

*Minnesota*

**Minnesota Test of Academic Skills (MTAS)  
Mathematics Item Sampler  
Grade 8**



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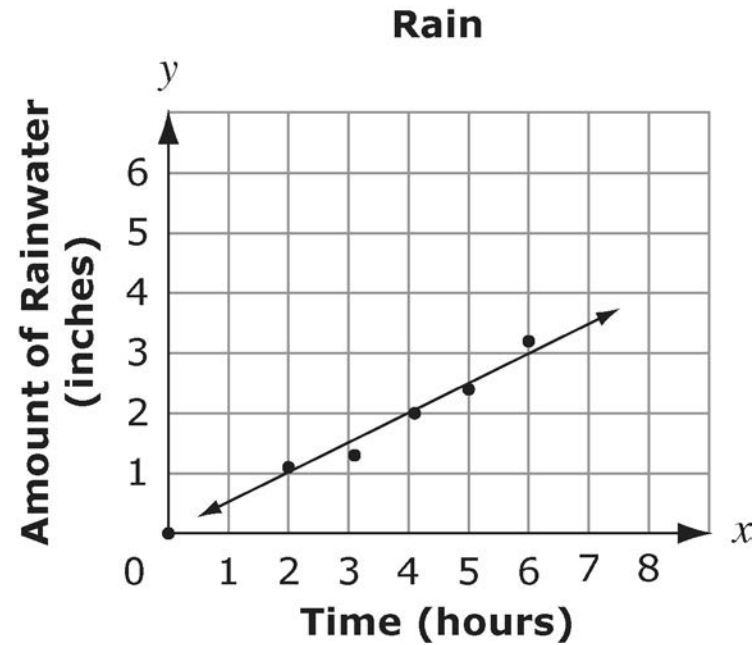
# Minnesota Test of Academic Skills

## Grade 8 Mathematics

### Sample Task 1

Test Administrator Instructions	Score	Student Responses
<p><i>Administration notes:</i></p> <ul style="list-style-type: none"> <li>▪ You may use objects when presenting questions and answer options. However, some tasks limit how objects can be used; any limitations will be specified on the task.</li> <li>▪ Repeat the question exactly as it appears at score 3 as many times as needed until the student responds or until it is clear that the student will not respond.</li> </ul>		
<p><u>Present:</u> M8_Sample 1.1</p> <p><b>Say: Sam recorded the amount of rain that fell in 6 hours. Using the line of best fit, ...point to the line of best fit...how much rain will fall in 8 hours?</b></p> <p><u>Present</u> the answer options in order. <i>Point to each option as you say it.</i></p> <p><b>A. 3 inches</b>  <b>B. 4 inches</b>  <b>C. 5 inches</b></p>	<b>3</b>	<p>4 inches</p> <p><i>If you believe the student's correct response was unintentional, reorder the answer options to B, C, A (instead of A, B, C). Repeat the question. If the student chooses the correct answer again, the task should be scored a 3. If the student chooses an incorrect answer, continue below.</i></p>
<p><i>Additional administration notes:</i></p> <ul style="list-style-type: none"> <li>▪ If the student responds incorrectly or not at all, present the task with support as scripted.</li> <li>▪ Once additional support is provided, the task may not be re-administered for a score of 3.</li> </ul>		
<p><u>Re-present:</u> M8_Sample 1.1</p> <p><b>Say: Find 8 hours on the graph. Point to 8 hours on the x-axis. Using the line of best fit, ...trace along the line of best fit without stopping...how much rain will fall in 8 hours?</b></p> <p><u>Re-present</u> the answer options in order. <i>Point to each option as you say it.</i></p> <p><b>A. 3 inches</b>  <b>B. 4 inches</b>  <b>C. 5 inches</b></p>	<b>2</b>	<p>4 inches</p> <p><i>If you believe the student's correct response was unintentional, reorder the answer options to B, C, A (instead of A, B, C). Repeat the question. If the student chooses the correct answer again, the task should be scored a 2. If the student chooses an incorrect answer, the task should be scored a 1.</i></p>
	<b>1</b>	<p>3 inches or 5 inches</p>
	<b>0</b>	<p>Unrelated or none</p>

**Grade 8 Math 8.4.1.2:** Students will use a line of best fit to make predictions about values not in the original data set.



Using the line of best fit, how much rain will fall in 8 hours?

