Guidelines for the Development of Accessible Audio Accommodations for Technology-Enhanced Assessment Items

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ABSTRACT

This document specifies recommended guidelines regarding the development of accessible audio accommodations on technology-enhanced items for high-stakes computerized assessments. Also, this document can be used as an auxiliary guide to identify accessible alternatives for item writers when developing new content.

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Purpose of these Guidelines

This document provides guidelines to inform decisions on audio scripting and tagging of assessment items for computer-based delivery. The recommendations in this document are not intended as inflexible rules but rather as a guide to developing audio scripts, text-to-speech (TTS) audio files, and alternative text (alt text) that will best assist students in accessing item content in a standardized manner without violating the construct being measured.

Initially utilizing guidelines developed by the Kansas State Department of Education (KSDE), the first author of this document has developed audio scripts for thousands of items spanning different content areas and item types and has trained dozens of item writers in TTS tagging for the Center for Educational Testing and Evaluation (CETE) at the University of Kansas. In addition, the Guidelines for Accessible Assessments Project (GAAP) grant provided recommendations for the audio representation of Common Core State Standards-related assessment items based on the following: (1) research studies involving the read-aloud accommodation, (2) preexisting state read-aloud guidelines for standardized assessment, and (3) discussion and feedback from the 18 GAAP consortium states, experts on accessibility, and content experts.

In response to advancements in technology and the generation of technology-enhanced (TE) item types, CETE developed and administered TE tests beginning in 2014. These tests required new processes for audio tagging as well as new ways of thinking about audio presentation of novel item types. The current guidelines are the result of building on KSDE best practices with outcomes from the GAAP recommendations and infusing lessons learned from applying TTS to innovative TE item types.

The approach to and process of creating TTS audio tags and alt text continue to develop and grow as technological enhancements are utilized to diversify the types of items used and enhance the delivery of assessments. For this reason, this is a living document that will grow and change as new technology, item types, and best practices are established.

Revised on October 16, 2015

Four Principles of Audio Delivery

I. Preserve item content and wording

Items should be read precisely as they are presented onscreen. Test items have been through rigorous review and approval processes that do not allow for further changes. Item content and wording cannot be changed, simplified, or paraphrased for audio presentation.

Onscreen test items may contain content that is not accessible to students with blindness, low vision, or reading difficulties for whom audio accommodation is appropriate. This content can be described using alternative text (alt text) embedded in the audio files tagged for the item. Examples of item content that may require alt text include:

- Layout or item features: e.g., left-to-right or top-to-bottom order of elements in the item, tables, column and row labels, titles, and keys or legends
- Visual images: e.g., maps, illustrations, photographs, and political cartoons

Research on image description from the National Center for Accessible Media provides some of the following general principles for effective item description:

- Brevity – keep graphic and image descriptions brief
- Clarity – make descriptions clear; present information in a consistent and logical order
- Data – focus on describing data, minimizing descriptions of extraneous visual elements

II. Preserve the tested construct

First, do not provide audio information that is not available in the visual presentation of the item and its associated tables, graphs, or images. For example, do not read the numeral 3,257 as “three thousand, two hundred, fifty seven” if the tested construct involves knowledge of place value. Instead read it as “three comma two five seven.” These decisions must be made on an item-by-item basis.

Second, do not describe item features or images if doing so would cue or reveal an answer. This may occur if an item requires a student to extract information from an illustration or photograph. For example, do not describe the illustration of a clock in a math problem about telling time if it shows the answer to the question. In these situations, the student must use a

visual or tactile image to obtain the information. This requirement for a visual or tactile image in addition to audio leads to the third principle.

III. Provide visual or tactile versions of the test

Visual or tactile supports serve two purposes as supplements to audio delivery. Circumstances described in Principle II above limit the amount of information that can be validly and equitably provided in audio delivery of item content. When describing item content would reveal an answer or provide potentially unfair cues to the student receiving this accommodation, the student will not have full access without a visual or tactile version of the item.

The second situation in which audio delivery will be insufficient is when a table, graph, or image is too difficult or complex to describe auditorially. Examples of this problem occur with graphs of quadratic equations or three-dimensional geometric solids. In these cases, visual images should supplement audio for students with low vision or poor reading skills while tactile images or manipulative shapes or solids can accompany audio for students who are blind.

IV. Use a standardized approach

Develop and maintain a standardized approach to audio presentation for each test or type of test. The standardized approach can be specific to an organization, the population being tested, the types of items on the test, or item content. For example, the description of the layout of tables should be consistent by always describing the number of columns before the number of rows, or by giving the scale and range of the x axis before the y axis.

Examples of standardization apply also to descriptions of maps and images. The following suggestions are examples:

- Clockwise reading
- Left to right reading
- Starting on the outside of an image and moving in
- Consistency within items
- Consistency between items of the same type
- Consistency between items that contain similar features

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Sample Item Presentations

Selected Response

Audio Guideline:

Text and Graphics/Nonvisual

a. Read the item as it appears, starting with the stem and followed by a top-down read aloud of answer choice options.
b. If the item is a multiple choice/multiple select---follow the same procedure.
c. If answer options are presented with additional alphanumeric characters, e.g. A, B, C, D or 1, 2, 3, 4---say the letter or number that precedes the answer option followed by the read aloud of the answer option.
d. NOTE: If answer options are lengthy, i.e. exceeding 60 seconds, introduce answer options with the following alt-text, “first answer choice,” “second answer choice,” “third answer choice”…

Application of Audio Guidelines:

Example 1:	
Item Presentation	All three sides of a triangle measure 9 inches. Which statement describes this triangle? ○ It is a scalene triangle. ○ It is an obtuse triangle. ○ It is a right triangle. ○ It is an equilateral triangle.
Alt. Text-to-Speech	All three sides of a triangle measure 9 inches. Which statement describes this triangle? It is a scalene triangle. It is an obtuse triangle. It is a right triangle. It is an equilateral triangle.

Constructed Response

Audio Guideline:

Text and Graphics/Nonvisual

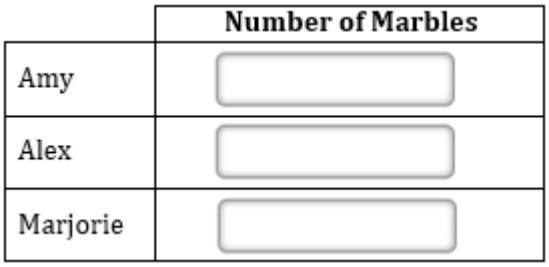
a. Read the item, and any directions referring to the type-in box.
b. If the box is labeled, tell the student what the label is.
c. If there is text that either precedes and/or follows the box, read the word “blank” in place of the box, in the context that the box appears.
d. If there are no directions referring to the box, say, “enter your answer in the box.”
e. Constructed response boxes may appear in tables; only indicate the “blank” if there is

one column with disproportionate distribution of constructed response boxes in each row; and/or there are multiple columns containing constructed response boxes in some, but not all cells within a table –refer to table audio guidelines in the Graphs and Tables section of this document

Application of Audio Guidelines:

<table>
<tr><th>Example 1:</th><th></th></tr>
<tr><td>Item Presentation</td><td>Amy has more than 11 marbles in a bag. She wants to share the marbles equally with her friends, Alex and Marjorie.
Give three possible total numbers of marbles in the bag so that Amy and her friends can share the marbles equally, with no marbles left.
 
Using one of your answers from the first question, fill in the table with the number of marbles each person will have.

Total number of marbles: 

 
<table><tr><th></th><th>Number of Marbles</th></tr><tr><td>Amy</td><td></td></tr><tr><td>Alex</td><td></td></tr><tr><td>Marjorie</td><td></td></tr></table></td></tr>
<tr><td>Alt. Text-to-Speech</td><td>Amy has more than 11 marbles in a bag. She wants to share the marbles equally with her friends, Alex and Marjorie.

One. Give three possible total numbers of marbles in the bag so that Amy and her friends can share the marbles equally, with no marbles left. Below, there are three boxes, enter your answer in the box.

Two. Using one of your answers from the first question, fill in the table with the number of marbles each person will have.

Total number of marbles is; Blank. Below, there is a table with 1 column and three rows. The column title is, Number of Marbles. The row labels are; Amy; Alex; Marjorie.</td></tr>
</table>

Example 2:	
Item Presentation	A company sells cylindrical candles in two sizes. The candles are priced by volume, at a rate of $0.55 per cubic inch (in3). The dimensions of the candles are provided in inches (in). What are the volumes of each candle, rounded to the nearest tenth of a cubic inch? candle A: _____ in^3 candle B: _____ in^3 Based on their volumes, what are the prices for each of the candles? Round your answers to the nearest whole dollar. candle A: $ _____ candle B: $ _____
Alt. Text-to-Speech	A company sells cylindrical candles in two sizes. The candles are priced by volume, at a rate of 55 cents per cubic inch. The abbreviation for cubic inch is, I., N., cubed. The dimensions of the candles are provided in inches. The abbreviation for inches is, I. N. What are the volumes of each candle, rounded to the nearest tenth of a cubic inch? Candle A., is blank cubic inches. Candle B., is blank cubic inches. Based on their volumes, what are the prices for each of the candles? Round your answers to the nearest whole dollar. Candle A., is blank dollars. Candle B., is blank dollars.

Example 3:	
Item Presentation	A phone company offers two monthly plans. Plan X offers customers unlimited minutes and texting for $45, plus data usage for $0.03 per megabyte (MB). Plan Y offers customers unlimited minutes, texting, and data usage for $100. Write an equation for plan X using c for the total cost of the plan and m for the number of MB of data used. Enter your equation in the box. 
Alt. Text-to-Speech Text & Graphics	A phone company offers two monthly plans. Plan X., offers customers unlimited minutes and texting for 45 dollars, plus data usage for three cents per megabyte. The abbreviation for megabyte is, M., B. Plan Y offers customers unlimited minutes, texting, and data usage for 100 dollars. Write an equation for plan X using c for the total cost of the plan and m for the number of megabytes of data used. Enter you equation in the box
Alt. Text-to-Speech Nonvisual	A phone company offers two monthly plans. Plan X., offers customers unlimited minutes and texting for 45 dollars, plus data usage for three cents per megabyte. The abbreviation for megabyte is, M., B. Plan Y offers customers unlimited minutes, texting, and data usage for 100 dollars. Write an equation for plan X using c for the total cost of the plan and m for the number of megabytes of data used. Enter you equation in the box.

Matrix

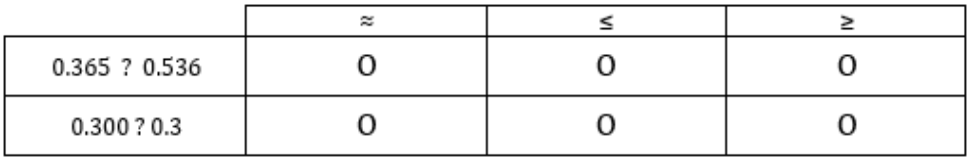
Audio Guideline:

Text and Graphics/Nonvisual

a. Read the item as it appears, starting with the stem.
b. At the end of the stem, introduce the matrix using the following alt-text: “Below, there is a matrix”
c. Indicate the number of columns and rows present in the table using “there are # columns and # rows in the table;” column and/or row count should exclude any row and/or column that contains column titles or row labels, respectively

d. Each row is introduced with “first row,” “second row,” “third row,” (fourth, fifth, sixth…) followed by reading the content in each cell considered a row label.

Application of Audio Guidelines:

Example 1:	
Item Presentation	
Alt. Text-to-Speech	The column titles are; approximately equals symbol, is less than or equal to symbol, is greater than or equal to symbol. First row, zero point three six five, question mark, zero point five three six. Second row, zero point three zero zero, question mark, zero point three.

Symbols

Money ($)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read dollars and cents if there is a decimal point.
b. Read only cents if there is a decimal point with "0" dollars is present (refer to example 2).
c. Do not read shortcuts for numbers. For instance, $0.25 –should be read as "twenty five cents" as opposed to "a quarter" (refer to example 1).
d. Unless the item is measuring place values, e.g. million, thousand, hundred; read the number place values (refer to example 3).
e. For items that contain monetary constructed responses, read "dollars" to denote the "$" (refer to example 4).

Application of Audio Guidelines:

Example 1:	
Item Presentation	A woman had $500 in her checking account before she wrote three checks. One check was for $250, another check was for $150, and the third check was for $100. Which of these equations best represents the money in the woman's checking account? ○ $500 + ($250 + $150 + $100) = $1,000 ○ ($500 – $250) – $150 = $100 ○ $500 – ($250 + $150 +100) = $0 ○ $250 + $150 = $500 – $100
Alt. Text-to-Speech	A woman had ***five hundred dollars*** in her checking account before she wrote three checks. One check was for *two* ***hundred fifty dollars***, another check was for ***one hundred fifty dollars***, and the third check was for ***one hundred dollars***. Which of these equations best represents the money in the woman's checking account? ○ ***5 hundred dollars, plus, parenthesis, 2 hundred fifty dollars, plus, 1 hundred fifty dollars, plus, 1 hundred dollars, close parenthesis, equals, 1 thousand dollars*** ○ ***parenthesis, 5 hundred dollars, minus 2 hundred fifty dollars, close parenthesis, minus 1 hundred fifty dollars, equals, 1 hundred dollars*** ○ ***5 hundred dollars, minus, parenthesis, 2 hundred fifty dollars, plus 1 hundred fifty dollars, plus 1 hundred dollars, close parenthesis, equals, zero dollars*** ○ ***2 hundred fifty dollars, plus 1 hundred 50 dollars, equals, 5 hundred, minus 1 hundred dollars***

Example 2:	
Item Presentation	$5.25
Alt. Text-to-Speech	Five dollars and twenty five cents.

Example 3:	
Item Presentation	$0.50
Alt. Text-to-Speech	Fifty cents.

Example 4:	
Item Presentation	$
Alt. Text-to-Speech	Blank dollars

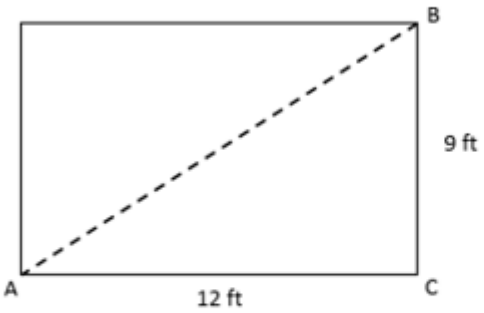
Angles/Triangles (∠ and Δ)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read angles and shapes beginning with “angle” or the name of the shape, e.g. “triangle,” followed by reading each letter individually.
b. Transformed and/or reflected angles or shapes that utilize “ ‘ “, are described as “prime.”
c. Reference to the case of a letter, i.e. upper/lower case, respectively, is not necessary unless specified by the item.

Application of Audio Guidelines:

Example 1:	
Item Presentation	John is building a storage shed. The shed will be 9 feet (ft) by 12 ft. He is going to measure the diagonals, as shown below, to make sure that the corners of the shed are right angles.  Which should be the length of $\overline{AB}$ if $\angle ABC$ is a right angle? ○ 21 ft ○ 18 ft ○ 16 ft ○ 15 ft
Alt. Text-to-Speech	John is building a rectangular storage shed. The shed will be ***nine feet*** by ***12 feet; the abbreviation for feet "is; F., T.,*** He is going to measure the diagonals, as shown below, to make sure that the corners of the shed are right angles. ***The labels on the diagram are; A., B., nine feet, C., twelve feet;*** Which should be the length of ***line segment A. B.,*** if ***angle A. B. C.,*** is a right angle? ○ ***Twenty-one feet*** ○ ***Eighteen feet*** ○ ***Sixteen feet*** ○ ***Fifteen feet***

Example 1:	
Item Presentation	$\angle$ XYZ
Alt. Text-to-Speech	Angle X., Y., Z.,

Example 2:	
Item Presentation	XYZ
Alt. Text-to-Speech	Triangle X., Y., Z.,

Example 3:	
Item Presentation	X'Y'Z'
Alt. Text-to-Speech	Triangle X., prime, Y., prime, Z., prime

Ratios (:)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "the ratio X to Y"; (refer to example 1)
b. In some instances, a ratio symbol will be used for fractions; this can usually be determined by context. Use the fraction guideline for set cases; (refer to example 2)
c. Items may include content that identifies the ratio. If, for example, the phrases "the ratio of" or "using the ratio" are present in an item, read "X to Y", omitting the phrase "the ratio" indicated in "a." to avoid being redundant.
d. Items that contain monetary constructed responses, read "the ratio… to…" to denote the " : " (refer to example 4).

