Grade 1 – Evidence Based Statements

Overview of the Maryland Comprehensive Assessment Program (MCAP)

The Maryland Comprehensive Assessment Program (MCAP) includes a coherent set of mathematics assessments aligned to the Maryland College and Career Ready Standards for Mathematics.

The MCAP Mathematics assessment development process is based on Evidence -Centered Design (ECD). The Evidence-Centered Design process begins by establishing the answer to "What skills and understandings should be assessed?" The Maryland College and Career Ready Standards (MCCRS) describe the skills and understandings that the MCAP Mathematics assessments assess. Assessments are then designed to gather evidence that allows inferences to be made. Assessments can be designed to allow inferences of various grain sizes. The MCAP Mathematics assessments are designed to provide evidence that allows only general inferences about a student's mathematical skills and understandings to be made.

Overview of the MCAP Mathematics Evidence Statements

MCAP Mathematics Evidence Statements help teachers, curriculum developers, and administrators understand how the MCCRSM will be assessed. Assessment items are designed to elicit the evidence described in the Evidence Statements.

The MCAP Mathematics Evidence Statements are organized using the same structure as the MCCRSM. The Domains, Clusters, and then Standards organize the Grade 2 Evidence Statements.

ORGANIZATION OF EVIDENCE STATEMENTS

The MCAP Mathematics Evidence Statements are organized using the same structure and wording as the MCCRS. Each grade is organized by the mathematical domains for the grade followed by the cluster headings. The standards for each domain are listed under the appropriate cluster heading with an explanation explaining how evidence is being gathered for that standard (i.e., how the standard is being assessed.) When applicable, the bolded portion of the standard addresses the focus of the evidence statement.

CODING OF CONTENT EVIDENCE STATEMENTS

Explanation of Coding	Example of the Evidence Statement
Assessing the Entire Standard • The evidence statement code is the same as the MCCRSM. • The exact language and intent of the entire standard is assessed, which includes examples and "e.g." parts of the standard.	• 1.NBT.A.1 Count to 120 starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
Assessing Portions of a Standard with Two or More Concepts • The evidence statement code is the same as the MCCRSM • The portion of the standard that is assessed will appear in bold font.	• 1.NBT.C4 **Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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**. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
Assessing Portions of a Standard with Multiple Operations • The evidence statement code is the same as the MCCRSM with an addition of a dash and a sequential number, e.g. -1, -2, -3, … • The portion of the standard that is being assessed will appear in bold font.	• 1.OA.A.1-1 **Use addition** and subtraction **within 20 to solve word problems involving situations of adding to,** taking from, putting together, taking apart, and comparing, **with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.** • 1.OA.A.1-2 **Use** addition and **subtraction within 20 to solve word problems involving situations of adding to,** taking from, putting together, taking apart, and comparing, **with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Standards for Mathematical Practice

The Standards for Mathematical Practice describe the varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These practice rest on important “processes and proficiencies” with longstanding importance in mathematics education.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Definitions

Defined below are some common terms used in the Evidence Statements.

- **Context:** The situation or setting for a word problem. The situations influence the solution path.
- **Thin Context:** A sentence or phrase that provides meaning for the quantity/quantities in a problem. For example, “The fractions represent lengths of a string.”
- **No context:** The item has no situation or setting. There are only numbers, symbols, and/or visual models in the item.
- **Visual models:** Drawn or pictorial examples that are representations of the mathematics.

Content Subclaim

1.OA Operations and Algebraic Thinking

1.OA.A Represent and solve problems involving addition and subtraction.

1.OA.A.1-1 **Use addition** and subtraction **within 20 to solve word problems involving situations of adding to**, taking from, putting together, taking apart, and comparing, **with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Evidence Statement:

- Use addition to solve **adding-to** problems with either result unknown or change unknown.

Clarifications:

- The sums for addition problems must be **within 20**.
- Items must be in context.
- Items may contain drawings or equations with a symbol for the unknown number to represent the problem.
- Allowable problem types are **result unknown** and **change unknown.** For more information about problem types, refer to Table 1, found in the back of this document.
    - **Result unknown:**

      Two birds sat on a ledge. Three more birds flew to the ledge. How many birds are now on the ledge?