M8\_Sample 1  
A

3 inches

---

M8\_Sample 1  
B

4 inches

---

M8\_Sample 1  
C

5 inches

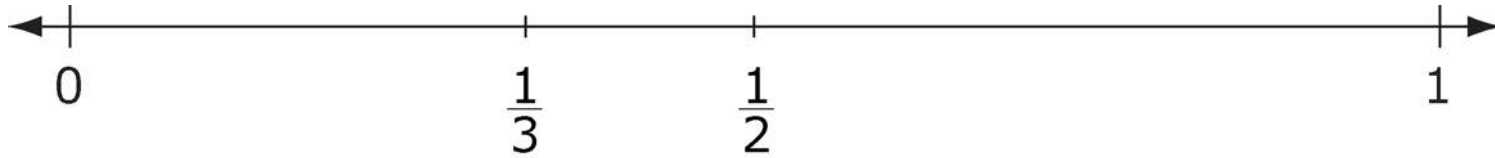
# Minnesota Test of Academic Skills

## Grade 8 Mathematics

### Sample Task 2

Test Administrator Instructions	Score	Student Responses	
<p><i>Administration notes:</i></p> <ul style="list-style-type: none"> <li>▪ You may use objects when presenting questions and answer options. However, some tasks limit how objects can be used; any limitations will be specified on the task.</li> <li>▪ Repeat the question exactly as it appears at score 3 as many times as needed until the student responds or until it is clear that the student will not respond.</li> </ul>			
<p><u>Present:</u> M8_Sample 2.1</p> <p><u>Say:</u> <b>Here is a number line that shows the fractions one-half (<math>\frac{1}{2}</math>) and one-third (<math>\frac{1}{3}</math>).</b> Point to the fractions on the number line. <b>Here is the fraction one-fourth.</b> Point to <math>\frac{1}{4}</math>. <b>Where does the fraction one-fourth belong?</b></p> <p><u>Present</u> the answer options in order. Point to each option as you say "Point A, Point B, Point C."</p> <p><b>A. Point A</b>  <b>B. Point B</b>  <b>C. Point C</b></p>	<b>3</b>	<p>Point A</p> <p><i>If you believe the student's correct response was unintentional, reorder the answer options to B, C, A (instead of A, B, C). Repeat the question. If the student chooses the correct answer again, the task should be scored a 3. If the student chooses an incorrect answer, continue below.</i></p>	
	<p><i>Additional administration notes:</i></p> <ul style="list-style-type: none"> <li>▪ If the student responds incorrectly or not at all, present the task with support as scripted.</li> <li>▪ Once additional support is provided, the task may not be re-administered for a score of 3.</li> </ul>		
	<p><u>Present:</u> M8_Sample 2.2</p> <p><u>Say:</u> <b>Here is another way to show the number line. This is one-half (<math>\frac{1}{2}</math>) ...point to the bar representing <math>\frac{1}{2}</math> ...and this is one-third (<math>\frac{1}{3}</math>) ...point to the bar representing <math>\frac{1}{3}</math>.</b> <b>Here is the fraction one-fourth...</b>point to the bar representing <math>\frac{1}{4}</math>. <b>Where does the fraction one-fourth belong?</b></p> <p><u>Re-present</u> the answer options in order. Point to each option as you say "Point A, Point B, Point C."</p> <p><b>A. Point A</b>  <b>B. Point B</b>  <b>C. Point C</b></p>	<b>2</b>	<p>Point A</p> <p><i>If you believe the student's correct response was unintentional, reorder the answer options to B, C, A (instead of A, B, C). Repeat the question. If the student chooses the correct answer again, the task should be scored a 2. If the student chooses an incorrect answer, the task should be scored a 1.</i></p>
<b>1</b>		Point B or Point C	
<b>0</b>		Unrelated or none	

