The CSMP Library

MATH STORY-WORKBOOKS

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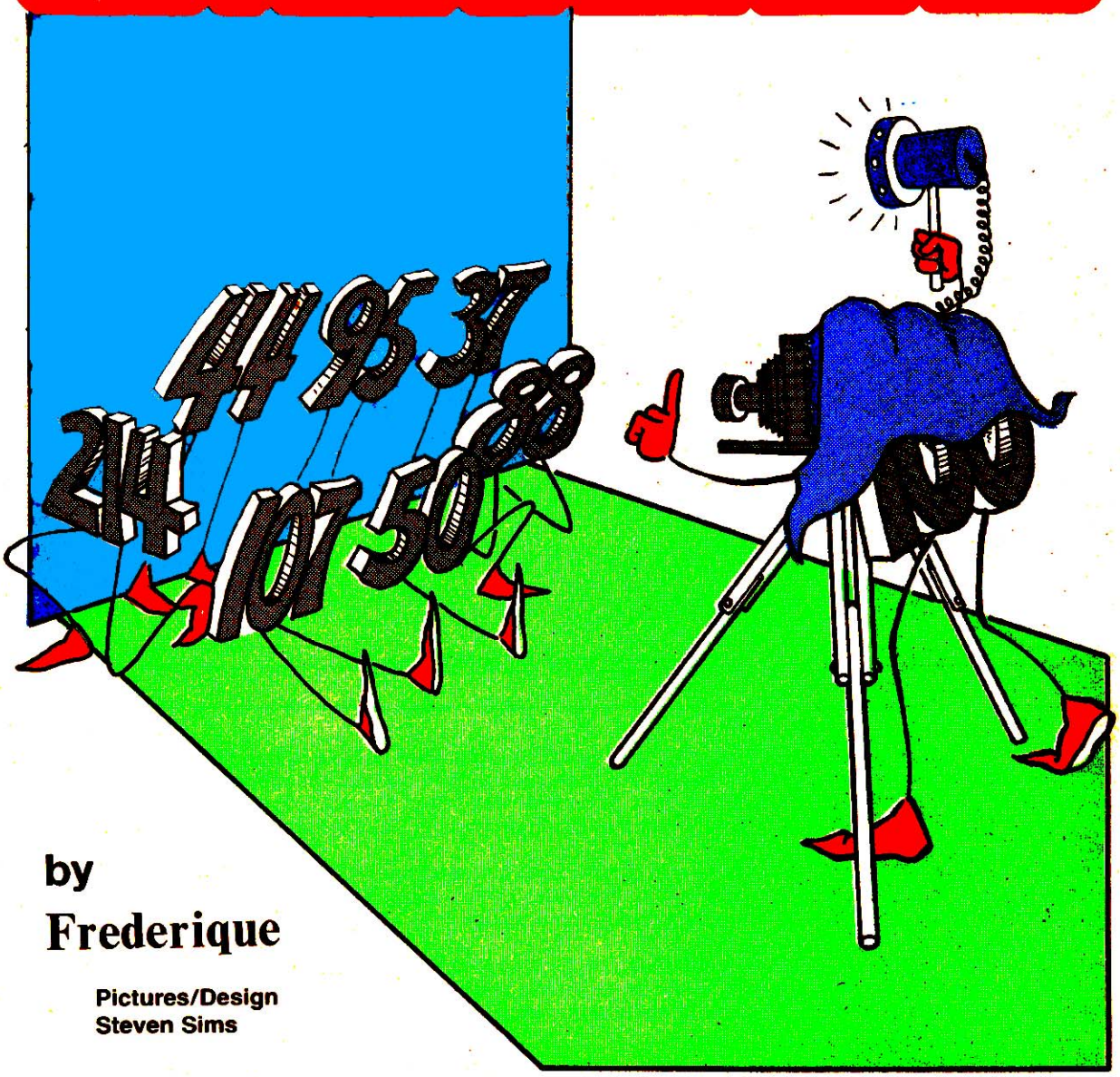
To PICTURE



by

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Pictures/Design
Steven Sims

The CSMP Library

MATH STORY-WORKBOOKS

Current List

Ages 8-11

ROLLERSKATING 37
TO PICTURE
A SHORT STORY ABOUT 2 FRIENDS
A SHORT STORY ABOUT 3 FRIENDS
THE ISLAND OF TAM - TAM
THE TALKATIVE NUMBERS

Ages 9 - 14

SUMMER CAMP
HALLOWEEN PUZZLES
1,000's DREAM
A STRANGE COUNTRY
NOT TOO CLOSE
WHO ARE WE ?
CLINTON STREET
A BOOK ABOUT ME
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.

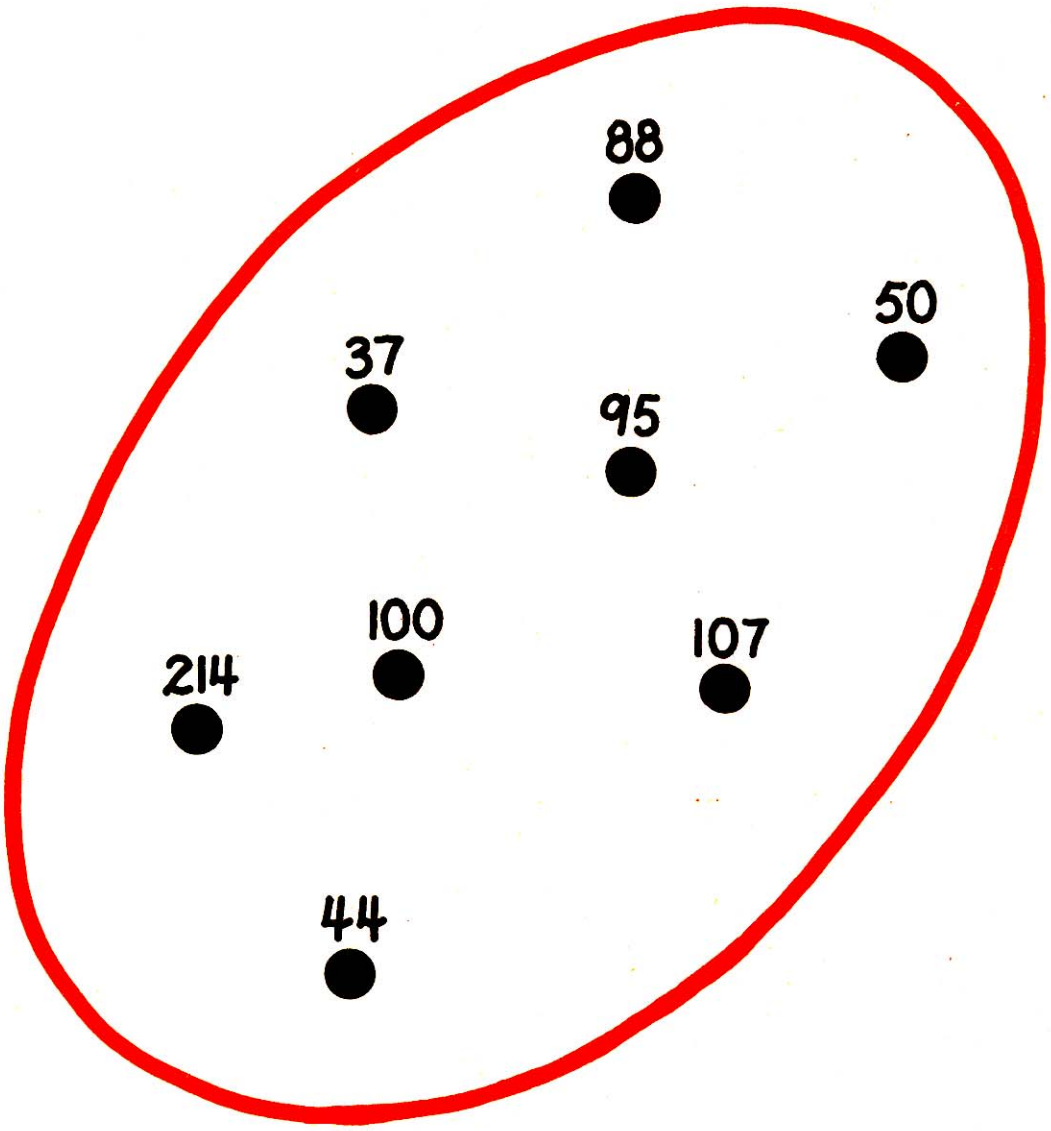
The number 100 is directing some friends in an interesting game. They all have to find their places in an arrow picture. As they very quickly discover, this is not as easy as it sounds. They cannot just jump into the picture at random; they have to think first. Once they realize this, it is not long before they have all found their proper places. Then 50 discovers that a second game is just the first one in a new guise.

