



Lesson 4.3: Internet Addresses

https://codehs.com/course/6037/lesson/4.3

Description	In this lesson, students will explore how internet hardware communicates using Internet Addresses and the Internet Protocol.
Objective	<p>Students will be able to:</p> <ul style="list-style-type: none"> • Discuss the necessity of internet protocols • Recognize the hierarchy of elements in an IP address <p>Enduring Understandings</p> <p>This lesson builds toward the following Enduring Understandings (EUs) and Learning Objectives (LOs). Students should understand that...</p> <ul style="list-style-type: none"> • EU 6.1 The Internet is a network of autonomous systems. (LO 6.1.1) • EU 6.2 Characteristics of the Internet influence the systems built on it. (LOs 6.2.1, 6.2.2)
Activities	<p>4.3.1 Video: Internet Addresses 4.3.2 Quiz: Internet Addresses Quiz 4.3.3 Free Response: The Need for Addresses 4.3.4 Quiz: 4-bit Addresses 4.3.5 Free Response: IPv4 vs IPv6</p>
Prior Knowledge	<ul style="list-style-type: none"> • Basic understanding of the internet
Planning Notes	<ul style="list-style-type: none"> • Review the slides and the exercises in the lesson. • Go through the steps listed in the Motivation Lesson Opener activity to be fully prepared. • There is a handout that accompanies this lesson. It can be used as an in-class activity or a homework assignment. Determine how and if this handout will be used and make the appropriate number of printouts prior to the class period. • This is a shorter lesson with time available for review, enrichment or to move ahead to the next lesson.
Standards Addressed	<p>6.1.1 [P3] (A-I) 6.2.1 [P5] (A-C) 6.2.2 [P4] (A, C-E)</p>
Teaching and Learning Strategies	<p>Lesson Opener:</p> <ul style="list-style-type: none"> • Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins] • <i>Motivation:</i> Guide students through the instructions on how to find their internal and external IP addresses. The instructions for a Mac are here and for a PC are here. To really “wow” the students, have them use the terminal or command prompt to determine their internal IP addresses. For external IP addresses, www.myIP.com or a similar site can be used. Discuss student findings. Are any parts of the IP addresses the same for everyone? What do they think these numbers represent? <p>Activities:</p>

	<ul style="list-style-type: none"> • Watch the lesson video and complete the corresponding quiz. [9-12 mins] • Complete <i>The Need for Addresses</i> free response activity. [5 mins] • Complete the <i>4-bit Addresses</i> quiz. Use this time to reflect on why internet protocols are necessary and important. [5 mins] • Complete <i>IPv4 vs IPv6</i> free response activity. [5 mins] • Complete the <i>Hierarchy</i> handout. Students can be paired or grouped for this activity. [10 mins] <p>Lesson Closer:</p> <ul style="list-style-type: none"> • Have students reflect and discuss their responses to the end of class discussion questions. [5 mins]
<p>Discussion Questions</p>	<p>Beginning of Class:</p> <ul style="list-style-type: none"> • What do you think of when you hear the word <i>protocol</i>? <ul style="list-style-type: none"> ◦ <i>Guidelines or rules to follow, an agreed upon set of steps, etc.</i> • How do you suppose a request travels from one computer to another? How does the request know where to go? <ul style="list-style-type: none"> ◦ <i>Students may have varied familiarity with IP addresses, but should be able to recognize that a unique identifier of some sort will be needed for the request to know where to go.</i> <p>End of Class:</p> <ul style="list-style-type: none"> • What is the purpose of an IP address? <ul style="list-style-type: none"> ◦ <i>IP addresses are used to identify the network location of any item that uses the Internet.</i> • Why are network protocols important? How does it help to have all IP addresses formatted in the same way? <ul style="list-style-type: none"> ◦ <i>Similar to how house addresses have a specified format, formatting IP addresses according to protocol will ensure that an Internet request finds its desired destination because the sending and receiving computer both agree on how to internet the IP address.</i>
<p>Resources/Handouts</p>	<p>Hierarchy_(teacher version)</p> <p>Hierarchy_(student version)</p>

Vocabulary

Term	Definition
Internet Protocol (IP)	A protocol that defines the structure of an Internet address and assigns a unique address to every device on the Internet.

Modification: Advanced	Modification: Special Education	Modification: English Language Learners