

Nifty Networks

You need

- ★ Prime Puzzle network diagrams (see copymaster)
- ★ a calculator
- ★ classmates

TECHNOLOGY

A network is a set of interconnected points or nodes. One of the most widely used networks is the Internet. Network diagrams are a useful way to show how things are connected, for example, bus routes or cellphone networks.

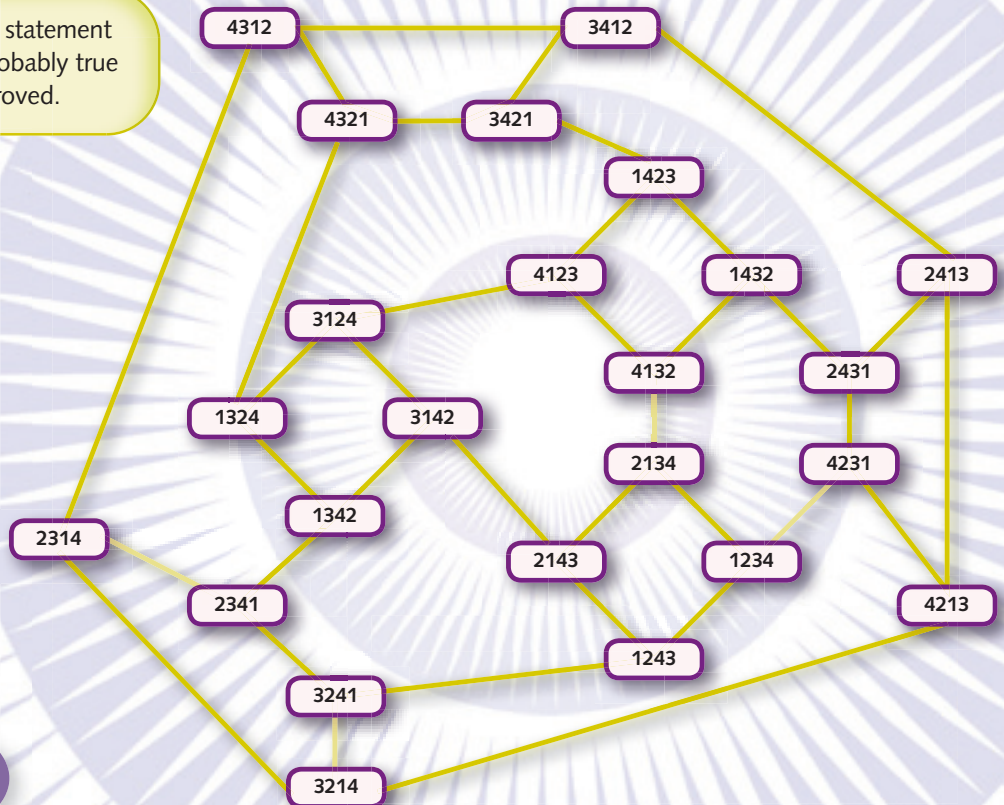
Activity One

The network diagram below shows the 24 ways that the digits 1, 2, 3, and 4 can be arranged.

1. a. Choose two nodes that are joined by a line. What do the two arrangements have in common?
b. Find two similar examples.

In this network diagram, each node is an arrangement of four numbers.

A "conjecture" is a statement that you think is probably true but have not yet proved.

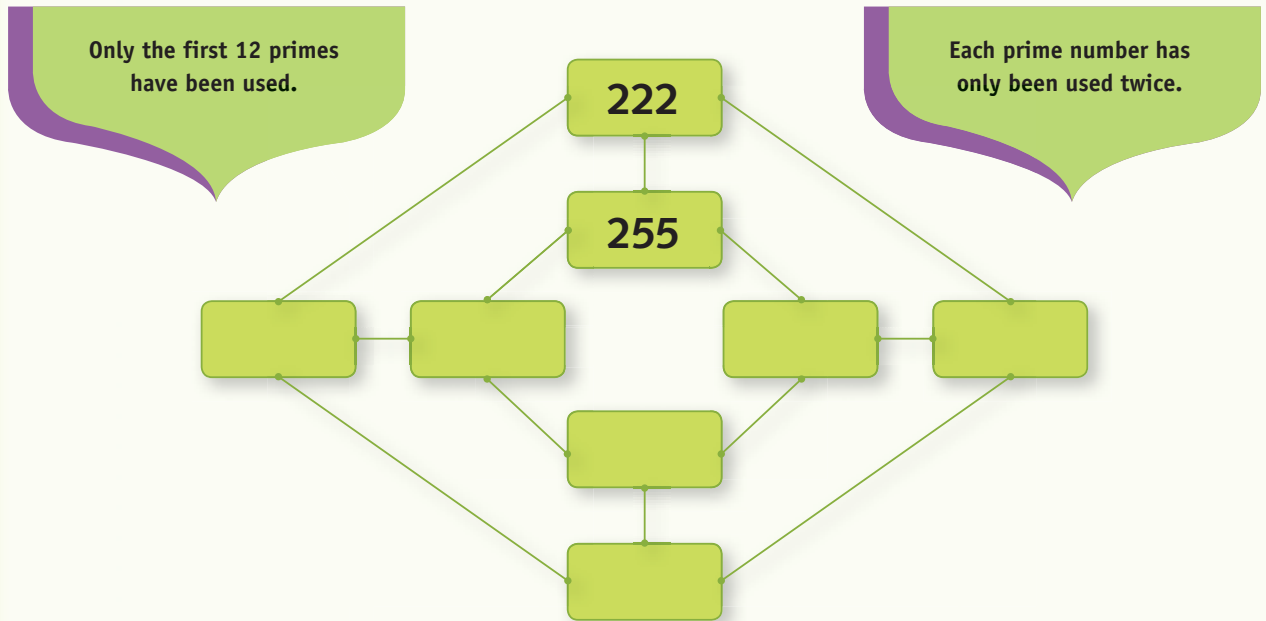


2. a. Suggest a possible rule (a conjecture) that explains why the nodes are connected as they are.
b. Test your conjecture by choosing a node and looking at the three nodes connected to it. If your conjecture appears correct, test it again using two other nodes. If it doesn't work, change your conjecture and start again.
c. Write down your conjecture and provide examples to show that it is correct.

Activity Two

1. Each of these numbers is a product of three primes:
222, 255, 385, 874, 2 821, 4 199, 11 803, 20 677

Working with a classmate or on your own, arrange the remaining six numbers in your copy of the network diagram so that each number shares exactly one factor with the numbers it is connected to.



2. Share the strategies you used to solve the puzzle with your classmates.
3. On one of your copies of the network below, write a different prime factor on each connecting line. Only use the first eight primes.

Work out the node numbers by multiplying the factors written on the lines connected to it.

Transfer the numbers for nodes A and B onto your second copy of the network. Give this copy to your classmate, along with a list of the remaining four node numbers, to see whether they can solve your puzzle.

