

# Make Math-Science Resources Accessible

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The goal of accessible learning is that a person with a disability will obtain the information as fully, equally and independently as a person without a disability. When a learning setting is accessible, a person with a disability is afforded the opportunity to acquire the same information, engage in the same interactions, and enjoy the same services as a person without a disability in an equally effective and equally integrated manner, with substantially equivalent ease of use.

For broad information about the best practices for making Math and Science information accessible, see the Portland Community College [Mathematics Accessibility Study](https://www.pcc.edu/instructional-support/accessibility/sas/math/accessible/) (<https://www.pcc.edu/instructional-support/accessibility/sas/math/accessible/>) highlights and report.

Please refer to the [Delivering Beyond Accessibility Compliance](https://www.d2l.com/resources/assets/delivering-beyond-accessibility-compliance/) (<https://www.d2l.com/resources/assets/delivering-beyond-accessibility-compliance/>) page on D2L for more info.

## Make Math and Science Equations Using EquatIO or the D2L HTML Editor

- You can use [EquatIO](https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more) (<https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more>) to insert Math and Science equations into your course.
- You can also use the [D2L equation editor](http://youtu.be/YQLiKm4iMq4) (<http://youtu.be/YQLiKm4iMq4>) which will output accessible equations.

For additional information on accessible resources in D2L, [Desire2Learn resource library](https://www.d2l.com/resources/?search=accessible#filter=.category-accessibility) (<https://www.d2l.com/resources/?search=accessible#filter=.category-accessibility>).

## Make Graphs Accessible

There are many ways to create graphs on the computer, including Winplot, Excel, Graph, pgfplots, PSTricks, and more. All graphs, regardless of how they were created, are read as images by a screen reader. As such, complete and appropriate alt text must be included for electronic documents and web pages. Printing a tactile graph on embossed paper is a very time-intensive process. When working with a visually impaired student, it is possible that Disability Services may ask the instructor to choose which images are the most important, as not all images may be printed.

## Make Math and Science Elements in Word Documents Accessible

When using Microsoft Word, use the MathType plugin to create math and science equations, formulas, and notations. Do not use Microsoft's equation editor.

- If you convert the document to a PDF or export it to a webpage, save the original Microsoft Word source document because Disability Services may ask for it.
- If you are using [LibreOffice](http://www.libreoffice.org/) (<http://www.libreoffice.org/>), use the native equation editor; it easily converts to an accessible format.

## Math and Science Elements in PDFs

Math and science equations, formulas, and notations are not accessible to a screen reader in a PDF file, so you should save the source file with the original MathType or LaTeX equations. Disability Services will ask for source files when there is an accommodation needed.

## Make Math and Science Elements in Microsoft PowerPoints Accessible

For Microsoft PowerPoint, use the MathType plugin to create math and science equations, formulas, and notations. Do not use Microsoft's equation editor.

- If you convert the PowerPoint presentation to a PDF or export it to a webpage, save the original PowerPoint source presentation because Disability Services may ask for it.
- If you are using older versions of PowerPoint or MathType, put the PowerPoint content into a Word document and use MathType to write the equations.

## Math and Science Elements in Online Publisher Content

Before using online publisher-provided material, make sure it is carefully vetted for accessibility. For more information contact Accessibility Services and Resources at [LSC-ASR@LoneStar.edu](mailto:LSC-ASR@LoneStar.edu) () to help you evaluate publisher content for accessibility. You should also consider switching to WeBWork, a more accessible online homework site.

## Math and Science Elements in Tests

- TestGen is not recommended for creating tests with math or science elements; the tests do not export to an accessible format. Unless you are willing to re-create mathematical content using MathType or LaTeX, you should not use TestGen for tests that contain math or science material.
- Make sure any tests or quizzes follow the specific document type rules listed above.
- If a student has a time extension that would make taking the test unreasonable to complete in one sitting (for example, taking a six-hour exam in one session), the instructor should split the test into multiple parts so that the student can take the different parts on different days.

## Additional Resources

- [Statistical Software and Blind Users](http://r-resources.massey.ac.nz/StatSoftware/) (<http://r-resources.massey.ac.nz/StatSoftware/>)
- [The TechVision Difference](http://www.yourtechvision.com/) (<http://www.yourtechvision.com/>)
- [National Center for Blind Youth in Science](https://nfb.org/programs-services/national-center-blind-youth-science) (<https://nfb.org/programs-services/national-center-blind-youth-science>)
- [Access2Science](http://www.access2science.com/) (<http://www.access2science.com/>)
- [Desmos](https://www.desmos.com/accessibility) (<https://www.desmos.com/accessibility>): a graphing tool that works with screen readers.
- [Teaching Accessible Science](http://www.perkins.org/resources/curricular/accessible-science/) (<http://www.perkins.org/resources/curricular/accessible-science/>)
- [4-part webinar series on accessible math and science](http://easi.cc/archive/stem2013/resources.htm) (<http://easi.cc/archive/stem2013/resources.htm>)
- [Texas School for the Blind: Math Home Page](https://www.tsbvi.edu/tx-senseabilities/issues/fall-2020/assistive-technology-for-math-10-tips-for-tvis) (<https://www.tsbvi.edu/tx-senseabilities/issues/fall-2020/assistive-technology-for-math-10-tips-for-tvis>)
- [AccessStem](http://www.washington.edu/doi/Stem/) (<http://www.washington.edu/doi/Stem/>)
- [Diagram Center webinars on accessible math tools, accessible complex images](http://diagramcenter.org/diagramwebinars.html) (<http://diagramcenter.org/diagramwebinars.html>)