Application of Audio Guidelines:

Example 1:	
Item Presentation	A model car is built using a 1:20 scale. The length of the model car is 5 inches (in). What is the length of the actual car? o 4 in o 20 in o 25 in o 100 in
Alt. Text-to-Speech	A model car is built using a ***one to twenty*** scale. The length of the model car is 5 inches. ***The abbreviation for inches is, I., N.,*** What is the length of the actual car? o 4 ***inches*** o 20 ***inches*** o 25 ***inches*** o 100 ***inches***

Example 2:	
Item Presentation	8 : 2
Alt. Text-to-Speech	The ratio, 8, to, two.

Example 3:	
Item Presentation	$\frac{7}{8} : \frac{6}{8}$
Alt. Text-to-Speech	The ratio, seven eighths, to, six eighths.

Example 4:	
Item Presentation	[ ] : [ ]
Alt. Text-to-Speech	The ratio, blank to blank.

Equal Signs (=)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "equals"; utilize punctuation, e.g. "." Or "," within the alternative text to create sufficient pausing both before and after "equals."
b. In some cases, "=" is used in the absence of an equation; use "equals symbol" to denote "=".

Application of Audio Guidelines:

Example 1:	
Item Presentation	5 + 5 = 10
Alt. Text-to-Speech	Five plus five, equals, 10.

Example 2:	
Item Presentation	

	=	<	>
0.365 ? 0.536	0	0	0
0.300 ? 0.3	0	0	0

Alt. Text-to-Speech	The column titles are; equals symbol, is less than symbol, is greater than symbol…

Pi (π)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "pi"

Application of Audio Guidelines:

Example 1:	
Item Presentation	A = πr2
Alt. Text-to-Speech	A., equals, pi R., squared

Approximately equal to (≈)

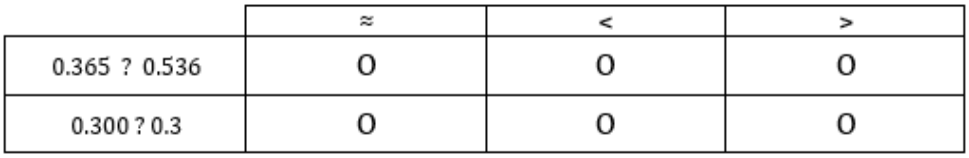
Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "is approximately equal to."
b. In some cases, "≈" is used in the absence of an equation; use "approximately equals symbol" to denote "≈".

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\frac{1}{3} \approx 0.33$
Alt. Text-to-Speech	One over three, is approximately equal to, zero point three three.

Example 2:	
Item Presentation	
Alt. Text-to-Speech	The column titles are; approximately equals symbol, is less than symbol, is greater than symbol…

Less than (<)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "is less than."
b. In cases where more than one inequality symbol is present, read the whole relationship together using "which is less than" for any additional "<"; (refer to example 2)
c. If the item is testing the individual's knowledge of inequality symbols, i.e. the alternative text-to-speech audio would give away the answer, use "inequality symbol" to describe "<"; (refer to example 1).

Application of Audio Guidelines:

Example 1:	
Item Presentation	6x < 2x + 5
Alt. Text-to-Speech	6 X., is less than, 2 X., plus 5 OR 6 X., inequality symbol, 2 X., plus 5

Example 2:	
Item Presentation	a < b < c
Alt. Text-to-Speech	A., is less than B., which is less than C.

Example 3:	
Item Presentation	≈ < > 0.365 ? 0.536 O O O 0.300 ? 0.3 O O O
Alt. Text-to-Speech	The column titles are; approximately equals symbol, is less than symbol, is greater than symbol.

Less than or equal to (≤)

Audio Guideline:

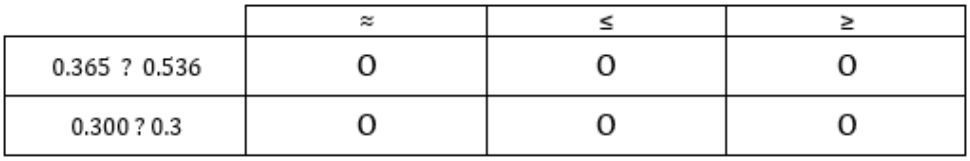
Text and Graphics/ Nonvisual

a. Read as "is less than or equal to."
b. In cases where more than one inequality symbol is present, read the whole relationship together using "which is less than or equal to" for any additional "≤"; (refer to example 2)
c. If the item is testing the individual's knowledge of inequality symbols, i.e. the alternative text-to-speech audio would give away the answer, use "inequality symbol" to describe "≤"; (refer to example 1).

Application of Audio Guidelines:

Example 1:	
Item Presentation	6x ≤ 2x + 5
Alt. Text-to-Speech	6 X., is less than or equal to, 2 X., plus 5 OR 6 X., inequality symbol, 2 X., plus 5

Example 2:	
Item Presentation	a ≤ b ≤ c
Alt. Text-to-Speech	A., is less than or equal to B., which is less than or equal to C.

Example 3:	
Item Presentation	
Alt. Text-to-Speech	The column titles are; approximately equals symbol, is less than or equal to symbol, is greater than or equal to symbol.

Greater than (>)

Audio Guideline:

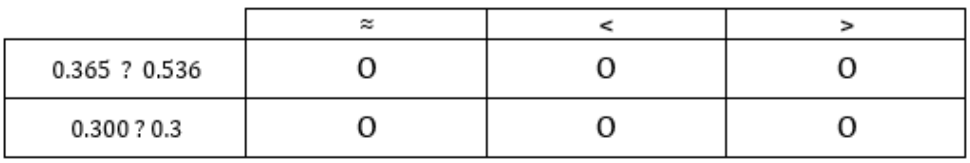
Text and Graphics/ Nonvisual

a. Read as "is greater than."
b. In cases where more than one inequality symbol is present, read the whole relationship together using "which is greater than" for any additional "**>**"; (refer to example 2)
c. If the item is testing the individual's knowledge of inequality symbols, i.e. the alternative text-to-speech audio would give away the answer, use "inequality symbol" to describe "**>**"; (refer to example 1).

Application of Audio Guidelines:

Example 1:	
Item Presentation	6x > 2x + 5
Alt. Text-to-Speech	6 X., is greater than, 2 X., plus 5 OR 6 X., inequality symbol, 2 X., plus 5

Example 2:	
Item Presentation	a > b > c
Alt. Text-to-Speech	A., is greater than B., which is greater than C.

Example 3:	
Item Presentation	
Alt. Text-to-Speech	The column titles are; approximately equals symbol, is greater than symbol, is greater than symbol.

Greater than or equal to (≥)

Audio Guideline:

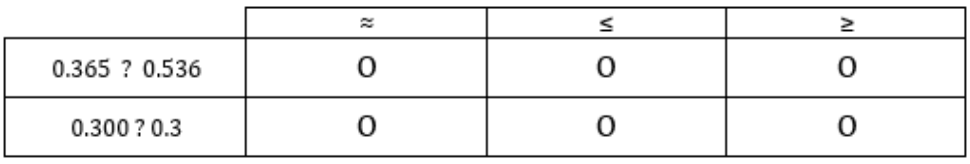
Text and Graphics/ Nonvisual

a. Read as "is greater than or equal to."
b. In cases where more than one inequality symbol is present, read the whole relationship together using "which is greater than or equal to" for any additional "≥"; (refer to example 2)
c. If the item is testing the individual's knowledge of inequality symbols, i.e. the alternative text-to-speech audio would give away the answer, use "inequality symbol" to describe "≥"; (refer to example 1).

Application of Audio Guidelines:

Example 1:	
Item Presentation	$6x \geq 2x + 5$
Alt. Text-to-Speech	6 X., is greater than or equal to, 2 X., plus 5 OR 6 X., inequality symbol, 2 X., plus 5

Example 2:	
Item Presentation	$a \geq b \geq c$
Alt. Text-to-Speech	A., is greater than or equal to B., which is greater than or equal to C.

Example 3:	
Item Presentation	
Alt. Text-to-Speech	The column titles are; approximately equals symbol, is less than or equal to symbol, is greater than or equal to symbol.

Dashes (–)

Audio Guideline:

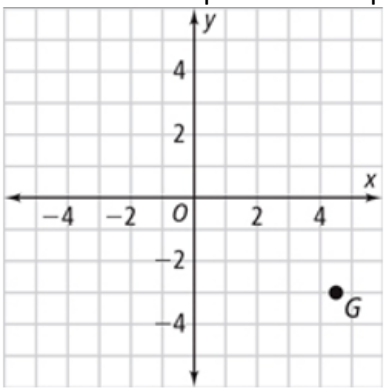
Text and Graphics/ Nonvisual

a. A dash " – " is read as "through" for the following conditions; when used to reference material, or for a group of conditions that utilizes non-consecutive numbers.
b. A dash " – " is read as "and" for a group of conditions that utilizes consecutive numbers.
c. A dash " – " can be read as "to" OR "through" for range(s) of data; refer to item content and/or context when determining the appropriate terminology

Application of Audio Guidelines:

Example 1:	
Item Presentation	Students in Mr. Smith's class were instructed to read pages 20-85. Steve reads 10 pages in 25 minutes. How long will it take Steve to complete his assignment?
Alt. Text-to-Speech	Students in Mr. Smith's class were instructed to read pages 20 through 85. Steve reads 10 pages in 25 minutes. How long will it take Steve to complete his assignment?

Example 2:	
Item Presentation	Approximately how many students earned a score between 400–499 for the math section on the SAT?
Alt. Text-to-Speech	Approximately how many students earned a score between four hundred and four hundred ninety nine for the math section on the SAT?

Example 3:	
Item Presentation	This coordinate plane shows point G.  What are the coordinates of point G?
Alt. Text-to-Speech	This coordinate plane shows point G. A coordinate grid with X., and Y., axes ranging from negative 4 to 4. With coordinate point labeled G. What are the coordinates of point G?

Temperatures (F° and C°)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "degrees Fahrenheit" and "degrees Celsius."
b. For items that contain temperature(s) as constructed responses, read "blank degrees Fahrenheit" or "blank degrees Celsius" to denote the "F" or "C"

Application of Audio Guidelines:

Example 1:	
Item Presentation	On Tuesday, it was 25°C. The temperature on Friday was 39°F. What day was warmer? Why was it warmer?
Alt. Text-to-Speech	On Tuesday, it was 25 degrees Celsius. The temperature on Friday was 39 degrees Fahrenheit. What day was warmer? Why was it warmer?

Parallels ($\overline{??} \parallel \overline{??}$)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "is parallel to" to denote "∥"

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\overline{EO} \parallel \overline{JG}$
Alt. Text-to-Speech	Line segment, E., O., is parallel to line segment, J., G.

Example 2:	
Item Presentation	☐ ∥ ☐
Alt. Text-to-Speech	Blank, is parallel to blank

Perpendiculars ($\overline{EO} \perp \overline{JG}$)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "is perpendicular to" to denote "⊥"

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\overline{EO} \perp \overline{JG}$
Alt. Text-to-Speech	Line segment, E., O., is perpendicular to line segment, J., G.

Example 2:	
Item Presentation	☐ ⊥ ☐
Alt. Text-to-Speech	Blank, is perpendicular to blank

Abbreviations (lbs, kg, mi, N)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read the whole word the abbreviation represents; following the completion of a sentence/statement that contains the first occurrence of the abbreviation, state the following: "the abbreviation for" (use the whole word) "is" (read the abbreviation letter by letter)
b. Read abbreviations letter by letter for items designed to measure an individual's ability to identify the meaning of the abbreviation.
c. If reading the whole word for the abbreviation(s) violates the construct being measured, then read abbreviations letter by letter.
d. Reference the cases of letters, i.e. upper- and/or lowercase for items that contain a mixture of upper- and lowercase abbreviations, respectively.

Application of Audio Guidelines:

Example 1:

Item Presentation

The table below shows a race car's average speed, in miles per hour (mph), during four 200-mile races.

Average Speed of Race Car

Race	1	2	3	4
Speed (mph)	151	156	162	169

The race car's average speed follows the pattern and continues to rise. What is the race car's average speed during the sixth race?

- 176 mph
- 177 mph
- 183 mph
- 186 mph

Alt. Text-to-Speech	The table below shows a race car's average speed in miles per hour, during four, two hundred mile races. The abbreviation for miles per hour is; M., P., H.; Below, there is a table with four columns and two rows; The title of the table is; Average Speed of Race Car; The row labels are; Race; Speed, miles per hour; first column, 1, 1 hundred 51; second column, 2, 1 hundred 56; third column, 3, 1 hundred 62; fourth column, 4, 1 hundred 69. The race car's average speed follows the pattern and continues to rise. What is the race car's average speed during the sixth race? 1 hundred 76 miles per hour 1 hundred 77 miles per hour 1 hundred 83 miles per hour 1 hundred 86 miles per hour

Example 2:	
Item Presentation	Jessica bought four packages of cheese weighing 3 pounds (lb) 2 ounces (oz), 4 lb 5 oz, 1 lb 5 oz, and 2 lb 1 oz. What is the TOTAL weight to the nearest pound of all four packages? ○ 10 lbs ○ 11 lbs ○ 13 lbs ○ 23 lbs
Alt. Text-to-Speech	Jessica bought four packages of cheese weighing 3 pounds 2 ounces, 4 ***pounds*** 5 ***ounces***, 1 ***pound*** 5 ***ounces***, and 2 ***pounds*** 1 ***ounces***. What is the TOTAL weight to the nearest pound of all four packages? ○ 10 ***pounds*** ○ 11 ***pounds*** ○ 13 ***pounds*** ○ 23 ***pounds***

Measurements (cm, m, ', ", in^2)

Audio Guideline:

Text and Graphics/ Nonvisual

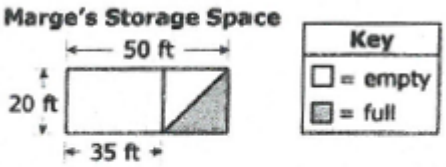
a. Read the whole word the symbol or letter represents; following the completion of a sentence/statement that contains the first occurrence of an abbreviation, state the following: "the abbreviation for" (use the whole word) "is" (read the abbreviation letter by letter including any symbols present).
b. Read measurements letter by letter for items designed to identify an individual's ability to

recognize the meaning of the abbreviated measurement.

c. If reading the whole word for the measurement(s) violates the construct being measured, then read the abbreviated measurement letter by letter, or indicate the name of the symbol being utilized.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Eric jumps 3 feet (ft). Seth jumps 2 ft. How much longer is Eric's jump than Seth's jump? • 1 ft • 2 ft • 3 ft • 5 ft
Alt. Text-to-Speech	Eric jumps 3 feet. The abbreviation for feet is, F., T., Seth jumps 2 feet. How much longer is Eric's jump than Seth's jump? • 1 foot • 2 feet • 3 feet • 5 feet

Example 2:	
Item Presentation	The diagram below shows the floor plan of Marge's storage space. The shaded area represents the part that is already full.  What is the area in square feet (ft^2) of the space that is empty? ○ 150 ft^2 ○ 700 ft^2 ○ 850 ft^2 ○ 1,000 ft^2

Alt. Text-to-Speech	The diagram below shows the floor plan of Marge's storage space. The shaded area represents the part that is already full. ***The title of the shaded figure is, Marge's Storage Space. Starting on the left and moving clockwise, the labels around the figure are, twenty feet, fifty feet, thirty five feet. To the right of the figure is a box with the title, Key, unshaded box equals empty; shaded box equals full.*** What is the area in square feet ~~***(ft²)***~~ of the space that is empty. ***The abbreviation for square feet is, F., T., squared.*** ○ ***One hundred fifty square feet*** ○ ***Seven hundred square feet*** ○ ***Eight hundred fifty square feet*** ○ ***One thousand square feet***

Example 3:	
Item Presentation	Jessica bought four packages of cheese weighing 3 pounds (lb) 2 ounces (oz), 4 lb 5 oz, 1 lb 5 oz, and 2 lb 1 oz. What is the TOTAL weight to the nearest pound of all four packages? ○ 10 lbs ○ 11 lbs ○ 13 lbs ○ 23 lbs
Alt. Text-to-Speech	Jessica bought four packages of cheese weighing 3 pounds 2 ounces, 4 ***pounds*** 5 ***ounces***, 1 ***pound*** 5 ***ounces***, and 2 ***pounds*** 1 ***ounces***. What is the TOTAL weight to the nearest pound of all four packages? ○ 10 ***pounds*** ○ 11 ***pounds*** ○ 13 ***pounds*** ○ 23 ***pounds***

Number Signs (#)

Audio Guideline:

Text and Graphics/ Nonvisual

a. If presented in the context whereby "#" indicates a number, read "number."
b. The above rule only applies when "#" is being utilized to signify number(s), as opposed to non-mathematical uses of the "#" symbol, e.g. use as a hash key or pound key symbol.

