

Expanding Audio Access to Mathematics Expressions by Students with Visual Impairments via MathML

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Speech Example 1

$$(2)(4)(5 + 1)(3)$$

MathSpeak

Transcription:

Left parenthesis 2 right parenthesis left parenthesis 4 right parenthesis left parenthesis 5 plus right parenthesis left parenthesis 3 right parenthesis.

Simple Speech

Transcription:

Open 2 close open 4 close open 5 plus 1 close open 3 close

ClearSpeak

Transcription:

2 times 4 times open parenthesis 5 plus 1 close parenthesis times 3

Speech Example 2

$$\frac{y^5 z^{-7}}{y^2 z^{x-3}}$$

MathSpeak

Transcription:

Start fraction. y superscript 5 baseline z superscript negative 7 over y squared z superscript x minus 3. End fraction.

Simple Speech

Transcription:

Fraction y to the fifth z super negative 7 end super over y squared z super x minus 3 end super end fraction.

ClearSpeak*

Transcription using current rules:

The fraction with numerator y to the fifth power z raised to the power negative 7, and denominator y squared z raised to the x minus 3 power.

Transcription using preference "Exponent":

The fraction with numerator y to the exponent 5 end exponent z to the exponent negative 7 end exponent, and denominator y to the exponent 2 end exponent z to the exponent x minus 3 end exponent.

Transcription using preference "Before Power":

The fraction with numerator y raised to the 5 power z raised to the negative 7 power, and denominator y raised to the 2 power z raised to the x minus 3 power

Transcription using preference "After Power":

The fraction with numerator y raised to the power 5 z raised to the power negative 7, and denominator y raised to the power 2 z raised to the power x minus 3

Transcription using Exact Speech (Experimental—pitch rises when speaking the portion in bold-underline):

The fraction with numerator y raised to the power 5 times z raised to the power negative 7, and denominator y raised to the power 2 times z raised to the x minus 3 power