

# Your Online Shields

Cyber Safety Lesson Plan (13-15 years old)

This lesson introduces students to cybersecurity concepts such as brute force attacks and the importance of multi-factor authentication (MFA) to protect online accounts.

## Learning Objectives

Students will be able to:

- Understand how brute force attacks operate and their impact on account security.
- Recognise the significance of multi-factor authentication as an additional layer of security.

## Duration


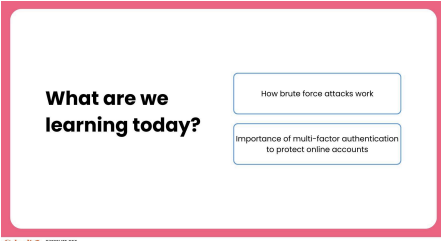
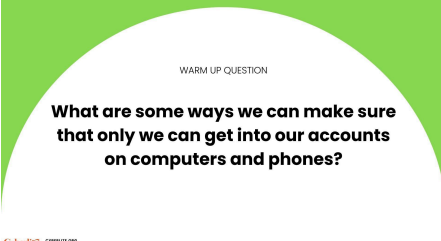
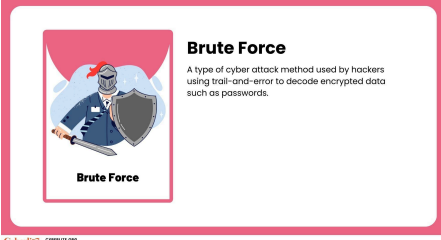

30 minutes

## Key Concepts

- **Brute Force:** A type of cyber attack method used by hackers using trial-and-error to decode encrypted data such as passwords.
- **Multi-Factor Authentication:** A security method that requires users to provide two or more verification factors to gain access to a resource, such as an online account. This adds an extra layer of protection beyond just a username and password.

## Internet Independent Framework

The learning objectives in this workshop are aligned with the Privacy and Information Security pillar of the Internet Independent Framework. Visit [cyberlite.org](https://cyberlite.org) for more information.

LESSON SLIDE	WHAT TO SAY OR DO
 <p>Lesson 3.2.2 PRIVACY &amp; INFORMATION SECURITY <b>Your Online Shields</b> Mastering multi-layered protection</p> <p>Cyberlite Cyberlite Books Pte. Ltd. All Rights Reserved.</p> <p>Slide 1</p>	<p>Welcome students to the lesson and briefly explain that today's lesson is about the online shields they have to protect against bad actors.</p>
 <p><b>What are we learning today?</b></p> <ul style="list-style-type: none"> <li>How brute force attacks work</li> <li>Importance of multi-factor authentication to protect online accounts</li> </ul> <p>Cyberlite Cyberlite Books Pte. Ltd. All Rights Reserved.</p> <p>Slide 2</p>	<p>Share the lesson objectives of what students will be learning today.</p>
 <p>WARM UP QUESTION</p> <p><b>What are some ways we can make sure that only we can get into our accounts on computers and phones?</b></p> <p>Cyberlite Cyberlite Books Pte. Ltd. All Rights Reserved.</p> <p>Slide 3</p>	<p>Facilitate a warm-up discussion by asking students to share any experiences or methods they use to keep their digital information secure. This can include simple practices like not sharing passwords.</p>
 <p><b>Brute Force</b></p> <p>A type of cyber attack method used by hackers using trial-and-error to decode encrypted data such as passwords.</p> <p>Cyberlite Cyberlite Books Pte. Ltd. All Rights Reserved.</p> <p>Slide 4</p>	<p>Explain brute force attacks as a trial-and-error method used by hackers to gain unauthorised access to accounts.</p> <p>To illustrate the concept, you may consider preparing a padlock and a collection of random keys. Then try each key on the lock until the correct one opens it. This is a way to show students how bad actors will try different passwords (keys) on your online account (lock) until they break it open.</p>
 <p><b>Multi-Factor Authentication</b></p> <p>A security method that requires users to provide two or more verification factors to gain access to a resource, such as an online account. This adds an extra layer of protection beyond just a username and password.</p> <p>Cyberlite Cyberlite Books Pte. Ltd. All Rights Reserved.</p> <p>Slide 5</p>	<p>Define multi-factor authentication, and provide a tangible example for students. For example, some logins require both a password and Face ID as a secondary form of authentication.</p>

**Can you list all the websites or apps which you have an online account?**

Can you think of any more?

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Slide 6

Engage students in an active discussion on different types of websites or apps that require them to have an online account. It is recommended to use examples that students will know, such as accounts required for schoolwork.

**Why is it important to protect your accounts?**

Some cyber criminals and black hat hackers want to get into your accounts without your permission to steal your information or cause a lot of trouble.

