed as integers, fractions, and decimals, along with the use of percents within practical situations.

Vocabulary	Instructional Activities Organized by Learning Objective

SOL 6.5

Fraction	Mixed Number	Decimal
Proper Fraction	Improper Fraction	Simplest Form

Textbook

Notes

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Rational Numbers	Terminating Decimals	Repeating Decimals

SOL 7.2

Positive	Negative	Practical Problems

Resources
- Print
- Technology-based

Station Activities

Assessment

Cross-Curricular Connections	**Tiered Differentiation**