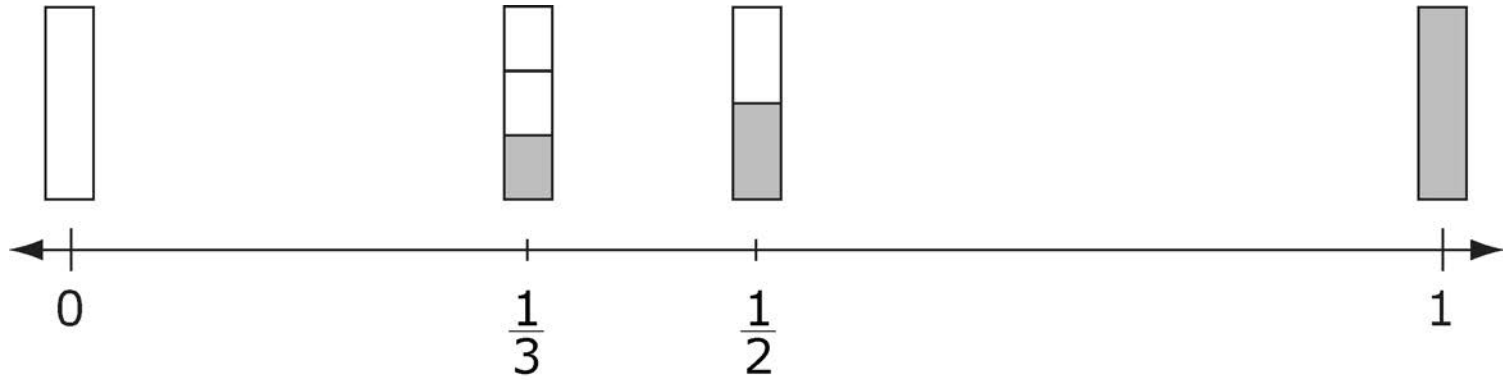
**Grade 8 Math 8.1.1.2:** Students will compare rational numbers; students will locate fractions on a number line.



$$\frac{1}{4}$$

Here is the fraction one-fourth.

Where does the fraction one-fourth belong?

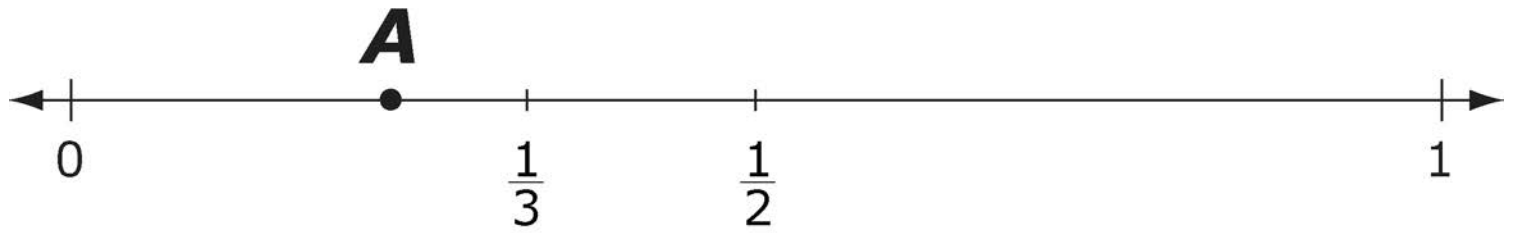


Here is the fraction one-fourth.

Where does the fraction one-fourth belong?

