

File Encryption and Compression

Discussion:

Two important features of file systems are encrypting and compressing files. Encrypting files can look different depending on the operating system, but regardless of the process, the goal is to secure sensitive data. One way to secure a file is to add a password to the file so that the only way to view the file is to provide the password.

Compressing files is also an important feature because it decreases the amount of space the files use, and it also makes it easier to transfer files from one device to another.

Teacher Notes:

The goal of this lesson is for students to have experience creating a password for a specific file and compressing a file. While this is not the most exciting activity, it is an important skill for students to know!

You may want students to create a few blank files to work with, just to be safe. Walk through the steps yourself beforehand to ensure you are prepared to support students as they go through the process.

You can extend the activity by having students research how to encrypt an entire folder instead of just a file. Additionally, to see how compressing the file changes the amount of memory it uses, you can have students take note of the size before and after they zip it.

Because Chromebooks primarily use Google Drive for storage, this activity does not apply to Chromebooks. If students only have access to Chromebooks, consider having students research extensions and 3rd party apps that enable encrypting and compressing files.

Exercise:

Knowing how to secure and compress files is an important skill. Follow the instructions below for your operating system to learn how to password protect and compress files.

Note: In order to practice compiling and adding a password, you will need to have a file ready. For Windows operating systems, you will need to have a Word file prepared. For Mac OS, you can have either a pdf or a Pages document prepared. These actions can be undone, it does not matter what file is used.

Password Protect a File: Mac

Mac Instructions, taken from the Apple Support website:

Password-protect a Pages document on Mac

You can assign a password to a document so that only those who know the password can open the document. Passwords can consist of almost any combination of numerals, capital or

lowercase letters, and special keyboard characters.

A document can have only one password. If you change an existing password when you share a document with others, the new password replaces the original. If you add a password after you share a document, be sure to notify participants.

Important: There's no way to recover your password if you forget it. Be sure to choose a password you won't forget, or write the password down in a safe place.

If your computer has Touch ID, the fingerprint detection feature, you can use it to open your password-protected documents with your fingerprint alone.

Require a password to open a document

- Choose File > Set Password (from the File menu at the top of your screen), enter the requested information, then click Set Password.
If your computer isn't set up for Touch ID, "Remember this password in my keychain" appears. You can select the checkbox to add the password to your [keychain](#) so you don't have to type the password each time.
If your computer is set up for Touch ID, "Open with Touch ID" appears. You can select the checkbox to turn on Touch ID for the document.

Note: Adding a password to a document encrypts the file.

Password-protect a PDF in Preview on Mac

You can give a PDF a password that everyone must enter to open the file. The password is used to encrypt the file.

1. In the Preview app  on your Mac, open the PDF you want to password-protect.
2. Choose File > Export, then select Encrypt.
3. Type a password, then retype it to verify the password

Compress Files: Mac OS

Mac OS instructions, taken from [Apple support website](#):

Compress or uncompress files and folders on Mac

Compressed files take up less disk space than uncompressed files, so compressing is useful for making backup copies of your data or for sending information over the Internet.

On your Mac, do any of the following:

- *Compress a file or folder:* Control-click it or tap it using two fingers, then choose Compress from the shortcut menu.
If you compress a single item, the compressed file has the name of the original item with the .zip extension. If you compress multiple items at once, the compressed file is called Archive.zip.

- *Uncompress (expand) an item:* Double-click the .zip file.

Password Protect a File: Windows

Windows instructions for Word documents, taken from [Windows support website](#):

Protect a document with a password

Word for Microsoft 365 Word for Microsoft 365 for Mac Word for the web

Passwords are case-sensitive and can be a maximum of 15 characters long.

If you lose or forget your password, Word won't be able to recover it for you. Be sure to keep the a copy of the password in a safe place or create a strong password that you'll remember.

1. Go to **File > Info > Protect Document > Encrypt with Password**.
2. Type a password, then type it again to confirm it.
3. Save the file to make sure the password takes effect.

Compress Files: Windows

Windows instructions, taken from [Windows support website](#):

Zip and unzip files

Zipped (compressed) files take up less storage space and can be transferred to other computers more quickly than uncompressed files. In Windows, you work with zipped files and folders in the same way that you work with uncompressed files and folders. Combine several files into a single zipped folder to more easily share a group of files.

To Zip (compress) a file or folder

1. Locate the file or folder that you want to zip.
2. Press and hold (or right-click) the file or folder, select (or point to) Send to, and then select - - Compressed (zipped) folder.

A new zipped folder with the same name is created in the same location. To rename it, press and hold (or right-click) the folder, select Rename, and then type the new name.

To Unzip (extract) files or folders from a zipped folder

3. Locate the zipped folder that you want to unzip (extract) files or folders from.
4. Do one of the following:
 - a. To unzip a single file or folder, open the zipped folder, then drag the file or folder from the zipped folder to a new location.
 - b. To unzip all the contents of the zipped folder, press and hold (or right-click) the folder, select Extract All, and then follow the instructions.