

Number and Operations in Base Ten:

5.NBT.A Understand the place value system.

- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. (CCSS: 5.NBT.A.1)
- Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (CCSS: 5.NBT.A.2)
- Read, write, and compare decimals to thousandths. (CCSS: 5.NBT.A.3)
- Use place value understanding to round decimals to any place. (CCSS:5.NBT.A.4)

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

- Fluently multiply multi-digit whole numbers using the standard algorithm. (CCSS: 5.NBT.B.5)
- Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (CCSS: 5.NBT.B.6)
- Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (CCSS: 5.NBT.B.7)

Number and Operations - Fractions:

5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.

- Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}$) (CCSS: 5.NF.A.1)
- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$ by observing that $\frac{3}{7} < \frac{1}{2}$ (CCSS: 5.NF.A.2)

5.NF.B Apply and extend previous understandings of multiplication and division.

- Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among

4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? (CCSS: 5.NF.B.3)

- Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. (CCSS: 5.NF.B.4)
- Interpret multiplication as scaling (resizing), by: (CCSS: 5.NF.B.5)
- Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. (CCSS: 5.NF.B.6)
- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.) (CCSS: 5.NF.B.7)

Measurement & Data:

5.MD.C Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.

- Recognize volume as an attribute of solid figures and understand concepts of volume measurement. (CCSS: 5.MD.C.3)
- Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (CCSS: 5.MD.C.4)
- Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. (CCSS: 5.MD.C.5)