

# Practices

## MP5 Use appropriate tools strategically.

Fourth graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper or a number line to represent and compare decimals and protractors to measure angles. They use other measurement tools to understand the relative size of units within a system and express measurements given in larger units in terms of smaller units.

## MP6 Attend to precision.

As fourth graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot.

## MP7 Look for and make use of structure.

In fourth grade, students look closely to discover a pattern or structure. For instance, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as tree diagrams and arrays to the multiplication principal of counting. They generate number or shape patterns that follow a given rule.

## MP8 Look for and express regularity in repeated reasoning.

Students in fourth grade should notice repetitive actions in computation to make generalizations. Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions.

[www.aMathsDictionaryforKids.com](http://www.aMathsDictionaryforKids.com)

An animated, interactive dictionary for students which explains over 600 common mathematical terms in simple language.



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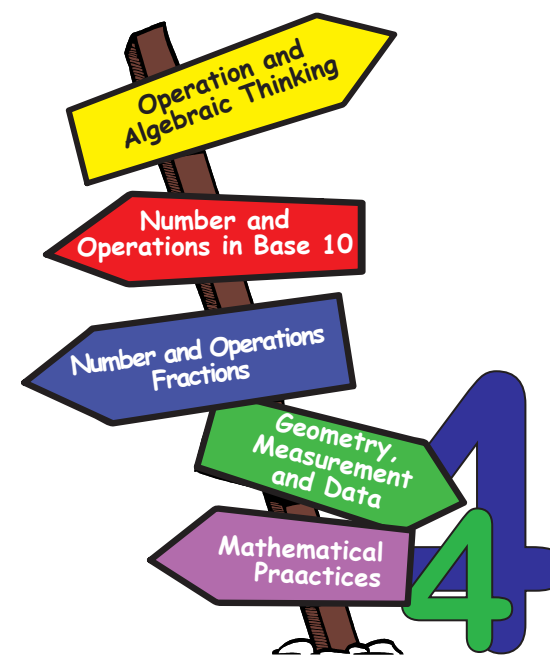
Adapted from Arizona Department of Education Mathematics Standards, 2010

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# Grade 4

## CCSS Math Expectations Checklist



# Mathematical

## MP1 Make sense of problems and persevere in solving them.

In fourth grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.

## MP2 Reason abstractly and quantitatively.

Fourth graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts.

## MP3 Construct viable arguments and critique the reasoning of others.

In fourth grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain their thinking and make connections between models and equations. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking.

## MP4 Model with mathematics.

Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Fourth graders should evaluate their results in the context of the situation and reflect on whether the results make sense.



# My checklist of what I can do in 4<sup>th</sup> grade math . . . . .

I understand that it is important to apply the mathematical practices (identified on the inside cover) on a regular basis.

## Operations & Algebraic Thinking . . . . .

**Use the four operations with whole numbers to solve problems: (4.OA.1, 4.OA.2, 4.OA.3)**

- I can explain how a multiplication equation can be used to compare.
- I can multiply or divide to solve word problems that use multiplication to compare.
- I can solve multistep word problems using the four operations.
- I can interpret the meanings of remainders.
- I can represent problems using equations with a letter standing for the unknown quantity (variable).
- I can decide if my answer makes sense using mental math, estimation, and rounding.

**Gain familiarity with factors and multiples: (4.OA.4)**

- I can find factor pairs for whole numbers 1-100.
- I can recognize a whole number as a multiple of each of its factors.
- I can decide whether a whole number (1-100) is: \_\_\_ multiple of a given 1-digit # \_\_\_ prime # \_\_\_ composite #

**Generate and analyze patterns: (4.OA.5)**

- I can create a number or shape pattern that follows a given rule
- I can identify characteristics about the pattern that are not part of the rule.

## Geometry . . . . .

**Draw and identify lines and angles, and classify shapes by properties of their lines and angles: (4.G.1, 4.G.2, 4.G.3)**

- I can draw geometric figures.
- I can use two-dimensional figures to identify geometric terms.
- I can classify two-dimensional figures based on parallel or perpendicular lines and angle size.
- I can recognize and identify right triangles.
- I can recognize a line of symmetry.
- I can identify a figure with a line of symmetry.
- I can draw a line of symmetry.