After all this activity the numbers take a rest on their Minicomputer boards. But soon 50 becomes bored and plays a prank on the other numbers. This motivates some intriguing questions about the different ways in which the numbers can be shown on the Minicomputer.

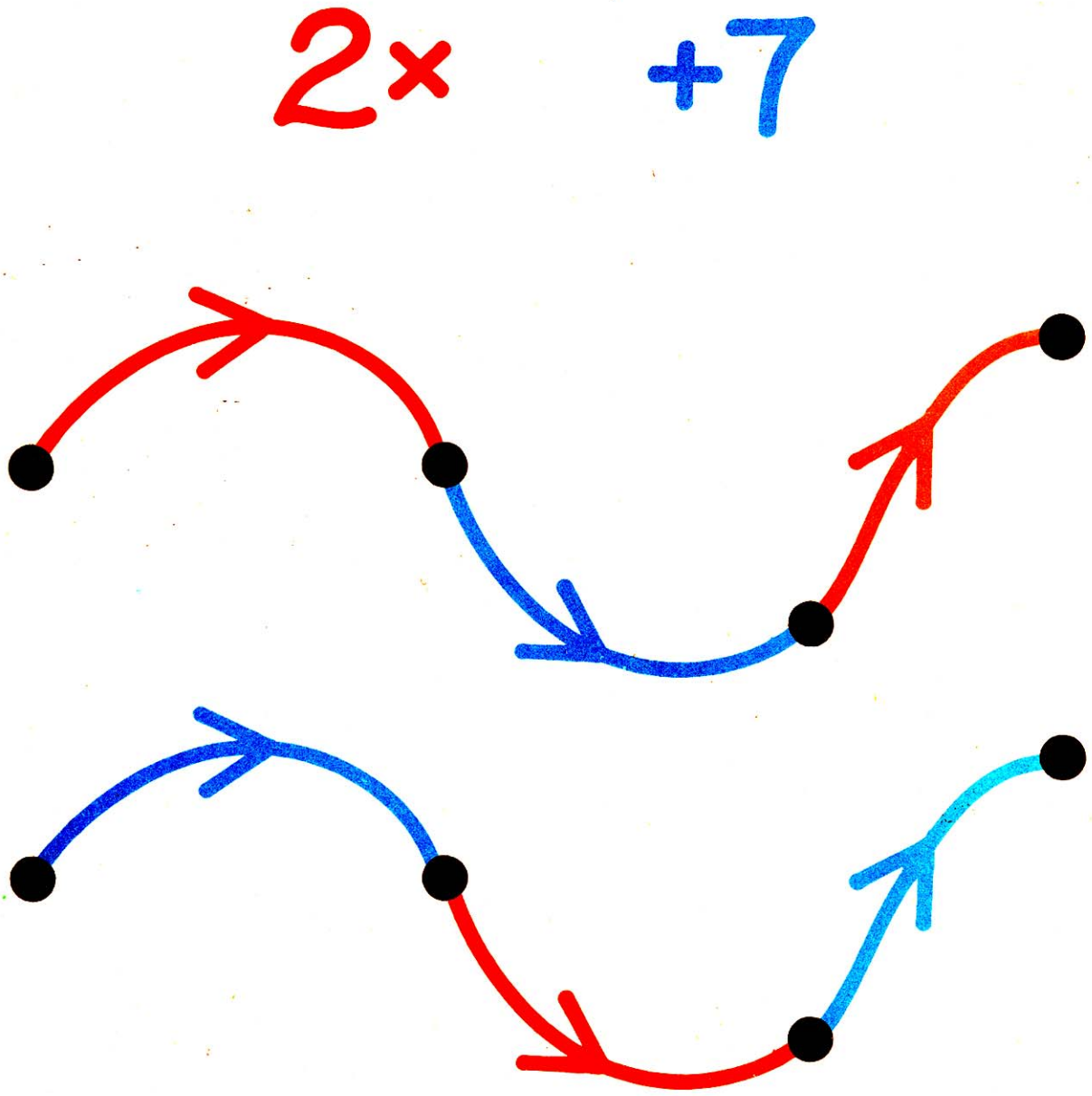
The story compels the reader to consider several challenging numerical problems presented in two non-verbal languages: the language of arrows and the language of the Minicomputer. While grappling with these problems, students develop mathematical reasoning skills within the context of an enjoyable story.

"I can't work with all this noise," I grumbled. "Those noisy children are arguing again on the new playground."