      2 + 3 = ?
    - **Change unknown:**

      Two birds sat on a ledge. Some more birds flew to the ledge. Then there were five birds on the ledge. How many birds flew over to the first two?

      2 + ? = 5

1.OA.A.1-2 **Use** addition and **subtraction within 20 to solve word problems involving situations of** adding to, **taking from**, putting together, taking apart, and comparing, **with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Evidence Statement:

- Use subtraction to solve **taking-from** problems with either result unknown, change unknown, or start unknown.

Clarifications:

- The minuend, subtrahend, and difference in subtraction problems must be within 20.
- Items must be in context.
- Items may contain drawings or equations with a symbol for the unknown number to represent the problem.
- Allowed symbols for the unknown include a question mark, an empty box, or a blank space.
- Allowable problem types are **result unknown** and **change unknown.** For more information about problem types, refer to Table 1, found in the back of this document.
    - **Result Unknown:**

      Three oranges were on the table. I ate one orange. How many oranges are on the table now?

      3 -1 = ?
    - **Change Unknown:**

      Three oranges were on the table. I ate some oranges. Then there were two oranges. How many oranges did I eat?

      3 - ? = 2

1.OA.A.1-3 **Use addition** and subtraction **within 20 to solve word problems involving situations of** adding to, taking from, **putting together,** taking apart, and comparing, **with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Evidence Statement:

- Use addition to solve **putting-together** problems with either addend unknown.

Clarifications:

- **Addend unknown:** The total is always known and either addend may be unknown.
- The sum in addition problems must be **within 20**.
- Items must be in context.

- Items may contain drawings or equations with a symbol for the unknown number to represent the problem.
- Allowed symbols for the unknown include a question mark, an empty box, or a blank space.
- Allowable problem type is **addend unknown.** For more information about problem types, refer to Table 1, found in the back of this document.
    - **Addend Unknown:** Ten marbles are on the table. Five are red and the rest are green. How many marbles are green?
      5 + ? = 10 or

      ? + 5 = 10

1.OA.A.1-4 **Use** addition and **subtraction within 20 to solve word problems involving situations of** adding to, taking from, putting together, **taking apart,** and comparing**, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Evidence Statement:

- Use subtraction to solve **taking-apart** problems with both addends unknown.

Clarifications:

- Use both addend unknown situations to show decompositions of a given number with the total to the left of the equal sign (**Total = addend + addend)**.
- Items must be in context.
- The sum in addition problems must be **greater than ten but no more than 20**.
- Items may ask for more than one decomposition.
- Items will not include incorrect equations.
- Allowable problem type is **both addends unknown.** For more information about problem types, refer to Table 1, found in the back of this document.
    - **Both Addends Unknown:** Max has five marbles. How many can she put in her left hand and how many in her right hand?

      5 = 0 + 5

      5 = 5 + 0

      5 = 1 + 4

      5 = 4 + 1

      5 = 2 + 3

5 = 3 + 2

1.OA.A.1-5 **Use addition** and subtraction **within 20 to solve word problems involving situations of** adding to, taking from, putting together, taking apart, and **comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Evidence Statement:

- Use addition to solve **comparing** problems with either difference unknown or bigger unknown.

Clarifications:

- The sums in items must be **within 20.**
- For the bigger unknown or smaller unknown situations, one version directs the correct operation using "more" for bigger unknown and "less" for smaller unknown.
- Items must start with a known quantity.
- Items must be in context.
- Allowable problem types are **difference unknown** or **bigger unknown.** For more information about problem types, refer to Table 1, found in the back of this document.
    - **Difference Unknown:** "How many more?" version: A teacher has two cats. A principal has five cats. How many more cats does the principal have than the teacher?

      2 + ? = 5
    - **Bigger Unknown:** Version with "more": A teacher has two cats. A principal has three more cats than the teacher. How many cats does the principal have?

      2 + 3 = ?

1.OA.A.1-6 **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.**

Evidence Statement:

- Use subtraction to solve **comparing** problems with either difference unknown or smaller unknown.

