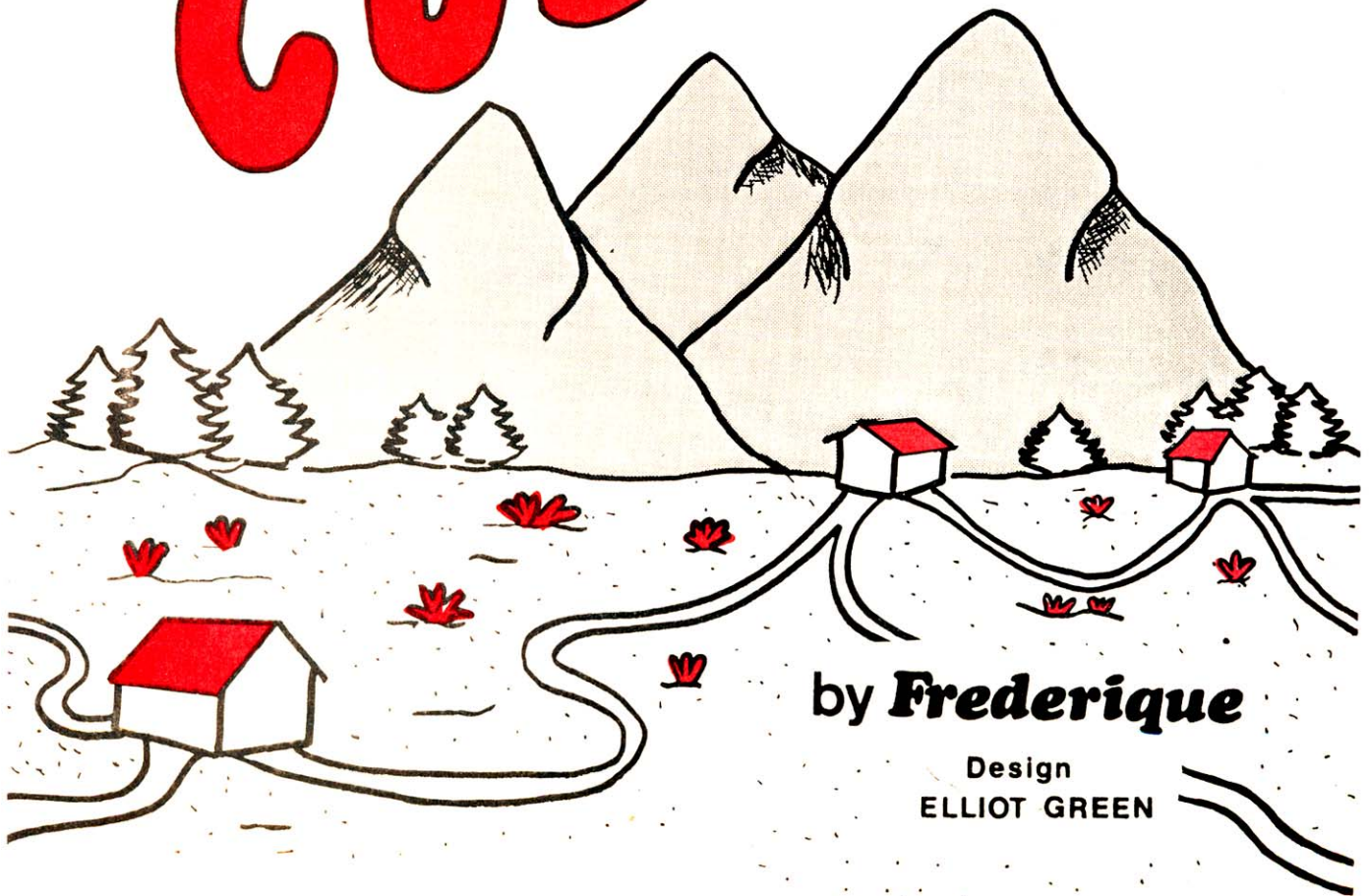


The CSMP Library

MATH STORY-WORKBOOKS

4-22901

A STRANGE COUNTRY

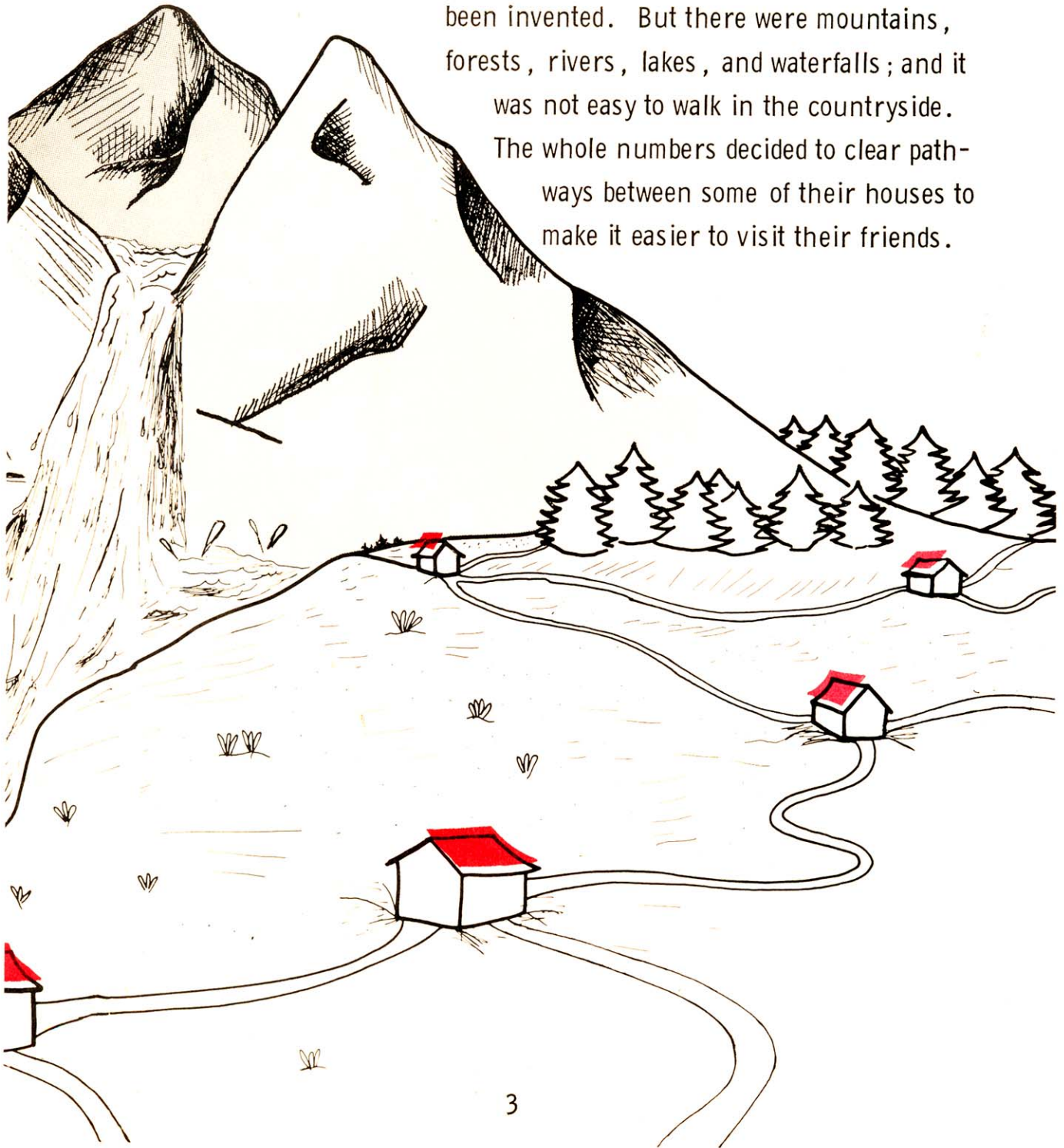


by **Frederique**

Design
ELLIOT GREEN



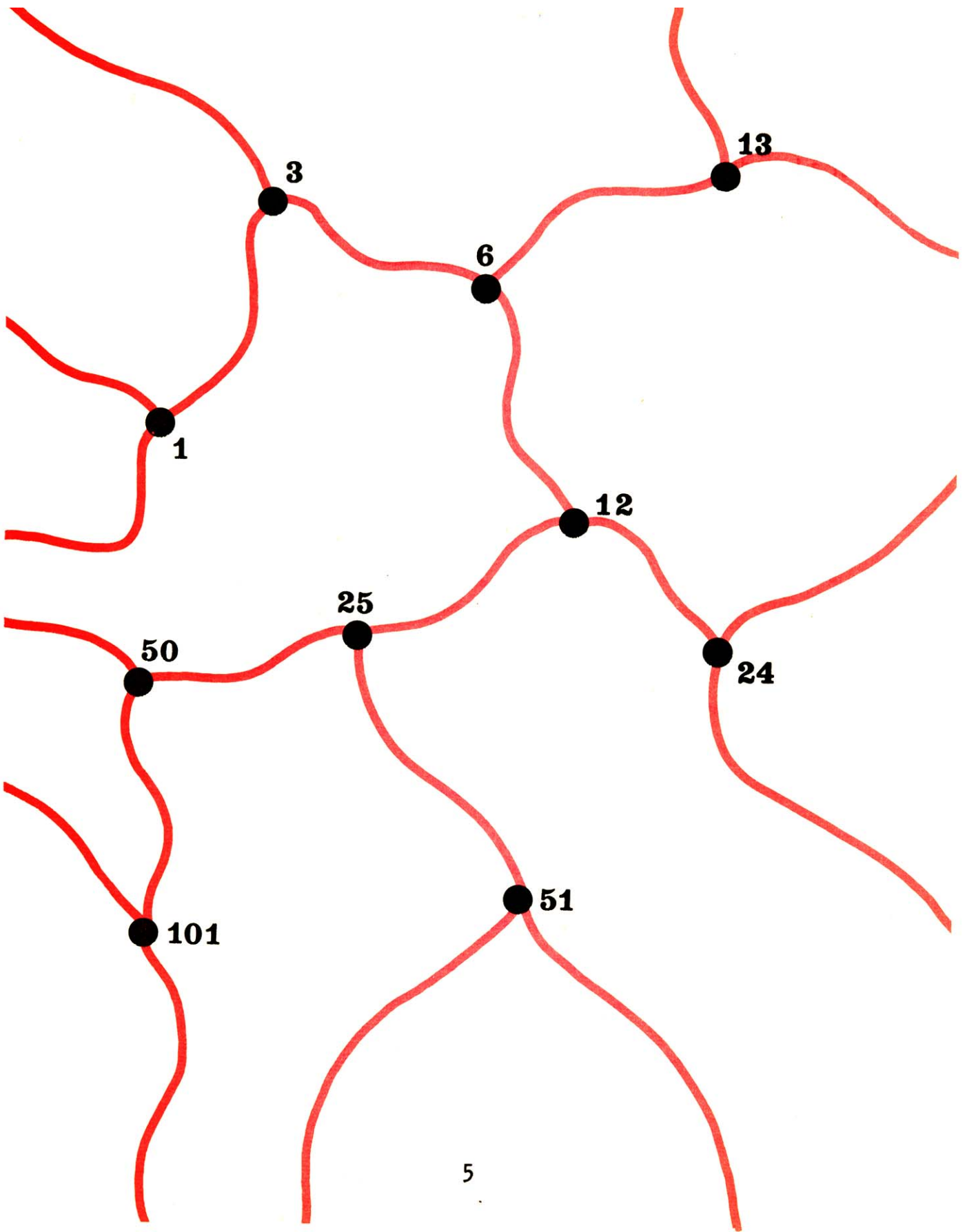
A long time ago, each whole number lived alone in a lovely little house. In their country, there were no highways, no railroads, and no airports because cars, trucks, trains, and airplanes had not yet been invented. But there were mountains, forests, rivers, lakes, and waterfalls; and it was not easy to walk in the countryside. The whole numbers decided to clear pathways between some of their houses to make it easier to visit their friends.



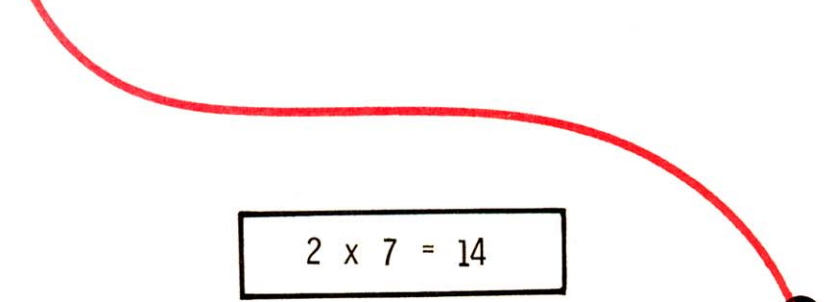
The decision to connect two houses by a path should not be made at random.
The numbers tried to find a fair rule that would not favor any of them.