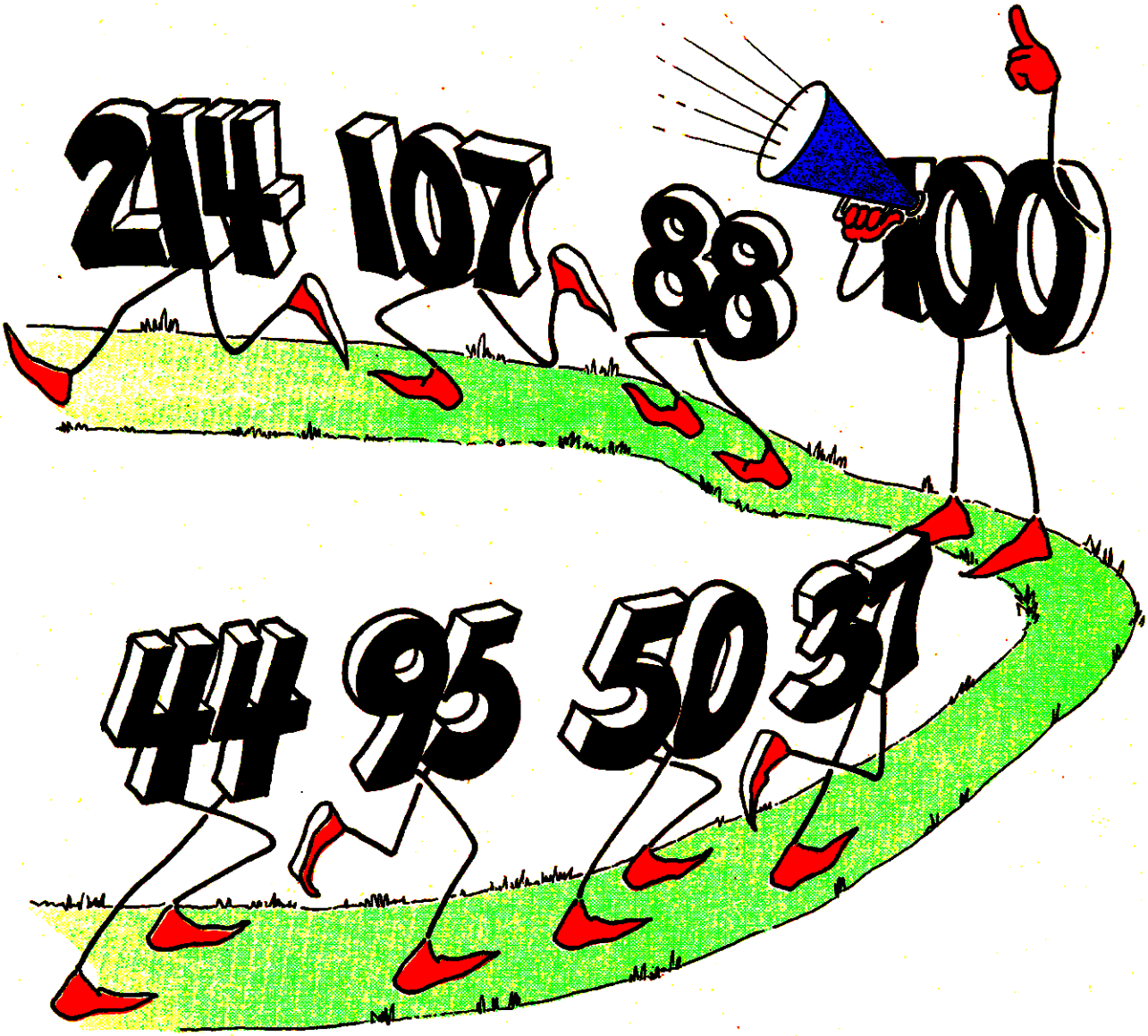
I looked out of the window and to my amazement there were no children in sight . . . just numbers running around and yelling at the tops of their lungs.



There was a strange picture drawn on the ground.



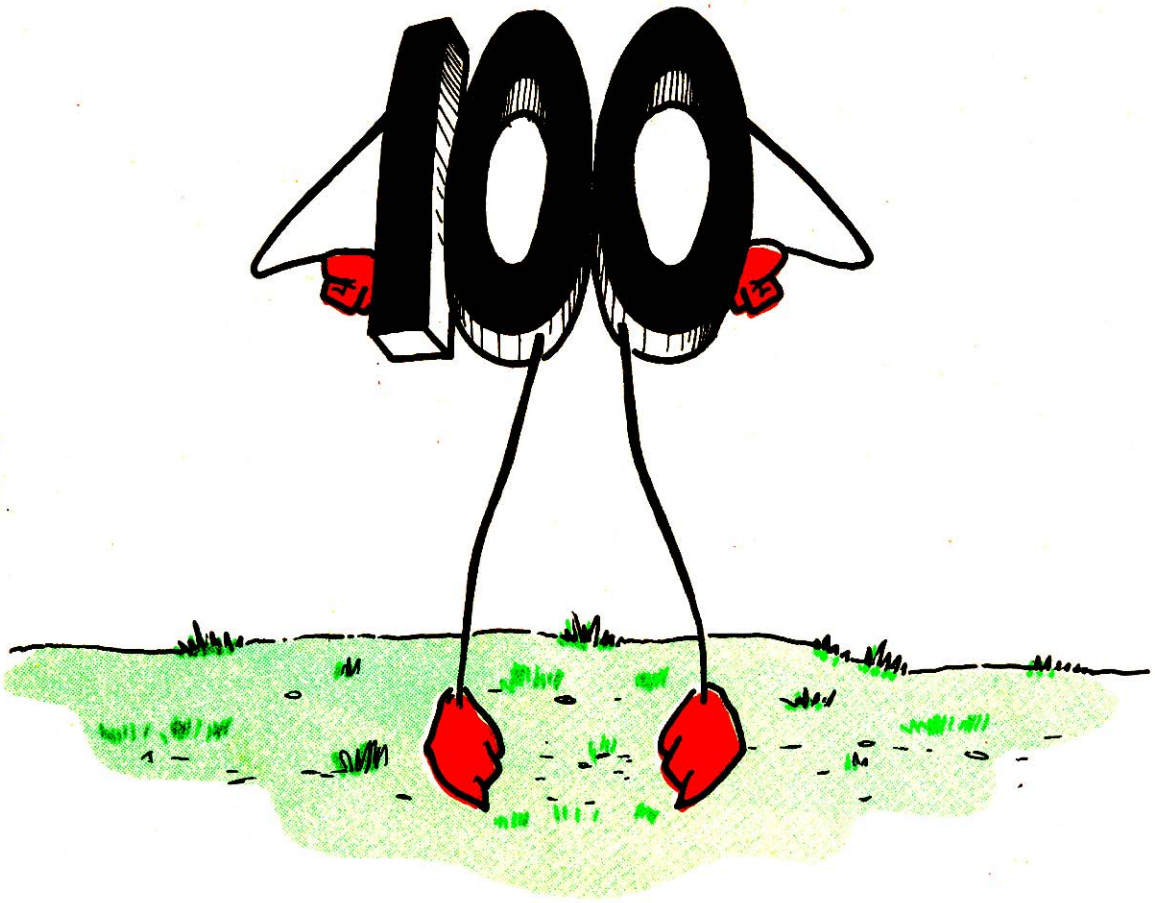
"Go and find your dot," ordered 100 who seemed to be in charge.
They rushed to take their places in the arrow picture.



DO YOU SEE A DOT FOR EACH NUMBER?
WRITE THEIR NAMES IN THE ARROW PICTURE ON PAGE 4.

SEE WHAT THE NUMBERS DID. DO YOU THINK THAT THEY FOUND THEIR PLACES?