Clarifications:

- The subtrahends and minuends in items must be **within 20.**
- For the bigger unknown or smaller unknown situations, one version directs the correct operation using "more" for bigger unknown and "less" for smaller unknown. "Fewer" may also be used.
- Items must start with a known quantity.
- Items must be in context.
- Allowable problem types are **difference unknown** or **smaller unknown.** For more information about problem types, refer to Table 1, found in the back of this document.
    - **Difference Unknown:** "How many fewer?" version: A teacher has two cats. A principal has five cats. How many fewer cats does the teacher have than the principal?

      5 – 2 = ?
    - **Smaller Unknown:** Version with "more": A principal has five cats. The principal has three more cats than a teacher. How many cats does the teacher have?

      5 – 3 = ?

1.OA.A.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Evidence Statement:

- Solve word problems involving three addends whose sum is less than or equal to 20.

Clarifications:

- The sums in addition problems must be **within 20**.

1.OA.B Understand and apply properties of operations and the relationship between addition and subtraction.

1.OA.B.3 Apply properties of operations as strategies to add and subtract. (Students need not use formal terms for these properties.) Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10, which equals 12. (Associative property of addition.)

Evidence Statement:

- Use the associative property or the commutative property to add and subtract **within 20.**

Clarifications:

- Commutative or associative property terminology is not assessed.
- Numbers should be selected to encourage the use of the associative or commutative property.

1.OA.B.4 Understand subtraction as an unknown addend problem. For example, subtract 10-8 by finding the number that makes 10 when added to 8.

Evidence Statement:

- Use addition to solve a given subtraction problem.

Clarifications:

- Items do not have context.
- Subtraction must be **within 20**.
- Drawings, pictures, and equations may be used with a symbol for the sum as the unknown.
- Allowed symbols for the unknown include a question mark, an empty box, or a blank space.

1.OA.C Add and subtract within 20.

1.OA.C.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

This is an instructional standard. This standard is not directly assessed.

1.OA.C.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten (e.g. 8 + 6 = 8 + 2 + 4, which leads to 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1, which leads to 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1, which equals 13).

This is an instructional standard. This standard is not directly assessed.

1.OA.D Work with addition and subtraction equations.

1.OA.D.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.

Evidence Statement:

- Determine if equations are true or false with the sum or difference coming at the beginning or the end of the equation.

Clarifications:

- Items do not have context.
- Add and subtract **within 20.**

1.OA.D.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the question true in each of the equations 8 + ? = 11, 5 = ? - 3, 6 + 6 = ?.

Evidence Statement:

- Use addition and subtraction within 20 to solve problems with an unknown in any position.

Clarifications:

- Items do not have context.
- Add and subtract **within 20.**
- Allowed symbols for the unknown include a question mark, an empty box, or a blank space.

1.NBT Number and Operations in Base Ten

1.NBT.A Extend the counting sequence.

1.NBT.A.1 Count to 120 starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **This is an instructional standard. This standard is not directly assessed.**

1.NBT.B Understand place value.

1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones.

2a. Understand the following as a special case: 10 can be thought of as a bundle of ten ones -- called a "ten."

2b. Understand the following as a special case: The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

2c. Understand the following as a special case: The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

Evidence Statement:

- The language of the standard guides the creation of assessment items.

Clarifications:

- Items do not have context.
- Items ask students to flexibly name a number using tens and ones.
- Special cases 2b & 2c can be assessed within items. Special case 2a is an instructional standard and is not directly assessed.

1.NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Evidence Statement:

- Compare two two-digit numbers using comparison symbols.

Clarifications:

- Items do not have context.
- Items must compare two two-digit numbers from 10 to 99.
    - Numbers may be within the same ten.
    - Numbers may be within a different ten with the same or a different digit in the ones place.

1.NBT.C Use place value understanding and properties of operations to add and subtract.

1.NBT.C.4 **Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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.** Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

Evidence Statement:

- Use drawings, pictures, strategies based on place value, and properties of operations to add within 100.

Clarifications:

- Items do not have context.
- The sum in addition must be within 100 and may include:
- Provide common tools such as base ten blocks, bundles and sticks, number lines, and 100 charts for student use.

1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

Evidence Statement:

- Calculate “10 more” or “10 less” than a given two-digit number.

Clarifications:

- Items do not have context.
- Values are two-digit numbers from 11 to 89.
- Two-digit numbers should not be a multiple of 10.