Application of Audio Guidelines:

Example 1:	
Item Presentation	#1 or #3-5
Alt. Text-to-Speech	Number one or numbers 3 through 5

Empty/Unknown Boxes (□ or ?)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Referred to as "box" when "□" is used in a formula or an equation.

b. Referred to as "question mark" when "?" is used in a formula or an equation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The number sentence shown below is part of a multiplication fact family. 3 x □ = 18 Which number sentence is part of the same fact family? • 3 x 3 = 9 • 18 ÷ 2 = 9 • 6 x 6 = 36 • 18 ÷ 3 = 6
Alt. Text-to-Speech	The number sentence shown below is part of a multiplication fact family. 3 times box, equals, 18 Which number sentence is part of the same fact family? • 3 times 3 equals 9 • 18 divided by 2 equals 9 • 6 times 6 equals 36 • 18 divided by 3 equals 6

<table>
<tr><th colspan="2">Example 2:</th></tr>
<tr><td>Item Presentation</td><td>A man is painting a pattern of stripes on a wall, as shown below.
<table><tr><td>White</td><td>Red</td><td>Blue</td><td>White</td><td>Red</td><td>?</td><td>?</td></tr></table>
If he continues the pattern of stripes, which two colors should he use next?
• Blue Red
• Red Blue
• White Red
• Blue White</td></tr>
<tr><td>Alt. Text-to-Speech</td><td>A man is painting a pattern of stripes on a wall, as shown below.

The values/words/labels in the table are, white, red, blue, white, red, question mark, question mark.

If he continues the pattern of stripes, which two colors should he use next?
• Blue; red
• Red; blue
• White; red
• Blue; white</td></tr>
</table>

Not equal to (≠)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "is not equal to"

Application of Audio Guidelines:

Example 1:	
Item Presentation	In the expression, $\frac{a}{b}$, $a \neq 0$ and $b \neq 0$. Which expression, when multiplied by $\frac{a}{b}$, would always result in a product of 1 ? ○ $-\frac{a}{b}$ ○ $-\frac{b}{a}$ ○ $\frac{b}{a}$ ○ $\frac{a}{b}$
Alt. Text-to-Speech	In the expression, ***A. over B., A., is not equal to zero*** and ***B., is not equal to zero.*** Which expression, when multiplied by ***A. over B.,*** would always result in a product of 1 ? ○ ***Negative A. over B.,*** ○ ***Negative B. over A.,*** ○ ***B. over A.,*** ○ ***A. over B.***

Example 2:	
Item Presentation	$6y \neq 20$
Alt. Text-to-Speech	Six Y., is not equal to twenty

Arc (⌒)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "arc" followed by the read aloud of each letter under the arc symbol.

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\overset{\frown}{ABC}$

Alt. Text-to-Speech	Arc A., B., C.,

Infinity (∞)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "infinity."

Application of Audio Guidelines:

Example 1:	
Item Presentation	The number line ranges from 1-∞.
Alt. Text-to-Speech	The number line ranges from one to infinity.

Percent (%)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "percent."
b. For items that contain percent symbols as part of the constructed response, read "blank percent."

Application of Audio Guidelines:

Example 1:	
Item Presentation	The sales tax on the items in her cart is 7%, how much money will she need to make this purchase?
Alt. Text-to-Speech	The sales tax on the items in her cart is seven percent, how much money will she need to make this purchase?

Lines: Line Segment, Line, Ray ($\overline{AB}$, $\overleftrightarrow{AB}$, $\overrightarrow{AB}$)

Audio Guideline:

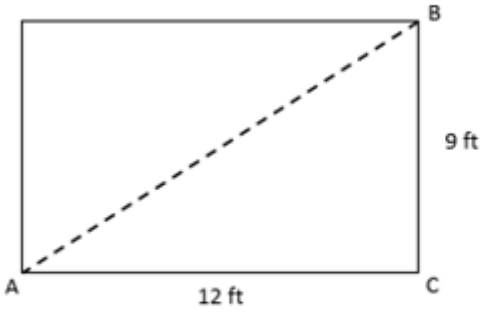
Text and Graphics/ Nonvisual

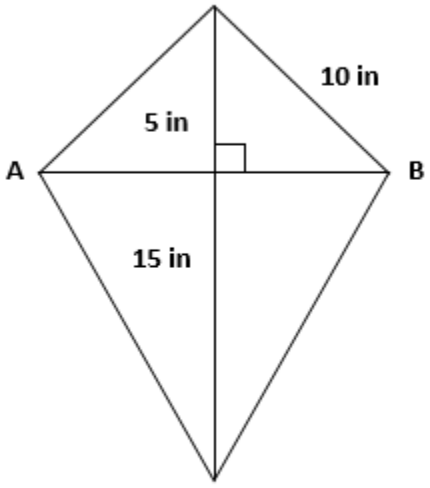
a. Read as "line segment" followed by the read aloud of each letter under the symbol for each occurrence of "$\overline{AB}$"; if reading the alternative text-to-speech violates the construct being measured, describe the symbol as "a solid horizontal line above the letters," followed by the read aloud of each letter under the symbol.
b. Read as "line" followed by the read aloud of each letter under the symbol for each occurrence of "$\overleftrightarrow{AB}$"; if reading the alternative text-to-speech violates the construct being measured,

describe the symbol as “a solid horizontal double sided arrow above the letters,” followed by the read aloud of each letter under the symbol.

c. Read as “ray” followed by the read aloud of each letter under the symbol for each occurrence of “$\overrightarrow{??}$.”;if reading the alternative text-to-speech violates the construct being measured, describe the symbol as “a solid horizontal arrow pointing right, above the letters,” followed by the read aloud of each letter under the symbol.

Application of Audio Guidelines:

Example 1:	
Item Presentation	John is building a storage shed. The shed will be 9 feet (ft) by 12 ft. He is going to measure the diagonals, as shown below, to make sure that the corners of the shed are right angles.  Which should be the length of $\overline{AB}$ if $\angle ABC$ is a right angle? ○ 21 ft ○ 18 ft ○ 16 ft ○ 15 ft
Alt. Text-to-Speech	John is building a rectangular storage shed. The shed will be ***nine feet*** by ***12 feet; the abbreviation for feet “is; F., T.,*** He is going to measure the diagonals, as shown below, to make sure that the corners of the shed are right angles. ***The labels on the diagram are; A., B., nine feet, C., twelve feet;*** Which should be the length of ***line segment A. B.,*** if ***angle A. B. C.,*** is a right angle? ○ ***Twenty-one feet*** ○ ***Eighteen feet*** ○ ***Sixteen feet*** ○ ***Fifteen feet***

Example 2:	
Item Presentation	Lawanda made a kite using some paper and wooden sticks, as shown below.  What is the approximate length in inches (in) of the shorter wooden stick $\overline{AB}$? ○ 11 in ○ 15 in ○ 17 in ○ 22 in
Alt. Text-to-Speech	Lawanda made a kite using some paper and wooden sticks, as shown below***; The labels around the diagram are; A., ten inches, B.; The labels in the diagram are; five inches; fifteen inches;*** What is the approximate length in inches of the shorter wooden stick***; line segment A. B.;*** ○ ***Eleven inches*** ○ ***Fifteen inches*** ○ ***Seventeen inches*** ○ ***Twenty-two inches***

Similar to (~)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as “is similar to.”
b. If reading the alternative text-to-speech violates the construct being measured, describe “ ~ ” as “tilde symbol.”

Application of Audio Guidelines:

Example 1:	
Item Presentation	ΔQRS ~ ΔXYZ
Alt. Text-to-Speech	Triangle Q., R., S., is similar to triangle X., Y., Z.,

Therefore (∴)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "therefore."

Application of Audio Guidelines:

Example 1:	
Item Presentation	$x = y$ and $y = z$ $\therefore x = z$
Alt. Text-to-Speech	X., equals Y., and Y., equals Z., therefore X., equals Z.,

Congruent (≅)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "is congruent to"

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\angle RST \cong \angle XYZ$
Alt. Text-to-Speech	Angle R., S., T., is congruent to angle X., Y., Z.,

Factorial (!)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "factorial."

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\frac{n!}{r!(n-r)!}$

Alt. Text-to-Speech	Numerator N., factorial, over denominator R., factorial, parenthesis, N., minus R., close parenthesis, factorial.

Plus/Minus (±)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "plus or minus."

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Alt. Text-to-Speech	Numerator negative B., plus or minus the square root of B., squared minus 4 A., C., over denominator 2 A.,

Subscript (A_b)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "A subscript B."

Application of Audio Guidelines:

Example 1:	
Item Presentation	$(X_i - X)^2$
Alt. Text-to-Speech	Parenthesis, X., subscript I., minus X., close parenthesis, squared.

Numbers

Negative and/or Positive Numbers

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read “0” as “zero,” not “oh.”
b. Numbers are read with place value, not as single numbers in isolation.
c. If reading numbers with place value violates the construct being measured, then read aloud each single number in isolation.
d. Read negative numbers as “negative”; do not refer to negative signs as a minus sign.
e. Generally, consecutive negative numbers intended to demonstrate the negative of a negative are presented with a set of parentheses; in set cases, refer to the parentheses section.
f. In cases when parentheses are absent from content demonstrating the negative of a negative, read “negative” (create a noticeable pause), then “negative.”
g. In cases when the operation is focused on subtraction, i.e. the presentation of two consecutive negative symbols, read “minus negative X.”
h. Read “positive” when “+” precedes a number and “+” is not considered part of the operation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	$0 – (-6) + 4x = 14$
Alt. Text-to-Speech	Zero minus, parenthesis, negative 6, close parenthesis, plus 4 X., equals 14

Example 2:	
Item Presentation	$0 – -6 + 4x = 14$
Alt. Text-to-Speech	Zero minus; **[pause]** negative 6, plus 4 X., equals 14

Example 3:	
Item Presentation	$457(-2) = y$
Alt. Text-to-Speech	4 hundred fifty seven, parenthesis, negative 2, close parenthesis, equals Y.

Example 4:	
Item Presentation	What is the distance between +9 and -3 on a number line?
Alt. Text-to-Speech	What is the distance between positive 9 and negative 3 on a number line?

Large Whole Numbers

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read large whole numbers by referencing all of the applicable number place values.
b. If reading number place values violates a construct being measured –read the number digit by digit, using "comma" and "point" to indicate any "," and/or "." present in the large whole number.
c. Omit the use of the word "and" for numbers greater than 100.

Application of Audio Guidelines:

Example 1:	
Item Presentation	What is 4256 **milligrams** in **grams**? o 4256000 grams o 425600 grams o 42.56 grams o 4.256 grams
Alt. Text-to-Speech	What is ***four two five six*** milligrams in grams? o ***four two five six, zero zero zero*** grams o ***four two five six, zero zero*** grams o ***four two point five six*** grams o ***four point two five six*** grams

Example 2:	
Item Presentation	What is the length, in **centimeters**, of a 250 **millimeter** long stick? o 2.5 centimeters o 25 centimeters o 2500 centimeters o 25000 centimeters
Alt. Text-to-Speech	What is the length, in centimeters, of a ***two hundred fifty*** millimeter long stick? o ***two point five*** centimeters o ***twenty five*** centimeters o ***two five, zero zero*** centimeters o ***two five, zero zero zero*** centimeters

Example 3:	
Item Presentation	The number 25,672.7 is the answer to which addition problem? • 20,000 + 500 + 600 + 70 + 2 + 0.7 • 200,000 + 500 + 600 + 70 + 2 + 0.7 • 200,000 + 5,000 + 600 + 70 + 2 + 0.7 • 20,000 + 5,000 + 600 + 70 + 2 + 0.7

Alt. Text-to-Speech	The number two five, comma, six seven two, point seven, is the answer to which addition problem? • Two zero comma zero zero zero **[pause]** plus five zero zero **[pause]** plus six zero zero **[pause]** plus seven zero plus two plus zero point seven • Two zero zero **[pause]** comma zero zero zero **[pause]** plus five zero zero **[pause]** plus six zero zero **[pause]** plus seven zero plus two plus zero point seven • Two zero zero **[pause]** comma zero zero zero **[pause]** plus five comma zero zero zero **[pause]** plus six zero zero **[pause]** plus seven zero plus two plus zero point seven • Two zero comma zero zero zero **[pause]** plus five comma zero zero zero **[pause]** plus six zero zero **[pause]** plus seven zero plus two plus zero point seven

Example 4:	
Item Presentation	Which numeral represents one hundred thousand eight? o 1,008 o 10,800 o 100,008 o 108,000
Alt. Text-to-Speech	Which numeral represents one hundred thousand eight? o ***One, comma zero zero eight*** o ***One zero, comma eight zero zero*** o ***One zero zero, comma zero zero eight*** o ***One zero eight, comma zero zero zero***

Fractions

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read common/improper fractions by presenting the numerator as the number it represents, then "over," followed by the denominator number it represents –using three words "# over #" for the presentation of fractions.

b. An exception to the above rule is $\frac{1}{2}$, which should always be read as one half.

c. Generally, presence of the context of distance and/or food, i.e. distance traveled, measurement of cooking ingredients –fractions are read by presenting the numerator as the number is represents and the denominator as an ordinal number, utilizing two words for the whole presentation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	In the expression, $\frac{a}{b}$, $a \neq 0$ and $b \neq 0$. Which expression, when multiplied by $\frac{a}{b}$, would always result in a product of 1 ? ○ $-\frac{a}{b}$ ○ $-\frac{b}{a}$ ○ $\frac{b}{a}$ ○ $\frac{a}{b}$
Alt. Text-to-Speech	In the expression, ***A. over B., A., is not equal to zero*** and ***B., is not equal to zero.*** Which expression, when multiplied by ***A. over B.,*** would always result in a product of 1 ? ○ ***Negative A. over B.,*** ○ ***Negative B. over A.,*** ○ ***B. over A.,*** ○ ***A. over B.***

Example 2:	
Item Presentation	Lewis has a bag containing only red candies and white candies. Which expression gives the probability of randomly choosing a red candy from the bag? ○ $\frac{\text{the number of red candies}}{\text{the number of white candies}}$ ○ $\frac{\text{the number of white candies}}{\text{the number of red candies}}$ ○ $\frac{\text{the number of white candies}}{\text{the number of white and red candies}}$ ○ $\frac{\text{the number of red candies}}{\text{the number of white and red candies}}$

Alt. Text-to-Speech	Lewis has a bag containing only red candies and white candies. Which expression gives the probability of randomly choosing a red candy from the bag? ○ ***The number of red candies, over; the number of white candies*** ○ ***The number of white candies, over; the number of red candies*** ○ ***The number of white candies, over; the number of white and red candies*** ○ ***The number of red candies, over; the number of white and red candies***

Example 3:	
Item Presentation	Terry is using a recipe that calls for $1\frac{2}{3}$ cups of flour. Which picture below shows the total amount of flour she will need for the recipe? ○ $\frac{1}{2}, \frac{1}{2}, \frac{1}{4}$ ○ $1, \frac{1}{2}, \frac{1}{3}, \frac{1}{3}$ ○ $\frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{1}{3}$ ○ $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{2}{3}$
Alt. Text-to-Speech	Terry is using a recipe that calls for***, one two thirds*** cups of flour. Which picture below shows the total amount of flour she will need for the recipe. ○ ***One half, comma one half, comma one fourth*** ○ ***One, comma one half, comma one third, comma one third*** ○ ***One third, comma two thirds, comma one third, comma one third*** ○ ***One half, comma one half, comma one half, comma two thirds***

Rational Expressions/Complex Fractions

Audio Guideline:

Text and Graphics/ Nonvisual

a. A fraction is complex when it has more than one number in the numerator and/or denominator position; this could include an arithmetic operation, or it may involve the use of parentheses and/or exponents. In set cases, read “numerator” followed by use of any applicable audio guidelines to describe the content in the numerator, “over, denominator” followed by use of any applicable guidelines to describe the content in the denominator.

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\frac{n!}{r!(n-r)!}$
Alt. Text-to-Speech	**Numerator N., factorial, over denominator R., factorial, parenthesis, N., minus R., close parenthesis, factorial.**

Proportions

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read proportions utilizing the fractions and/or rational expressions/complex fractions guidelines when applicable.

Application of Audio Guidelines:

Example 1:	
Item Presentation	
Alt. Text-to-Speech	

Mixed Numbers

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read the whole number, followed by the word "and"; then read the fraction using the audio guidelines for fractions.