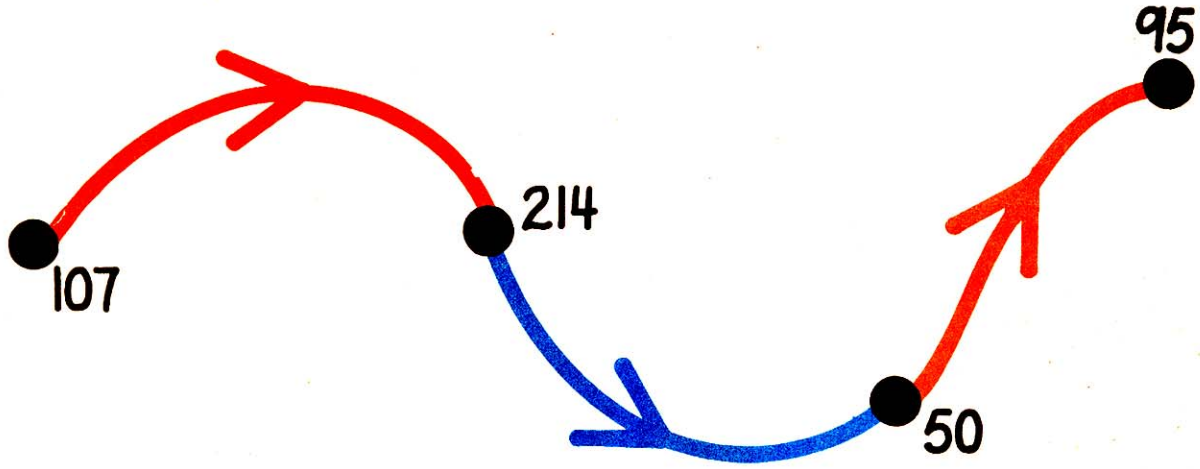
THERE ARE A LOT OF MISTAKES IN THIS ARROW PICTURE. CAN YOU FIND SOME OF THEM?

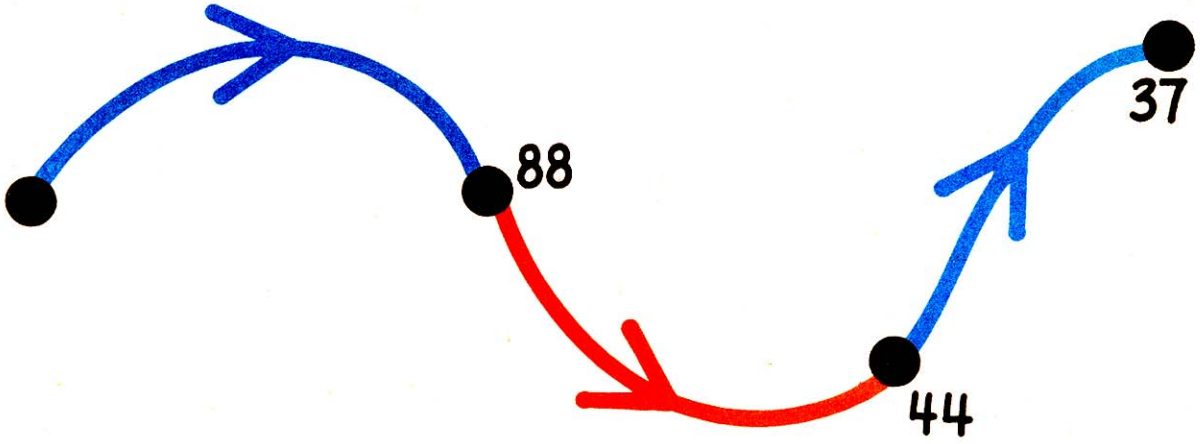


100 DECIDED NOT TO CHOOSE A DOT.

DO YOU KNOW WHY?

