

Cybersecurity Awareness Month 2022: Middle School Lessons



Cybersecurity Awareness 2022 Lesson:

In this resource you will find 4 cybersecurity lessons geared towards students in grades 6 - 8.

How to Implement:

- Option 1: You can fit one lesson in per week for 4 weeks in October.
- Option 2: You can do all lessons in one week that is dedicated to cybersecurity.
- Option 3: Do what ever works for your class!! (These options are just suggestions.)

Show Off Your Students' Learning

If you would like to show how your students are learning about cybersecurity, please feel free to email us student work or classroom pictures to the4ms@gmail.com. We would love to see what your students are learning about cybersecurity in October.

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Lesson 1: PBS NOVA LABS – CYBERSECURITY

Website	https://www.pbs.org/wgbh/nova/labs/lab/cyber/
Educator Guide	https://www.pbs.org/wgbh/nova/labs/about-cyber-lab/educator-guide/
Vocabulary	https://www.pbs.org/wgbh/nova/labs/media/cms_page_media/49/NOVA%20Labs%20Cybersecurity%20-%20Glossary_1.pdf
Time Needed	75 minutes
Lesson Plan	<ul style="list-style-type: none">• Engage (10 min)<ul style="list-style-type: none">○ Have students watch Cybersecurity 101 and discuss what they know about cyber security and what safety measures they currently take with their online information.• Explore (20 min)<ul style="list-style-type: none">○ Challenge students with the question, “How aware are you of the best practices for staying safe online?” Explain to students that in the game, they will explore ways that they can stay safe online and avoid security breaches.○ Instruct students to create a list of tips that they would follow to avoid online scams and to create reliable passwords.○ Instruct students to complete all the Level 1 challenges in the game.• Explain (15 min) -<ul style="list-style-type: none">○ Reconvene and discuss some of the best practices that they learned and whether they encountered any information that supported or contradicted the tips they compiled before the game.

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	<ul style="list-style-type: none">○ Present the best practices and the glossary terms that are essential to understand cybersecurity and instruct students to take notes.• Elaborate (45 min)<ul style="list-style-type: none">○ Instruct students to complete the remainder of the game and to take notes on other best practices they encounter while playing the game. The Cybersecurity Lab also works well for group play, as students can collaborate in problem solving.• Evaluate (20 min)<ul style="list-style-type: none">○ Students should complete the video quizzes and turn in their Lab Report with confirmation of Lab Completion○ Educators should also use this opportunity to assess student learning, with short response discussion questions summarizing best practices, the cybersecurity stories, and the glossary terms.
Extended Learning Opportunity	<ul style="list-style-type: none">• Car-Hacking• Car-Hacking - For Teachers• Car-Hacking Discussion Questions

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Lesson 2: Cybersecurity	
Website(s)	<ul style="list-style-type: none">• Cybersecurity: Crash Course Computer Science• Grok Academy- Cyber Security: Defense Against the Dark Hats
Time Needed	90 minutes
Lesson Plan	<ul style="list-style-type: none">• Let students watch Cybersecurity: Crash Course Computer Science<ul style="list-style-type: none">○ Students should write down 10 interesting things that they learned from the video.○ Allow students to share what they found interesting• Grok Academy- Cyber Security: Defense Against the Dark Hats<ul style="list-style-type: none">○ Allow students to work through the activity.• Closing<ul style="list-style-type: none">○ Have students write down 5 ways they can be safer online.

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Lesson 3: Cryptography

Website(s)	<ul style="list-style-type: none">• Cryptography: Crash Course Computer Science #33
Materials	<ul style="list-style-type: none">• Caesar Shift Activity and Teacher Notes• Round Head Fastener (Ex: Brass Plated Fastener)• Scissors• Pigpen Cipher Activity and Teacher Notes
Time Needed	55-65 min
Lesson Plan	<ul style="list-style-type: none">• Caesar Cipher Shifter (25-30 min)<ol style="list-style-type: none">1. Provide each student with the Caesar cipher shifter print-offs.2. Students should cut both circles out.3. Students should use their pencil to make a hole in the center of each circle.4. Students will lay the smaller circle (face up) on the larger circle (face up) and secure the circles together using the fastener.5. Students should complete the worksheet using the Caesar cipher.6. Go over the activity in a whole group discussion. (Allow a few students to write their code on the board for class to decode.)• Pigpen Cipher (20-25 min)<ol style="list-style-type: none">1. Provide each student with the pigpen cipher worksheet.2. Allow students to work through the worksheet.3. Go over the activity in a whole group discussion. (Allow a few students to write their code on the board for class to decode.)• Cryptography Video Activity (20 min)<ul style="list-style-type: none">○ Let students watch Cybersecurity: Crash Course Computer Science○ Students should write down 10 interesting facts about cryptography and its importance.○ Allow students to share what they found interesting