After a long discussion, they agreed on a rule invented by their leader,
the number 0.

By looking at part of a map of their country drawn on page 5, you might be
able to guess something about this rule.

WRITE YOUR GUESS BELOW.

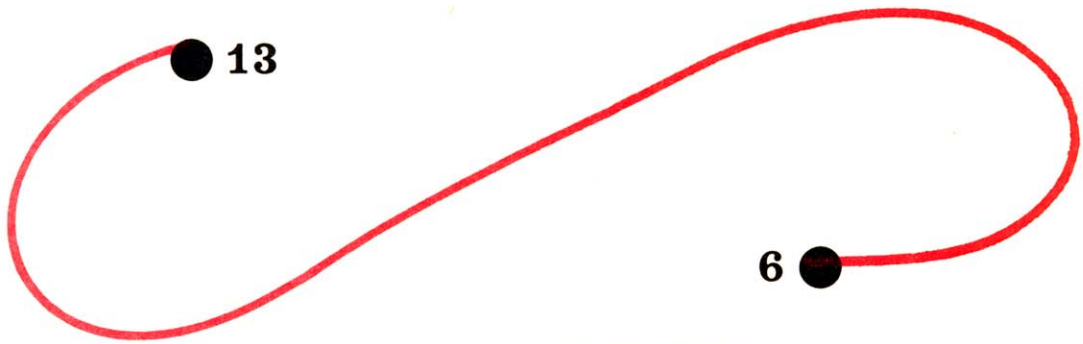


7



$$2 \times 7 = 14$$

14



13



6



$$13 = (2 \times 6) + 1$$

20



There is no direct connection
between 20's house and 30's
house.

30



THE RULE

The houses of two numbers are directly connected by a path

if and only if

ONE NUMBER EQUALS THE DOUBLE OF THE OTHER

or

ONE NUMBER EQUALS ONE MORE THAN THE DOUBLE OF THE OTHER

Are the houses of these numbers directly connected?

12 and 25 _____

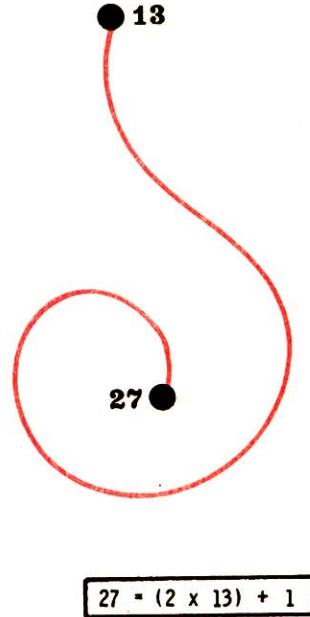
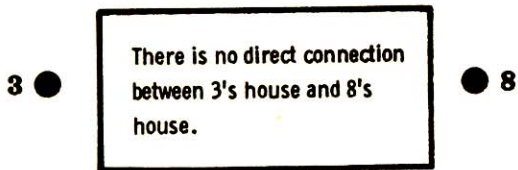
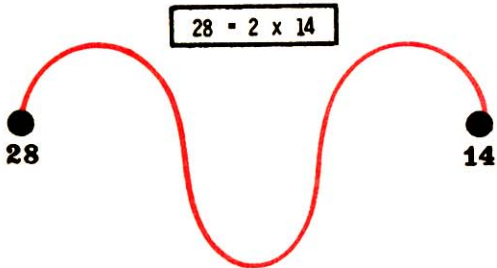
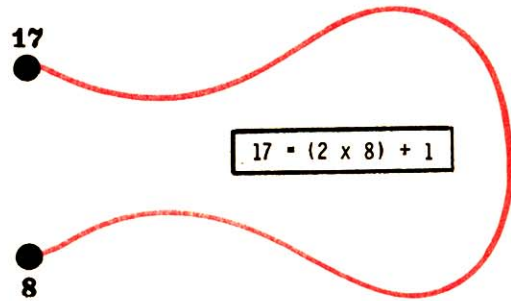
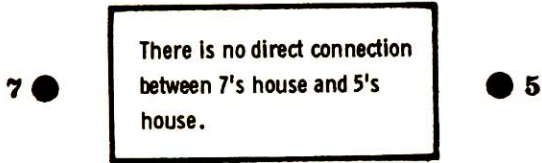
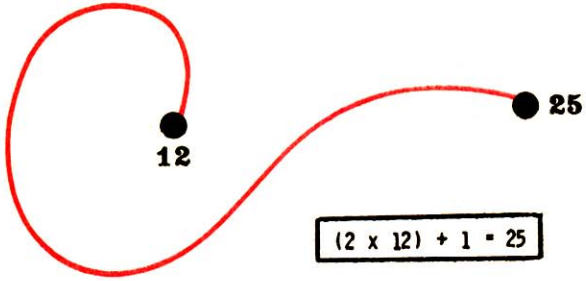
7 and 5 _____