2× +7

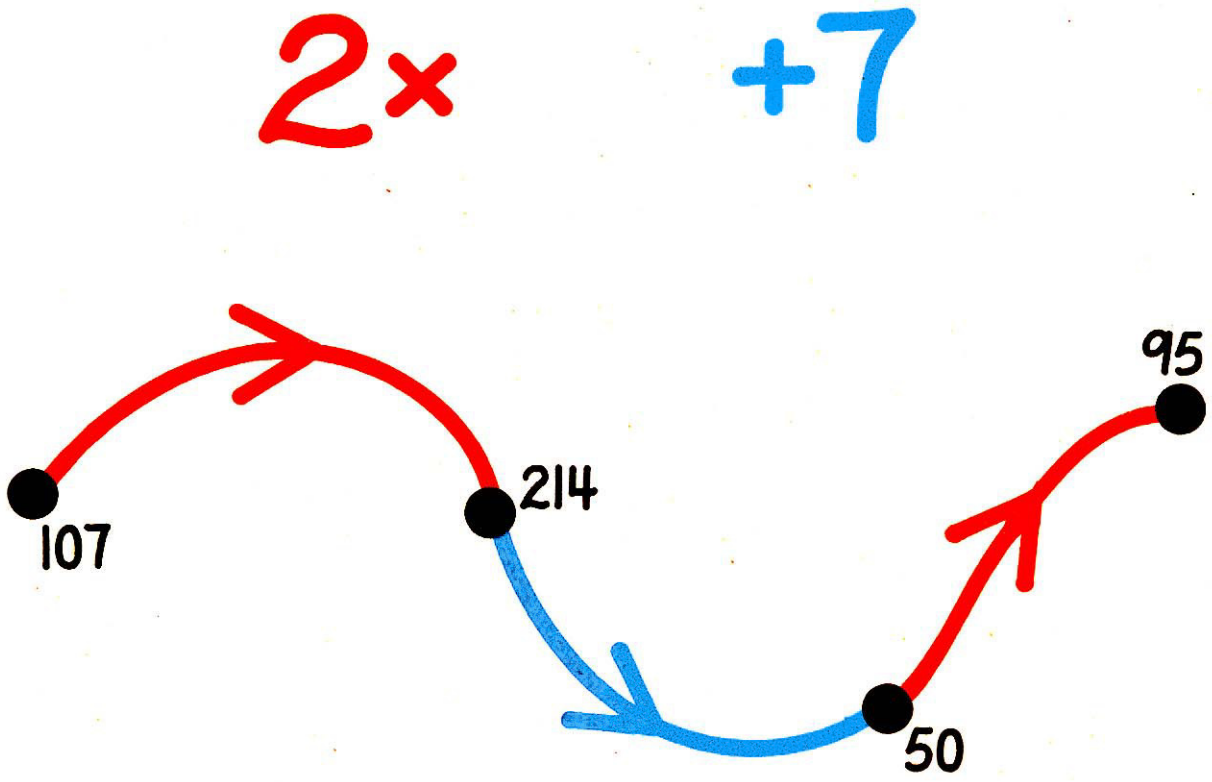




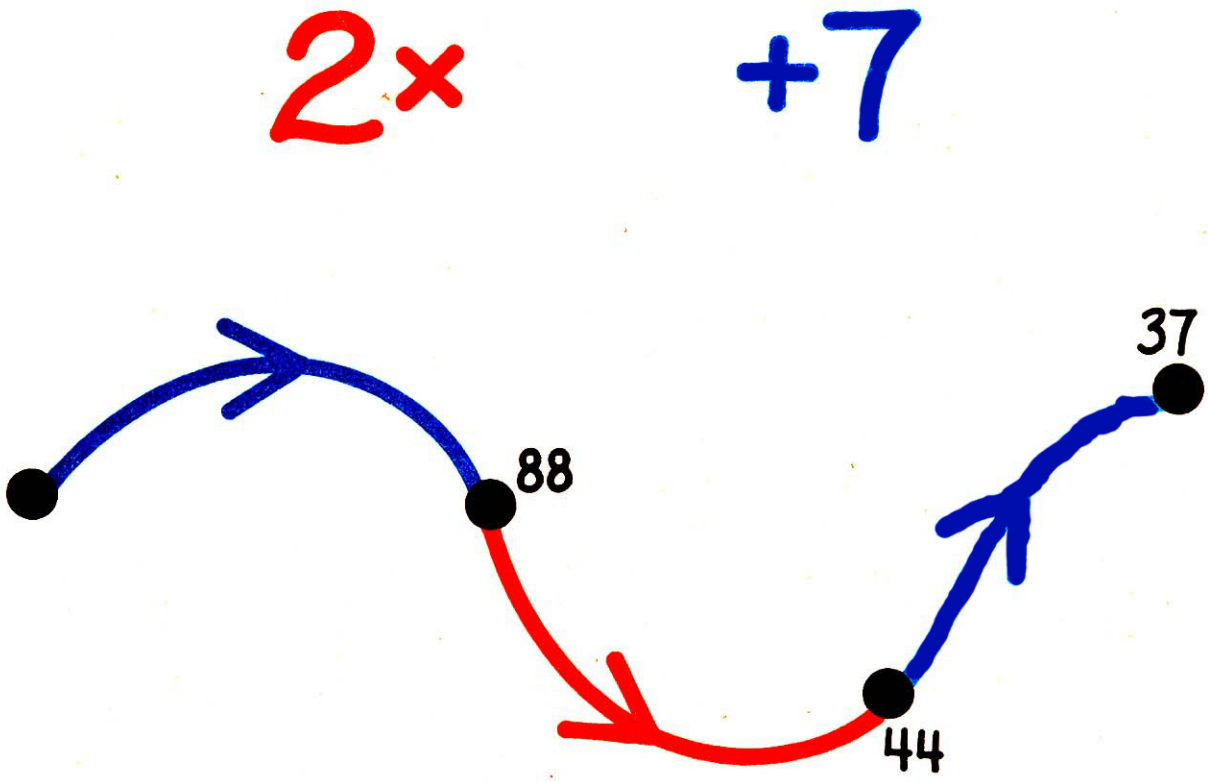
"You silly numbers," said 100. "You were very careless. You didn't look at the picture. You just ran and took places without thinking."

The numbers were very quiet.

"It is true that 2 x 107 = 214," added 100. "But 214 + 7 doesn't equal 50. Besides, I am 2 x 50 and not 95."



Then 100 looked at the second part of the picture.



"It's completely wrong! You didn't even notice which way the arrows are pointing, did you?"

"Let's start again," suggested 50.

"But how do we find our places?" asked 88. "This picture is really complicated."

"Which of us is the smallest?" asked 100.

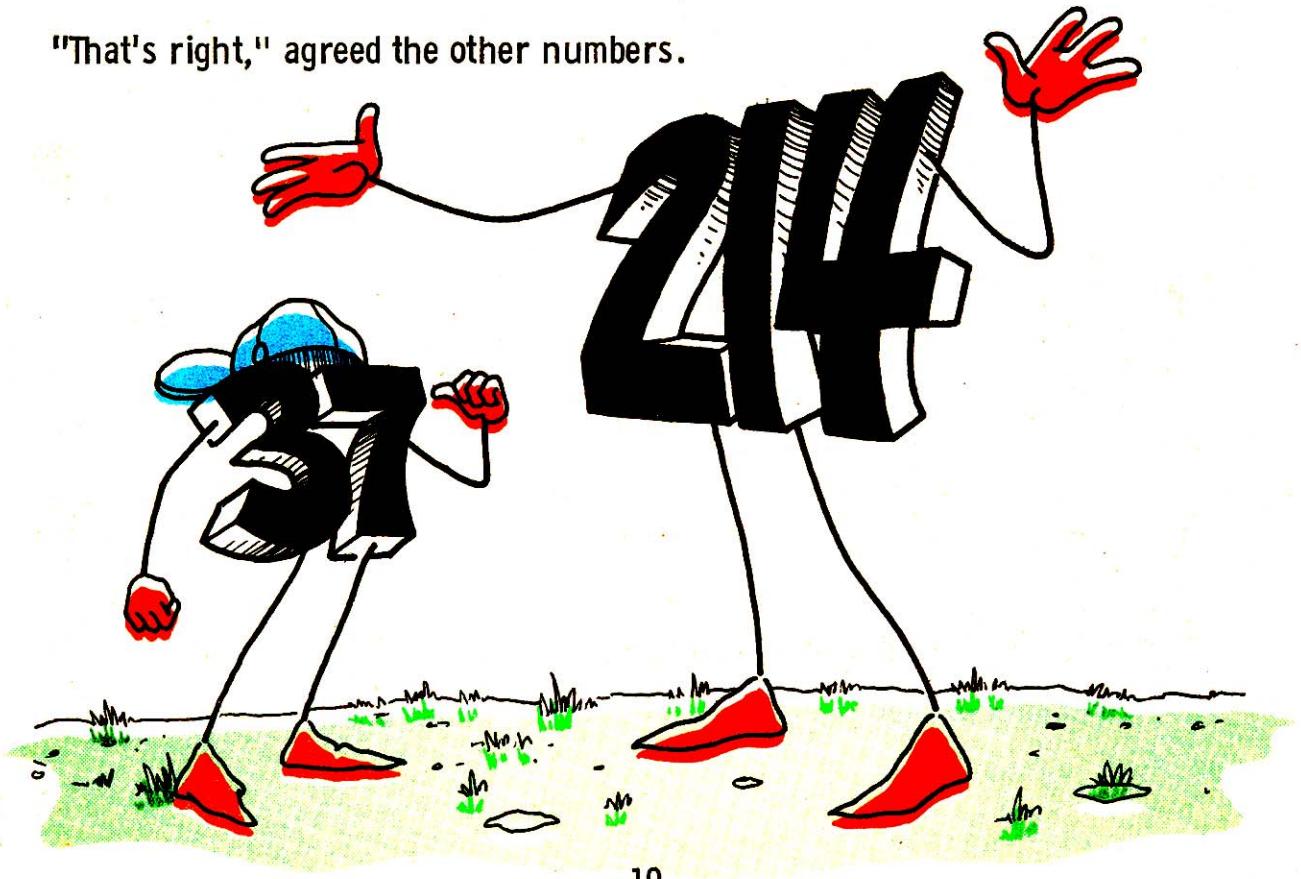
"I am," said 37.

"And who's the largest?"

