



### 2.OA Operations and Algebraic Thinking

#### 2.OA.A Represent and solve problems involving addition and subtraction.

**2.OA.A.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

- E.15 Addition word problems - sums to 20
- E.16 Addition sentences for word problems - sums to 20
- E.21 Add three one-digit numbers: word problems
- E.23 Add four or more one-digit numbers: word problems
- F.11 Subtraction word problems - up to 18
- F.12 Subtraction sentences for word problems - up to 18
- G.14 Addition word problems - up to two digits
- G.16 Write the addition sentence - up to two digits
- G.19 Add three numbers up to two digits each: word problems
- G.21 Add four numbers up to two digits each: word problems
- H.9 Subtraction word problems - up to two digits
- H.11 Write the subtraction sentence - up to two digits
- L.3 Addition and subtraction word problems - up to 20
- L.10 Addition and subtraction word problems - up to 100
- L.11 Two-step addition and subtraction word problems - up to 100

#### 2.OA.B Add and subtract within 20.

**2.OA.B.2** Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

- E.1 Add one-digit numbers - sums to 10
- E.2 Ways to make a number with addition - sums to 10
- E.9 Add one-digit numbers
- E.11 Add zero
- E.13 Add doubles
- E.14 Add doubles - complete the sentence
- E. Make ten to add
- E.17 Complete the addition sentence - sums to 20
- E.19 Addition sentences: which is true?
- E.20 Add three one-digit numbers
- F.1 Subtract one-digit numbers - up to 10
- F.2 Ways to subtract - up to 10
- F.4 Subtract doubles
- F.8 Subtract a one-digit number from a two-digit number up to 18
- F.10 Subtract zero/all
- F.13 Complete the subtraction sentence - up to 18
- F.15 Subtraction sentences: which is true?
- L.1 Add and subtract numbers up to 20
- L.2 Addition and subtraction - ways to make a number - up to 20
- L.5 Addition and subtraction sentences up to 20: which is true?

**2.OA.C** Work with equal groups of objects to gain foundations for multiplication.

**2.OA.C.3** Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

- A.16 Even or odd
- E.14 Add doubles - complete the sentence

**2.OA.C.4** Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

- E.24 Identify repeated addition in arrays: sums to 10
- E.25 Write addition sentences for arrays: sums to 10
- E.26 Identify repeated addition in arrays: sums to 25
- E.27 Write addition sentences for arrays: sums to 25

---

## 2.NBT Number and Operations in Base Ten

### 2.NBT.A Understand place value.

**2.NBT.A.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

- M.2 Place value models - up to hundreds
- M.4 Identify a digit up to the hundreds place
- M.6 Place value - up to hundreds
- M.11 Convert to/from a number - up to hundreds

**2.NBT.A.1a** 100 can be thought of as a bundle of ten tens - called a "hundred."

**2.NBT.A.1b** The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

- M.12 Convert between place values - ones and hundreds

**2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.

- A.4 Skip-counting by fives and tens
- A.8 Count forward and backward by fives and tens
- A. Count forward - up to 1,000
- A. Count forward by tens - up to 1,000
- A.14 Count forward and backward by fives, tens, and hundreds

**2.NBT.A.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

- C.2 Spell word names for numbers up to 20
- C.3 Writing numbers up to 100 in words - convert words to digits
- C.4 Writing numbers up to 100 in words - convert digits to words
- C.5 Writing numbers up to 1,000 in words - convert words to digits
- C.6 Writing numbers up to 1,000 in words - convert digits to words
- M.14 Convert from expanded form - up to hundreds

**2.NBT.A.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

- B.2 Comparing numbers up to 1,000

**2.NBT.B** Use place value understanding and properties of operations to add and subtract.

**2.NBT.B.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

- E.11 Add zero
- G.1 Add multiples of 10
- G.3 Use models to add a two-digit and a one-digit number - without regrouping
- G.4 Use models to add a two-digit and a one-digit number - with regrouping
- G.5 Add a two-digit and a one-digit number - without regrouping
- G.6 Add a two-digit and a one-digit number - with regrouping
- G.7 Use models to add two-digit numbers - without regrouping
- G.9 Add two-digit numbers without regrouping - sums to 100
- G.10 Add two-digit numbers with regrouping - sums to 100
- G. Use compensation to add - up to two digits
- G.13 Ways to make a number using addition
- G.15 Complete the addition sentence - up to two digits
- H.1 Subtract multiples of 10

- H.3 Subtract a one-digit number from a two-digit number - without regrouping
- H.4 Subtract a one-digit number from a two-digit number - with regrouping
- H.5 Subtract two two-digit numbers - without regrouping
- H.6 Subtract two two-digit numbers - with regrouping
- H.8 Ways to make a number using subtraction
- H.10 Complete the subtraction sentence - up to two digits
- L.8 Add and subtract numbers up to 100
- L.9 Addition and subtraction - ways to make a number - up to 100
- L.16 Which sign (+ or -) makes the number sentence true?

