

# Unit 08: Recursion

Content Area: **Mathematics**  
Course(s): **AP Comp Sci A**  
Time Period: **Semester 2**  
Length: **3 weeks**  
Status: **Published**

## Standards

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MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
TECH.K-12.1.1.d	understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.
TECH.K-12.1.6.a	choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

## Enduring Understanding

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Recursion is a powerful programming technique.

Recursion is self-similar.

## Essential Questions

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What is recursion?

How does recursion work?

Why do you need a base case in recursion?

## Knowledge and Skills

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- Describe how recursive method calls affect control flow
- Compare and contrast an iterative approach to a problem versus a recursive approach
- Define infinite recursion and discuss ways to avoid it
- Understand and trace methods which use recursion
- Implement sorting algorithms (merge and quick sort)
- Compute statement execution counts for sorting algorithms (merge and quick sort)
- Informally compare sorting algorithms (selection, insertion, merge, and quick sorts)

## **Transfer Goals**

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Students will be able to apply a "divide and conquer" technique to solve a problem by breaking it into simpler cases.

Students will be able to select the correct tool/algorithm for a given task.

## **Resources**

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[AP CS A Java Course — AP CSAwesome](#)

[Overview \(Java SE 11 & JDK 11 \)](#)

[Albert.io](#)

[AP Classroom](#)

[Repl.it IDE](#)