## Number & Operations in Base 10 . . . . .

**Generalize place value understanding for multi-digit whole numbers ( $\leq 1,000,000$ ): (4.NBT.1, 4.NBT.2, 4.NBT.3)**

- I can determine that a digit represents ten times what it would be in the place to its right.
- I can read multi-digit whole numbers using numerals, number names, and expanded form.
- I can write multi-digit whole numbers using numerals, number names, and expanded form.
- I can compare two multi-digit numbers using  $>$ ,  $=$ , and  $<$ .
- I can round multi-digit whole numbers to any place.

**Use place value understanding and properties of operations to perform multi-digit arithmetic: (4.NBT.4, 4.NBT.5, 4.NBT.6)**

- I can fluently add multi-digit numbers.
- I can fluently subtract multi-digit numbers.
- I can multiply a four digit whole number by a one digit whole number using strategies and properties of operations.
- I can multiply two two-digit numbers using strategies and properties of operations.
- I can represent/explain the calculation using an equation, rectangular array, and/or area models. \_\_\_\_\_ represent \_\_\_\_\_ explain
- I can apply strategies to find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.

## Number & Operations – Fractions. . . . .

**(Limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, & 100) Extend understanding of fraction equivalence and ordering: (4.NF.1, 4.NF.2)**

- I can explain why fractions are equivalent using fraction models.
- I can recognize and create equivalent fractions.
- I can compare two fractions with different numerators and denominators using  $<$ ,  $>$ , and  $=$ .
- I can show/prove the comparison using a fraction model from the same whole. \_\_\_\_\_ show \_\_\_\_\_ prove

**Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers: (4.NF.3, 4.NF.4)**

- I can add/subtract fractions. \_\_\_ add \_\_\_ subtract
- I can break apart a fraction into a sum of fractions with the same denominator in more than one way.
- I can record each sum of fractions using an equation.
- I can prove my equation using a fraction model.
- I can add/subtract mixed numbers with like denominators. \_\_\_ add \_\_\_ subtract
- I can solve word problems involving fractions with the same denominator by: \_\_\_ add \_\_\_ subtract
- I can use a visual fraction model to show that fractions have multiples.
- I can use a fraction model to multiply a fraction by a whole number.
- I can use fraction models to solve word problems involving multiplication of a fraction by a whole number.

**Understand decimal notation for fractions, and compare decimal fractions: (4.NF.5, 4.NF.6, 4.NF.7)**

- I can make an equivalent fraction for tenths as hundredths.
- I can make an equivalent fraction for tenths as hundredths, therefore I can add fractions for tenths and hundredths.
- I can use decimal notation for fractions with denominators 10 or 100.
- I can compare two decimals to hundredths according to their size using  $>$ ,  $<$ ,  $=$ .
- I can show the comparison when the two decimals are from the same whole.
- I can prove the results using a visual model.

## Measurement and Data . . . . .

**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit: (4.MD.1, 4.MD.2, 4.MD.3)**

- I can determine the relative sizes of measurement within one system of units.
- I can express measurements in a larger unit in terms of a smaller unit.
- I can record the measurement equivalents in a two-column table.
- I can use the four operations to solve word problems including distance, time, volume, mass, and money.
- I can express measurements in a larger unit in terms of smaller units using simple fractions or decimals.
- I can represent measurement quantities using diagrams such as a number line diagram.
- I can use the area and perimeter formulas in real world and math problems.

**Represent and interpret data: (4.MD.4)**

- I can make a line plot using fractional units.
- I can use the line plot information to solve problems by adding and subtracting fractions.

**Geometric measurement: understand concepts of angle and measure angles: (4.MD.5, 4.MD.6, 4.MD.7)**

- I can show what a degree is within a circle
- I can use degrees to measure angles.
- I can read the degree of an angle.
- I can use a protractor to construct and measure angles.
- I can recognize the sum of the angle parts is equal to the whole angle
- I can solve addition and subtraction problems with unknown angles on a diagram.

### How to use checklist:

- Show the date of when you were able to do the math expectation.
- Show an example of what you did in a journal.