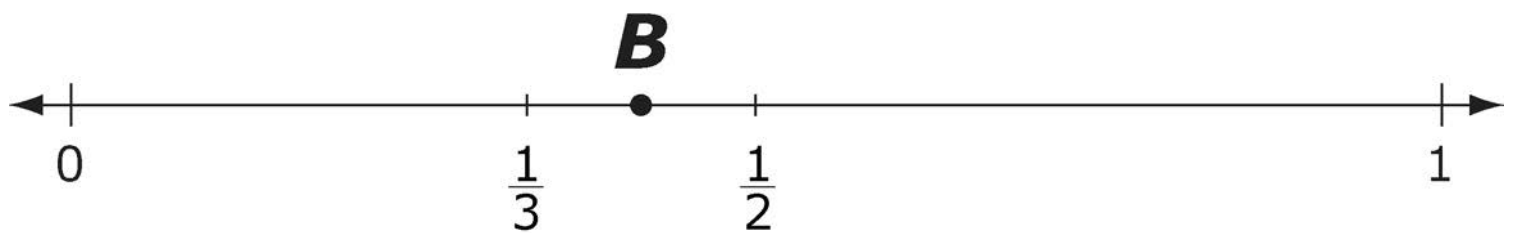
M8\_Sample 2

A



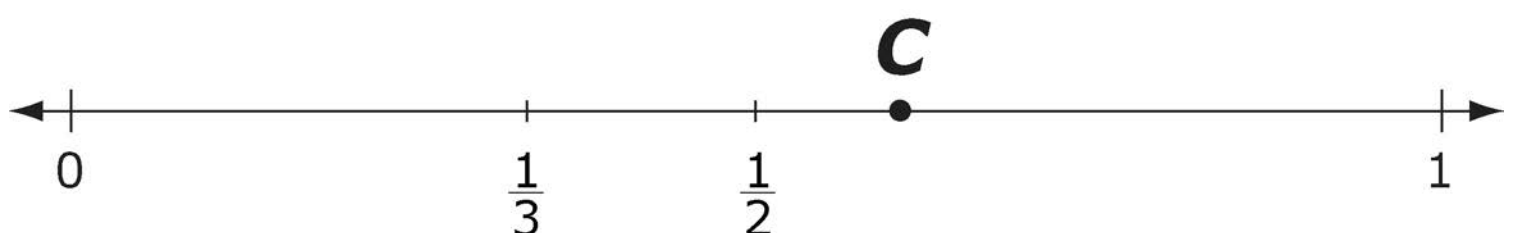
M8\_Sample 2

B



M8\_Sample 2

C





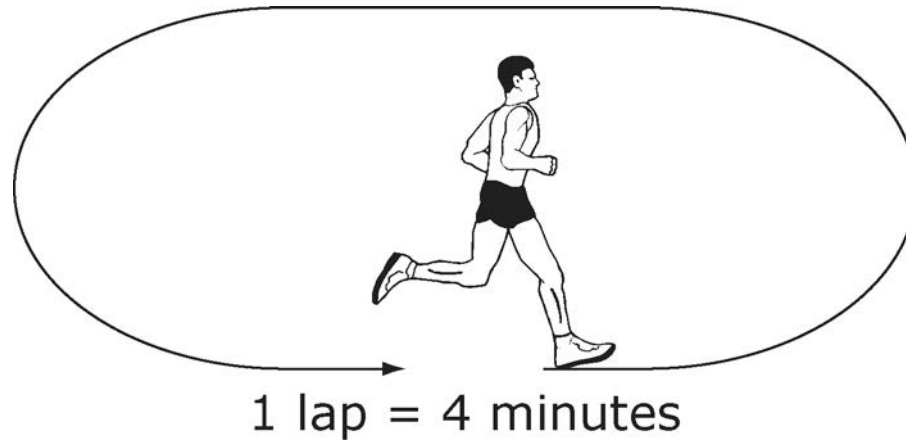
# Minnesota Test of Academic Skills

## Grade 8 Mathematics

### Sample Task 3

Test Administrator Instructions	Score	Student Responses
<p><i>Administration notes:</i></p> <ul style="list-style-type: none"> <li>▪ You may use objects when presenting questions and answer options. However, some tasks limit how objects can be used; any limitations will be specified on the task.</li> <li>▪ Repeat the question exactly as it appears at score 3 as many times as needed until the student responds or until it is clear that the student will not respond.</li> </ul>		
<p><u>Present:</u> M8_Sample 3.1</p> <p><u>Say:</u> <b>Arlo runs 1 lap in 4 minutes. The variable <math>l</math> represents number of laps, and the variable <math>m</math> represents the number of minutes. Point to the graphic and each variable. Which equation can help you find how many laps Arlo runs in 12 minutes?</b></p> <p><u>Present</u> the answer options in order. <i>Point to each option as you say it.</i></p> <p><b>A. <math>l + 4 = m</math></b>  <b>B. <math>l - 4 = m</math></b>  <b>C. <math>l \times 4 = m</math></b></p>	<b>3</b>	$l \times 4 = m$ <p><i>If you believe the student's correct response was unintentional, reorder the answer options to B, C, A (instead of A, B, C). Repeat the question. If the student chooses the correct answer again, the task should be scored a 3. If the student chooses an incorrect answer, continue below.</i></p>
<p><i>Additional administration notes:</i></p> <ul style="list-style-type: none"> <li>▪ If the student responds incorrectly or not at all, present the task with support as scripted.</li> <li>▪ Once additional support is provided, the task may not be re-administered for a score of 3.</li> </ul>		
<p><u>Present:</u> M8_Sample 3.2</p> <p><u>Say:</u> <b>Here is a table that shows how many minutes it takes Arlo to run 1 lap and 2 laps. Point to the graphic. Think about the operation you can use to find out how many laps Arlo can run in 12 minutes. Which equation can help you find how many laps Arlo runs in 12 minutes?</b></p> <p><u>Re-present</u> the answer options in order. <i>Point to each option as you say it.</i></p> <p><b>A. <math>l + 4 = m</math></b>  <b>B. <math>l - 4 = m</math></b>  <b>C. <math>l \times 4 = m</math></b></p>	<b>2</b>	$l \times 4 = m$ <p><i>If you believe the student's correct response was unintentional, reorder the answer options to B, C, A (instead of A, B, C). Repeat the question. If the student chooses the correct answer again, the task should be scored a 2. If the student chooses an incorrect answer, the task should be scored a 1.</i></p>
	<b>1</b>	$l + 4 = m$ or $l - 4 = m$
	<b>0</b>	Unrelated or none



**Grade 8 Math 8.2.4.1:** Students will use linear equations to represent situations involving a constant rate of change.