**2.NBT.B.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.

- G.18 Add three numbers up to two digits each
- G.20 Add four numbers up to two digits each

**2.NBT.B.7** Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

- G.11 Add two-digit numbers - sums to 200
- I.1 Add multiples of 100
- I.2 Add multiples of 10 or 100
- I.3 Use models to add three-digit numbers - without regrouping
- I.4 Use models to add three-digit numbers - with regrouping
- I.5 Addition with three-digit numbers
- I. Use compensation to add - up to three digits
- I.6 Addition word problems - up to three digits
- I.7 Complete the addition sentence - up to three digits
- I.8 Write the addition sentence - up to three digits
- J.1 Subtract multiples of 100

- J.2 Subtract multiples of 10 or 100
- J.3 Subtract three-digit numbers
- J. Subtract across zeros
- J.5 Complete the subtraction sentence - up to three digits
- L. Add and subtract numbers up to 1,000
- M.9 Regroup tens and ones - ways to make a number
- M.10 Regroup tens and ones

**2.NBT.B.8** Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

- L.14 Input/output tables - add and subtract by 100
- L.15 Input/output tables - add and subtract by 10 or 100

**2.NBT.B.9** Explain why addition and subtraction strategies work, using place value and the properties of operations.

- K.1 Related addition facts
- K.2 Related subtraction facts
- K.3 Fact families

---

## 2.MD Measurement and Data

**2.MD.A** Measure and estimate lengths in standard units.

**2.MD.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

- S.2 Measure using an inch ruler
- S.8 Measure using a centimeter ruler

**2.MD.A.2** Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

- S.4 Which customary unit of length is appropriate: inches, feet, or yards?
- S.9 Which metric unit of length is appropriate?

**2.MD.A.3** Estimate lengths using units of inches, feet, centimeters, and meters.

- S.3 Which customary unit of length is appropriate: inches or feet?
- S.9 Which metric unit of length is appropriate?

**2.MD.A.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

- S.5 Customary units of length: word problems
- S.10 Metric units of length: word problems

**2.MD.B** Relate addition and subtraction to length.

**2.MD.B.5** Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

- S.5 Customary units of length: word problems
- S.10 Metric units of length: word problems

**2.MD.B.6** Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

- A.11 Number lines - up to 100
- A.13 Number lines - up to 1,000
- E.8 Addition sentences using number lines - sums up to 20
- F.7 Subtraction sentences using number lines - up to 20

**2.MD.C** Work with time and money.

**2.MD.C.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

- Q.1 Match digital clocks and times
- Q.2 Match analog clocks and times
- Q.3 Match analog and digital clocks
- Q.4 Read clocks and write times: hour and half hour
- Q.5 Read clocks and write times
- Q.7 A.M. or P.M.

**2.MD.C.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

- P.1 Names and values of common coins
- P.3 Count money - pennies, nickels, and dimes only
- P.4 Count money - up to \$1
- P.5 Count money - up to \$5
- P.6 Equivalent amounts of money - up to \$1
- P.7 Exchanging money - with pictures
- P.9 Comparing groups of coins
- P.10 Add money - up to \$1
- P.11 Add money - up to \$1: word problems
- P.12 Subtract money - up to \$1
- P.13 Subtract money - up to \$1: word problems
- P.14 Add and subtract money - up to \$1
- P.15 Add and subtract money - up to \$1: word problems
- P.16 Purchases - do you have enough money - up to \$1
- P.17 Purchases - do you have enough money - up to \$5
- P.18 Which picture shows more - up to \$5
- P.19 Least number of coins
- P.20 How much more to make a dollar?
- P.21 Correct amount of change



P.22 Making change

## 2.MD.D Represent and interpret data.

**2.MD.D.9** Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

R.10 Create line plots

**2.MD.D.10** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

R.6 Interpret bar graphs II

R.7 Which bar graph is correct?

R.8 Create bar graphs

R.11 Interpret pictographs I

R.13 Create pictographs I

---

## 2.G Geometry

### 2.G.A Reason with shapes and their attributes.

**2.G.A.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

T.1 Name the two-dimensional shape

T.2 Select two-dimensional shapes

T.3 Count sides and vertices

T.4 Compare sides and vertices

U. Cubes

U.3 Count vertices, edges, and faces

- U.4** Compare vertices, edges, and faces
- U.5** Identify faces of three-dimensional shapes
- U.6** Identify shapes traced from solids

**2.G.A.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

- V.3** Tile a rectangle with squares
- V.4** Area

**2.G.A.3** Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

- W.1** Equal parts
- W.6** Make halves
- W.7** Make thirds
- W.8** Make fourths
- W.9** Make halves, thirds, and fourths
- W.10** Make halves, thirds, and fourths in different ways

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

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

- E.21 Add three one-digit numbers: word problems
- G.19 Add three numbers up to two digits each: word problems
- L.3 Addition and subtraction word problems - up to 20
- L.10 Addition and subtraction word problems - up to 100
- L.11 Two-step addition and subtraction word problems - up to 100
- P.15 Add and subtract money - up to \$1: word problems
- P.19 Least number of coins
- P.20 How much more to make a dollar?
- P.22 Making change
- R.6 Interpret bar graphs II
- S.5 Customary units of length: word problems
- S.10 Metric units of length: word problems

