## *SfS Away from the Classroom!*

## *T06: Digital Information Networks (Recommended for Grades 6-8)*

***Please use the following resources to learn about how the internet works!***

**Watch this Video**: https://www.youtube.com/watch?v=7_LPdttKXPc

If you're interested in the history of the internet try this: https://www.youtube.com/watch?v=1UStbvRnwmQ

**Answer these questions:**

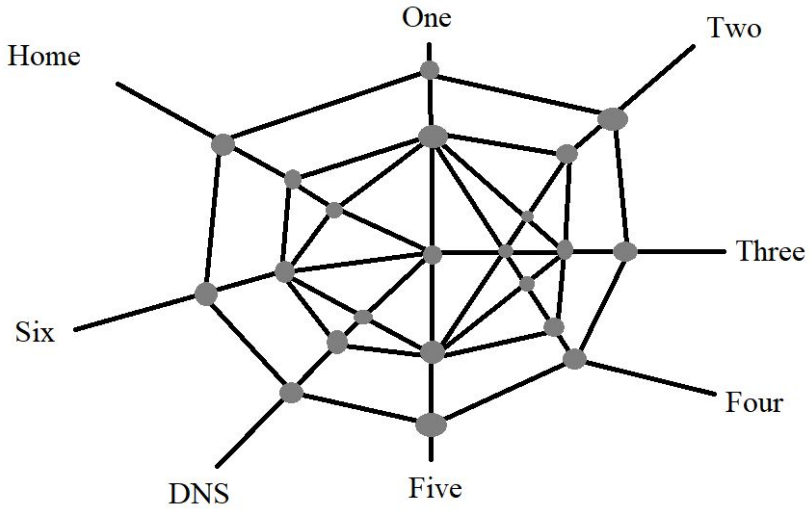
- What is the internet made of?
- What is the role of a router?
- What is a server?

**Activities:** Follow these directions to make and experiment with your own network!

You will need:

| | | |
|---|---|---|
| • 3 Pennies<br>• 1 Dime<br>• A lab partner<br>• String or yarn | • Legos or cups<br>• 1 Die<br>• Post-its (or paper)<br>• pencil | Optional (outdoors):<br>• Chalk |

1. Build a network like the one in the image.
    a. Use legos or cups for each node (dot) and the yarn/string as the lines connecting the nodes.
    b. Make sure to label the ends of the network using the post-its.
    c. Make the network large enough to walk around.
    (If you don't have enough room inside, you can draw this grid outside with chalk!)



2. Give your lab partner the 3 pennies and the dime.
    a. The coins represent a webpage and all its text and pictures.

3. Place the die at the spot labeled “DNS.”
    a. The “DNS” is a translator that takes human ways of referring to websites and turns them into language the computers can understand.

4. Your goal is to gather the 3 pennies and bring them back to your home computer.
    a. You may only carry 1 penny at a time. Your partner will be making it hard to do!

5. You start at “Home” and walk through the network to “DNS”, making sure you only walk on the lines.
    a. Once there, roll the die to determine which server has the webpage you need.
    b. Your lab partner should stand, with the coins, on the number of the server (1-6) you rolled.

6. Walk through the network to the server to where your pennies are located, being sure to only walk on the lines.
    a. Pick up one penny from the server (your lab partner) and return home.

7. Before you go again, your lab partner should remove 1 node (the dots on your grid) and 2 connections (the lines on your grid) so that you have to take a different path to reach the server.
    a. Your lab partner is modeling a situation where some parts of the internet lose power or connectivity.

8. Now, you can make your way through a new path to the server (your lab partner with the pennies)
    a. You can retrieve your second penny, and take it “Home” going through the “DNS.”
    b. Once you deliver it “Home”, immediately head back to DNS and then to the location of your final penny… but you won’t receive your 3rd penny just yet!

9. When you get to the server the 3rd time, your lab partner should hand you the dime instead of the penny.
    a. You need to take the dime “Home” before you can return for the last penny.
    b. This models advertisements that appear on webpages, disrupting their ability to load smoothly.

**<u>Make observations & use Claims, Evidence, and Reasoning!</u>**

1. **Claim**: The internet is made of many computers connected together.
    - **Evidence**:

    - **Reasoning**:

2. **Claim**: Information can travel through many different pathways as it goes through the internet.
    - **Evidence**:

    - **Reasoning**: