

Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.	
Content Domain: Measurement and Data	
Target G [m]: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. (DOK 1, 2)	
Tasks for this target generally require students to solve straightforward one-step contextual word problems using the four operations in situations involving time intervals in minutes, liquid volume in liters, and mass/weight in grams and kilograms. Situations involving intervals of time are limited to addition and subtraction. Some foundational tasks that assess telling and writing time to the nearest minute may be appropriate for building a range of difficulty in the adaptive item bank. The emphasis for this target is not on cultural aspects of time such as clocks but rather on time as a measurement quantity that can be operated on arithmetically like other more tangible measurement quantities.	
Standards: 3.MD.A, 3.MD.A.1, 3.MD.A.2	3.MD.A Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. 3.MD.A.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, e.g., by representing the problem on a number line diagram. 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling: 2.MD.A, 2.MD.A.3 2.MD.C, 2.MD.C.7 4.MD.A, 4.MD.A.1, 4.MD.A.2	Related Grade 2 Standards 2MD.A Measure and estimate lengths in standard units. 2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters. 2MD.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. Related Grade 4 Standards 4.MD.A Solve problems involving measurement and conversion of measurements. 4.MD.A.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. <i>For example, know that 1 ft. is 12 times as long as 1 in. Express the length of</i>

	<p>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), ...</p> <p>4.MD.A.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.</p>
DOK Levels:	1, 2
Achievement Level Descriptors:	
<p>RANGE Achievement Level Descriptor (Range ALD)</p> <p>Target G: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</p>	Level 1 Students should be able to tell and write time to the nearest five-minute interval and solve addition and subtraction problems involving fifteen-minute time intervals.
	Level 2 Students should be able to tell and write time to the nearest minute and solve one-step addition problems involving five-minute time intervals. They should be able to measure liquid volumes using liters and masses of objects using grams and kilograms and add or subtract to solve one-step word problems involving masses or liquid volumes that are given in the same units.
	Level 3 Students should be able to solve one-step addition and subtraction problems involving time intervals in minutes. They should be able to multiply or divide to solve one-step problems involving masses or volumes that are given in the same units.
	Level 4 Students should be able to solve one-step addition or subtraction problems involving all time intervals from hours to minutes.
Evidence Required:	<ol style="list-style-type: none"> 1. The student tells and writes time to the nearest minute. 2. The student solves one-step word problems with addition and subtraction including time intervals in minutes. 3. The student solves one-step word problems involving liquid volume (liters) and mass (grams, kilograms) using the four operations.
Allowable Response Types:	Multiple Choice, single correct response; Equation/Numeric
Allowable Stimulus Materials:	number line diagram, measurement scales, tables, measuring cups, analog clocks, digital clocks
Construct-Relevant Vocabulary:	grams (g), kilograms (kg), liters (L), estimate, time, time intervals, minute, hour, measure, liquid volume, mass, standard units, metric
Allowable Tools:	None
Target Specific Attributes:	Word problems involving intervals of time are limited to addition and subtraction.
Non-targeted Constructs:	

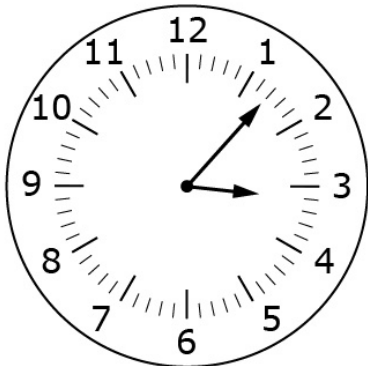
Accessibility Guidance:	<p>Item writers should consider the following Language and Visual Element/Design guidelines¹ when developing items.</p> <p>Language Key Considerations:</p> <ul style="list-style-type: none"> • Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context • Avoid sentences with multiple clauses • Use vocabulary that is at or below grade level • Avoid ambiguous or obscure words, idioms, jargon, unusual names and references <p>Visual Elements/Design Key Considerations:</p> <ul style="list-style-type: none"> • Include visual elements only if the graphic is needed to assess the construct or it aids in the understanding of the context • Use the simplest graphic possible with the greatest degree of contrast, and include clear, concise labels where necessary • Avoid crowding of details and graphics <p>Items are selected for a student's test according to the blueprint, which selects items based on Claims and targets, not task models.</p> <p>As such, careful consideration is given to making sure fully accessible items are available to cover the content of every Claim and target, even if some item formats are not fully accessible using current technology.²</p>
Development Notes:	<p>Some tasks coding to Evidence Statement 2 will be assessed in Claim 2 and Claim 4.</p> <p>Items calculating the interval of time using a number line with the beginning and ending times labeled will be assessed in Claim 2.</p> <p>Items calculating the interval of time using a chart with beginning and ending times labeled will be assessed in Claim 4.</p> <p>Items calculating an end time, given the start time using text or graphics and interval of time will be assessed in Claim 2.</p>

¹ For more information, refer to the General Accessibility Guidelines at:

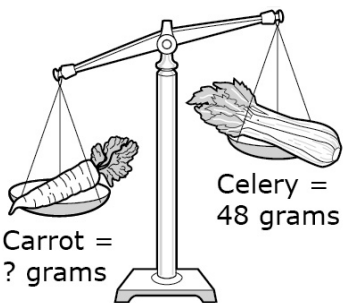
<http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/Guidelines/AccessibilityandAccommodations/GeneralAccessibilityGuidelines.pdf>

² For more information about student accessibility resources and policies, refer to

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced_Guidelines.pdf

<p>Task Model 1</p> <p>Response Type: Multiple Choice, single correct response</p> <p>DOK Level 1</p> <p>3.MD.A.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, e.g., by representing the problem on a number line diagram.</p> <p>Evidence Required: 1. The student tells and writes time to the nearest minute.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to identify time to the minute on an analog clock.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Model shows time to 15 or 30 minute intervals. Model shows time to 5 minute intervals. Model shows time to 1 minute intervals. <p>TM1 Stimulus: The student is prompted to identify time, in minutes, on an analog clock.</p> <p>Example Stem: Use this clock to answer the question.</p>  <p>Select the time, to the nearest minute, shown on the clock.</p> <p>A. 1:15 B. 2:07 C. 3:07 D. 7:15</p> <p>Rubric: (1 point) The student correctly selects the time displayed on the clock (e.g., C).</p> <p>Response Type: Multiple Choice, single correct response</p>
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<p>Task Model 2</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>3.MD.A.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, e.g., by representing the problem on a number line diagram.</p> <p>Evidence Required: 2. The student solves one-step word problems with addition and subtraction including time intervals in minutes.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to enter an interval of time in minutes.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Times within each item can include any of the following: <ul style="list-style-type: none"> • 15 minutes intervals • 5 minute intervals • 1 minute intervals • Item difficulty can be adjusted via this example method: <ul style="list-style-type: none"> • Calculate intervals of time presented in a contextual word problem. <p>TM2 Stimulus: The student is presented with a one-step, contextual problem using images of clocks or text only.</p> <p>Example Stem: A music class starts at 1:32 p.m and ends at 2:15 p.m.</p> <p>Enter the length, in minutes, of the music class.</p> <p>Rubric: (1 point) The student correctly enters the length of the class in minutes (e.g., 43).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 3</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p> <p>Evidence Required: 3. The student solves one-step word problems involving liquid volume (liters) and mass (grams, kilograms) using the four operations.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to enter the solution to a one-step contextual word problem involving measurement.</p> <p>Stimulus:</p> <ul style="list-style-type: none"> Measurements may be mass (g, kg) or liquid volume (L). Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Addition/subtraction within 100; with or without regrouping Addition with a sum within 1000; with or without regrouping Subtraction with a minuend within 1000; with or without regrouping Multiplication with a product within 100 Division with a single-digit divisor and dividend within 100 A graphic may or may not be included. <p>TM3 Stimulus: The student is presented with a one-step contextual word problem.</p> <p>Example Stem 1: A bunch of celery has a mass of 48 grams. A carrot has a mass that is 15 grams more than the celery.</p> <div>  </div> <p>Enter the mass, in grams, of the carrot.</p> <p>Example Stem 2: A farmer takes 46 kilograms of potatoes to the market. The farmer sells 29 kilograms of the potatoes.</p> <p>Enter the number of kilograms of potatoes the farmer has left.</p> <p>Rubric: (1 point) The student writes the correct solution (e.g., 63; 17).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 3</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p> <p>Evidence Required: 3. The student solves one-step word problems involving liquid volume (liters) and mass (grams, kilograms) using the four operations.</p> <p>Tools: None</p>	<p>TM3 (continued)</p> <p>Example Stem 3: Harold buys 2-liter bottles of juice for a picnic. He buys 8 bottles.</p> <p>How many liters of juice did Harold buy?</p> <p>Example Stem 4: Mrs. Ross made 48 liters of fruit juice for a school picnic. She gives all of the juice to 8 classrooms with each classroom getting the same amount of juice.</p> <p>How many liters of juice does Mrs. Ross give each classroom?</p> <p>Rubric: (1 point) The student writes the correct solution (e.g., 16; 6).</p> <p>Response Type: Equation/Numeric</p>
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