Measure lengths indirectly and by iterating length units (Standards 1–2).

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

Concepts and Skills to Master

- Understand that three objects can be compared with common measurable attributes
- Order objects from longest/tallest to shortest, or shortest to longest/tallest
- Directly compare two objects to a third object. Use those comparisons to indirectly compare the two objects. (The book is longer than the pencil. The crayon is shorter than the pencil. Therefore, the crayon is shorter than the book.)

Teacher Note: First grade students continue to use direct comparison to compare lengths. Direct comparison means that students compare the amount of an attribute in two objects without using a standard measuring tool. For example, two students may stand back to back to determine who is taller. Sometimes a third object can be used as an intermediary, allowing indirect comparison. For example, students may find objects in the classroom that are the same length as, longer than, and shorter than their forearm. They will know that the objects longer than their forearm are also longer than the objects shorter than their forearm.

Related Standards: Current Grade Level	Related Standards: Future Grade Levels
1.MD.2 Express the length of an object as a whole number of length units by laying multiple copies of a shorter object end to end **1.MD.4** Organize, represent and interpret data with up to three data points. Ask and answer questions about how many more or less in one category than in another	**2.MD.1** Measure the length of an object by selecting and using appropriate tools **2.MD.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit **3.MD.4** Generate measurement data by measuring lengths

Critical Background Knowledge from Previous Grade Levels

- Describe measurable attributes of objects, such as length (K.MD.1)
- Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the length of two pencils and describe one as shorter or longer (K.MD.2)

Academic Vocabulary

measure, order, first, second, third, length, height, more, less, longer than, taller than, shorter than, compare

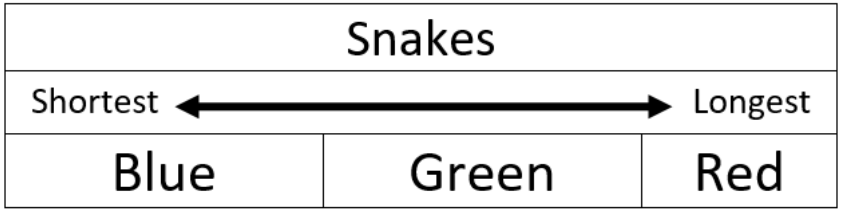
Suggested Models	Suggested Strategies
Sample Question: The snake handler is trying to put the snakes in order from shortest to longest. She knows that the red snake is longer than the green snake. She also knows that the green snake is longer than the blue snake. In what order should she put the snakes?  	● Given three objects order them from the tallest to shortest and shortest to tallest ● Compare heights of three classmates ● Build objects that are longer or shorter than a given object ● Use tape on the floor, a line on a page, or string to measure and compare objects

Image Source: http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/1.pdf

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Measure lengths indirectly and by iterating length units (Standards 1–2).

Standard 1.MD.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.*

Concepts and Skills to Master

- Understand that to measure an object, one must use the same unit of measurement, end-to-end, with no gaps or overlaps
- Measure the length of a variety of objects using non-standard tools such as paper clips, linking cubes, circle counters, etc.
- Record the length of objects with a whole number and label of an appropriate nonstandard unit

Teacher Note: Though this standard does not directly address comparison, students may use the same unit to measure both items, and use the information to draw conclusions about the length of the two objects. Students are not expected to measure with standard units until second grade.

Related Standards: Current Grade Level	Related Standards: Future Grade Levels
1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object **1.NBT.1** Count to 120, represent a number of objects with a written numeral	**2.MD.1, 2.MD.2, 2.MD.3, 2.MD.4** Measure and estimate lengths in standard units **2.MD.5, 2.MD.6** Relate addition and subtraction to length; Represent lengths on a number line **2.MD.9, 3.MD.4** Generate measurement data by measuring lengths of several objects **3.MD.6** Measure area by counting unit squares

Critical Background Knowledge from Previous Grade Levels

- Describe measurable attributes of objects, such as length or weight (K.MD.1)
- Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute (K.MD.2)
- Understand the relationship between numbers and quantities connect counting to cardinality (K.CC.4)

Academic Vocabulary

unit, measure, gap, overlap, length

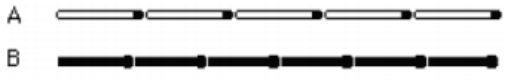
Suggested Models	Suggested Strategies
Example: Which row is longer?  **Student Incorrect Response:** The row with 6 sticks is longer. Row B is longer. **Student Correct Response:** They are both the same length. See, they match up end to end. Researchers showed children two rows of matches. Although, from the adult perspective, the lengths of the rows were the same, many children argued that the row with 6 matches was longer because it had more matches. They counted units (matches), assigning a number to a discrete attribute (cardinality). In measuring continuous attributes, the sizes of the units (white and dark matches) must be considered. First grade students can learn that objects used as basic units of measurement must be the same size.	• Use a variety of manipulatives (paper clips, linking cubes, teddy bear counters, etc.) as tools when measuring objects • Measure the same object using different nonstandard units • Have students use their own feet to measure distance (see the book, “How Big is a Foot?”)