1.NBT.C.6 Subtract multiples of 10 in the range of 10-90 from multiples of 10 in the range of 10-90 (positive or zero differences), 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.

Evidence Statement:

- Subtract multiples of 10 from multiples of 10 with a difference that is 0 or greater.

Clarifications:

- Multiples are in the range of 10-90.

1.MD Measurement and Data

1.MD.A Measure lengths indirectly and by iterating length units.

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

This is an instructional standard. This standard is not directly assessed.

1.MD.A.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Evidence Statement:

- The language of the standard guides the creation of assessment items.

Clarifications:

- Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
- Keep measurements to standard units of 1 inch or non-standard units such as connecting cubes and paper clips.

1.MD.B Tell and write time.

1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.

Evidence Statement:

- Tell time to the hour and half hour using analog clocks.

Clarifications:

- Digital clocks are not assessed.
- Students may be asked to identify the correct time or to match the correct clock to a time written to the hour or half hour.

1.MD.C Work with time and money.

1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

This is an instructional standard. This standard is not directly assessed.

1.G Geometry

1.G.A Reason with shapes and their attributes.

1.G.A.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

This is an instructional standard. This standard is not directly assessed.

1.G.A.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

This is an instructional standard. This standard is not directly assessed.

1.G.A.3 **Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*.** Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Evidence Statement:

- Partition circles and rectangles into two or four equal shares and describe the whole as two halves, four fourths, or four quarters.

Clarifications:

- The focus of items is to identify correctly partitioned shapes and not physically partition them.
- Items are limited to halves, fourths, and quarters.

This standard is foundational work for fractions in grade 3.

Table 1: Common addition and subtraction situations (adapted from the Common Core State Standards Initiative)

	Results Unknown	Change Unkown	Start Unknown
Add to	Two birds sat on a ledge. Three more birds flew to the ledge. How many birds are now on the ledge? 2 + 3 = ?	Two birds sat on a ledge. Some more birds flew to the ledge. Then there were five birds on the ledge. How many birds flew over to the first two? 2 + ? = 5	Some birds sat on a ledge. Three more birds flew to the ledge. Then there were five birds on the ledge. How many birds were on the ledge before? ? + 3 = 5
Take from	Three oranges were on the table. I ate one orange. How many oranges are on the table now? 3 – 1 = ?	Three oranges were on the table. I ate some oranges. Then there were two oranges. How many oranges did I eat? 3 – ? = 2	Some oranges were on the table. I ate one orange. Then there were two oranges. How many oranges were on the table before? ? – 3 = 2
	Total Unknown	Addend Unknown	Both Addends Unknown
Put Together/ Take Apart	Five red marbles and two green marbles are on the table. How many marbles are on the table? 5 + 2 = ?	Ten marbles are on the table. Five are red and the rest are green. How many marbles are green? 5 + ? = 10 or ? + 5 = 10	Max has five marbles. How many can she put in her left hand and how many in her right hand? 5 = 0 + 5 5 = 5 + 0 5 = 1 + 4 5 = 4 + 1 5 = 2 + 3 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare "more"	**"How many more?" version:** Macy has two cats. Marcus has five cats. How many more cats does Marcus have than Macy? 2 + ? = 5	**Version with "more":** Marcus has three more cats than Macy. Macy has two cats. How many cats does Marcus have? 2 + 3 = ?	Version with "more": Marcus has three more cats than Macy. Marcus has five cats. How many cats does Macy have? 5 – 3 = ?
Compare "fewer"	**"How many fewer?" version:** Macy has two cats. Marcus has five cats. How many fewer cats does Macy have than Marcus? 5 – 2 = ?	**Version with "fewer":** Macy has three fewer cats than Marcus. Macy has two cats. How many cats does Marcus have? 3 + 2 = ?	**Version with "fewer":** Macy has three fewer cats than Marcus. Marcus has five cats. How many cats does Macy have? ? + 3 = 5

Darker shading indicates the four difficult subtypes that students should work on in grade 1 but need not master until grade 2. *Adapted from CCSS, p.88, which is based on Mathematics Learning in Early Childhood: Paths Towards Excellence and Equity, National Research Council, 2009, pp. 32-22 and the CCSS Progression document pp. 9.*