3.CYB.2 Cybersecurity

> *The student will identify the relationship between passwords and security risk. (a) Describe how authentication and authorization protect private information. (b) Identify multiple authentication methods. (c) Discuss the security risk posed by not having a strong password.*

Understanding the Standard

To protect private information, many online platforms use authentication, or making sure that only certain individuals have access to a person's information, through the use of passwords, personal identification numbers (PIN), or two-factor authentication. Because computer programs can be used to guess passwords, strong passwords have characteristics that make them more difficult to guess. Many websites have rules as to the length and composition of passwords; these rules help create stronger passwords. Students will explain how passwords help protect privacy, classify strong and weak passwords, and also explain how strategies such as logging off of devices and keeping passwords a secret can help protect information.

Term	Definition
Private	Free from being observed or disturbed by other people.
Authentication (also called authorization)	The process of identifying a person and making sure they are who they say they are, such as using a password, a PIN, or biometric information.
Password	A secret code used to log into accounts and keep information private.
Strong password	An effective password that would be difficult to break.
Weak password	A password that is easy to guess or to break by repeatedly trying a list of words or letter combinations.

Prerequisite Knowledge

Students should have a basic understanding of safe and unsafe actions and knowledge of the word "private" as applied to information. In order to discuss the features of strong passwords, students should have an understanding of different text characters, such as uppercase and lowercase letters, numerals, and symbols.

Integration Opportunities

English 3.DSR b Students should read and comprehend informational texts about security risks and draw evidence from the reading to discuss CS-specific topics such as privacy and arguments for strong passwords.

History 3.1j Draw connections between demonstrating responsible digital citizenship and protecting private information through the use and protection of strong passwords.

Summary of a Lesson

As a class, watch the Passwords - Safer Schools video and conduct a class discussion on the importance of using passwords. Introduce the class to the Password Ninja password generator. Have students generate and record 10 passwords and discuss how difficult it might be to guess one of the passwords. Notice patterns or similarities amongst the generated passwords and brainstorm how one might make the password trickier to guess. Give students the opportunity to explore the advanced features to customize passwords and make them more difficult to guess. Categorize passwords as "easy to guess," "difficult to guess," "easy to remember," and "difficult to remember," and describe the relationships between passwords in each category.