



## Cybersecurity UNIT OVERVIEW

The **Cybersecurity** Unit is designed to provide a high-level and engaging introduction to networking and cybersecurity concepts. Each lesson is a combination of short instructional videos, cybersecurity games/simulations, and class discussion. Each lesson also includes a worksheet that can be used for assessment.

### UNIT DETAILS

- Grade level: 5th-8th grade
- Length: 5 lessons (85 minutes each)
- Cost to implement: Free

### MATERIALS

- Enough computers for at least a 2:1 student to computer ratio during class
- Internet connection strong enough to stream videos from multiple devices at the same time

### HIGH-LEVEL LEARNING OBJECTIVES

By the end of this unit students will:

- Learn how computers exchange data over networks
- Learn how networks are designed to ensure reliability and efficiency
- Learn how clients (computers) communicate with servers to load web resources (videos, pages, etc.)
- Learn how servers can be vulnerable to attack and how these attacks have affected a number of real-world businesses
- Learn how web companies can ensure their infrastructure is able to withstand attacks

### STANDARDS ALIGNMENT

- [ISTE \(International Society for Technology in Education\)](#)
- CSTA (Computer Science Teachers Association) – *coming soon!*

## HOW THE CURRICULUM WORKS

### LEARN → EXPLORE → DISCUSS

- This unit is built using a framework that allows students to learn about a concept through bite-sized videos, then explore the concept using hands-on activities and then discuss the concept through group discussions.
- All concept instruction is provided through short custom videos (under 5 min).

### CYBERSIM

- The student activities in the unit include all levels of a custom-built, online interactive simulation game called CyberSim.
- All levels of this game are available online (Chromebook compatible) and without sign in.
- All levels are collaborative and are designed to be played in groups of 2-3 players sharing one computer.

## UNIT PLAN

### LESSONS

LESSON	INCLUDES	LENGTH	RESOURCES
1	<ul style="list-style-type: none"> <li>● Introduction to unit</li> <li>● Student worksheet</li> <li>● Research cybersecurity careers</li> <li>● 2 instructional videos</li> <li>● 1 activity intro video (rules)</li> <li>● 2 student activities</li> </ul>	85 min	<ul style="list-style-type: none"> <li>● Lesson plan</li> <li>● Slides</li> <li>● Worksheet</li> </ul>
2	<ul style="list-style-type: none"> <li>● Student worksheet</li> <li>● 2 instructional videos</li> <li>● 2 activity intro videos (rules)</li> <li>● 2 student activities</li> </ul>	85 min	<ul style="list-style-type: none"> <li>● Lesson plan</li> <li>● Slides</li> <li>● Worksheet</li> </ul>
3	<ul style="list-style-type: none"> <li>● Student worksheet</li> <li>● 2 instructional videos</li> <li>● 2 activity intro videos (rules)</li> <li>● 2 student activities</li> </ul>	85 min	<ul style="list-style-type: none"> <li>● Lesson plan</li> <li>● Slides</li> <li>● Worksheet</li> </ul>
4	<ul style="list-style-type: none"> <li>● Student worksheet</li> <li>● 1 instructional video</li> <li>● 1 activity intro video (rules)</li> <li>● 1 student activity</li> <li>● Case studies</li> </ul>	85 min	<ul style="list-style-type: none"> <li>● Lesson plan</li> <li>● Slides</li> <li>● Worksheet</li> </ul>
5	<ul style="list-style-type: none"> <li>● Case studies</li> <li>● Presentations</li> </ul>	60 min	<ul style="list-style-type: none"> <li>● Lesson plan</li> <li>● Slides</li> <li>● Worksheet</li> </ul>

## ASSESSMENT

Each lesson has several opportunities for assessment, including:

- A student worksheet
- Class discussion questions

The unit also concludes with student presentations which can be used as a summative assessment opportunity.

## DIFFERINATION

- Each lesson contains student activities (CyberSim levels) that can be repeated and re-played multiple times to give students additional opportunities to learn.
- Each lesson contains self-paced videos with closed captioning to help students who are more visual/auditory learners, and learners who may need to replay the videos more than once.
- The unit can be spread out over a longer period for students who need more time.