One way we protect ourselves is by setting up passwords on our accounts.

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Slide 7

Explain how digital protection works similarly to physical locks, serving as barriers against unauthorised access to our online spaces.

**Brute Force Attacks**

Hackers sometimes use "brute force" to try and get into your accounts. This is when they try to guess your password by trying lots of different combinations until they get it right. It's like someone trying to guess the combination to a lock by trying every possible number.

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Slide 8

Dive deeper into the mechanics of brute force attacks, explaining how hackers use computer programs to guess passwords rapidly.

**Strong Passwords are Your Shields**

Having a strong password is important because it makes it harder for someone to guess it through brute force.

**Do you remember what makes up a strong password?**

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Slide 9

Discuss the characteristics of strong passwords and how they act as the first line of defence against brute force attacks.

Review the elements of a strong password, including length, complexity, and the use of a mix of characters.

**Adding Layers of Protection**

Besides strong passwords, we can add even more protection with **Multi-Factor Authentication (MFA)**.

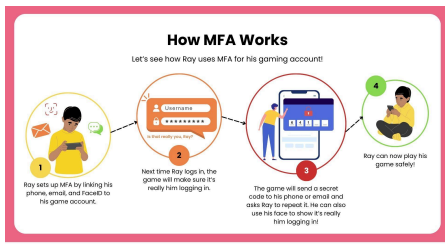
MFA is a security system that's like having a second lock in addition to your regular password. It can use:

- Things you know (like a secret code)
- Things you have (like a phone)
- Things you are (like a fingerprint)

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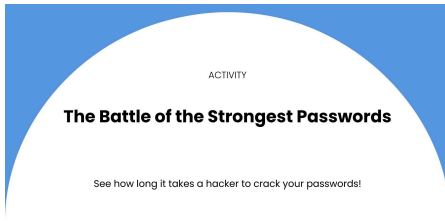
Slide 10

Introduce MFA as an extra security layer beyond passwords. Explain the different types of verification factors (something you know, have, or are) with relatable examples.



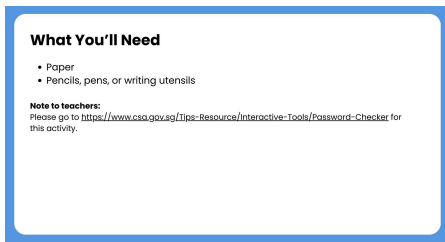
Slide 11

Use Ray’s scenario of logging into a gaming account to show how MFA works in practice. Highlight the process of receiving and using a verification code or biometric data.



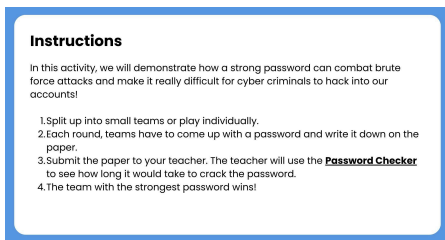
Slide 12

Introduce this activity where students create passwords and learn how different elements contribute to password strength.



Slide 13

Gather the necessary materials. Open a browser and visit <https://www.csa.gov.sg/Tips-Resource/Interactive-Tools/Password-Checker> for the activity.

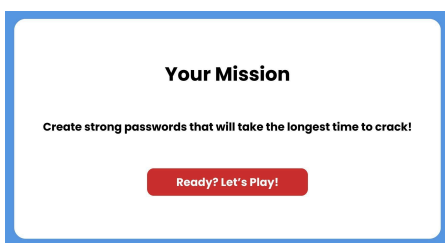


Slide 14

Divide the class into small groups. If you have a smaller class size, students may choose to play individually.

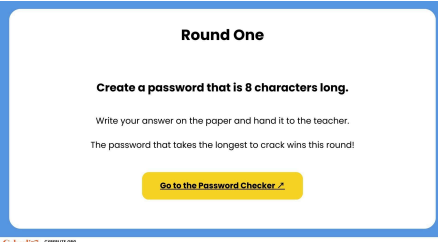
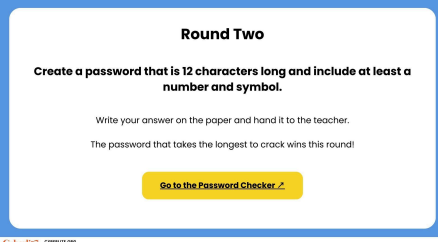
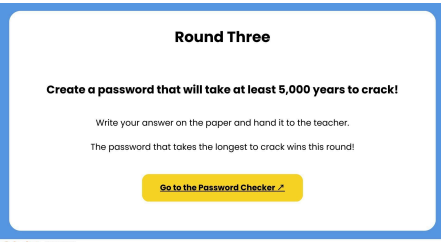
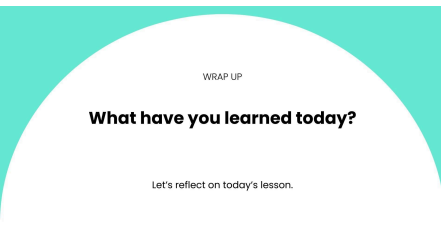
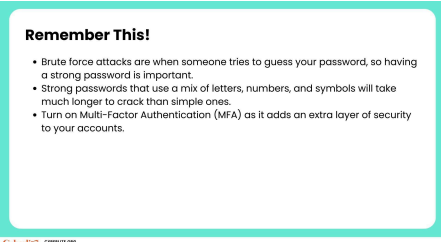
Hand out the paper and pens to each group.