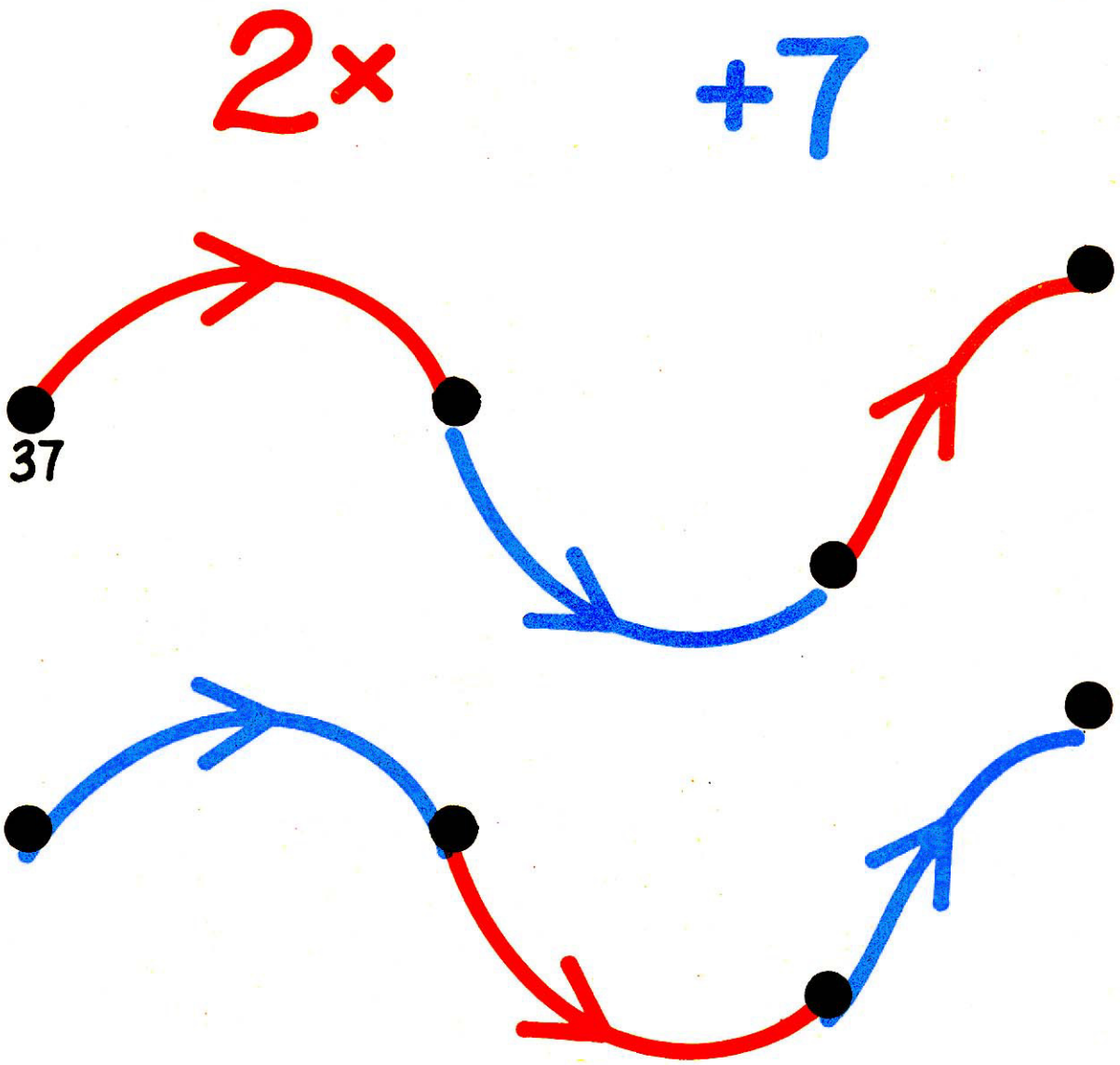
"I am," answered 214.

"Therefore, in our game 37 will be one of the starting points and 214 will be one of the ending points," concluded 50.

"That's right," agreed the other numbers.

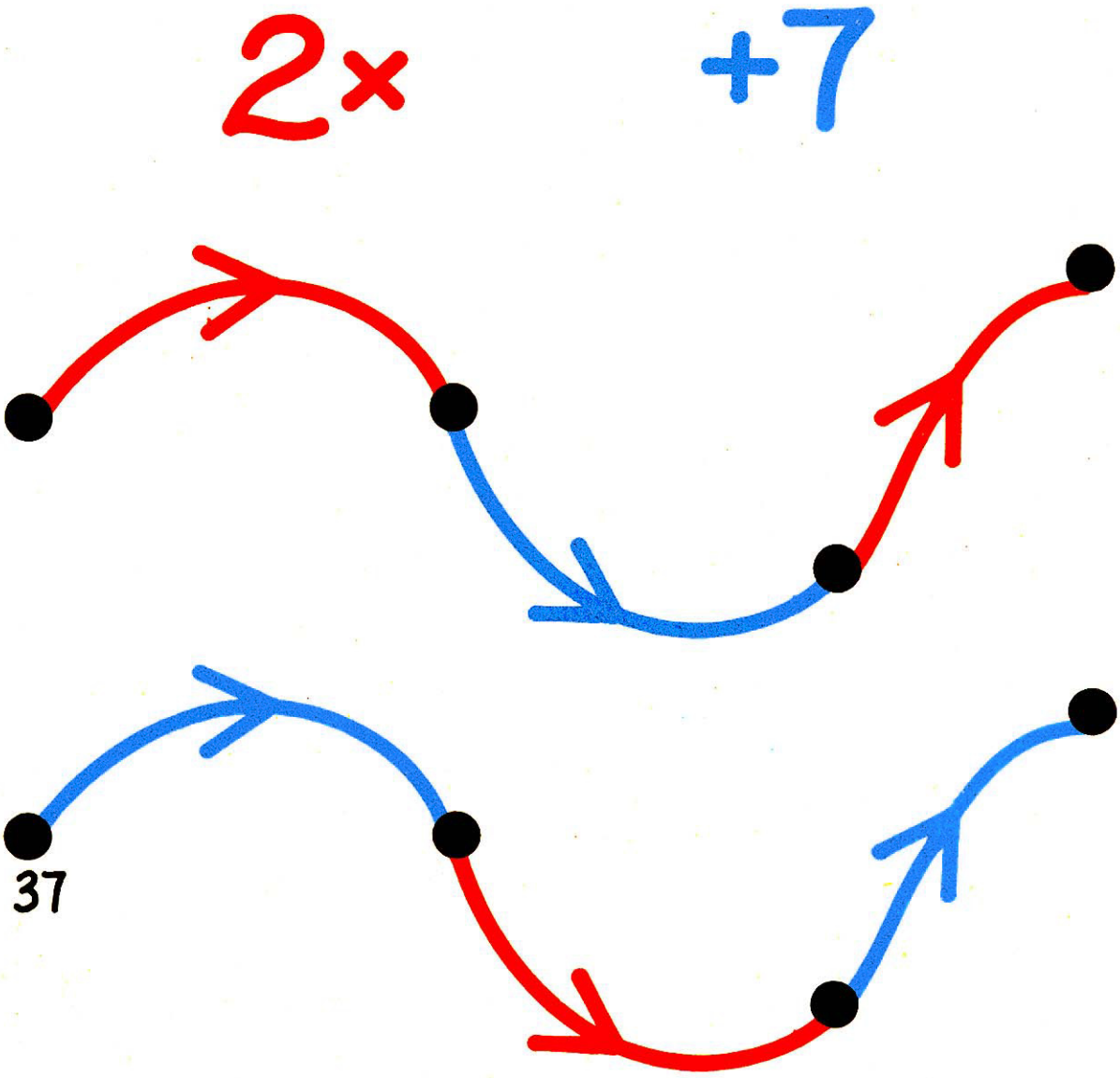


Without another thought, 37 jumped to one of the starting points.



"Impossible," yelled the other numbers. "2 x 37 = 74 but 74 is not one of us."

Quickly, 37 ran to the other starting point.