17 and 8 _____

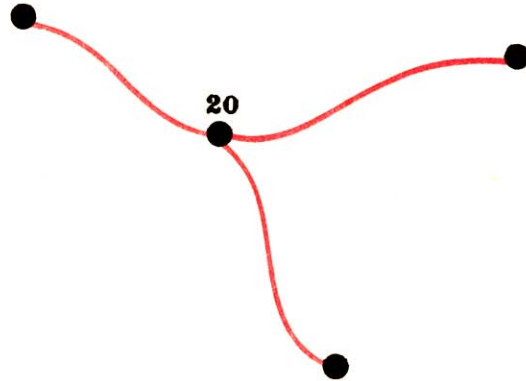
28 and 14 _____

3 and 8 _____

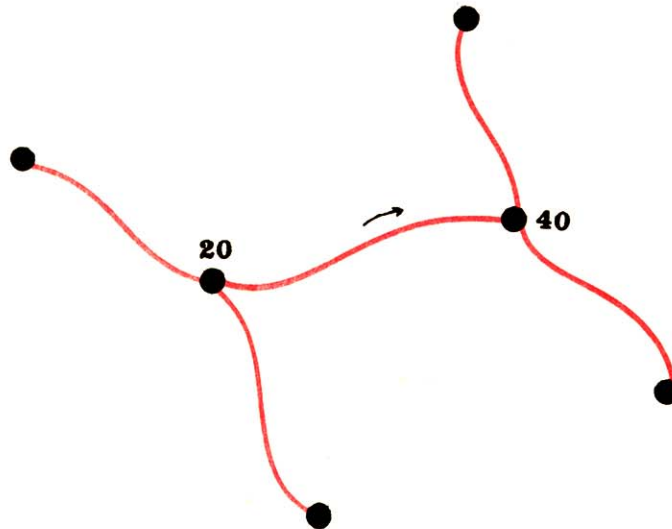
27 and 13 _____



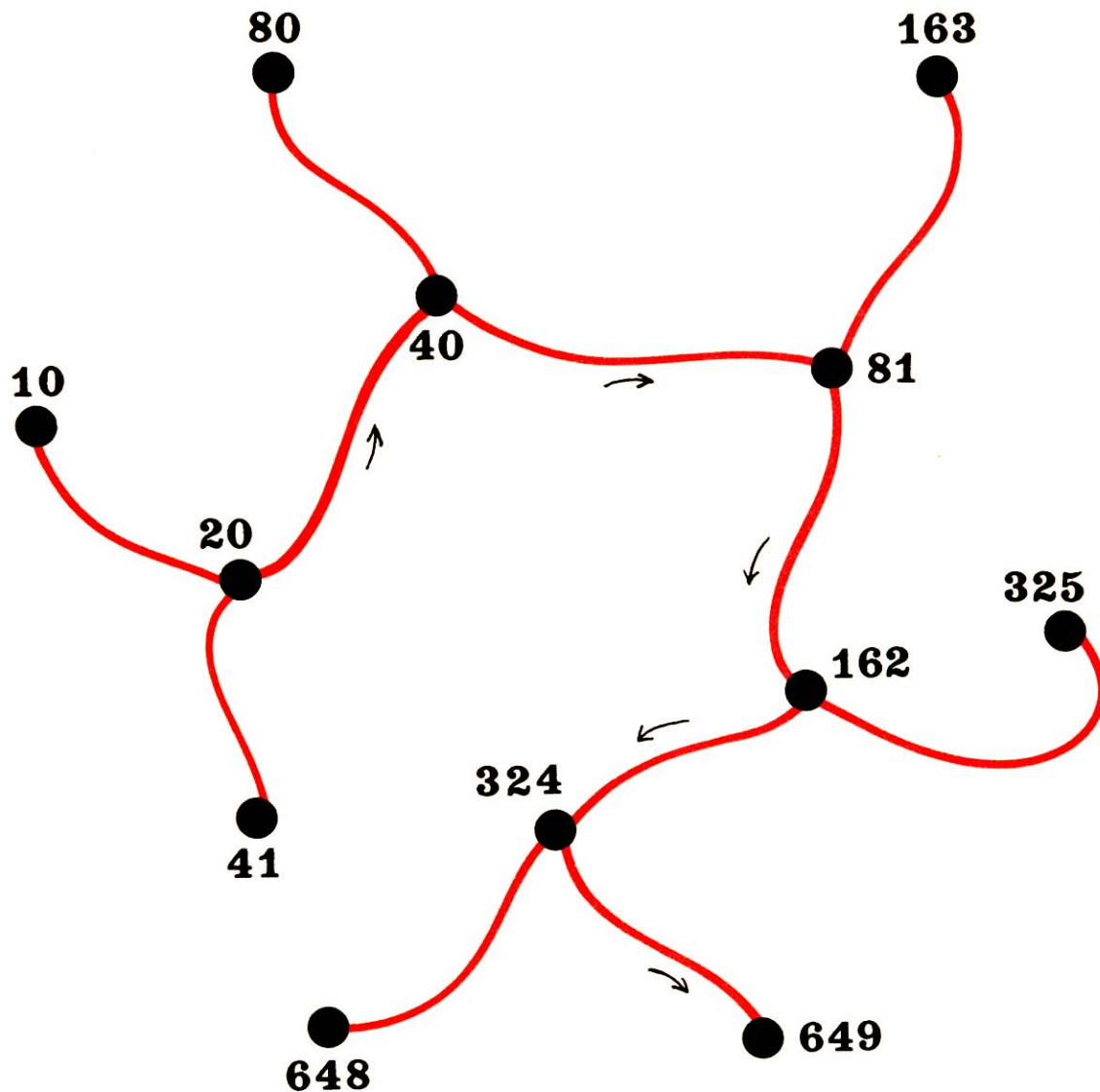
Come along. We will go for a walk in the whole numbers' country.
Let's start at 20's house. How many paths can we choose?
Who are the next neighbors of 20? WRITE THEIR NAMES IN THIS PICTURE.



Suppose we go from 20's house to 40's house.
How can we continue our walk?
Who are the next neighbors of 40? WRITE THEIR NAMES IN THIS PICTURE.



Before you turn the page, take a large sheet of paper and continue this walk along several more paths.



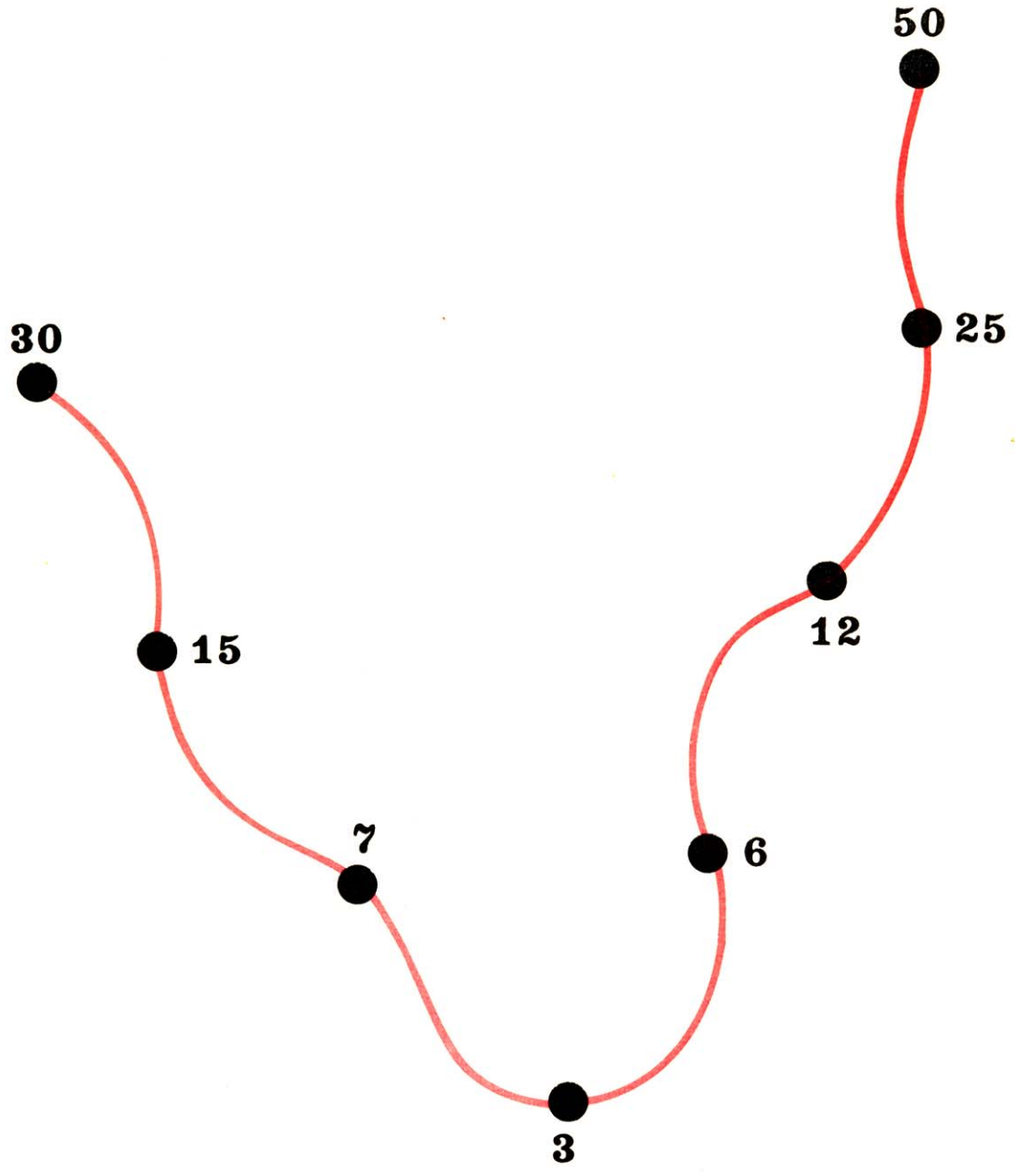
I went from 20's house to 649's house, and along the way I met 40, 81, 162 and 324. I stopped at 649's house because I was a little tired. And you? Which numbers did you visit?

