Common Core Math Standards for Fourth Grade
Number and Operations in Base Ten²

The standards explain what children should be able to understand and do by the end of each grade. The box on the left lists the standards teachers are using, and the box on the right is what you can do at home to support what children are learning in the classroom.

Number and Operations in Base Ten²	4.NBT

Generalize place value understanding for multi-digit whole numbers.
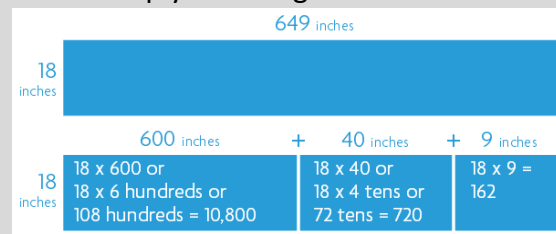
1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*

2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

3. Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic.

4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.

5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

6. Find whole-number quotients and remainders with up to four-digit dividends and one-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.

What does this mean and what can I do at home to help my child develop these skills?

- Ask questions and review homework to see whether your child understands *why* as well as *what* the answer is.
- Encourage your child to write or describe numbers in different ways. For example, what are some different ways to make 1,450? 1,450 = 1 thousand, 4 hundreds, 5 tens and 0 ones, or 1,000 + 400 + 50, or 14 hundreds and 50 ones, etc.
- Give your child practice in adding and subtracting numbers up to 1,000,000.
- Help your child know and memorize the basic math facts.
- Help your child use the concepts of area and place value as strategies to multiply multi-digit numbers.

649 inches		
18 inches		
600 inches +	40 inches +	9 inches
18 x 600 or 18 x 6 hundreds or 108 hundreds = 10,800	18 x 40 or 18 x 4 tens or 72 tens = 720	18 x 9 = 162

- Help your child develop an understanding of division with larger numbers. One approach is to use "friendly numbers."

Consider this:
We have 252 buttons to put in 4 boxes. How many buttons can we put in each box? (252 ÷ 4)

We can put 50 in each box (4 x 50) = 200
We can put 10 in each box (4 x 10) =   40
We can put _3_ in each box   (4 x 3) = _12_
                                    63   252

So, we can put 63 buttons in each box.
                                      252 ÷ 4 = 63

- From a sales catalogue, have your child select a specified number of items and then estimate the total cost of the items.

Common Core Math Standards for Fourth Grade
Number and Operations-Fractions

The standards explain what children should be able to understand and do by the end of each grade. The box on the left lists the standards teachers are using, and the box on the right is what you can do at home to support what children are learning in the classroom.

Number and Operations—Fractions[3]   4.NF

Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
   a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
   b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.
   c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
   d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
   a. Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).
   b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)
   c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

Understand decimal notation for fractions, and compare decimal fractions.

5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[4] For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

6. Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

What does this mean and what can I do at home to help my child develop these skills?

- Let your child see you doing real-life math that involves fractions. This will help your child see that everyone uses math.
- Help your child see that two fractions may be equal.
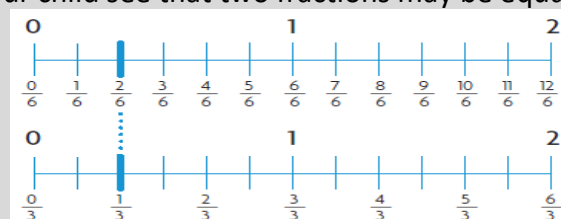
- Use everyday objects to allow your child to explore the concept of fractions. For example, use measuring cups so your child can see how many times you have to refill a ¼ cup to equal a ½ cup or how many ¼'s are in two cups. Have your child describe two fractions that are equal using a measuring cup (fill a ¼ measuring cup twice is the same as filling one ½ measuring cup.)
- Have your child write or describe fractions in different ways. For example, what are some different ways to make ¾? Answers could include ¼ + ¼ + ¼ or 3 x ¼.
- Practice place value with your child. Help your child understand that a number can be represented as both a fraction and a decimal. 32/100 is read as thirty-two hundredths and written on the place value chart as 0.32.

Hundreds	Tens	Ones	•	Tenths	Hundredths
			•	3	2

- Encourage your child to stick with it whenever a problem seems difficult. This will help your child develop perseverance.

Common Core Math Standards for Fourth Grade
Operations and Algebraic Thinking

The standards explain what children should be able to understand and do by the end of each grade. The box on the left lists the standards teachers are using, and the box on the right is what you can do at home to support what children are learning in the classroom.

Operations and Algebraic Thinking   4.OA

Use the four operations with whole numbers to solve problems.

1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[1]

3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Generate and analyze patterns.

5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

What does this mean and what can I do at home to help my child develop these skills?

- Play math games with your child. For example, "I am thinking of a number between 20 and 30. This number is multiple of 2 and 3 and has factors that include 4 and 9. What is the number?" (36)
- Look for word problems in real-life for your child to solve.
- Using grocery store ads, write a list of items with the dollar amount and quantity of each item needed. Ask your child to write an equation showing how much money will be spent for the items on the list.
- Discuss the cost of one week's groceries for your family. Ask your child to write an equation showing the cost of groceries for 4 weeks.
- Look at recipes for cookies, casseroles, etc. Have your child write equations to increase or decrease the amount of food the recipe makes (e.g., double or half the recipe).
- Cut the totals off cash register receipts. Give your child one or more receipts and ask him/her to "be the cash register" and find the missing totals.
- Practice finding multiples by skip-counting together. Select a number from 2 to 9 and skip count by that number to 100.
- Practice skip-counting by 2s, 3s, 4s, 5s, and 10s. Record the numbers as you skip count, and look for patterns (e.g., the multiples of 5 all have a 5 or 0 in the ones digit, the multiples of 2 are all even numbers, etc).
- Create a number or shape pattern for your child that follows a rule (add 3 to each number). Have your child extend the pattern or explain what rule your pattern followed.

Common Core Math Standards for Fourth Grade
Measurement and Data

The standards explain what children should be able to understand and do by the end of each grade. The box on the left lists the standards teachers are using, and the box on the right is what you can do at home to support what children are learning in the classroom.

Measurement and Data	4.MD

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

   a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

   b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

What does this mean and what can I do at home to help my child develop these skills?

- Have your child find measurements around the house and determine measurement equivalents. For example, ½ yard is 18 inches.
- Help your child with conversions of measurements from larger units to smaller by having him/her measure water using different sizes of measuring cups.
- Use a clock (not a digital clock) to help your child understand intervals of time and how time elapses. Create scenarios for your child to "act out" with the clock (e.g., You need to arrive at school at 7:30. It takes 12 minutes to get to school. What time should you leave home?)
- Have your child measure the length and width of a room in your home. Then multiply the length times the width to find the area. Do the same in other rooms and compare the areas of the rooms to see which room has the greatest area.
- Have your child measure the sides of a rectangular object and add the lengths together to find the perimeter (e.g., cereal box, oatmeal box, etc.)
- Allow your child to collect data showing how much liquid, to the nearest ¼ cup, is consumed by each member of the family in one day. Help your child show the data on a line plot. Discuss the range (difference between the highest and lowest values) and the total amount consumed by all family members.
- Look at the hands on a circular clock face. Discuss the angle formed by the hands when the clock shows 3:00, 6:00, 5:00, etc.
- Have an angle scavenger hunt around the neighborhood. Look for acute angles, right angles or obtuse angles.