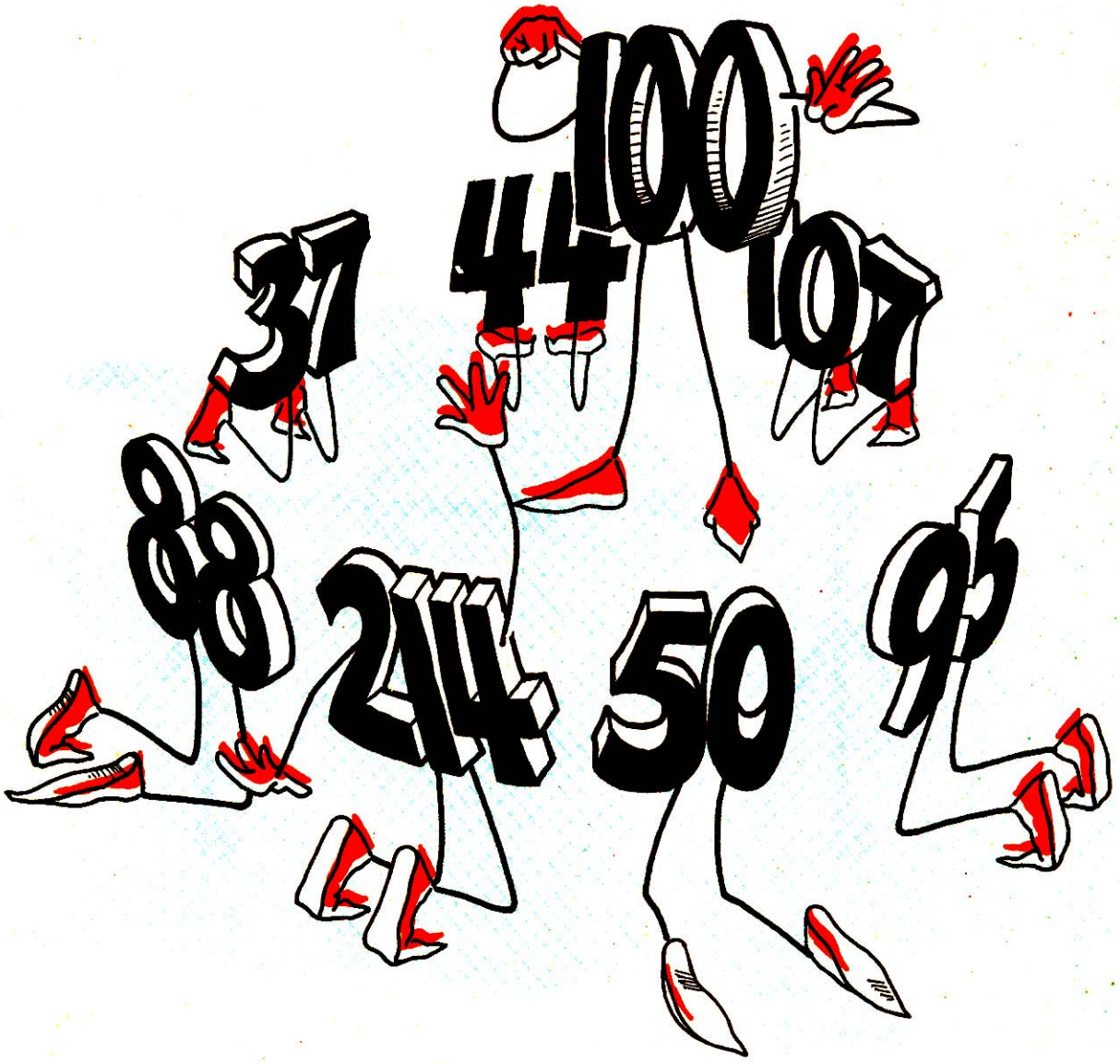


"Now it's easy to find our places," said 44, 88, 95, 214, 107, 100, and 50.

LABEL THE DOTS IN THIS ARROW PICTURE.

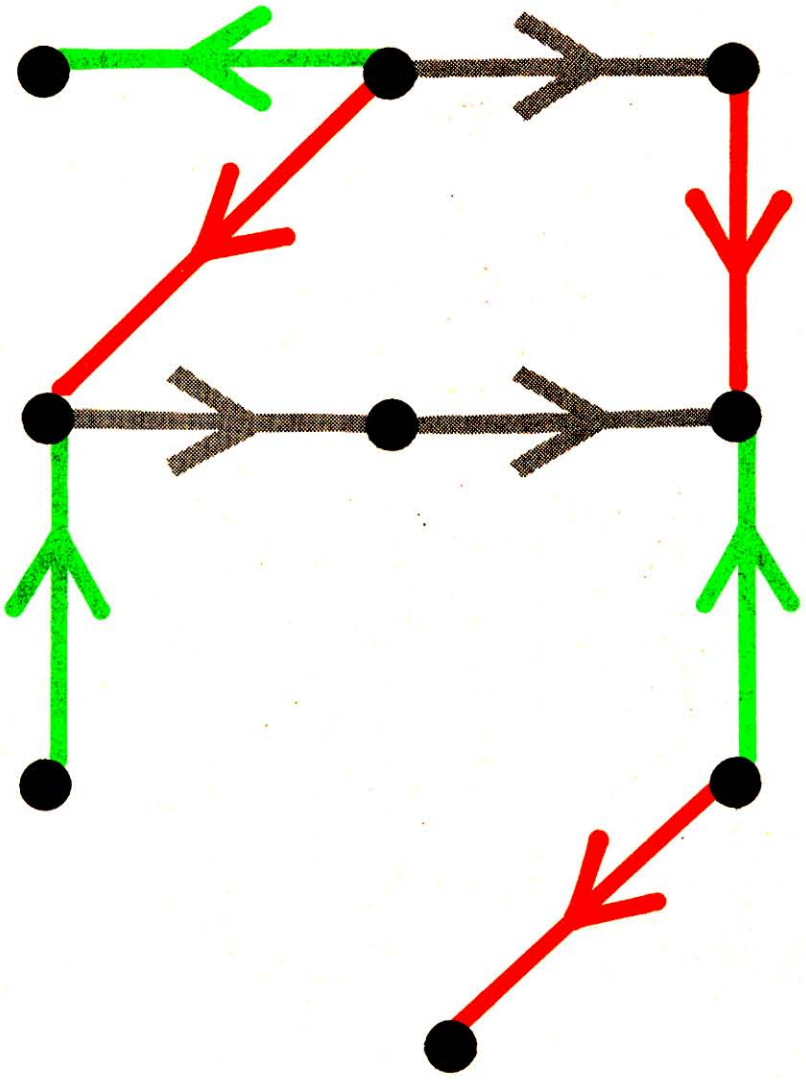
DID YOU LABEL THE DOTS CORRECTLY ON PAGE 4?

"Let's play a new game," suggested 214.
"OK," said 100. "But this time, please, think before acting."
"We'll try," promised the numbers.



100 drew a new picture on the ground.