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Lesson 4: Cyber Security Arcade	
Website	Education Arcade: https://www.educationarcade.co.nz/game-time
Materials	Cyber Security Arcade Worksheet
Time Needed	65-90 minutes
Lesson Plan	<ul style="list-style-type: none">• Brute Force (15-20 min)<ul style="list-style-type: none">○ Description: A password security game where you will learn about password strength, and how to turn your password into a long and strong passphrase.○ Key Messages: Long passwords are strong, how to easily add complexity to your password, don't re-use passwords, multi factor authentication is key. The key topic of this game is: Is my password secure from hackers?• Clickbait (15-20 min)<ul style="list-style-type: none">○ Description: A phishing email game where you will learn about the different types of phishing attacks and the traits to watch out for.○ Key Messages: The traits of phishing emails, don't click suspicious links, don't open suspicious attachments, speak up and report it. The key topic of this game is: What are the different types of phishing emails?• Breach (10-15 min)<ul style="list-style-type: none">○ Description: A data loss protection game that teaches you about identifying sensitive data and how to handle it safely and securely.○ Key Messages: Classify your data so you know how to handle it, when to encrypt files, Double check recipients, sanitize emails before forwarding. The key topic of this game is: How do I protect sensitive data?• Ransom Attack (5-8 min)<ul style="list-style-type: none">○ Description: An interactive story about a cyber criminals' plan to extort money from people using ransomware.○ Key Messages: Do not open links from unexpected emails or unknown contacts, don't open suspicious attachments

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and always back up your sensitive data. The key topic of this game is: **How does a ransomware attack work?**

- Email Attack (5-8 min)
 - **Description:** An interactive story explaining how criminals steal money by hijacking email accounts to send **invoice scams** to people.
 - **Key Messages:** Do not open links or attachments from unknown people, Double check payment details and/or confirm them over another channel. The key topic of this game is: **What is a business email compromise (bec) attack?**
- Scamland (15-20)
 - **Description:** A **scam awareness** game that teaches you all about common scams people face every day, how to identify them, and stop them.
 - **Key Messages:** When you receive an unsolicited email or phone call, Stop. Think. Report. Telltale signs to watch out for across all of the different scam types. The key topic of this game is: **How can I identify common online and phone scams?**

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Cybersecurity Awareness Month:

The following information can be found on <https://www.cisa.gov/cybersecurity-awareness-month>

Since 2004, the President of the United States and Congress have declared October to be Cybersecurity Awareness Month, helping individuals protect themselves online as threats to technology and confidential data become more commonplace. The Cybersecurity and Infrastructure Security Agency (CISA) and the National Cybersecurity Alliance (NCA) lead a collaborative effort between government and industry to raise cybersecurity awareness nationally and internationally.

Cybersecurity Awareness Month Theme

"See Yourself in Cyber"

This year's campaign theme – "See Yourself in Cyber" – demonstrates that while cybersecurity may seem like a complex subject, ultimately, it is really all about people. This October will focus on the "people" part of cybersecurity, providing information and resources to help educate CISA partners and the public, and ensure all individuals and organizations make smart decisions whether on the job, at home or at school – now and in the future. We encourage each of you to engage in this year's efforts by creating your own cyber awareness campaigns and sharing this messaging with your peers.

Additional Cybersecurity Resources and Websites can be found at:

- National Cybersecurity Alliance website: <https://staysafeonline.org/>
- Cybersecurity Awareness Month – Safety Tips Sheets, Posters, and Lesson Plans: <https://www.freotech4teachers.com/2021/10/cybersecurity-awareness-month-safety.html>
- National Initiative for Cybersecurity Careers and Studies (NICCS) website: <https://niccs.cisa.gov/education-training/cybersecurity-teachers>