Application of Audio Guidelines:

Example 1:	
Item Presentation	What is the sum of $3\frac{1}{5}+2\frac{1}{3}$? ○ $5\frac{2}{15}$ ○ $5\frac{1}{4}$ ○ $5\frac{2}{5}$ ○ $5\frac{8}{15}$
Alt. Text-to-Speech	What is the sum of ***three and one fifth, plus, two and one third***? ○ ***Five and two fifteenths*** ○ ***Five and one fourth*** ○ ***Five and two fifths*** ○ ***Five and eight fifteenths***

Example 2:	
Item Presentation	Besan is going to subtract $4\frac{5}{9}$ from $6\frac{4}{7}$. Besan can find a common denominator of the fractions by ○ multiplying 4 and 9. ○ multiplying 6 and 7. ○ multiplying 9 and 7. ○ multiplying 4 and 6.
Alt. Text-to-Speech	Besan is going to subtract ***four and five ninths*** from ***six and four sevenths***. Besan can find a common denominator of the fractions by? ○ multiplying ***four*** and ***nine***. ○ multiplying ***six*** and ***seven***. ○ multiplying ***nine*** and ***seven***. ○ multiplying ***four*** and ***six***.

Decimal Points

Audio Guideline:

Text and Graphics/ Nonvisual

a. Numbers preceding the decimal point are read with place value, not as single numbers in isolation; that is, unless reading numbers with place value violates the construct being measured, then read aloud each single number in isolation.
b. Read the word "point" to describe the decimal point, then speak each number that follows the individually.
c. When there are repeating zeros or numbers that follow the decimal point, apply the following rules:
   - If there are three or fewer zeros or repeating numbers, then read them as is.
   - If there are more than three zeros or repeating numbers, then read them in groups of three with pauses between each group.
d. Read the word "repeating" when "…" represents a group of numbers that repeats.
e. Read the word "repeating" when a vinculum (solid horizontal line/bar) is present over a number or a group of numbers to indicate the presence of a repeating decimal value.

Application of Audio Guidelines:

Example 1:	
Item Presentation	What is 4256 **milligrams** in **grams**? o 4256000 grams o 425600 grams o 42.56 grams o 4.256 grams
Alt. Text-to-Speech	What is ***four two five six*** milligrams in grams? o ***four two five six, zero zero zero*** grams o ***four two five six, zero zero*** grams o ***four two point five six*** grams o ***four point two five six*** grams

Example 2:	
Item Presentation	What is the length, in **centimeters**, of a 250 **millimeter** long stick? o 2.5 centimeters o 25 centimeters o 2500 centimeters o 25000 centimeters
Alt. Text-to-Speech	What is the length, in centimeters, of a ***two hundred fifty*** millimeter long stick? o ***two point five*** centimeters o ***twenty five*** centimeters o ***two five, zero zero*** centimeters o ***two five, zero zero zero*** centimeters

Example 3:	
Item Presentation	6.50
Alt. Text-to-Speech	Six point five zero

Example 4:	
Item Presentation	0.8429102
Alt. Text-to-Speech	Zero point eight four two nine one zero two

Example 5:	
Item Presentation	650.000
Alt. Text-to-Speech	Six hundred fifty, point zero zero zero

Example 6:	
Item Presentation	1.000000001
Alt. Text-to-Speech	One point zero zero zero [pause] zero zero zero [pause] zero zero one

Example 7:	
Item Presentation	0.333…
Alt. Text-to-Speech	Zero point three three three, repeating

Example 8:	
Item Presentation	$0.33\overline{3}$
Alt. Text-to-Speech	Zero point three three three, repeating

Roman Numerals

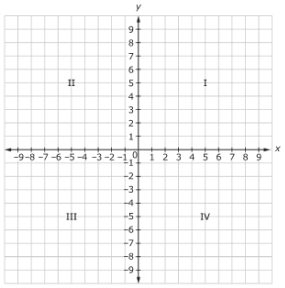
Audio Guideline:

Text and Graphics/ Nonvisual

a. Read the Roman Numeral reference, e.g. “page,” “number,” “section,” or “quadrant,” and then the number the Roman Numeral represents.
b. If reading the Roman Numeral value(s) violates a construct being measured, then read the words “Roman Numeral” followed by the letters one at a time.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Find the point in quadrant IV that is furthest from the origin.
Alt. Text-to-Speech	Find the point in quadrant four that is furthest from the origin.

Example 2:	
Item Presentation	A triangle is located in quadrant I and has vertices (2, 2), (4, 5), and (5, 1).  The triangle is then reflected over the x-axis. What are the coordinates of one of the new vertices?
Alt. Text-to-Speech	A triangle is located in quadrant one and has vertices, two comma two, four comma five, and five comma one. Below, there is a coordinate plane with X., and Y., axes that range from negative nine to nine. The labels on this coordinate plane are, Roman Numerals two, one, three, four. The triangle is then reflected over the X., axis. What are the coordinates of one of the new vertices?

Example 3:	
Item Presentation	What is the numeric value of XVII?
Alt. Text-to-Speech	What is the numeric value of X., V., I., I. ?

Time

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read time literally without the use of shortcuts or reading time in reference to a different version of time; for instance, do not use references such as, noon, a quarter to six, ten after four, or ten till five.
b. Read “am” and/or “pm” as “A., M.,” “P., M.,” without reference to the time of day; for example, “in the morning” or “at night”.
c. If reading the time on items that use graphical representations of analog clocks violates the construct measured, the use of alt-text referencing the presence of the image is permitted, however no alt-text indicating the time on the clock should be provided.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Alicia puts lasagna in the oven at 7:45. The lasagna was ready 55 minutes later. What time was the lasagna ready? 7:55 8:50 8:40 8:35
Alt. Text-to-Speech	Alicia puts lasagna in the oven at seven forty five. The lasagna was ready fifty five minutes later. What time was the lasagna ready? Seven fifty five Eight fifty Eight forty Eight thirty five

Example 2:	
Item Presentation	Carlos leaves 40 minutes before 8:30 to arrive at work on time. When does Carlos leave? 
Alt. Text-to-Speech	Carlos leaves forty minutes before eight thirty to arrive at work on time. When does Carlos leave? [No additional alt-text should be read, as it would violate a construct being measured]

Example 3:	
Item Presentation	Patrick's history class ends at 1:50 p.m., and school ends at 3:25p.m. In minutes (min), how much time is between Patrick's history class and the end of the school day?
Alt. Text-to-Speech	Patrick's history class ends at one fifty P., M., and school ends at three twenty five P., M., In minutes, how much time is between Patrick's history class and the end of the school day? The abbreviation for minutes is, M., I., N.,

<table>
<tr><th colspan="2">Example 4:</th></tr>
<tr><td>Item Presentation</td><td>The table shows when a bus arrives at particular bus stops.
Bus Schedule
<table><tr><th>Place</th><th>Time (p.m.)</th></tr><tr><td>Liberty Park</td><td>2:15</td></tr><tr><td>Art Museum</td><td>3:00</td></tr><tr><td>City Courthouse</td><td>3:30</td></tr><tr><td>Downtown Library</td><td>3:45</td></tr></table>How long does it take the bus to go from Liberty Park to the Downtown Library in minutes (min)?
30 min
65 min
90 min
110 min</td></tr>
<tr><td>Alt. Text-to-Speech</td><td>The table shows when a bus arrives at particular bus stops.

There are two columns and four rows in the table; the title of the table is, Bus Schedule. The column titles are, Place, Time, P., M.,; First row, Liberty Park, two fifteen; Second row, Art Museum, three o’clock; Third row, City Courthouse, three thirty; Fourth row, Downtown Library, three forty five.

How long does it take the bus to go from Liberty Park to the Downtown Library in minutes; the abbreviation for minutes is, M., I., N.,
Thirty minutes
Sixty five minutes
Ninety minutes
One hundred ten minutes</td></tr>
</table>

Date

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read years as they would be read/spoken in plain use of language.
b. Read the full name of months even if abbreviations are presented in the text.
c. Read days as you would when reading a date instead of reading the day as a number; for example, “second” as opposed to “two,” “third” opposed to “three,” “fourth” instead of “four,” etc.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Every day for a week, Susie wrote down the number of hours her lights were turned on at home, as shown in the chart below. **Number of Hours that Lights Are On** | Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
---	---	---	---	---	---	---
10	6	8	6	5	14	12	 What is the **range** in the number of hours that lights were turned on? o 9 o 5 o 4 o 2
Alt. Text-to-Speech	Every day for a week, Susie wrote down the number of hours her lights were turned on at home, as shown in the chart below. ***The title of the table is; Number of Hours that Lights Are On; Monday, 10; Tuesday, 6; Wednesday, 8; Thursday, 6; Friday, 5; Saturday, 14; Sunday, 12.*** What is the **range** in the number of hours that lights were turned on? o 9 o 5 o 4 o 2

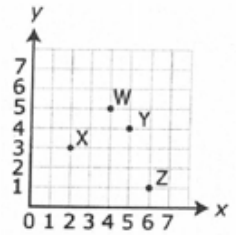
Coordinate Pairs

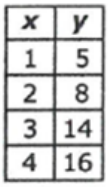
Audio Guideline:

Text and Graphics/ Nonvisual

a. Read coordinate pairs as "X., comma Y.,"
b. Omit alt-text if its provision violates a construct being measured.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Four points are graphed on the coordinate grid below.  Which ordered pair gives the location of point Y on the coordinate grid? • (6, 1) • (5, 4) • (4, 5) • (2, 3)
Alt. Text-to-Speech	**F**our points are graphed on the coordinate grid below. ***The coordinate grid has X., and Y., axes that range from zero to seven; with each line increasing by a value of 1. The labels on the points are; X., W., Y., Z.,*** Which ordered pair gives the location of point Y., on the coordinate grid? *Six comma one* *Five comma four* *Four comma five* *Two comma three*

Example 2:	
Item Presentation	A table of values is shown below.  Which ordered pair is shown in the function table? ○ (3, 14) ○ (1, 2) ○ (8, 2) ○ (16, 4)
Alt. Text-to-Speech	A table of values is shown below. ***There are two columns and four rows in this table, the column titles are, X., Y., ;first row, one, five; second row, two, eight; third row, three, fourteen; fourth row, four, sixteen.*** Which ordered pair is shown in the function table? ○ ***Three comma fourteen*** ○ ***One comma two*** ○ ***Eight comma two*** ○ ***Four comma sixteen***

Expressions/Equations/Operations

Multiplication

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read "times" when multiplication symbols, such as "×" or "•" appear in math items.
b. Do not read "times" to represent an implied multiplication when there are two variables or a variable and a number presented consecutively.

Application of Audio Guidelines:

Example 1:	
Item Presentation	$11 \times 2 = 22$
Alt. Text-to-Speech	Eleven times two equals twenty two

Example 2:	
Item Presentation	$3x \times xy = 21$
Alt. Text-to-Speech	Three X., times X., Y., equals twenty one

Example 3:	
Item Presentation	$-2(5) \bullet 10x = -250$
Alt. Text-to-Speech	Negative two, parenthesis 5, close parenthesis, times ten X., equals negative two hundred fifty.

Addition

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "plus."

Application of Audio Guidelines:

Example 1:	
Item Presentation	4 + 5 + 6 + 7 = 22
Alt. Text-to-Speech	Four plus five plus six plus seven equals twenty two.

Example 2:	
Item Presentation	Jane and Gwen ran a 200-meter race. Gwen ran it in 21.81 seconds, and Jane's time was 7 hundredths of a second less than Gwen's time. Gwen used the addition problem shown below to find Jane's time, but she made one mistake. *21.81* *+0.07* *21.88* Which mistake did Gwen make? o She added 0.07 instead of 0.7. o She added 0.07 instead of subtracting. o She added 0.07 instead of 0.007. o She added 0.07 instead of subtracting 0.7.
Alt. Text-to-Speech	Jane and Gwen ran a ***two hundred*** meter race. Gwen ran it in ***twenty-one point eight one*** seconds, and Jane's time was ***seven*** hundredths of a second less than Gwen's time. Gwen used the addition problem shown below to find Jane's time, but she made one mistake. ***Twenty-one point eight one, plus, zero point zero seven, equals twenty-one point eight eight.*** Which mistake did Gwen make? o She added ***zero point zero seven*** instead of ***zero point seven***. o She added ***zero point zero seven*** instead of subtracting. o She added ***zero point zero seven*** instead of ***zero point zero zero seven***. o She added ***zero point zero seven*** instead of subtracting ***zero point seven***.

Subtraction

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "minus."

Application of Audio Guidelines:

Example 1:	
Item Presentation	10 – 4 = 6
Alt. Text-to-Speech	Ten minus four equals six

Division

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "divided by."
b. The presence of a remainder, "R," is read as "remainder"; if reading "remainder" violates a construct being measure, use "R" as opposed to "remainder" to denote the remainder.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Kyle is trying to solve the problem below. $0.5\overline{)54.36}$ Which step could Kyle take **first** to make solving the problem easier? o Multiply the divisor and dividend by 10. o Multiply the divisor and dividend by 0.5. o Divide the 5 by 0.5. o Divide 54 by 0.5.
Alt. Text-to-Speech	Kyle is trying to solve the problem below. ***Fifty-four point three six, divided by zero point five.*** Which step could Kyle take first to make solving the problem easier? o Multiply the divisor and dividend by ***ten***. o Multiply the divisor and dividend by ***zero point five***. o Divide the ***five*** by ***zero point five***. o Divide ***fifty-four*** by ***zero point five***.

Example 2:	
Item Presentation	What is 6,498 divided by 76? o 84 r 114 o 85 r 28 o 85 r 38 o 714 r 24

Alt. Text-to-Speech	What is ***six thousand four hundred ninety-eight*** divided by ***seventy-six***? ○ ***Eighty-four, remainder one hundred fourteen*** ○ ***Eighty-five, remainder twenty-eight*** ○ ***Eighty-five, remainder thirty-eight*** ○ ***Seven hundred fourteen, remainder twenty-four***

Parentheses

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read parentheses by referring to the opening and closing of the parentheses using the following alternative text: “parenthesis” –for the opening parenthesis, and; “close parenthesis” –for the closing parenthesis
b. Equations and/or expressions that consist of multiple parts and sets of parentheses will require additional pausing around the alternate text to differentiate between sections
c. Do not read “parenthesis,” “close parenthesis” for the following conditions: coordinate pairs; measurements, or; abbreviations
d. Read brackets using the same guidelines as parentheses, but using the words “bracket” and “close bracket.”