Image Source: http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/1.pdf

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Tell and write time (Standard 3).	
Standard 1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	
Concepts and Skills to Master	
● Distinguish the difference between the minute and hour hands on an analog clock ● Tell time on analog and digital clocks to the hour and half hour ● Understand the relationship between the hour and minute hands as they move around the clock ● Represent time displayed in a digital format on an analog clock and time displayed on an analog in a digital format	
Related Standards: Current Grade Level	Related Standards: Future Grade Level
1.G.3 Partition circles into two equal shares. Describe the shares using the word halves	**2. MD.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. **3.MD.1** Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, for example, by representing the problem on a number line diagram
Critical Background Knowledge	
• Students are initially introduced to time in first grade. There are no kindergarten standards related to time. • Students may have had informal experience with time in relation to daily activities (morning, afternoon, night, “we go to bed at 8 o’clock,” etc.)	
Academic Vocabulary	
time, hour, half hour, minute, minute hand, hour hand, analog clock, digital clock, o’clock, thirty (for example, “six”-thirty, “seven”-thirty), half past	
Suggested Models	Suggested Strategies
 All of these clocks indicte the hour of “two”, although they look slightly different. This is an important idea for students as they learn to tell time.	● Manipulate a physical clock to represent time in hours and half hours ● Manipulate a virtual clock to represent time in hours and half hours ● Match times on digital and analog clocks ● Apply time to real world situations (class schedule, school events, etc.)
Image Source: http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/1.pdf	

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Represent and interpret data (Standard 4).	
Standard 1.MD.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.	
Concepts and Skills to Master	
● Organize given data with up to three categories (see Suggested Models below) ● Represent data with up to three categories ● Interpret data with up to three categories ● Ask and answer questions about the total number of data points (For example, How many in each category? How many more or less are in one category than in another?). ● Use measurement vocabulary to analyze data (see Academic Vocabulary below) Teacher Note: There is no single correct way to represent categorical data. First grade students are not required to use any specific format. However, students should be familiar with mark schemes such as tally marks, pictorial representations, etc. A format that might be useful in first grade is a picture graph in which one picture represents one object. The Standards in grades 1–3 do not require students to gather categorical data.	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
1.OA.1 Use addition and subtraction within 20 to solve word problems **1.OA.2** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20	**2.MD.10** Draw a picture graph and a bar graph with single-unit scale to represent a data set with up to four categories **2.OA.1** Use addition and subtraction within 100 to solve one- and two-step word problems
Critical Background Knowledge from Previous Grade Levels	
● Understand the relationship between numbers and quantities; connect counting to cardinality (K.CC.4) ● Count to answer how many up to 20 (K.CC.5)	
Academic Vocabulary	
organize, sort, classify, group, graph, category, attribute, less than, more than, fewer, title, labels, data, most, least	

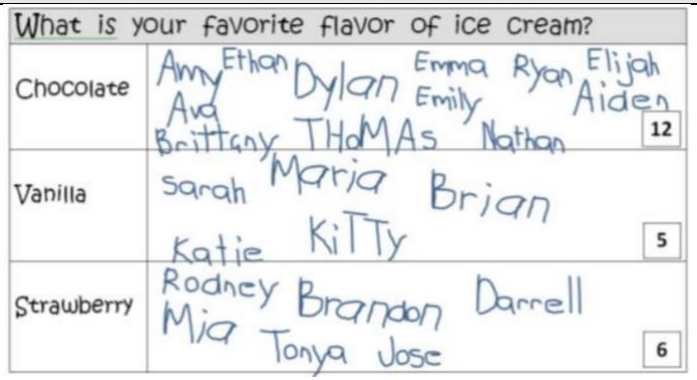
Suggested Models	Suggested Strategies
Sorting Categorical Data The marks represent individual data points. The two category counts, 7and 8, are a numerical summary of the data.  12 people liked chocolate. Chocolate has the most votes. Vanilla has 5 votes. 1 more vote and it can tie with strawberry.	● Think about survey questions to pose and limit responses to three categories (see Suggested Model on the left) ● Create a table or chart to organize data ● Use tally marks to collect data ● Ask questions to each other about data collected

Image Sources: http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/1.pdf; https://commoncoretools.files.wordpress.com/2011/06/ccss_progression_md_k5_2011_06_20.pdf

Identify the value of coins (Standard 5).	
Standard 1.MD.5 Identify the values of pennies, nickels, dimes and quarters and know their comparative values. *(For example, a dime is of greater value than a nickel.)* Use appropriate notation to designate a coin's value. *(For example, 5¢.)*	
Concepts and Skills to Master	
● Recognize names and identify values of pennies, nickels, dimes, and quarters ● Compare values of coins (a penny is of less value than a quarter, etc.) ● Use the cents symbol to write the value of a penny, a nickel, a dime, and a quarter (1¢, 5¢, 10¢, 25¢)	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
1.NBT.3 Compare numbers using the symbols >, =, and <	**2.MD.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *For example, if you have 2 dimes and 3 pennies, how many cents do you have?* • The context of money will be use when working on operations in all future grade levels
Critical Background Knowledge from Previous Grade Levels	
● Students are initially introduced to money in first grade. There are not any kindergarten standards related to money. ● Students may have had informal experience with money in relation to daily activities (counting change in a piggy bank, buying candy at the store, etc.) ● Compare two numbers using "greater than," "less than," or "equal to" (K.CC.7)	
Academic Vocabulary	
penny, nickel, dime, quarter, coin, cents, ¢, value, compare, greater, less	
Suggested Models	Suggested Strategies
● Expose students to older and newer physical coins ● Expose students to the front and back sides of the coins 	● Relate physical coins to images of coins ● Match coins' notations and values to images of coins or physical coins ● Use physical coins to compare images, size, and color

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