30 and 50 are very good friends , but their houses are not directly connected by a path .

Can you find a way of walking from 30's house to 50's house?
SHOW YOUR WALK BELOW .

50
●

●
30



Did you find the same solution?

Try to go from 26's house to 48's house...

● 48

●
26

... and from 64's house to 15's house.

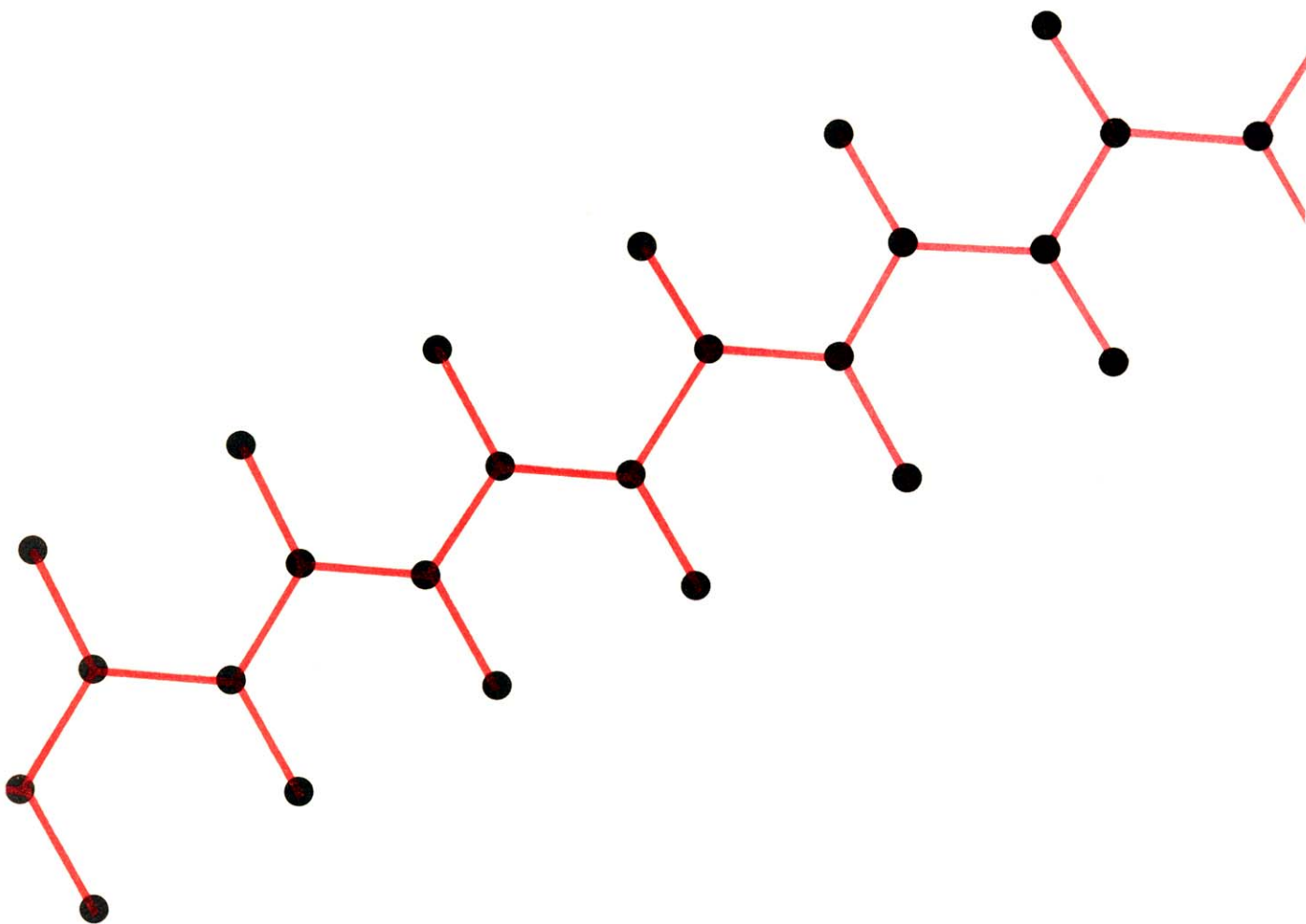
● 15

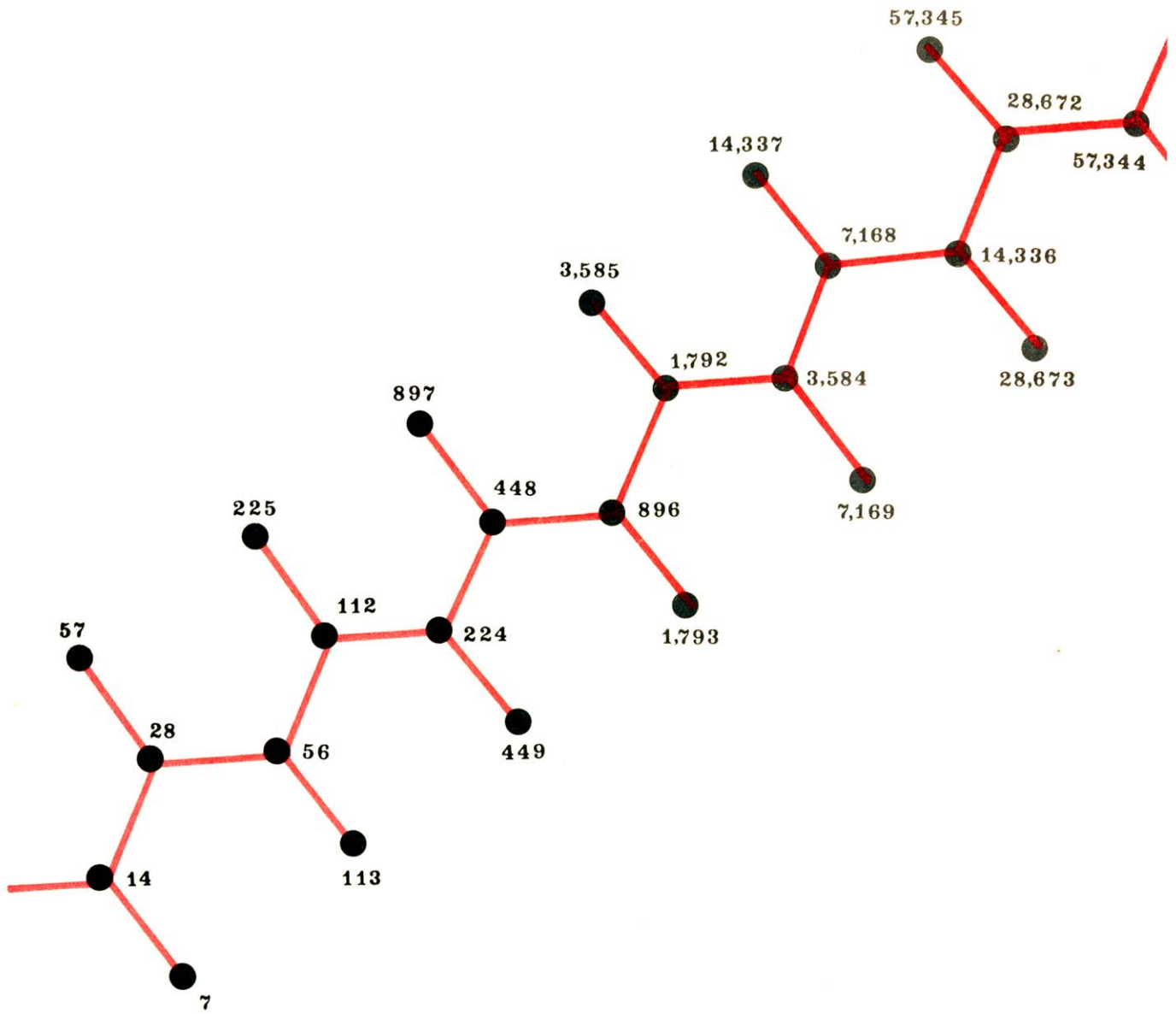
●
64

Here is another part of a map of the whole numbers' country.

Which numbers could live in these houses?