Application of Audio Guidelines:

Example 1:	
Item Presentation	A woman had $500 in her checking account before she wrote three checks. One check was for $250, another check was for $150, and the third check was for $100. Which of these equations best represents the money in the woman’s checking account? ○ $500 + ($250 + $150 + $100) = $1,000 ○ ($500 – $250) – $150 = $100 ○ $500 – ($250 + $150 +100) = $0 ○ $250 + $150 = $500 – $100

Alt. Text-to-Speech	A woman had ***five hundred dollars*** in her checking account before she wrote three checks. One check was for *two* ***hundred fifty dollars***, another check was for ***one hundred fifty dollars***, and the third check was for ***one hundred dollars***. Which of these equations best represents the money in the woman's checking account? ○ ***5 hundred dollars, plus, parenthesis, 2 hundred fifty dollars, plus, 1 hundred fifty dollars, plus, 1 hundred dollars, close parenthesis, equals, 1 thousand dollars*** ○ ***parenthesis, 5 hundred dollars, minus 2 hundred fifty dollars, close parenthesis, minus 1 hundred fifty dollars, equals, 1 hundred dollars*** ○ ***5 hundred dollars, minus, parenthesis, 2 hundred fifty dollars, plus 1 hundred fifty dollars, plus 1 hundred dollars, close parenthesis, equals, zero dollars*** ○ ***2 hundred fifty dollars, plus 1 hundred 50 dollars, equals, 5 hundred, minus 1 hundred dollars***

Mathematical Exponents

Audio Guideline:

Text and Graphics/ Nonvisual

a. The base, either a numeral or a variable, is read first
b. Read the exponent that follows the base in the following ways: exponents with a value of "2" will often be read as "squared"; likewise, exponents with a value of "3" will often be read as "cubed"; read "to the __th power" for other numerals and/or variables, or; if the exponent is an equation or expression, read, "to the" [follow rule(s) for describing the equation and/or expression] "power"
c. A return to the base is indicated with the use of a pause following the alternative text "power"
d. Negative exponents are read as "___ to the negative ___ power"
e. Fractions as exponents use the aforementioned rules in conjunction with the rules indicated for creating alternative text for fractions.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Simplify: $(-5)^2 + 7(3)$ ○ -54 ○ -4 ○ 46 ○ 96

Alt. Text-to-Speech	Simplify: ***parenthesis, negative five, close parenthesis, squared, plus, seven parenthesis, three, close parenthesis.*** ○ ***Negative fifty-four*** ○ ***Negative four*** ○ ***Forty-six*** ○ ***Ninety-six***

Variables/Letters

Audio Guideline:

Text and Graphics/ Nonvisual

a. Lowercase variables in math items are read aloud without reference to their case.
b. Uppercase variables in math items are read aloud without reference to their case.
c. When a math item contains both uppercase and lowercase variables, both cases are to be specified with the alternative text “uppercase” and “lowercase”
d. Negative signs appearing in front of a variable and/or the combination of a number and a variable are read as “negative”

Application of Audio Guidelines:

Example 1:	
Item Presentation	Three children had 6 dollars to share. They decided to divide the money evenly among them by using the equation below. 6 dollars ÷ 3 = *y* dollars How many dollars (*y*) will each child get? • 1 dollar • 2 dollars • 3 dollars • 4 dollars

Alt. Text-to-Speech	Three children had 6 dollars to share. They decided to divide the money evenly among them by using the equation below. 6 dollars divided by 3, equals, Y., dollars How many dollars, Y., will each child get? 1 dollar 2 dollars 3 dollars 4 dollars

Logs

Audio Guideline:

Text and Graphics/ Nonvisual

a. If the log is presented with a base, read "log base ___ of" followed by the number/variable presented
b. When a log is presented without an indication of an explicit base read "log" followed by the number/variable presented; do not interpret implied base value, as this may violate the construct being measured
c. Items with "ln *x*" are read as "natural log of X.," –if reading the aforementioned violates a construct being measured, read, "L., N., of ___"

Application of Audio Guidelines:

Example 1:	
Item Presentation	ln *x*
Alt. Text-to-Speech	Natural log of X., OR L., N., of X.,

Radicals

Audio Guideline:

Text and Graphics/ Nonvisual

a. Radicals that have an implied index of two are read as, "the square root of"
b. Radicals that have an index of three are read as, "the cube root of"
c. Radicals that have a numeral other than two or three for a radical index are read as, "the $\_\_^{th}$ root of"
d. Radicals that have a variable for a radical index are read as "[variable] root of"
e. Follow applicable rules for radical indices that are inclusive of fractions, equations, and/or expressions

Application of Audio Guidelines:

Example 1:	
Item Presentation	$\sqrt{a^2 + b^2}$
Alt. Text-to-Speech	The square root of A. squared plus B. squared

Absolute Values

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read as "the absolute value of"
b. Use applicable pausing for/around absolute values that are presented as part of a larger expression and/or equation.
c. Read the absolute value of a negative as, "the absolute value of negative ___"
d. Read the negative of an absolute value as, "negative the absolute value of ___"

Application of Audio Guidelines:

Example 1:	
Item Presentation	| 9 | – | -9 | =
Alt. Text-to-Speech	The absolute value of nine, minus the absolute value of negative nine

Example 2:	
Item Presentation	-| 9 | + | 9 | =
Alt. Text-to-Speech	Negative the absolute value of nine, plus the absolute value of nine

Functions f(x)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read the first letter shown, usually this is "F," then the word "of," followed by the variable and/or number in the parentheses
b. Expressions inside the parentheses may be more complex or include an additional function; read the letter first, then the word "of," followed by either the variable or expression in parentheses
c. The inverse of a function is read as, "___ inverse of ___"

d. If provision of alternative TTS violates a construct being measured, read "F, parenthesis, X, close parenthesis"

Application of Audio Guidelines:

Example 1:	
Item Presentation	F(*x*) =
Alt. Text-to-Speech	F. of X. OR F. parenthesis, X., close parenthesis

System of Equations/Inequalities

Audio Guideline:

Text and Graphics/ Nonvisual

a. Begin by reading, "system of," indicate the number/quantity present, then specify if "equations" or "inequalities" are present, e.g. "system of ___ equations" or "system of ___ inequalities"
b. Information in the system is read from the top to the bottom, referencing the row order for each equation/inequality
c. Read equations and inequalities using the guidelines indicated in previous sections

Application of Audio Guidelines:

Example 1:	
Item Presentation	A system of equations is shown below. $5x - 2y = 5$ $2x - 3y = 21$ What is the value of x in the system of equations? ○ $-\frac{16}{3}$ ○ 1 ○ 3 ○ $\frac{26}{7}$

Alt. Text-to-Speech	A system of equations is shown below. ***First equation; Five X., minus two Y., equals 5*** ***Second equation; two X., minus three Y., equals twenty-one*** What is the value of *x* in the system of equations? ○ ***Negative sixteen over three*** ○ ***One*** ○ ***Three*** ○ ***Twenty-six over seven***

Trigonometry

Audio Guideline:

Text and Graphics/ Nonvisual

a. Read the full word for abbreviated trigonometric functions; if reading the full word violates the construct being measured, i.e. items designed to measure knowledge of these abbreviations, read the abbreviation letter by letter.
b. When applicable, read trigonometric functions and items using the Greek alphabet

Application of Audio Guidelines:

Example 1:	
Item Presentation	
Alt. Text-to-Speech	

Graphs/Tables

Tables

Audio Guideline:

Text and Graphics/ Nonvisual

a. Tables that have titles are introduced with, “the title of the table is;” followed by reading the title; for tables without titles, start with tables’ audio guideline (b)
b. Indicate the number of columns and rows present in the table using “there are # columns and # rows in the table;” column and/or row count should exclude any row and/or column that contains column titles or row labels, respectively
c. Tables that have column titles are introduced with, “the column titles are;” followed by reading the column titles from left to right –include a brief pause after each column title is read; for tables without column titles, move on to guideline (d)
d. Tables that have row labels are introduced with, “the row labels are;” followed by reading the row labels from the top down –include a brief pause after each row label is read; for tables without row labels, move on to guideline (e)
e. Each row is introduced with “first row,” “second row,” “third row,” (fourth, fifth, sixth…) followed by repeating the row label and then reading the content contained in the row across all columns from left to right
f. In some cases, the orientation of a table will lend itself to reading the table information column by column, as opposed to row by row; determination on how to present the table is a logical decision based on table content
g. Blank cells should be read as “blank”
h. **NOTE**: Remain consistent with the style of reading from table to table. Utilizing a standardized approach will promote greater understanding of the patterns of description; for instance, use the word “title” for the table’s caption/title and when referring to columns; use the word “label,” for tables, only when referring to rows

Revised on October 16, 2015

Application of Audio Guidelines:

Example 1:	
Item Presentation	Jeff surveyed a group of students about their afterschool activities on the previous day. The results of his survey are shown in the table below.

Afterschool Activities

Student	Activity
Jim	Read
Carol	Television
Mike	Sports
Ben	Read
Laura	Television
Ed	Sports
Gayle	Sports
Nancy	Read
Fred	Sports
Connor	Read
Veronica	Chores
Charlie	Sports

Which frequency table represents the information in the table?

o **Afterschool Activities**

Activity	Amount
Read	4
Sports	5
Television	2

o **Afterschool Activities**

Activity	Amount
Chores	1
Read	3
Sports	6

o **Afterschool Activities**

Activity	Amount
Chores	1
Read	4
Sports	5
Television	2

o **Afterschool Activities**

Activity	Amount
Chores	1
Read	3
Sports	2
Television	5

Alt. Text-to-Speech	Jeff surveyed a group of students about their afterschool activities on the previous day. The results of his survey are shown in the table below. ***The title of the table is, Afterschool Activities; there are two columns and twelve row; the column titles are, Student; Activity; first row, Jim, Read; second row, Carol, television; third row, Mike, sports; fourth row, Ben, read; fifth row, Laura television; sixth row, Ed, sports; seventh row, Gayle, sports; eighth row, Nancy, read; ninth row, Fred, sports; tenth row, Conner, read; eleventh row, Veronica, chores; twelfth row, Charlie, sports.*** Which frequency table represents the information in the table? • ***Each answer choice is a table, each table is labeled the same; the title of the table is, Afterschool Activities; the column titles are, Activity, Amount;*** • ***First table, first row, read, 4; second row, sports, 5; third row, television, 2;*** • ***Second table, first row, chores, 1; second row, read, 3; third row, sports, 6;*** • ***Third table, first row, chores, 1; second row, read, 4; third row, sports, 5; fourth row, television, 2;*** • ***Fourth table, first row, chores, 1; second row, read, 3; third row, sports, 2; fourth row, television, 5.***

Example 2:	
Item Presentation	The table below shows some values of *x* and *y*. | *x* | *y* | | --- | --- | | 14 | ? | | 15 | 225 | | 16 | 256 | | 17 | 289 | What is the value of *y* when *x* = 14? ○ 169 ○ 194 ○ 196 ○ 211

Alt. Text-to-Speech	The table below shows some values of ***X.*** and ***Y., ; There are two columns and four rows in this table; the column titles are; X., Y.; First row, fourteen, Question mark; Second row, fifteen, two hundred twenty-five; Third row, sixteen, two hundred fifty-six; Fourth row, seventeen, two hundred eighty-nine;*** What is the value of ***Y.,*** when ***X., equals fourteen.*** ○ ***One hundred sixty-nine*** ○ ***One hundred ninety-four*** ○ ***One hundred ninety-six*** ○ ***Two hundred eleven***

Example 3:	
Item Presentation	Manuel is saving money for a special trip. The equation $y = 7x + 25$ can be used to find the total amount of money Manuel has saved at the end of the week. Which table correctly shows the total amount of money (y) Manuel has saved at the end of each week (x)? ○ **Amount of Money Saved Each Week** **Week (x)** 1 2 3 4 **Amount of Money Saved (y)** $32 $39 $46 $53 ○ **Amount of Money Saved Each Week** **Week (x)** 1 2 3 4 **Amount of Money Saved (y)** $25 $32 $39 $46 ○ **Amount of Money Saved Each Week** **Week (x)** 1 2 3 4 **Amount of Money Saved (y)** $7 $14 $21 $28 ○ **Amount of Money Saved Each Week** **Week (x)** 1 2 3 4 **Amount of Money Saved (y)** $32 $64 $96 $128

Alt. Text-to-Speech	Manuel is saving money for a special trip. The equation ***Y., equals 7 X., plus 25,*** can be used to find the total amount of money Manuel has saved at the end of the week. Which table correctly shows the total amount of money, ***Y.,*** Manuel has saved at the end of each week***, X., Each answer choice is a graph, each graph is labeled the same. The title of the graph is, Amount of Money Saved Each Week. Each graph has two rows and four columns; the row labels are, Week, X., ; Amount of Money Saved, Y.,*** ○ ***First table; first column, one, thirty-two dollars; second column, two, thirty-nine dollars; third column, three, forty-six dollars; fourth column, four, fifty-three dollars*** ○ ***Second table; first column, one, twenty-five dollars; second column, two, thirty-two dollars; third column, three, thirty-nine dollars; fourth column, four, forty-six dollars*** ○ ***Third table; first column, one, seven dollars; second column, two, fourteen dollars; third column, three, twenty-one dollars; fourth column, four, twenty-eight dollars*** ○ ***Fourth table; first column, one, thirty-two dollars; second column, two, sixty-four dollars; third column, three, ninety-six dollars; fourth column, four, one hundred twenty-eight dollars***

Example 4:	
Item Presentation	The table below shows Jim's test scores in math. **Jim's Test Scores** 92 69 76 90 87 90 Which of the following measures of Jim's test scores is the highest? ○ mean ○ median ○ mode ○ range

Alt. Text-to-Speech	The table below shows Jim's test scores in math. ***The title of the table is, Jim's Test Scores; there is one column and six rows in this table; first row, ninety-two; second row, sixty-nine; third row, seventy-six; fourth row, ninety; fifth row, eighty-seven; sixth row, ninety.*** Which of the following measures of Jim's test scores is the highest? ○ mean ○ median ○ mode ○ range

Example 5:

Item Presentation

The ages of the people who attended a music recital are listed in the table below.

Ages of People Attending a Recital

Ages	Number of People
0 – 9	𝍸 II
10 – 19	𝍸 III
20 – 29	𝍸 𝍸 𝍸 𝍸 𝍸 IIII
30 – 39	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
40 – 49	𝍸 𝍸 𝍸 𝍸 IIII
50 – 59	𝍸 𝍸 𝍸 𝍸 III
60 – 69	𝍸 𝍸 𝍸 𝍸 I
70 – 79	III

How many people aged 60 or older attended the recital?

- ○ 3 people
- ○ 21 people
- ○ 24 people
- ○ 121 people

Alt. Text-to-Speech

The ages of the people who attended a music recital are listed in the table below. ***The title of the table is; Ages of People Attending a Recital; there are two columns and eight rows in this table; the column titles are; Ages; Number of People; First row, zero, to nine; Second row, ten, to nineteen; Third row, twenty, to twenty-nine; Fourth row, thirty, to thirty-nine; Fifth row, forty, to forty-nine; Sixth row, fifty, to fifty-nine; Seventh row, sixty, to sixty-nine; Eighth row, seventy, to seventy-nine.*** How many people aged ***sixty*** or older attended the recital?

- ○ ***Three*** people
- ○ ***Twenty-one*** people
- ○ ***Twenty-four*** people
- ○ ***One hundred twenty-one*** people

Tally Charts

Audio Guideline:

Text and Graphics/ Nonvisual

a. Tally charts or tables with tally marks are introduced with either, “the title of the tally chart is;” or “the title of the table is;” followed by reading the title –(utilize the item’s terminology to determine if “tally chart” or “table” should be used; if the item does not specify, default to tally chart); for tally charts without titles, start with tally charts’ audio guideline (b)
b. Indicate the number of columns and rows present in the tally chart using, “there are # columns and # rows in the chart/table;” column and/or row count should exclude any row and/or column that contains column titles or row labels, respectively
c. Tally charts that have column titles are introduced with, “the column titles are;” followed by reading the column titles from left to right –include a brief pause after each column title is read; for charts without column titles, move on to guideline (d)
d. Tally charts that have row labels are introduced with, “the row labels are;” followed by reading the row labels from the top down –include a brief pause after each row label is read; for charts without row labels, move on to guideline (e)
e. Each row is introduced with “first row,” “second row,” “third row,” (fourth, fifth, sixth…) followed by repeating the row label and then reading the content contained in the row across all columns from left to right
    1. Read the number of tally marks only if it does not violate the construct being measured
    2. IF reading tally marks does violate the construct being measured, this item will not be accessible to blind and some low-vision students without an accompanying tactile representation
f. **NOTE:** Remain consistent with the style of reading from chart to chart. Utilizing a standardized approach will promote greater understanding of the patterns of description; for instance, use the word “title” for the tally chart’s caption/title and when referring to columns; use the word “label,” for tally charts, only when referring to rows

Application of Audio Guidelines:

Example 1:	
Item Presentation	The ages of the people who attended a music recital are listed in the table below. **Ages of People Attending a Recital** **Ages** | **Number of People** 0 – 9 | 𝍸 || 10 – 19 | 𝍸 ||| 20 – 29 | 𝍸 𝍸 𝍸 𝍸 𝍸 |||| 30 – 39 | 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 40 – 49 | 𝍸 𝍸 𝍸 𝍸 |||| 50 – 59 | 𝍸 𝍸 𝍸 𝍸 ||| 60 – 69 | 𝍸 𝍸 𝍸 𝍸 | 70 – 79 | ||| How many people aged 60 or older attended the recital? ○ 3 people ○ 21 people ○ 24 people ○ 121 people
Alt. Text-to-Speech	The ages of the people who attended a music recital are listed in the table below. ***The title of the table is; Ages of People Attending a Recital; there are two columns and eight rows in this table; the column titles are; Ages; Number of People; First row, zero, to nine; Second row, ten, to nineteen; Third row, twenty, to twenty-nine; Fourth row, thirty, to thirty-nine; Fifth row, forty, to forty-nine; Sixth row, fifty, to fifty-nine; Seventh row, sixty, to sixty-nine; Eighth row, seventy, to seventy-nine.*** How many people aged ***sixty*** or older attended the recital? ○ ***Three*** people ○ ***Twenty-one*** people ○ ***Twenty-four*** people ○ ***One hundred twenty-one*** people

Example 2:	
Item Presentation	The table below shows a family's dinner choices over a two month period. **Family Dinner Choices Over a Two-Month Period** **Dinner** / **Frequency** Fish / ||| Pizza / 𝍸 𝍸 | Hamburger / 𝍸 𝍸 𝍸 | Bar-b-que / 𝍸 |||| Macaroni and Cheese / 𝍸 | Roast / 𝍸 |||| Hot Dogs / |||| Eating Out / ||| For this family, their choices match what they like to eat. What can be concluded from the data? ○ Fish is a popular food for dinner. ○ Hamburgers are not as popular as fish. ○ The family likes hot dogs more than fish. ○ The family eats out more often than they eat fish.
Alt. Text-to-Speech	The table below shows a family's dinner choices over a two month period. ***The title of the tally chart is, Family Dinner Choices Over a Two-Month Period. There are two columns and eight rows in this chart. The column titles are, Dinner; Frequency. First row, Fish, three; Second row, Pizza, eleven; Third row, Hamburger, sixteen; Fourth row, Bar-b-que, nine; Fifth row, Macaroni and Cheese, six; Sixth row, Roast, nine; Seventh row, Hot Dogs, four, Eighth row, Eating Out, three.*** For this family, their choices match what they like to eat. What can be concluded from the data? ○ Fish is a popular food for dinner. ○ Hamburgers are not as popular as fish. ○ The family likes hot dogs more than fish. ○ The family eats out more often than they eat fish.

Example 3:	
Item Presentation	A teacher asked her students which color they liked best The teacher found that 12 of her students liked blue, 5 of her students liked green, 1 of her students liked purple, and 1 of her students liked yellow. Which table correctly displays the colors the students liked best? ○ **Colors Students Liked Best**: Blue 𝍸 ||; Green 𝍸; Purple |; Yellow | ○ **Colors Students Liked Best**: Blue 𝍸 𝍸; Green 𝍸; Purple |; Yellow || ○ **Colors Students Liked Best**: Blue 𝍸 𝍸 ||; Green 𝍸; Purple ||; Yellow | ○ **Colors Students Liked Best**: Blue 𝍸 𝍸 ||; Green 𝍸; Purple |; Yellow |
Alt. Text-to-Speech	A teacher asked her students which color they liked best The teacher found that 12 of her students liked blue, 5 of her students liked green, 1 of her students liked purple, and 1 of her students liked yellow. Which table correctly displays the colors the students liked best? ***Each answer choice is a tally chart, each tally chart is labeled the same. The title of the tally chart is, Colors Students Liked Best. The row labels are, blue, green, purple, yellow.***

Bar Graphs

Audio Guideline:

Text and Graphics/ Nonvisual

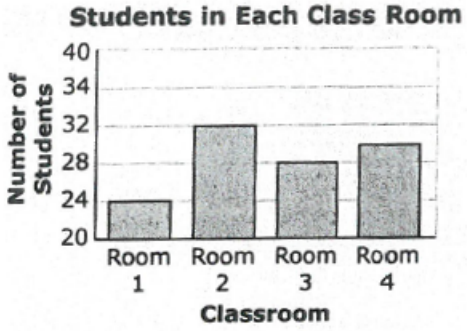
a. Bar graphs that have titles are introduced with, "the title of the bar graph is;" followed by reading the title; for bar graphs without titles, start with bar graphs' audio guideline (b)
b. The description of axes depends on the bar graph's content. However, irrespective of the labels used, if the bars in the graph are vertical, read the vertical axis label first, and; if the bars are horizontal, read the horizontal axis label first –axes can be described in the following ways:
    1. Bar graphs with vertical bars –
        i. ***Only X and Y labels present:*** "The Y. axis ranges from ___ to ___, with each line increasing by a value of ___; The X. axis has # bars; from left to right, the bars are labeled ___"

ii. ***Descriptive labels and X and Y labels present:*** "The Y. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The X. axis, labeled ___, has # bars, from left to right, the bars are labeled ___"
iii. ***Only descriptive labels present:*** "The vertical axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The horizontal axis, labeled _____, has # bars, from left to right, the bars are labeled ___"
iv. ***Absence of descriptive and/or X and Y labels:*** "The vertical axis ranges from ___ to ___, with each line increasing by a value of ___; The horizontal axis, has # bars, from left to right, the bars are labeled ___"

2. Bar graphs with horizontal bars –
   i. ***Only X and Y labels present:*** "The X. axis ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis has # bars; from the top down, the bars are labeled ___"
   ii. ***Descriptive labels and X and Y labels present:*** "The X. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis, labeled ___, has # bars, from the top down, the bars are labeled ___"
   iii. ***Only descriptive labels present:*** "The horizontal axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis, labeled _____, has # bars, from the top down, the bars are labeled ___"
   iv. ***Absence of descriptive and/or X and Y labels:*** "The horizontal axis ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis, has # bars, from the top down, the bars are labeled ___"

c. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description
d. **NOTE:** The description of the graph will no longer include noting the heights of the bars (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The bar graph shows how many students are in four different classroom.  George looked at the graph and saw that the bar for room 3 was two times as tall as the bar for room 1. He decided that there were two times as many students in room 3 as in room 1. What mistake did George make? o He failed to see that the scale starts at 20, not 0. o He thought that a taller bar meant more students. o He was comparing room 4 to room 1. o He needed to order the rooms from smallest to largest.
Alt. Text-to-Speech	The bar graph shows how many students are in four different classroom. ***The title of the bar graph is, Students in Each Class Room. The vertical axis, labeled Number of Students, ranges from twenty to forty, with each line increasing by a value of four; The horizontal axis, labeled Classroom, has four bars; from left to right, the bars are labeled, Room 1, Room 2, Room 3, Room 4.*** George looked at the graph and saw that the bar for room 3 was two times as tall as the bar for room 1. He decided that there were two times as many students in room 3 as in room 1. What mistake did George make? o He failed to see that the scale starts at 20, not 0. o He thought that a taller bar meant more students. o He was comparing room 4 to room 1. o He needed to order the rooms from smallest to largest.

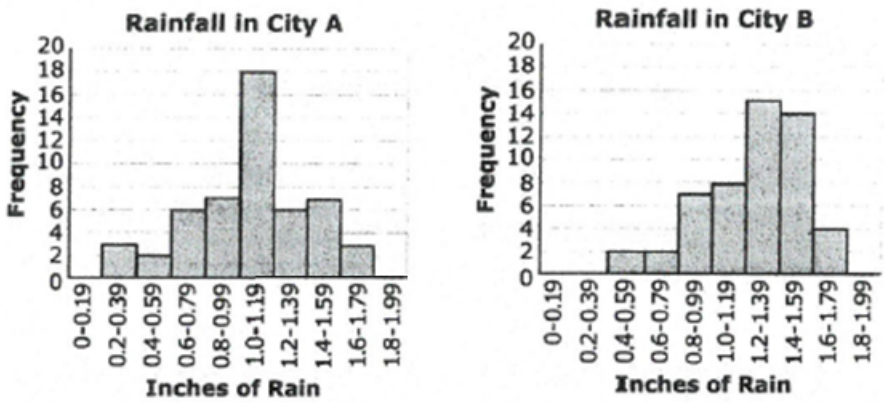
Histograms

Audio Guideline:

Text and Graphics/ Nonvisual

a. Histograms that have titles are introduced with, "the title of the histogram is;" followed by reading the title; for histograms without titles, start with histograms' audio guideline (b)
b. Unlike bar graphs, histograms are usually displayed with vertical bars; as such, describe the vertical/Y axis first –this can be done in the following ways:
    1. ***Only Y label present:*** "The Y. axis ranges from ___ to ___, with each line increasing by a value of ___."
    2. ***Descriptive and Y label present:*** "The Y. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___."
    3. ***Only descriptive label present:*** "The vertical axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___."
    4. ***Absence of Y and/or descriptive labels:*** "The vertical axis ranges from ___ to ___, with each line increasing by a value of ___."
c. The horizontal/X axis can be described in the following ways; **NOTE:** (do not include description of class intervals if doing so violates the construct being measured):
    1. ***Only "X" label present:*** "The X. axis ranges from ___ to ___; with class intervals of ___."
    2. ***Descriptive and X label present:*** "The X. axis, labeled _____, ranges from ___ to ___, with class intervals of ___."
    3. *Only descriptive labels present:* "The horizontal axis, labeled _____, ranges from ___ to ___, with class intervals of ___."
    4. ***Absence of X and/or descriptive labels:*** "The horizontal axis ranges from ___ to ___, with class intervals of ___."
d. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description
e. **NOTE:** The description of the graph will no longer include noting the heights of the bars (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The histograms below show weekly rainfall amounts in different cities.  Based on the data, which conclusion is most accurate? o The upper quartile value is the same for both cities. o The upper quartile value is greater for city B than for city A. o The lower quartile value is greater for city A than for city B. o The lower quartile value is the same for both cities.
Alt. Text-to-Speech	The histograms below show weekly rainfall amounts in different cities. ***Below there are two histograms, on the left, the title of the histogram is, Rainfall in City A. The vertical axis, labeled Frequency, ranges from zero to twenty with each line increasing by a value of two. The horizontal axis, labeled Inches of rain, ranges from zero to one point nine nine, with class intervals of zero point one nine; On the right, the title of the histogram is, Rainfall in City B. The vertical axis, labeled Frequency, ranges from zero to twenty with each line increasing by a value of two. The horizontal axis, labeled Inches of rain, ranges from zero to one point nine nine, with class intervals of zero point one nine.*** Based on the data, which conclusion is most accurate? o The upper quartile value is the same for both cities. o The upper quartile value is greater for city B than for city A. o The lower quartile value is greater for city A than for city B. o The lower quartile value is the same for both cities.

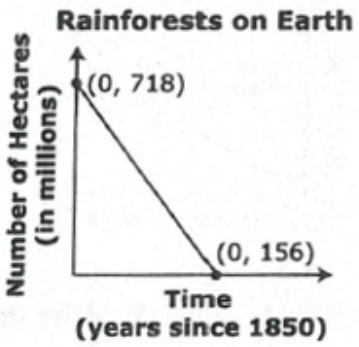
Line Graphs

Audio Guideline:

Text and Graphics/ Nonvisual

a. Line graphs that have titles are introduced with, "the title of the line graph is;" followed by reading the title; for line graphs without titles, start with line graphs' audio guideline (b)
b. The description of axes depends on the line graph's content.
    1. ***Only X and Y labels present:*** (for axes having different ranges and/or incremental values) –"The X. axis ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The X. and Y. axes range from ___ to ___, with each line increasing by a value of ___"
    2. ***Descriptive labels and X and Y labels present:*** "The X. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
    3. ***Only descriptive labels present:*** "The horizontal axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
    4. ***Absence of descriptive and/or X and Y labels:*** (for axes having different ranges and/or incremental values) –"The horizontal axis ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The horizontal and vertical axes range from ___ to ___, with each line increasing by a value of ___"
c. If a Key is presented with the line graph, following the description/alt-text for the line graph, indicate the location/orientation of the key with one of the following (**NOTE**: keys will usually be presented below or to the right of a graph, if this is not the case for a specific item, please indicate the key's location in relation to the graph): "Below the line graph, there is a box…" or "To the right of the line graph, there is a box…" (refer to the key section for rules on reading keys)
d. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description
e. **NOTE:** The description of the graph will no longer include noting the location of content (i.e. points/lines) within the graph; (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The graph below shows how the number of hectares (in millions) of rainforest that cover Earth have changed each year since 1850.  What does the slope of the line represent? o the year when the number of hectares of rainforest is equal to zero o the total number of hectares of rainforest o the year when the most hectares of rainforest vanished o the rate at which the number of hectares of rainforest are decreasing
Alt. Text-to-Speech	The graph below shows how the number of hectares, in millions, of rainforest that cover Earth have changed each year since eighteen fifty. The title of the graph “is; Rainforests on Earth; The horizontal axis is labeled, Time, years since eighteen fifty; The vertical axis is labeled Number of Hectares, in millions; two points are connected by a solid line; zero comma 7 hundred 18, and zero comma 1 hundred 56. What does the slope of the line represent? The year when the number of hectares of rainforest is equal to zero The total number of hectares of rainforest The year when the most hectares of rainforest vanished The rate at which the number of hectares of rainforest are decreasing

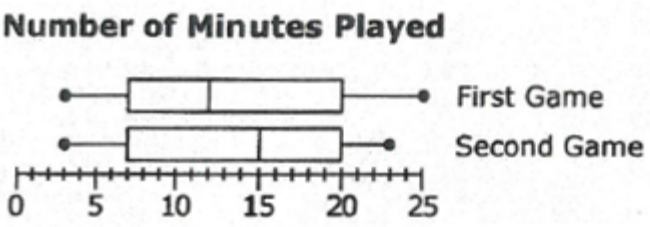
Box-and-Whisker Plots

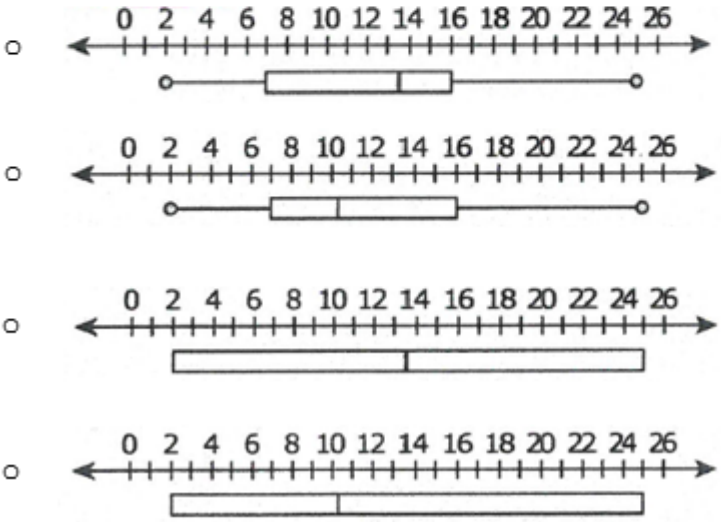
Audio Guideline:

Text and Graphics/ Nonvisual

a. Box-and-whisker plots that have titles are introduced with, “the title of the box-and-whisker plot is;” followed by reading the title; for box-and-whisker plots without titles, start with box-and-whiskers’ audio guideline (b)
b. Describe the number line with, “below the boxes and whiskers, a number line ranges from ___ to ___, with each line increasing by a value of ___.” **NOTE:** If there are descriptors present, i.e. “in,” “m,” “km,” “lbs,” include the expanded unit name in the description of the number line range in the alt-text.
c. If there are additional words/descriptors presented around the boxes and whiskers, indicate the location of the words in relation to the boxes and whiskers with, e.g. “to the right of box and whiskers are the words _____.”
d. **NOTE:** Remain consistent with the style of reading from plot to plot. Utilizing a standardized approach will promote greater understanding of the patterns of description
e. **NOTE:** The description of box-and-whisker plots will no longer include noting the location of content (e.g. points, lines, whiskers, quartiles, or medians) within the plot; (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The manager of a football team recorded the number of minutes each team member played during the first two football games of the season. The data for the 25 players on the team is represented in the box-and-whisker plots below.  Which statement about the data in the box-and-whisker-plots is true? ○ The median number of minutes played in the game is greater for game 1 than game 2. ○ The median number of minutes played in the game is the same for game 1 and game 2. ○ The interquartile range of the number of minutes played in the game is the same for game 1 and game 2. ○ The interquartile range of the number of minutes played in the game is greater for game 1 than game 2.
Alt. Text-to-Speech	The manager of a football team recorded the number of minutes each team member played during the first two football games of the season. The data for the 25 players on the team is represented in the box-and-whisker plots below. ***The title of the box and whisker plot is, Number of Minutes Played; Below the boxes and whiskers, a number line ranges from zero to twenty-five, with each line increasing by a value of one. To the right of the boxes and whiskers are the labels, First Game, Second Game.*** Which statement about the data in the box-and-whisker-plots is true? ○ The median number of minutes played in the game is greater for game 1 than game 2. ○ The median number of minutes played in the game is the same for game 1 and game 2. ○ The interquartile range of the number of minutes played in the game is the same for game 1 and game 2. ○ The interquartile range of the number of minutes played in the game is greater for game 1 than game 2.