### MP2 Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

- A.16** Even or odd
- B.2** Comparing numbers up to 1,000
- E.16** Addition sentences for word problems - sums to 20
- E.25** Write addition sentences for arrays: sums to 10
- E.27** Write addition sentences for arrays: sums to 25
- F.12** Subtraction sentences for word problems - up to 18
- G.16** Write the addition sentence - up to two digits
- H.11** Write the subtraction sentence - up to two digits
- M.2** Place value models - up to hundreds
- S.4** Which customary unit of length is appropriate: inches, feet, or yards?
- S.9** Which metric unit of length is appropriate?
- W.1** Equal parts

---

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

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

- E.19 Addition sentences: which is true?
  - F.15 Subtraction sentences: which is true?
  - L.5 Addition and subtraction sentences up to 20: which is true?
  - L.16 Which sign (+ or -) makes the number sentence true?
  - P.9 Comparing groups of coins
  - R.7 Which bar graph is correct?
- 

## MP4 Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

- E.15 Addition word problems - sums to 20
- E.16 Addition sentences for word problems - sums to 20
- E.21 Add three one-digit numbers: word problems
- E.23 Add four or more one-digit numbers: word problems
- F.11 Subtraction word problems - up to 18
- F.12 Subtraction sentences for word problems - up to 18
- G.14 Addition word problems - up to two digits
- G.16 Write the addition sentence - up to two digits
- G.19 Add three numbers up to two digits each: word problems
- G.21 Add four numbers up to two digits each: word problems
- H.9 Subtraction word problems - up to two digits
- H.11 Write the subtraction sentence - up to two digits

- L.3 Addition and subtraction word problems - up to 20
  - L.10 Addition and subtraction word problems - up to 100
  - P.15 Add and subtract money - up to \$1: word problems
  - P.16 Purchases - do you have enough money - up to \$1
  - P.17 Purchases - do you have enough money - up to \$5
  - P.22 Making change
- 

## MP5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

- A.11 Number lines - up to 100
  - A.13 Number lines - up to 1,000
  - E.8 Addition sentences using number lines - sums up to 20
  - F.7 Subtraction sentences using number lines - up to 20
  - I.5 Addition with three-digit numbers
  - J.3 Subtract three-digit numbers
  - L.1 Add and subtract numbers up to 20
  - L.8 Add and subtract numbers up to 100
  - S.2 Measure using an inch ruler
  - S.8 Measure using a centimeter ruler
  - V.4 Area
-

## MP6 Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

- L.5 Addition and subtraction sentences up to 20: which is true?
- P.19 Least number of coins
- Q.5 Read clocks and write times
- Q.7 A.M. or P.M.
- R.7 Which bar graph is correct?
- R.10 Create line plots
- S.2 Measure using an inch ruler
- S.4 Which customary unit of length is appropriate: inches, feet, or yards?
- S.8 Measure using a centimeter ruler
- S.9 Which metric unit of length is appropriate?
- T.1 Name the two-dimensional shape
- T.3 Count sides and vertices

---

## MP7 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see  $7 \times 8$  equals the well remembered  $7 \times 5 + 7 \times 3$ , in preparation for learning about the distributive property. In the expression  $x^2 + 9x + 14$ , older students can see the 14 as  $2 \times 7$  and the 9 as  $2 + 7$ . They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see  $5 - 3(x - y)^2$  as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers  $x$  and  $y$ .

- A.16 Even or odd
- E.13 Add doubles
- E.24 Identify repeated addition in arrays: sums to 10
- E.25 Write addition sentences for arrays: sums to 10
- E.26 Identify repeated addition in arrays: sums to 25
- E.27 Write addition sentences for arrays: sums to 25
- F.4 Subtract doubles
- K.1 Related addition facts
- K.2 Related subtraction facts
- K.3 Fact families
- M.9 Regroup tens and ones - ways to make a number
- M.10 Regroup tens and ones
- M.14 Convert from expanded form - up to hundreds
- T.2 Select two-dimensional shapes
- U.2 Select three-dimensional shapes
- U.6 Identify shapes traced from solids
- W.9 Make halves, thirds, and fourths
- W.10 Make halves, thirds, and fourths in different ways

---

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

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation  $(y - 2)/(x - 1) = 3$ . Noticing the regularity in the way terms cancel when expanding  $(x - 1)(x + 1)$ ,  $(x - 1)(x^2 + x + 1)$ , and  $(x - 1)(x^3 + x^2 + x + 1)$  might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

- E.8 Addition sentences using number lines - sums up to 20



- F.7** Subtraction sentences using number lines - up to 20
- I.2** Add multiples of 10 or 100
- J.2** Subtract multiples of 10 or 100
- L.7** Input/output tables - add and subtract by 10
- L.14** Input/output tables - add and subtract by 100
- L.15** Input/output tables - add and subtract by 10 or 100