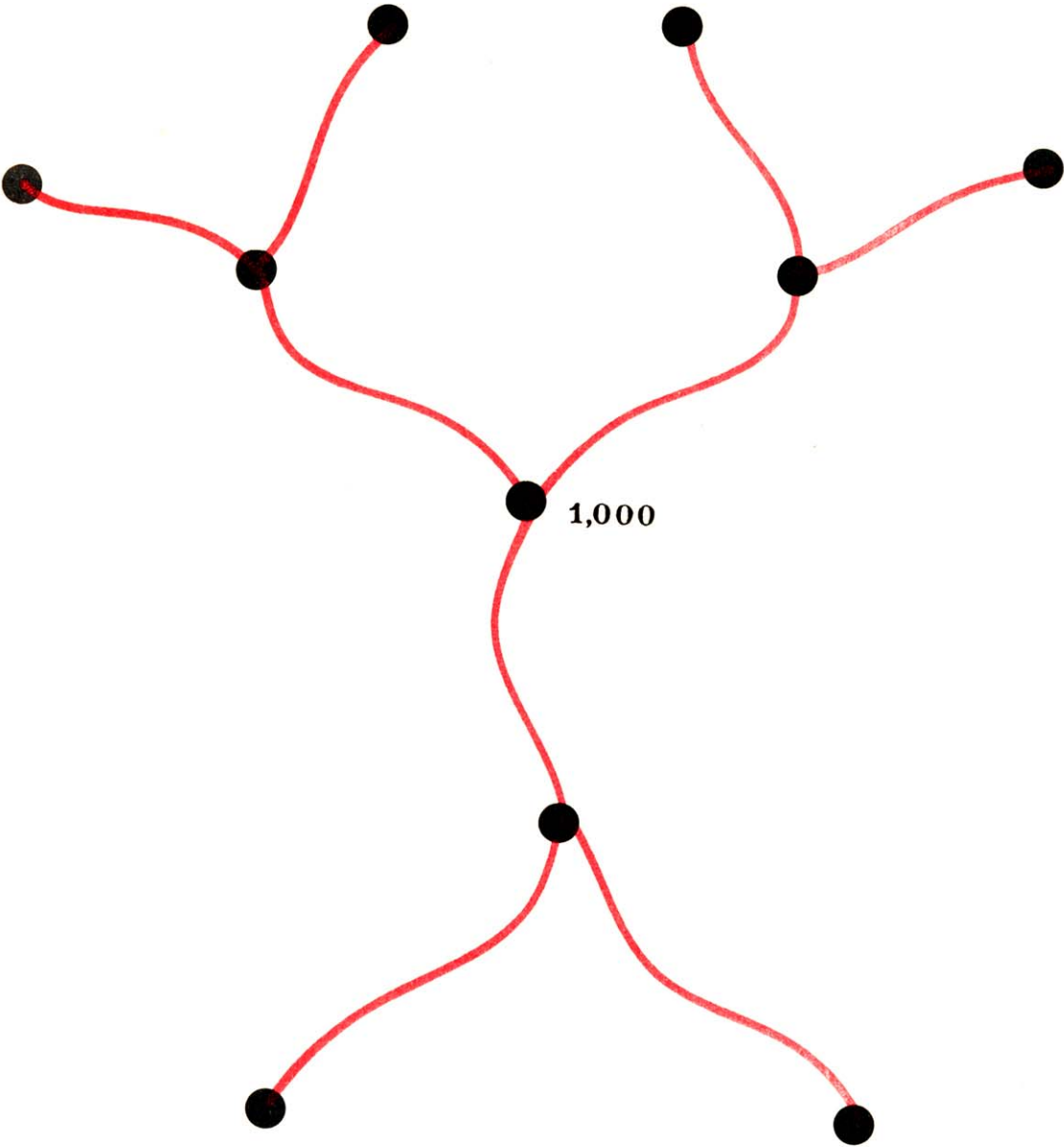
Many solutions are possible. WRITE ONE OF THEM IN THE PICTURE.





Compare this solution to yours on page 15.

Do you know the numbers who live in this neighborhood of 1,000?
WRITE THEIR NAMES IN THE PICTURE.



Do you remember that 0 is the leader of the whole numbers and that 0 invented the rule for connecting their houses?

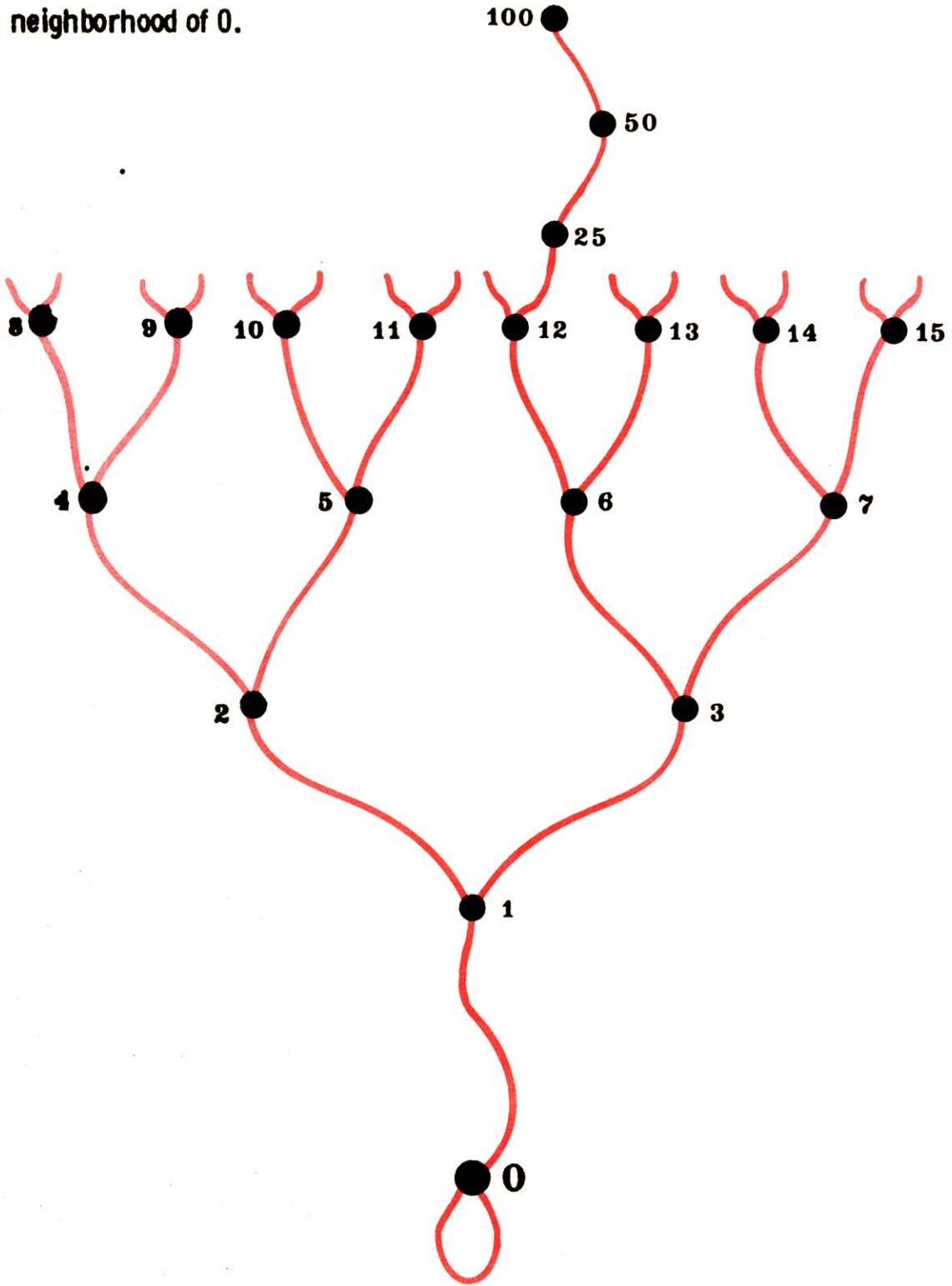
Do you know who are the next neighbors of 0?

How many are there? _____



DRAW A PICTURE BELOW OF A NEIGHBORHOOD OF 0. TRY TO INCLUDE 100 IN YOUR PICTURE.

A neighborhood of 0.



0 can easily walk from home to the house of any other number.

SHOW BELOW HOW 0 CAN WALK TO THE HOUSE OF 1,000.

● 1,000

●
0

There is a path from 0's house back to 0's house ; a nice way for 0 to take a walk without being disturbed.

1 is the only other next neighbor of 0.

$$2 \times 0 = 0$$

$$(2 \times 0) + 1 = 1$$

With the exception of 0, each whole number has exactly three next neighbors.

Who are the three next neighbors of 100?

_____, _____, _____.

Who are the three next neighbors of 45?