Example 2:	
Item Presentation	The table below shows a data analysis of the ages of brothers and sisters of the students in a class. **Data Analysis of Ages of Brothers and Sisters** Lower Extreme: 2 Upper Extreme: 25 Lower Quartile: 7 Upper Quartile: 16 Modes: 8, 12 Median: 13.5 Mean: 10.2 Range: 23 Which box-and-whisker-plot best displays the data? 
Alt. Text-to-Speech	The table below shows a data analysis of the ages of brothers and sisters of the students in a class. ***The title of the table is, Data Analysis of Ages of Brothers and Sisters. There are two columns and eight rows in this table. First row, Lower Extreme, 2; Second row, Upper Extreme, 25; third row, Lower Quartile, 7; fourth row, upper quartile, 16; Fifth row, modes, 8, 12; Sixth row, Median, 13 point 5; Seventh row, Mean, 10 point 2; eighth row, range 23.*** Which box-and-whisker-plot best displays the data? ***Each answer choice is a box and whisker plot that is labeled the same; above each box and whisker plot a number line ranges from zero to 26, with each line increasing by a value of one.***

Scatter Plots

Audio Guideline:

Text and Graphics/ Nonvisual

a. Scatter plots that have titles are introduced with, "the title of the scatter plot is;" followed by reading the title; for scatter plots without titles, start with scatter plots' audio guideline (b)
b. The description of axes depends on the scatter plot's content.
    1. ***Only X and Y labels present:*** (for axes having different ranges and/or incremental values) –"The X. axis ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The X. and Y. axes range from ___ to ___, with each line increasing by a value of ___"
    2. ***Descriptive labels and X and Y labels present:*** "The X. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
    3. ***Only descriptive labels present:*** "The horizontal axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
    4. ***Absence of descriptive and/or X and Y labels:*** (for axes having different ranges and/or incremental values) –"The horizontal axis ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The horizontal and vertical axes range from ___ to ___, with each line increasing by a value of ___"
c. **NOTE:** Remain consistent with the style of reading from plot to plot. Utilizing a standardized approach will promote greater understanding of the patterns of description.
d. **NOTE:** The description of scatter plots will no longer include noting the location of points (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Example to come
Alt. Text-to-Speech	

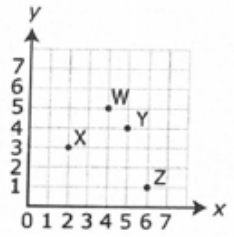
Coordinate Grids

Audio Guideline:

Text and Graphics/ Nonvisual

a. Coordinate grids that have titles are introduced with, "the title of the coordinate grid is;" followed by reading the title; for coordinate grids without titles, start with coordinate grids' audio guideline (b)
b. The description of axes depends on the coordinate grid's content.
    1. ***Only X and Y labels present:*** (for axes having different ranges and/or incremental values) –"The X. axis ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The X. and Y. axes range from ___ to ___, with each line increasing by a value of ___"
    2. ***Descriptive labels and X and Y labels present:*** "The X. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
    3. ***Only descriptive labels present:*** "The horizontal axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
    4. ***Absence of descriptive and/or X and Y labels:*** (for axes having different ranges and/or incremental values) –"The horizontal axis ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The horizontal and vertical axes range from ___ to ___, with each line increasing by a value of ___"
c. If points within the grid are labeled (this excludes descriptors identifying a coordinate pair), include alt-text for the labels within the grid, beginning with the most top, left point, moving clockwise around the grid to describe each point present.
d. **NOTE:** Remain consistent with the style of reading from grid to grid. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** The description of coordinate grids will no longer include noting the location of points (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Four points are graphed on the coordinate grid below.  Which ordered pair gives the location of point Y on the coordinate grid? • (6, 1) • (5, 4) • (4, 5) • (2, 3)
Alt. Text-to-Speech	Four points are graphed on the coordinate grid below. ***The coordinate grid has X., and Y., axes that range from zero to seven; with each line increasing by a value of 1. The labels on the points are; X., W., Y., Z.,*** Which ordered pair gives the location of point Y., on the coordinate grid? *Six comma one* *Five comma four* *Four comma five* *Two comma three*

Exponential/Linear Function Graphs

Audio Guideline:

Text and Graphics/ Nonvisual

a. Exponential/Linear Function graphs that have titles are introduced with, "the title of the graph is;" followed by reading the title; for graphs without titles, start with exponential/linear function graphs' audio guideline (b)
b. The description of axes depends on the exponential/linear function graphs' content.
   1. ***Only X and Y labels present:*** (for axes having different ranges and/or incremental values) –"The X. axis ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The X. and Y. axes range from ___ to ___, with each line increasing by a value of ___"
   2. ***Descriptive labels and X and Y labels present:*** "The X. axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The Y. axis,

labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"

3. ***Only descriptive labels present:*** "The horizontal axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___"
4. ***Absence of descriptive and/or X and Y labels:*** (for axes having different ranges and/or incremental values) –"The horizontal axis ranges from ___ to ___, with each line increasing by a value of ___; The vertical axis ranges from ___ to ___, with each line increasing by a value of ___"; (for axes that have the same ranges AND the same incremental values) –"The horizontal and vertical axes range from ___ to ___, with each line increasing by a value of ___"

c. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description.
d. **NOTE:** The description of exponential/linear function graphs will no longer include noting the location of points (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Example to come
Alt. Text-to-Speech	

Line Plots

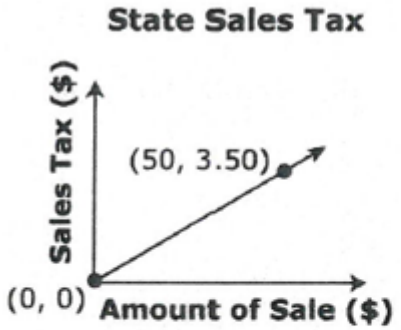
Audio Guideline:

Text and Graphics/ Nonvisual

a. Line plots that have titles are introduced with, "the title of the line plot is;" followed by reading the title; for line plots without titles, start with line plots' audio guideline (b)
b. The description of the x-axis title, i.e. the number line plot title, depends on the line plots' content.
   1. ***Number line (x-axis for line plot) labeled:*** "The number line, labeled _____, ranges from ___ to ___, with each line increasing by a value of ___;
   2. ***Number line (x-axis for line plot) NOT labeled:*** "The number line ranges from ___ to ___, with each line increasing by a value of ___;
c. If a Key is included, refer to the Keys' audio guideline
d. **NOTE:** Remain consistent with the style of reading from plot to plot. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** The description of line plots will no longer include noting the quantity and

location of “x’s” or symbols above the number line (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The graph below shows the sales tax rate in a certain state.  Based on the data, which conclusion is most accurate? ○ 3.5 ¢ for every $1 sold ○ 7 ¢ for every $1 sold ○ 35 ¢ for every $1 sold ○ 70 ¢ for every $1 sold
Alt. Text-to-Speech	The graph below shows the sales tax rate in a certain state. The title of the graph “is; State Sales Tax; The horizontal axis is labeled, Amount of Sale, dollar symbol; The vertical axis is labeled, Sales Tax, dollar symbol; there are two points connected by a ray; zero comma zero, and fifty comma three point five zero. Based on the data, which conclusion is most accurate? • 3 point 5 cents for every 1 dollar sold • 7 cents for every 1 dollar sold • 35 cents for every 1 dollar sold • 70 cents for every 1 dollar sold

Pictographs

Audio Guideline:

Text and Graphics/ Nonvisual

a. Pictographs that have titles are introduced with, "the title of the pictograph is;" followed by reading the title; for pictographs without titles, start with pictographs' audio guideline (b)
b. If there is a Key, introduce the Key using the Keys' audio guidelines
c. If the pictograph is formatted as a table, refer to the audio guidelines for tables.
d. If the pictograph is formatted as a graph, refer to the audio guidelines for graphs.
e. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description.
f. **NOTE:** The expanded description of exponential/linear function graphs will no longer include noting the number of pictures/images (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:

Item Presentation

A teacher asked his students how they got to school. The teacher learned that 6 of his students took the bus, 2 of his students rode their bicycles, 8 of his students were driven by car, and 4 of his students walked. Which pictograph correctly shows how the teacher's students got to school?

○ **Ways We Get to School**

Bus	🧍🧍🧍
Bicycle	🧍🧍
Car	🧍🧍🧍🧍
Walk	🧍

Key
🧍 = 2 students

○ **Ways We Get to School**

Bus	🧍🧍🧍
Bicycle	🧍
Car	🧍🧍🧍🧍
Walk	🧍🧍

Key
🧍 = 2 students

○ **Ways We Get to School**

Bus	🧍🧍🧍🧍🧍🧍
Bicycle	🧍🧍
Car	🧍🧍🧍🧍🧍🧍🧍🧍
Walk	🧍🧍🧍🧍

Key
🧍 = 2 students

○ **Ways We Get to School**

Bus	🧍🧍🧍🧍🧍🧍🧍🧍
Bicycle	🧍🧍
Car	🧍🧍🧍🧍🧍🧍
Walk	🧍🧍🧍🧍

Key
🧍 = 2 students

Alt. Text-to-Speech	A teacher asked his students how they got to school. The teacher learned that 6 of his students took the bus, 2 of his students rode their bicycles, 8 of his students were driven by car, and 4 of his students walked. Which pictograph correctly shows how the teacher's students got to school? ***Each answer choice is a pictograph; each pictograph is labeled the same; the title of the pictograph is; Ways We Get to School; the row labels are; Bus, Bicycle, Car, Walk; Below each pictograph is a box with the label, Key; the image of a person, equals two students.***

Number Lines

Audio Guideline:

Text and Graphics/ Nonvisual

a. Number lines that have titles are introduced with, "the title of the number line is;" followed by reading the title; for number lines without titles, start with number lines' audio guideline (b)
b. Describe the range of the number line in the following manner, "The number line ranges from ___ to ___, with each line increasing by a value of"
c. Describe the information on the number line using the following:
    1. ***Point on a number line:*** indicate the # of points and any labels for the points with – "There are ___ points, labeled _____, _____, _____, _____ on the number line."; **NOTE:** location of points for this type of number line will no longer be included, this exclusion is to maintain consistency between text and graphics and nonvisual tagging –as such, this content in an item will not be accessible to blind and some low-vision students without an accompanying tactile representation.
    2. ***Solutions to Inequalities:*** indicate the location, as well as the type of circle (i.e. open closed), and arrow/darkened lines' directions with – "At the tick mark labeled ___ there is an (open/closed) circle, with an arrow pointing (left/right)"; use the same approach to introduce each circle and arrow shown
f. If a Key is included, refer to the Keys' audio guideline
g. **NOTE:** Remain consistent with the style of reading from number line to number line. Utilizing a standardized approach will promote greater understanding of the patterns of description.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Example to come
Alt. Text-to-Speech	

Stem-and-Leaf Plots

Audio Guideline:

Text and Graphics/ Nonvisual

a. Stem-and-leaf plots that have titles are introduced with, "the title of the stem-and-leaf plot is;" followed by reading the title; for stem-and-leaf plots without titles, start with stem-and-leaf plots' audio guideline (b)
b. If there is a Key, indicate the location of the key relative to the plot using, "below" "above" "to the right of" and "to the left of"; then follow the audio guidelines for Keys to describe the information.
c. Indicate the number of rows/stems in the plot followed by describing each row using the following, "There are ___ stems in this plot; first stem, ___, has leaves ___, ___, ___, ___; second stem, ___, has leaves ___, ___, ___." Continue this process for each row/stem
d. **NOTE:** Remain consistent with the style of reading from plot to plot. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** The expanded description of stem-and-leaf plots will no longer include noting the direction of content (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The test results of 30 algebra students are shown in the stem-and-leaf plot. **Algebra Test Scores** 3 | 7 4 | 5 8 5 | 6 8 9 6 | 6 6 7 9 7 | 2 2 3 3 5 7 7 7 7 9 8 | 1 2 2 2 6 7 7 9 9 | 4 8 **Key** 7 | 5 = 75% Which measure has a value of 76% in this set of data? ○ median ○ range ○ mode ○ mean

Alt. Text-to-Speech	The test results of 30 algebra students are shown in the stem-and-leaf plot. ***The title of the stem and leaf plot is, Algebra Test Scores; Below the plot is a box with the title Key; in the key, seven, vertical bar, 5, equals 75 percent. There are 7 stems in this plot; first stem, 3, has leaf 7; second stem, 4, has leaves 5, 8; third stem 5, has leaves 6, 8, 9; fourth stem, 6, has leaves 6, 6, 7, 9; fifth stem, 7, has leaves 2, 2, 3, 3, 5, 7, 7, 7, 7, 9; sixth stem, 8, has leaves 1, 2, 2, 2, 6, 7, 7, 9; seventh stem, 9, has leaves 4, 8.*** Which measure has a value of 76% in this set of data? o median o range o mode o mean

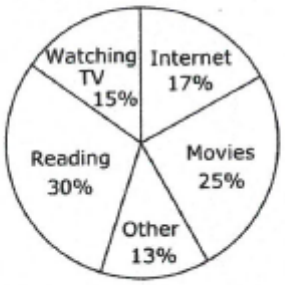
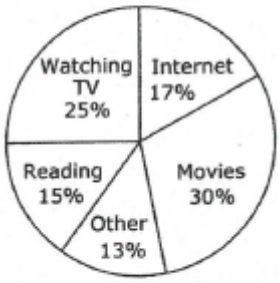
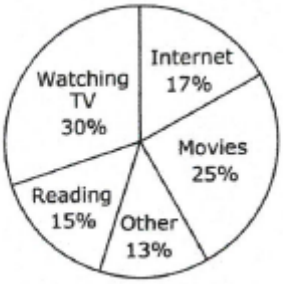
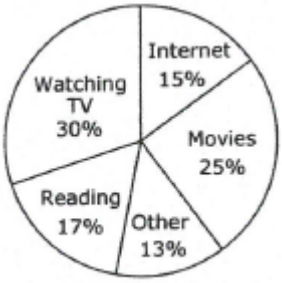
Circle Graphs

Audio Guideline:

Text and Graphics/ Nonvisual

a. Circle graphs that have titles are introduced with, "the title of the circle graph is;" followed by reading the title; for circle graphs without titles, start with circle graphs' audio guideline (b)
b. Indicate the number of sections and describe the information by moving clockwise from the top section, read the section label and the accompanying information with, "Starting at the top, and moving clockwise around the circle, there are ___ sections labeled ___, ___, ___, ___"
c. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description.
d. N**OTE:** The expanded description of circle graphs will no longer include noting the relative size of sections (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Each circle graph below shows how much time someone spent on different leisure activities in a week. Which circle graph shows that someone spent twice as much time reading as watching TV? ○  ○  ○  ○ 

Alt. Text-to-Speech	Each circle graph below shows how much time someone spent on different leisure activities in a week. Which circle graph shows that someone spent twice as much time reading as watching TV? ***Each answer choice is a circle graph.*** ○ ***First graph, starting at the top, and moving clockwise around the circle, there are five sections labeled; watching T.V., 15 percent; Internet, 17 percent; Movies, 25 percent; Other, 13 percent; Reading, 30 percent;*** ○ ***Second graph, starting at the top, and moving clockwise around the circle, there are five sections labeled; watching T.V., 25 percent; Internet, 17 percent; Movies, 30 percent; Other, 13 percent; Reading, 15 percent;*** ○ ***Third graph, starting at the top, and moving clockwise around the circle, there are five sections labeled; watching T.V., 30 percent; Internet, 17 percent; Movies, 25 percent; Other, 13 percent; Reading, 15 percent;*** ○ ***Fourth graph, starting at the top, and moving clockwise around the circle, there are five sections labeled; watching T.V., 30 percent; Internet, 15 percent; Movies, 25 percent; Other, 13 percent; Reading, 17 percent;***

Diagrams, Figures, and Keys

Keys

Audio Guideline:

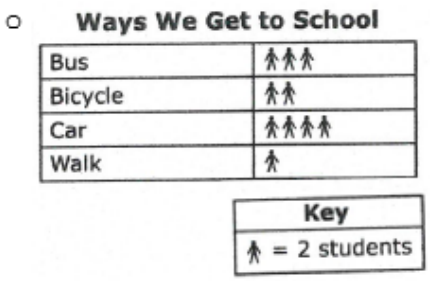
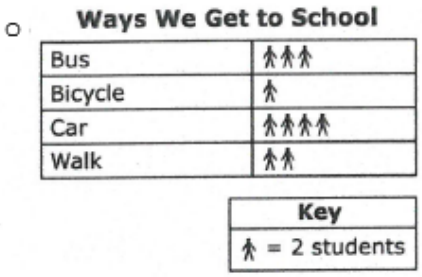
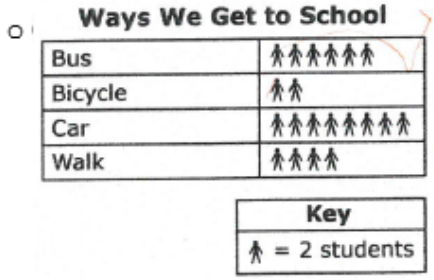
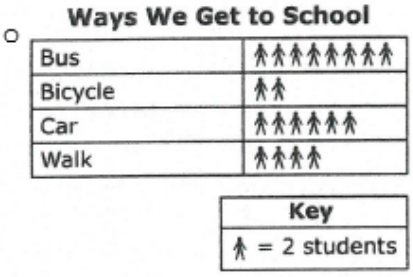
Text and Graphics/ Nonvisual

a. Indicate the position of the key relative to the information that it describes using, "below" "above" "to the right of" "to the left the *graph*"
b. Describe the Key using, "there is a box with the label ___ ("key") In the Key there are the words ___, ___, ___".
c. **NOTE:** Remain consistent with the style of reading from graph to graph. Utilizing a standardized approach will promote greater understanding of the patterns of description.
d. N**OTE:** The expanded description of circle graphs will no longer include noting the relative size of sections (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation

