AP Computer Science Principles
Ticket Out the Door
Set 12: Connecting Networks

Name _____ Period _____

Skill 12.01 Exercise 1
What is the Internet?
How do you use the Internet? Think about your typical day. When are you using the Internet? For what purposes? What role does it have in your life?

Skill 12.02 Exercise 1
Define network topology.

Skill 12.02 Exercise 2
Obtain two pieces of string from Pluska. Complete the following challenges in your assigned group. For each challenge your group must consider the following rules, - Only two people can be connected by a single string. - You can be connected to multiple people at the same time via multiple strings.
Challenge 1: As a group, create a network topology where everyone is connected to everyone else. How many strings did you use to create your network?
Challenge 2: Strings cost money, so create a network topology that uses as few strings as possible. How many strings did you use to create your network?
Challenge 3: Strings can be cut, which might disconnect people from the network. Create a network topology that keeps everyone connected even if two of the lines are cut. How many strings did you use to create your network?

AP Computer Science Principles
Ticket Out the Door
Set 12: Connecting Networks

Name _____ Period _____

Challenge 4: Consider the guidelines below,

Guideline A: Strings cost money, so try to use the least number of strings possible

Guideline B: Strings can be cut, which might disconnect people from the network

Guideline C: Direct Connections are faster than long paths with indirect connections

As a group, create a network that you feel balances all 3 guidelines.

Draw a picture of the network topology your group created below.
What is a strength of your topology?
What is a weakness?

Skill 12.03 Exercise 1

Identify what each acronym below represents

WAN	
DCN	
LAN	

Based on what you wrote above, what type of network did you create with your group using strings?

What type of network is the Internet?

Skill 12.04 Exercise 1

For each of the physical network connections, identify the type of signal it transmits, along with the advantages and disadvantages of each technology.

	Type of signal	Advantage	Disadvantage
Copper wires			
Wireless			
Fiber-optic			

AP Computer Science Principles
Ticket Out the Door
Set 12: Connecting Networks

Name _____ Period _____

Skill 12.05 Exercise 1
How many wires would be required to send the number 20
What if only 1 wire were available? How could you send the number 20?

Skill 12.06 Exercise 1	
The flashlight binary signal test simulates a flashlight turning on and off. Let the letter B represents the off position and the letter A represents the on position. Watch the first test, then decide on the message being sent,	
Test 1	
Now watch the second test and decide on the message being sent,	
Test 2	
After seeing Test 2, how might you revise test 1? Indicate your revised version below.	
Test 1 Revised	
What additional information let you to revise your message?	

Skill 12.06 Exercise 2
Below is a screen shot of the results of an Internet speed test on my home computer, Internet speed test × 29.5 Mbps download 20.2 Mbps upload
How many bits per second can I download? How many bits per second can I upload?
Why might your download speed be faster than your upload speed?

AP Computer Science Principles
Ticket Out the Door
Set 12: Connecting Networks

Name _____ Period _____

Skill 12.06 Exercise 3

Josiah used a tool to measure how many bits he could transfer over his home connection to the Internet. What is the bandwidth?

Second	Bits transferred
1	900
2	800
3	700
4	1100
5	800

Skill 12.06 Exercise 4

What is latency?

Navigate to http://ping-test.net/ and run the ping test.
For which location did the ping test take the longest? The shortest?