Explain to students their goal is to create strong passwords, which will be determined by how long it takes to crack the password on the [Password Checker](#) tool.



Slide 15

Prompt students to only create a password according to the specific instructions of each round. There will be three rounds in total.

 <p><b>Round One</b></p> <p><b>Create a password that is 8 characters long.</b></p> <p>Write your answer on the paper and hand it to the teacher. The password that takes the longest to crack wins this round!</p> <p><a href="#">Go to the Password Checker ↗</a></p> <p><small>Cyberlite CYBERLITE.ORG 2021 © Cyberlite Books Pte. Ltd. All Rights Reserved.</small></p> <p>Slide 16</p>	<p>Ask students to “create a password that is 8 characters long”.</p> <p>Once done, students should each hand you their password on a piece of paper. Enter each group’s password into the Password Checker tool.</p> <p>The winner is determined by the longest time it takes to crack the passwords.</p>
 <p><b>Round Two</b></p> <p><b>Create a password that is 12 characters long and include at least a number and symbol.</b></p> <p>Write your answer on the paper and hand it to the teacher. The password that takes the longest to crack wins this round!</p> <p><a href="#">Go to the Password Checker ↗</a></p> <p><small>Cyberlite CYBERLITE.ORG 2021 © Cyberlite Books Pte. Ltd. All Rights Reserved.</small></p> <p>Slide 17</p>	<p>Ask students to “create a password that is 12 characters long and include at least a number and symbol”.</p> <p>Once done, students should each hand you their password on a piece of paper. Enter each group’s password into the Password Checker tool.</p> <p>The winner is determined by the longest time it takes to crack the passwords.</p>
 <p><b>Round Three</b></p> <p><b>Create a password that will take at least 5,000 years to crack!</b></p> <p>Write your answer on the paper and hand it to the teacher. The password that takes the longest to crack wins this round!</p> <p><a href="#">Go to the Password Checker ↗</a></p> <p><small>Cyberlite CYBERLITE.ORG 2021 © Cyberlite Books Pte. Ltd. All Rights Reserved.</small></p> <p>Slide 18</p>	<p>Ask students to “Create a password that will take at least 5,000 years to crack”.</p> <p>Once done, students should each hand you their password on a piece of paper. Enter each group’s password into the Password Checker tool.</p> <p>The winner is determined by the longest time it takes to crack the passwords.</p>
 <p>WRAP UP</p> <p><b>What have you learned today?</b></p> <p>Let's reflect on today's lesson.</p> <p><small>Cyberlite CYBERLITE.ORG 2021 © Cyberlite Books Pte. Ltd. All Rights Reserved.</small></p> <p>Slide 19</p>	<p>Summarise the lesson's key points, reinforcing the importance of strong passwords and MFA in protecting online accounts.</p>
 <p><b>Remember This!</b></p> <ul style="list-style-type: none"> <li>• Brute force attacks are when someone tries to guess your password, so having a strong password is important.</li> <li>• Strong passwords that use a mix of letters, numbers, and symbols will take much longer to crack than simple ones.</li> <li>• Turn on Multi-Factor Authentication (MFA) as it adds an extra layer of security to your accounts.</li> </ul> <p><small>Cyberlite CYBERLITE.ORG 2021 © Cyberlite Books Pte. Ltd. All Rights Reserved.</small></p> <p>Slide 20</p>	<p>Encourage students to reflect on what they've learned by asking how they might change their online behaviours based on the day's lesson.</p>

A red rectangular slide with the text "Well Done!" in white, bold font. In the top right corner, it says "Lesson 3.2.2". In the bottom left corner, there is a small Cyberlite logo and the text "Cyberlite Books Pte. Ltd. All Rights Reserved.".	<p>Congratulate the students for their thoughtful participation and remind them to protect their online accounts.</p>
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Slide 21