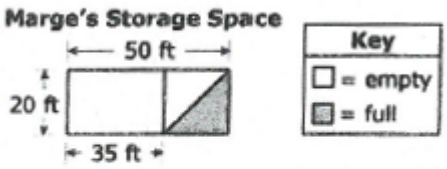
Application of Audio Guidelines:

Example 1:	
Item Presentation	The test results of 30 algebra students are shown in the stem-and-leaf plot. **Algebra Test Scores** 3 | 7 4 | 5 8 5 | 6 8 9 6 | 6 6 7 9 7 | 2 2 3 3 5 7 7 7 7 9 8 | 1 2 2 2 6 7 7 9 9 | 4 8 **Key** 7 | 5 = 75% Which measure has a value of 76% in this set of data? ○ median ○ range ○ mode ○ mean

Alt. Text-to-Speech	The test results of 30 algebra students are shown in the stem-and-leaf plot. ***The title of the stem and leaf plot is, Algebra Test Scores; Below the plot is a box with the title Key; in the key, seven, vertical bar, 5, equals 75 percent. There are 7 stems in this plot; first stem, 3, has leaf 7; second stem, 4, has leaves 5, 8; third stem 5, has leaves 6, 8, 9; fourth stem, 6, has leaves 6, 6, 7, 9; fifth stem, 7, has leaves 2, 2, 3, 3, 5, 7, 7, 7, 7, 9; sixth stem, 8, has leaves 1, 2, 2, 2, 6, 7, 7, 9; seventh stem, 9, has leaves 4, 8.*** Which measure has a value of 76% in this set of data? ○ median ○ range ○ mode ○ mean

Example 2:	
Item Presentation	A teacher asked his students how they got to school. The teacher learned that 6 of his students took the bus, 2 of his students rode their bicycles, 8 of his students were driven by car, and 4 of his students walked. Which pictograph correctly shows how the teacher's students got to school? ○  ○  ○  ○ 

Alt. Text-to-Speech	A teacher asked his students how they got to school. The teacher learned that 6 of his students took the bus, 2 of his students rode their bicycles, 8 of his students were driven by car, and 4 of his students walked. Which pictograph correctly shows how the teacher's students got to school? ***Each answer choice is a pictograph; each pictograph is labeled the same; the title of the pictograph is; Ways We Get to School; the row labels are; Bus, Bicycle, Car, Walk; Below each pictograph is a box with the label, Key; the image of a person, equals two students.***

Example 3:	
Item Presentation	The diagram below shows the floor plan of Marge's storage space. The shaded area represents the part that is already full.  What is the area in square feet (ft^2) of the space that is empty? ○ 150 ft^2 ○ 700 ft^2 ○ 850 ft^2 ○ 1,000 ft^2
Alt. Text-to-Speech	The diagram below shows the floor plan of Marge's storage space. The shaded area represents the part that is already full. ***The title of the shaded figure is, Marge's Storage Space. Starting on the left and moving clockwise, the labels around the figure are, twenty feet, fifty feet, thirty five feet. To the right of the figure is a box with the title, Key, unshaded box equals empty; shaded box equals full.*** What is the area in square feet ~~***(ft^2)***~~ of the space that is empty. ***The abbreviation for square feet is, F., T., squared.*** ○ ***One hundred fifty square feet*** ○ ***Seven hundred square feet*** ○ ***Eight hundred fifty square feet*** ○ ***One thousand square feet***

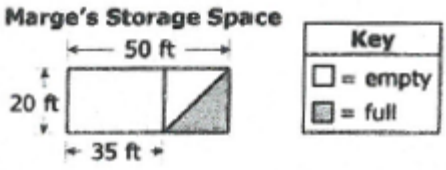
Shaded Figures (Grids, Bars, and Shapes)

Audio Guideline:

Text and Graphics/ Nonvisual

a. Shaded figures that have titles are introduced with, "the title of the shaded figure is;" followed by reading the title; for shaded figures without titles, start with shaded figures' audio guideline (b).
b. Identify any words, letters, or numbers within the figure; when possible start with the outer, upper left word/letter/number and move clockwise around the figure; then move inward, reading any information in the same clockwise fashion.
c. Identify the dimensions of the figure; the following represent ways to described figure dimensions:
    1. "there are ___ columns, with ___ boxes in each"
    2. "there are ___ rows, with ___ boxes in each"
d. Identify the number of figures shaded; avoid using terminology that creates fractions for the individual, e.g. "x of y boxes are shaded," as it will often violate the construct being measured.
e. When identifying the number of boxes shaded, avoid stating the total number when information can be provided for the individual to use in order to determine the number of shaded boxes; e.g. "there are four columns with ten boxes shaded" as opposed to "there are forty boxes shaded"
f. **NOTE:** Remain consistent with the style of reading from shaded figure to shaded figure. Utilizing a standardized approach will promote greater understanding of the patterns of description.
g. **NOTE:** The expanded description of shaded figures should not be overly wordy (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	The diagram below shows the floor plan of Marge's storage space. The shaded area represents the part that is already full.  What is the area in square feet (ft^2) of the space that is empty? ○ 150 ft^2 ○ 700 ft^2 ○ 850 ft^2 ○ 1,000 ft^2

Alt. Text-to-Speech	The diagram below shows the floor plan of Marge's storage space. The shaded area represents the part that is already full. ***The title of the shaded figure is, Marge's Storage Space. Starting on the left and moving clockwise, the labels around the figure are, twenty feet, fifty feet, thirty five feet. To the right of the figure is a box with the title, Key, unshaded box equals empty; shaded box equals full.*** What is the area in square feet ~~***(ft²)***~~ of the space that is empty. ***The abbreviation for square feet is, F., T., squared.*** ○ ***One hundred fifty square feet*** ○ ***Seven hundred square feet*** ○ ***Eight hundred fifty square feet*** ○ ***One thousand square feet***

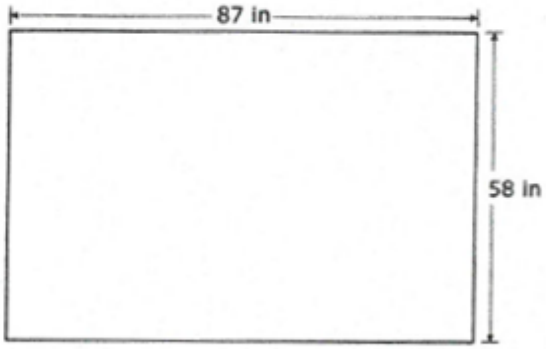
Figures/Illustrations

Audio Guideline:

Text and Graphics/ Nonvisual

a. Figures/Illustrations that have titles are introduced with, "the title of the figure is;" followed by reading the title (there are some cases where it may also be appropriate to use the term diagram); for figures/illustrations without titles, start with figures/illustrations audio guideline (b).
b. Figures/Illustrations that have captions are introduced with, "below the figure, are the words ___"; for figures/illustrations without captions, start with figures/illustrations audio guideline (c).
c. Identify the location and content of any scale present prior to describing parts of the figure.
d. Identify any words, letters, or numbers within the figure; when possible start with the outer, upper left word/letter/number and move clockwise around the figure; then move inward, reading any information in the same clockwise fashion.
e. Identify the dimensions of the figure; the following represent ways to described figure dimensions:
f. **NOTE:** Remain consistent with the style of reading from figure to figure. Utilizing a standardized approach will promote greater understanding of the patterns of description.
g. **NOTE:** The expanded description of figures and illustrations should not be overly wordy (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	A rectangular bathroom floor measures 58 inches (in.) on one side and 87 in. on the other side, as shown below.  Which is the best ESTIMATE of the perimeter of the bathroom floor? ○ 150 in. ○ 260 in. ○ 300 in. ○ 540 in.
Alt. Text-to-Speech	A rectangular bathroom floor measures 58 inches ~~***(in.)***~~ on one side and 87 ***inches*** on the other side, as shown below. ***The abbreviation for inches is, I., N., The labels on the diagram are, eighty-seven inches; fifty-eight inches.*** Which is the best ESTIMATE of the perimeter of the bathroom floor? • ***One hundred fifty inches*** • ***Two hundred sixty inches*** • ***Three hundred inches*** • ***Five hundred forty inches***

Spinners

Audio Guideline:

Text and Graphics/ Nonvisual

a. Spinners that have titles are introduced with, “the title of the spinner is;” followed by reading the title; for spinners without titles, start with spinners’ audio guideline (b).
b. When there is more than one spinner present, indicate the number of spinners first, then introduce each spinner with “first,” “second,” “third,” etc.; if there are titles for each spinner, “the title of the first spinner is,” “the title of the second spinner is,” etc.
c. Beginning at the top and moving clockwise around the spinner, identify any words,

letters, and/or numbers on the spinner using, “Starting at the top and moving clockwise, the values in the spinner are,”; for multiple spinners, “Staring at the top and moving clockwise, the values in the ‘first,’ ‘second,’ ‘third’ spinner are.”

d. **NOTE:** Remain consistent with the style of reading from spinner to spinner. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** The expanded description of spinners will no longer include identifying the relative sizes of each section (this exclusion is to maintain consistency between text and graphics and nonvisual tagging); as such, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	A spinner with eight congruent sections is shown below.  The arrow on the spinner is spun once. What is the probability of the arrow pointing to a section with a multiple of 5? ○ $\frac{3}{8}$ ○ $\frac{1}{2}$ ○ $\frac{2}{1}$ ○ $\frac{8}{3}$
Alt. Text-to-Speech	A spinner with eight congruent sections is shown below. ***Starting at the top and moving clockwise, the values in the spinner are; thirty-three, five, nine, twelve, seventeen, twenty, twenty-five, twenty-eight.*** The arrow on the spinner is spun once. What is the probability of the arrow pointing to a section with a multiple of 5? ○ ***Three over eight*** ○ ***One over two*** ○ ***Two over one*** ○ ***Eight over three***

Coins and Dollars

Audio Guideline:

Text and Graphics/ Nonvisual

a. Coins and dollars that have titles are introduced with, “the title of the image is;” followed by reading the title; for coins and dollars without titles, start with coins and dollars’ audio guideline (b).
b. Identify and describe the money using standard language, i.e. penny, dime, quarter, or dollar.
c. Identify and describe each currency symbol without interpreting their value, e.g. 6 dimes, as opposed to 60 cents, 5 quarters, as opposed to a dollar 25.
d. **NOTE:** Remain consistent with the style of reading from image to image. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** If the alt text/expanded description violates the construct being measured, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Example to come
Alt. Text-to-Speech	

Numbered/Step Diagrams

Audio Guideline:

Text and Graphics/ Nonvisual

a. Numbered/step diagrams that have titles are introduced with, “the title of the diagram is;” followed by reading the title; for numbered/step diagrams without titles, start with numbered/step diagrams’ audio guideline (b).
b. Provide a brief orientation of how the diagram is presented and will be read aloud; e.g. “starting on the left and moving right” or “starting at the top and moving down.
c. Following the orientation prompt, identify the steps or diagram numbers along with a brief description of the figures in each step with just enough detail to understand the item.
d. **NOTE:** Remain consistent with the style of reading from diagram to diagram. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** If the alt text/expanded description violates the construct being measured, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation

Application of Audio Guidelines:

Example 1:	
Item Presentation	The steps Jessie used to simplify an expression are shown below. $\frac{3}{2}x + 3(3 + x) - 1$ [Given] $\frac{3}{2}x + 3(x + 3) - 1$ [Step 1] $\frac{3}{2}x + 3(x + 3) - 1$ [Step 2] $\frac{9}{2}x + 9 - 1$ [Step 3] $\frac{9}{2}x + 8$ [Step 4] Which step shows the use of the commutative property? o Step 1 o Step 2 o Step 3 o Step 4
Alt. Text-to-Speech	The steps Jessie used to simplify an expression are shown below. ***Three over two, X., plus three, parenthesis, three plus X., close parenthesis, minus one; bracket, given, close bracket.*** ***Three over two, X., plus three, parenthesis, X., plus three, close parenthesis, minus one; bracket, Step 1, close bracket.*** ***Three over two, X., plus three, parenthesis, X., plus three, close parenthesis, minus one; bracket, Step 2, close bracket.*** ***Nine over 2, X., plus nine minus one; bracket, Step 3, close bracket.*** ***Nine over 2, X., plus eight; bracket, Step 4, close bracket.*** Which step shows the use of the commutative property? o Step 1 o Step 2 o Step 3 o Step 4

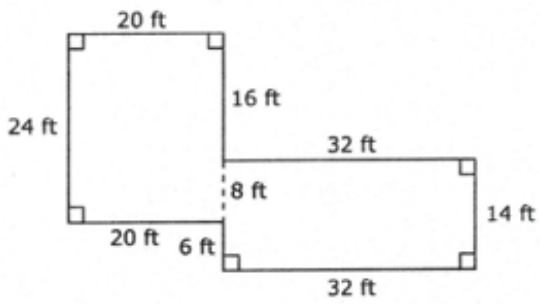
Geometric Figures

Audio Guideline:

Text and Graphics/ Nonvisual

a. Geometric figures that have titles are introduced with, "the title of the figure is;" followed by reading the title; for geometric figures without titles, start with geometric figures' audio guideline (b).
b. Identify all labels of sides and/or angles; when possible start with the outer, upper left label and move clockwise around the figure; then move inward, reading any information in the same clockwise fashion.
c. Simple shapes are considered any 2D shape with eight sides or less: Refer to simple shapes as is, unless the item is measuring the individual's ability to identify a shape. If the item includes a simple shape, describe what type of shape it is with as few words as possible –making certain to reference labels of sides and angles.
d. Three dimensional Shapes/Figures: Reference the type of figure; if relevant, and does not violate the construct being measured, describe the figure including the number of sides.
e. **NOTE:** Remain consistent with the style of reading from figure to figure. Utilizing a standardized approach will promote greater understanding of the patterns of description.
f. **NOTE:** If the alt text/expanded description violates the construct being measured, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Jenny wants to install new gutters around the edge of the roof of her house. The diagram below shows the outline of her roof in feet (ft).  What is the perimeter of Jenny's roof? ○ 150 ft ○ 164 ft ○ 172 ft ○ 180 ft

Alt. Text-to-Speech	Jenny wants to install new gutters around the edge of the roof of her house. The diagram below shows the outline of her roof in feet ***~~(ft)~~. The abbreviation for feet is, F., T., Below, starting on the left and moving clockwise, the labels on the diagram are, 24 feet, 20 feet, 16 feet, 32 feet, 14 feet, 32 feet, 6 feet, 20 feet, 8 feet.*** What is the perimeter of Jenny's roof? ○ ***One hundred fifty feet*** ○ ***One hundred sixty four feet*** ○ ***One hundred seventy two feet*** ○ ***One hundred eighty feet***

Venn Diagrams

Audio Guideline:

Text and Graphics/ Nonvisual

a. Venn diagrams that have titles are introduced with, "the title of the Venn diagram is;" followed by reading the title; for Venn diagrams without titles, start with Venn diagrams' audio guideline (b)
b. Introduce the layout of the Venn diagram, as well as any section labels prior to reading any content, e.g. bullet points, lists, statements, using the following: "the Venn diagram shows two intersecting circles; the circle on the left is labeled, _____; the circle on the right is labeled, _____; the area of intersection is labeled, _____."
c. Identify the content within each section, starting with the left circle, then moving to the right circle, and ending with the area of intersection using the following: "on the left, under the label _____, (are the words/values/statements); on the right, under the label, _____, (are the words/values/statements); in the area of intersection, under the label, _____, (are the words/values/statements)
    1. NOTE: generally, the left and right circles will contain labels; however, at times the area of intersection will not be labeled, under these circumstances, utilize the same procedure, excluding "under the label, _____"
d. **NOTE:** Remain consistent with the style of reading from Venn diagram to Venn diagram. Utilizing a standardized approach will promote greater understanding of the patterns of description.
e. **NOTE:** If the alt text/expanded description violates the construct being measured, this item may not be accessible to blind and some low-vision students without an accompanying tactile representation.

Application of Audio Guidelines:

Example 1:	
Item Presentation	Example to come
Alt. Text-to-Speech	