$l$  = number of laps

$m$  = number of minutes

Arlo runs 1 lap in 4 minutes. Which equation can help you find how many laps Arlo runs in 12 minutes?

 <b><math>l = \text{lap}</math></b>	 <b><math>m = \text{minutes}</math></b>
1	4
2	8

Which equation can help you find how many laps Arlo runs in 12 minutes?

M8\_Sample 3  
A

$$l + 4 = m$$

---

M8\_Sample 3  
B

$$l - 4 = m$$

---

M8\_Sample 3  
C

$$l \times 4 = m$$

## MTAS Mathematics Object List (OPTIONAL) Mathematics Item Sampler

The MTAS Object Lists for mathematics and science include examples of objects and other variations in the presentation of the MTAS tasks. Some common ways to vary the task presentation include (1) using Braille text and tactile graphics, enlarging, or texturizing print and (2) supplementing numbers in tasks with some type of counter. These variations may be used with nearly all math and science tasks unless explicitly prohibited in the task script.

Calculators are allowed on all tasks but may be especially useful for tasks involving basic operations (addition, multiplication, subtraction, and division). Students may use **any** type of calculator on the MTAS with which they have demonstrated appropriate competence during classroom instruction.

Keep in mind that these lists provide recommendations only; test administrators may use different objects and/or text formats to make tasks more accessible for individual students as long as students are not provided with additional content information. For example, several math tasks incorporate a number line with an unlabeled point. Number lines used in classrooms may not be appropriate for all of the MTAS tasks if all points are labeled.

Please contact MDE ([mde.testing@state.mn.us](mailto:mde.testing@state.mn.us)) if you have questions about objects that may be used to represent MTAS tasks.

Task	Objects
<b>Grade 8 Sample 01</b>	<p><b>Present scatterplot using Braille graph paper and objects:</b>            1 clock to represent Time on x-axis            1 picture of raindrops to represent Amount of Rainwater on y-axis            Tactile graphics that represent graph on presentation page</p> <p><b>Present answer options using counters or Braille:</b>            3            4            5</p> <p><b>Note:</b> Total counters needed: 12 counters</p>

<p><b>Grade 8 Sample 02</b></p>	<p><b>Present raised version of number line using sticky string and fraction tiles, or tactile graphics and Braille:</b>  1 number line  <math>0, \frac{1}{3}, \frac{1}{2}, 1, \frac{1}{4}</math></p> <p><b>Present additional information for score 2 using fraction bars with cardboard or tactile graphics:</b>  1 bar with 0 of 1 section shaded or textured  1 bar with 1 of 3 sections shaded or textured  1 bar with 1 of 2 sections shaded or textured  1 bar with 1 of 1 section shaded or textured  1 bar with 1 of 4 sections shaded or textured</p> <p><b>Present answer options using sticky string or tactile graphics for number lines (all with labels 0, 1/3, 1/2, 1):</b>  1 number line with answer option/Point A's dot on it  1 number line with answer option/Point B's dot on it  1 number line with answer option/Point C's dot on it</p>
<p><b>Grade 8 Sample 03</b></p>	<p><b>Present task using pictures, objects, and math tiles, or Thermoform/Piaf pages:</b>  1 textured circle to represent a lap  1 figure to represent Arlo  2 numerals: 1, 4  2 letters: l, m  Use demonstration to represent laps by tracing a finger around the circle  Point to a clock to represent minutes</p> <p><b>Present additional information for score 2 using objects, sticky string, and number tiles or tactile graphics:</b>  4 numerals: 1, 2, 4, 8  1 figure to represent Arlo  1 clock</p> <p><b>Present answer options using math tiles or Braille:</b>  <math>l + 4 = m</math>  <math>l - 4 = m</math>  <math>l \times 4 = m</math></p>