_____, _____, _____.

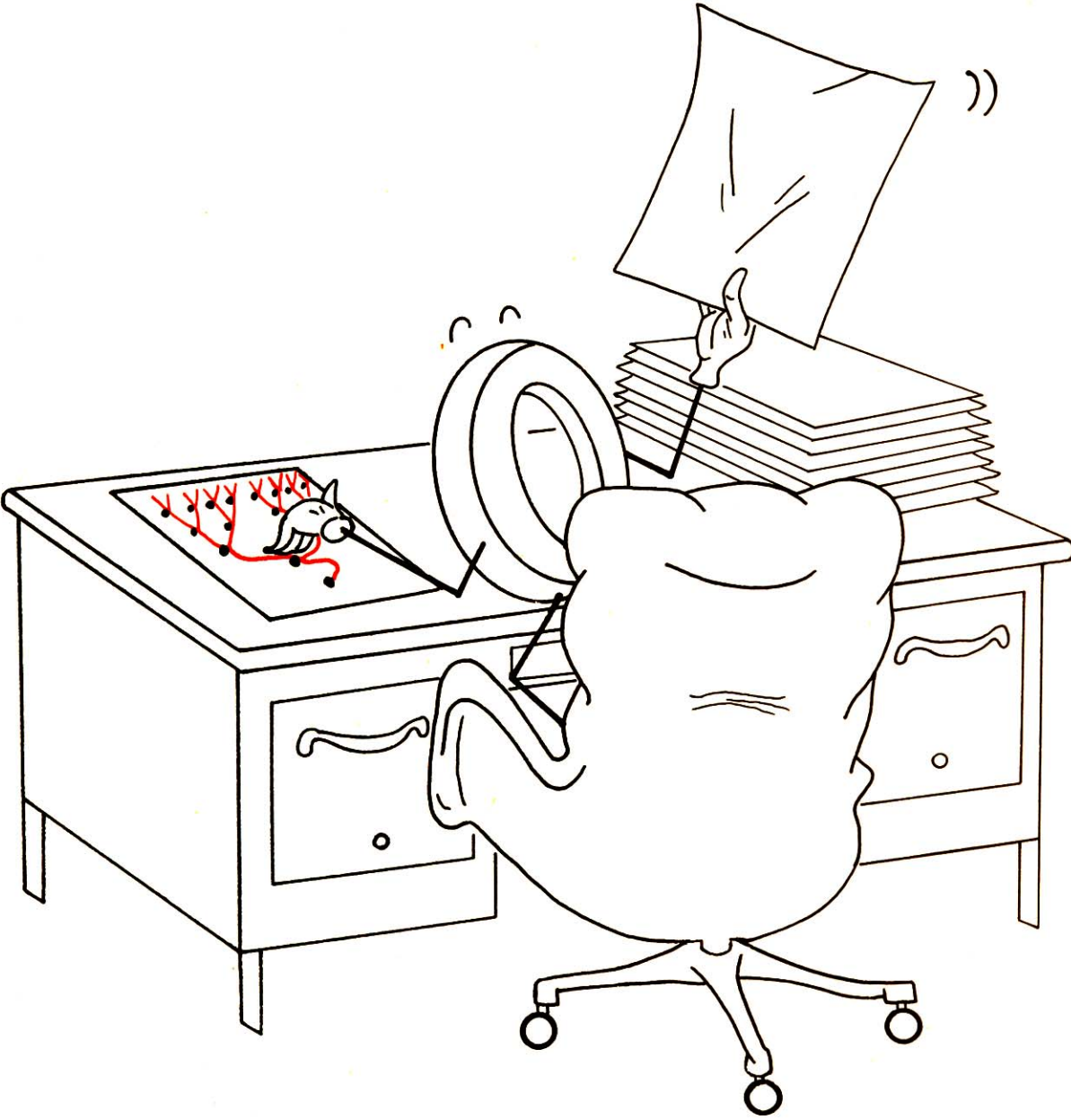
Who are the three next neighbors of 428?

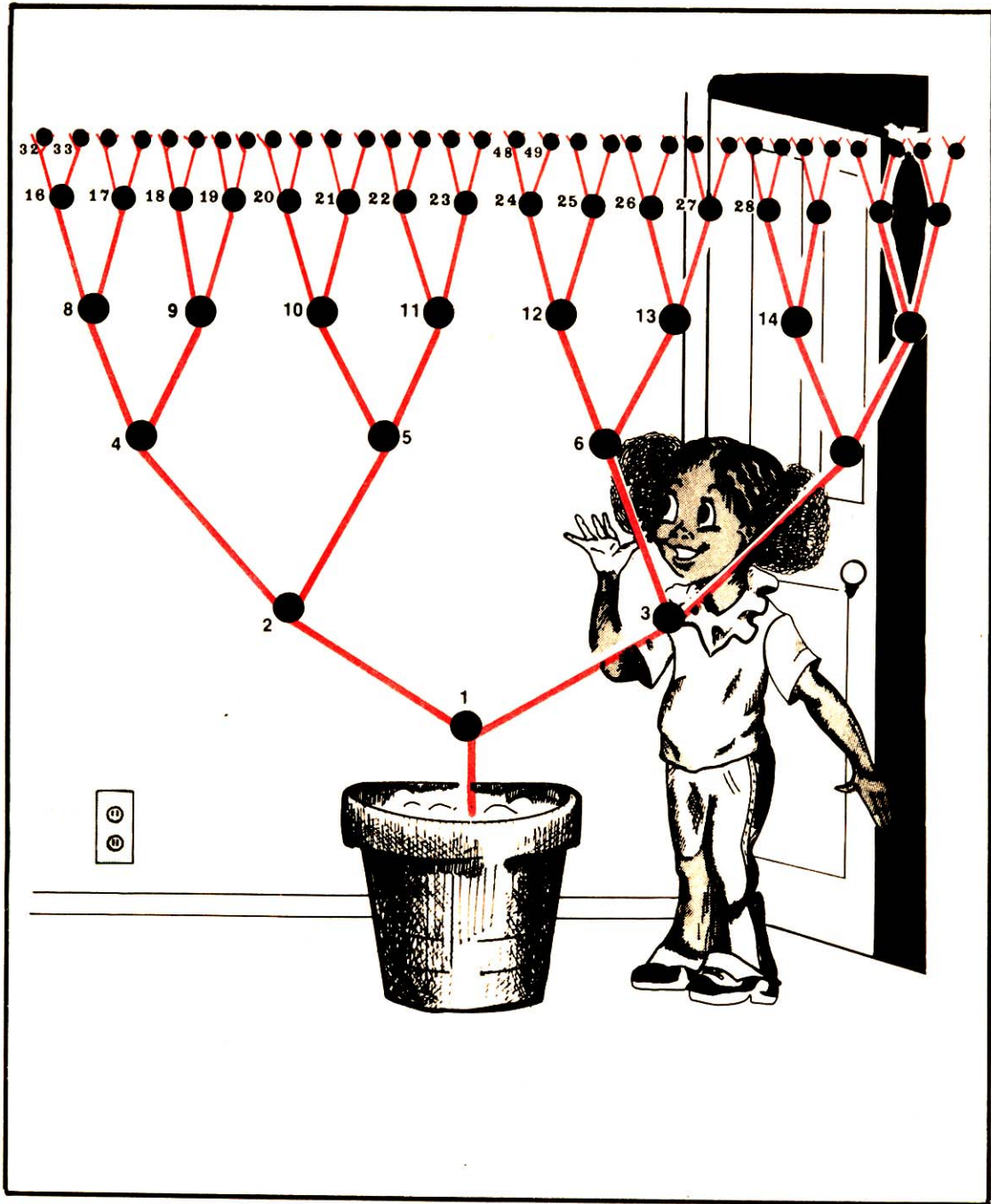
_____, _____, _____.

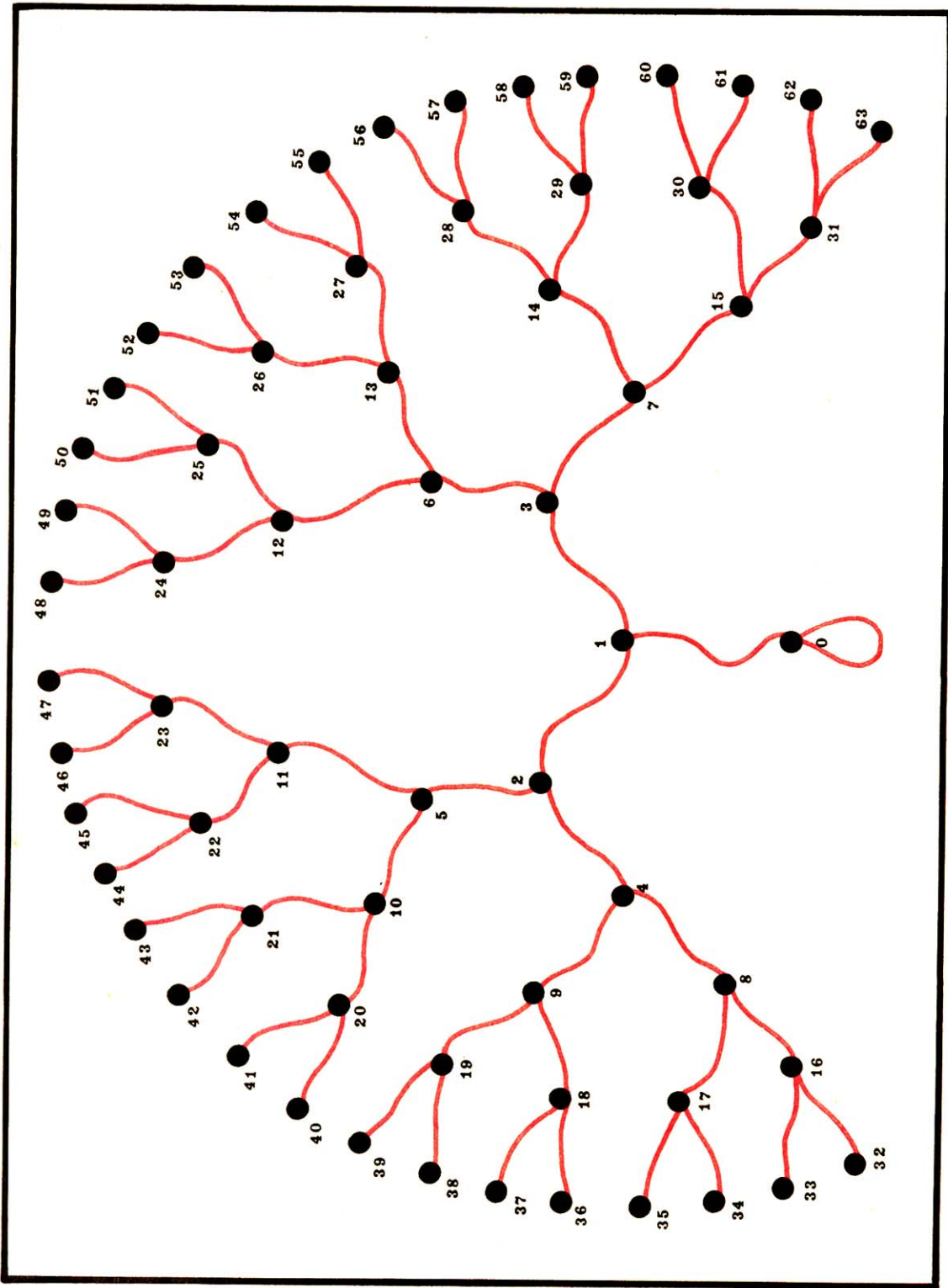
Who are the three next neighbors of 75?

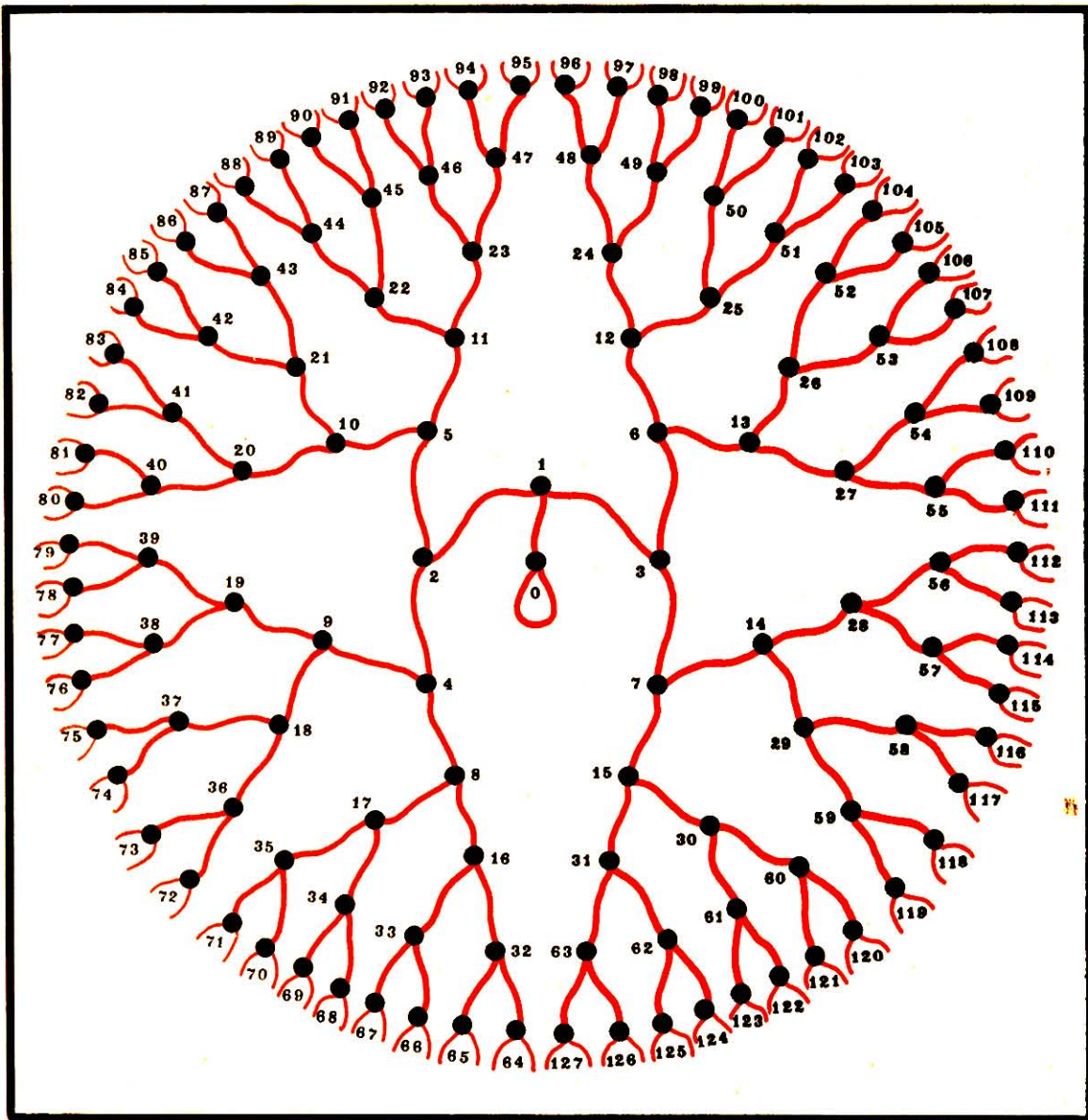
_____, _____, _____.

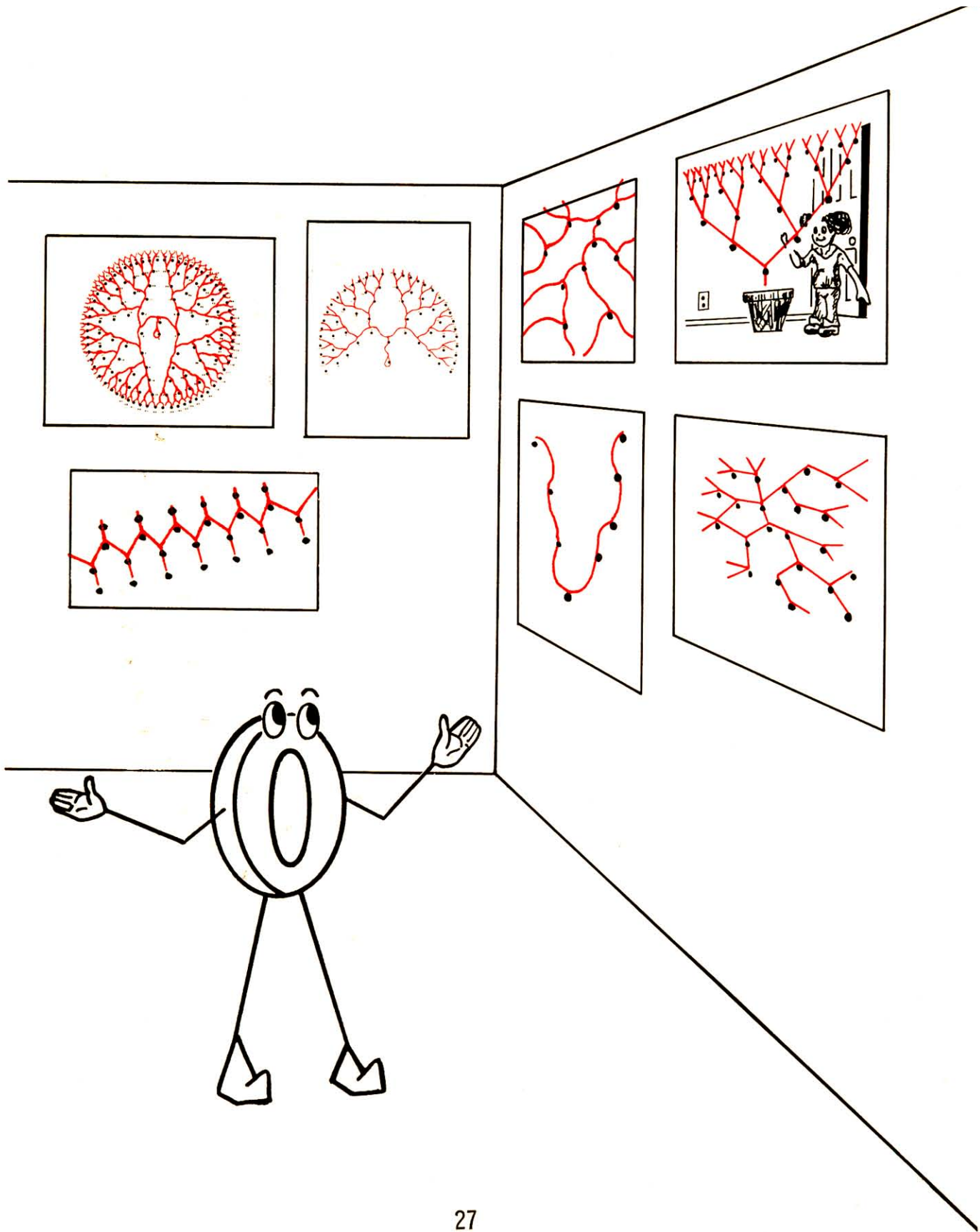
0's office needed some decorations , so 0 organized an exhibition of posters .
Each poster would present a map showing part of the whole numbers ' country .
Many numbers sent 0 drawings , some of which are shown on pages 24 to 26 .



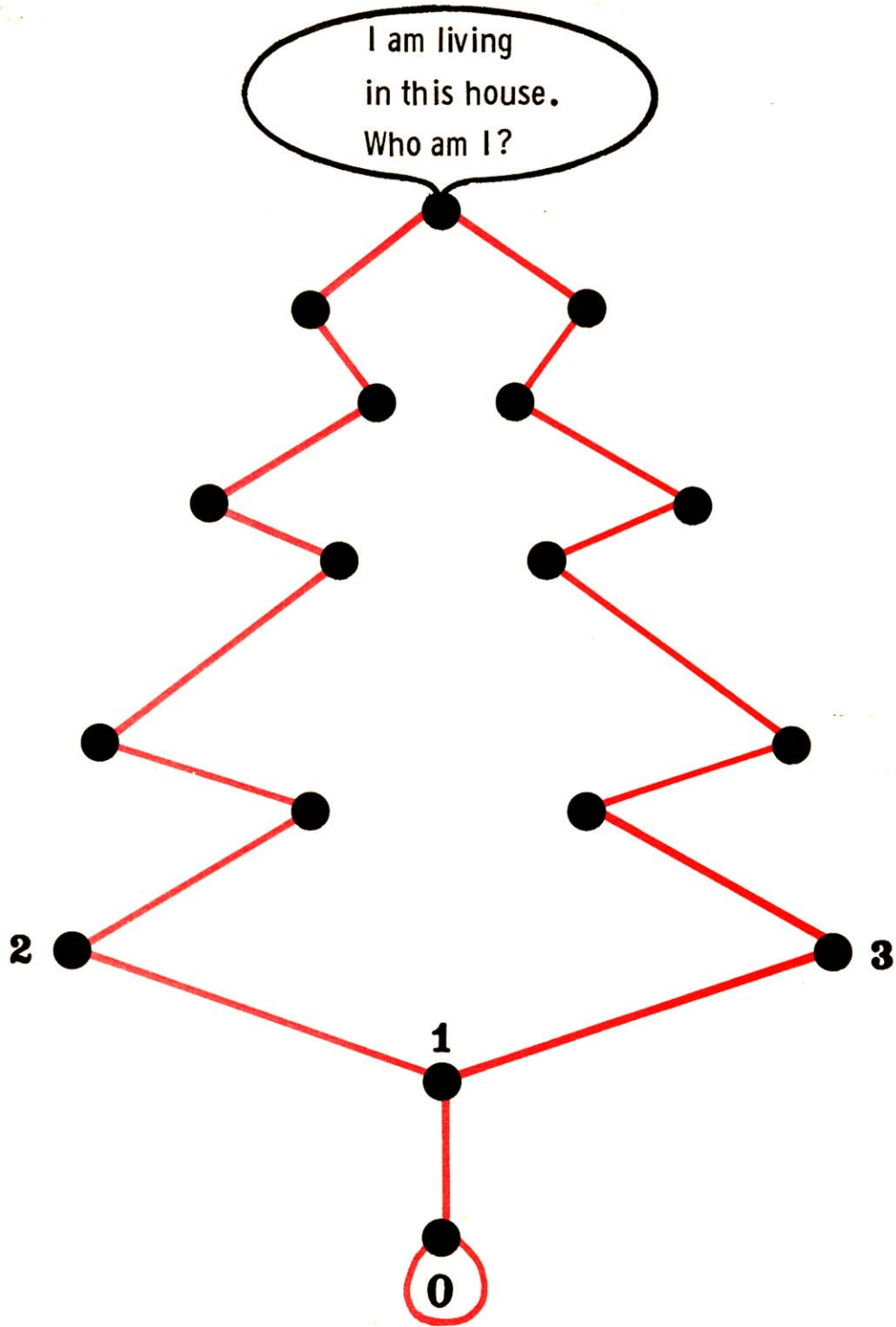








Some days after the exhibition , someone sent this picture to 0.



"It's strange," muttered O.

After looking at the posters hanging on the walls, O scribbled some calculations on a sheet of paper.

Finally, O wrote on the picture.

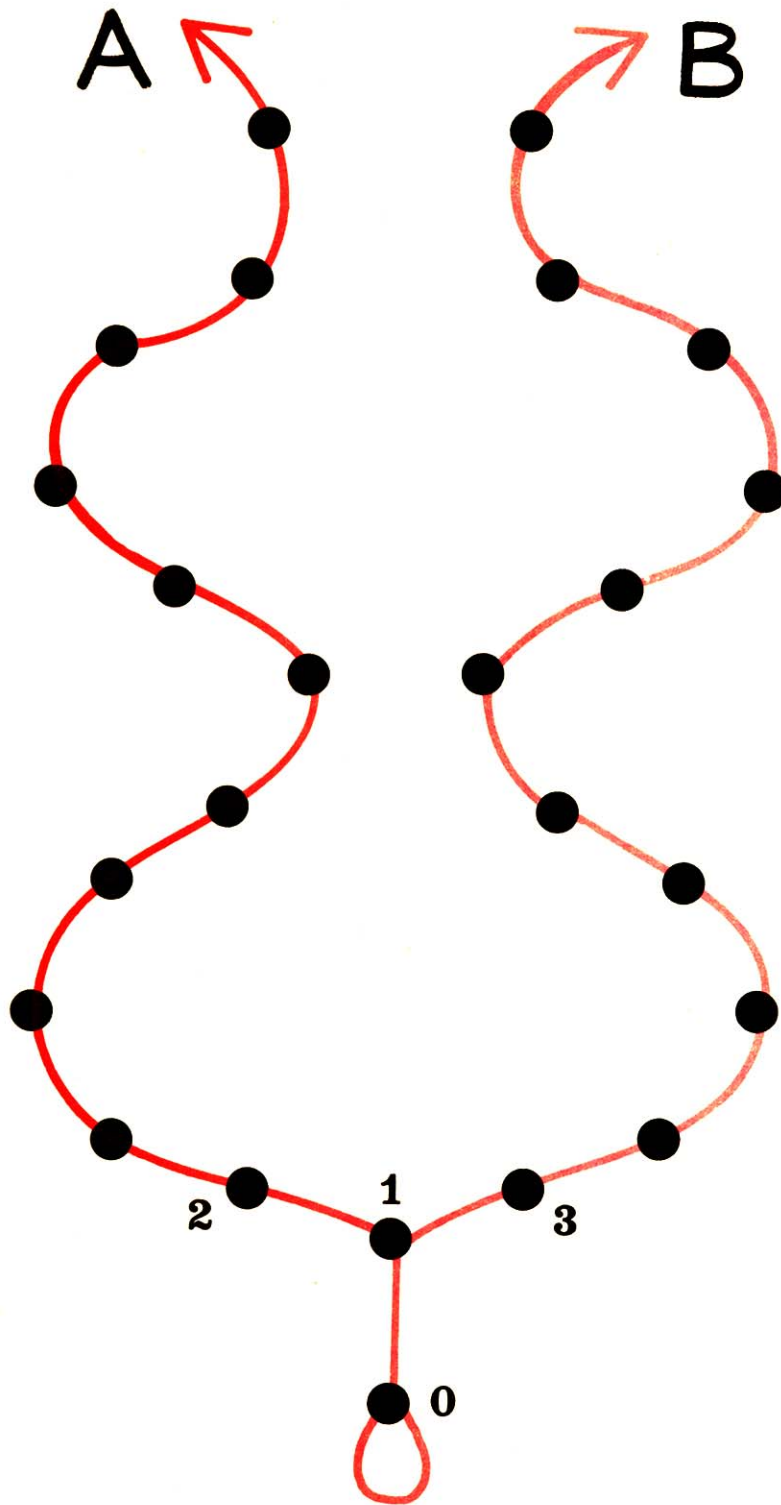
A red rectangular box with a thin border, centered on the page. Inside the box, the text "You are a little JOKESTER!" is written in a simple, black, sans-serif font. The word "JOKESTER" is in all caps.

CAN YOU EXPLAIN WHY?

During the night, O dreamed about going for a walk with a friend.

In front of I's house, they had an argument. The friend decided to walk on road A while O chose road B. Realizing that they would NEVER meet, O awoke very upset.

WHAT DO YOU THINK?



The CSMP Library

Math Story-Workbooks

Current List

Ages 8 - 11

Summer School—0's Discovery
Rollerskating 37
To Picture
The Island of Tam-Tam

Ages 9 - 14

Summer Camp
Halloween Puzzles
1,000's Dream
A Strange Country
Not Too Close
Clinton Street
Seven Secret Numbers
Shunda's Newsstand

A series of story-workbooks providing fanciful excursions in the colorful world of mathematics for all young people, their teachers and their parents, actively involving them in the acquisition of new mathematical insights.

Copyright © 1980 CEMREL, Inc.

In this story-workbook the young readers are taken on a fantasy journey to the curious country of the numbers. Long ago in this country, the numbers' houses were connected by little paths following a strange rule which was invented by their leader, the number 0. The rule involved two interesting numerical relations, doubling and doubling plus one. Using the flexible language of cords, students freely explore with these two relations and the inverse of each as they search for a way to connect different pairs of numbers (30 and 50, for example). Next they are immersed in a global situation as they try to draw their idea of a map of the country. This experience leads them to examine a binary tree, which is presented artistically to show its simplicity and beauty. In the closing pages, a joke is played on 0 which causes him to have a disturbing dream. Both the joke and the dream suggest mathematical ideas that can serve as a stimulus to further thinking about the tree for those children who are interested.

Cille Smith