2× −7 +6

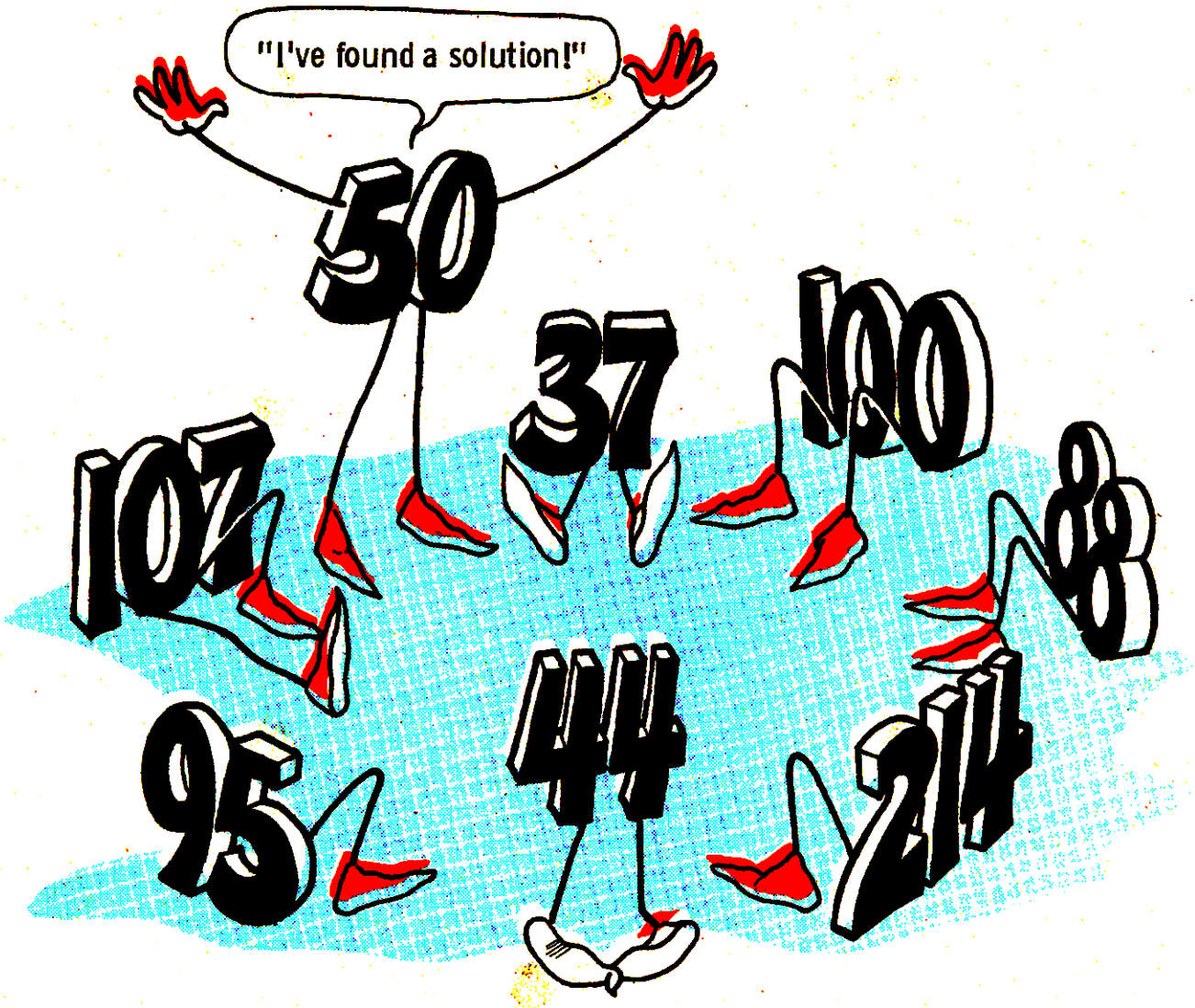


"Whew?" sighed the numbers. "This game is not easy to play!"

"There are nine dots and there are only eight of us," observed 88.

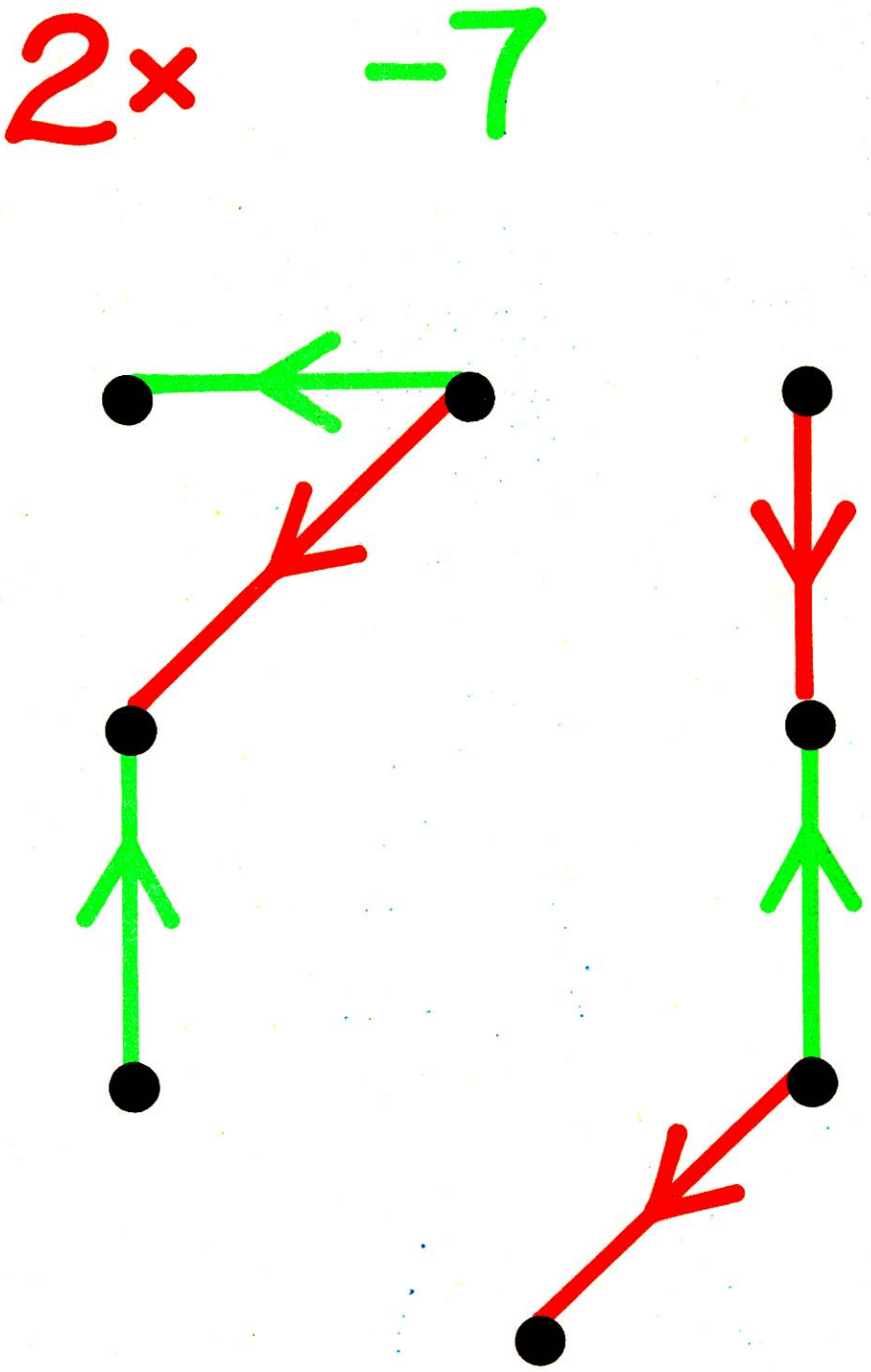
"That's true," said 100. "We will need another friend to complete the picture."

The numbers were silent for a while. Suddenly, 50 shouted:

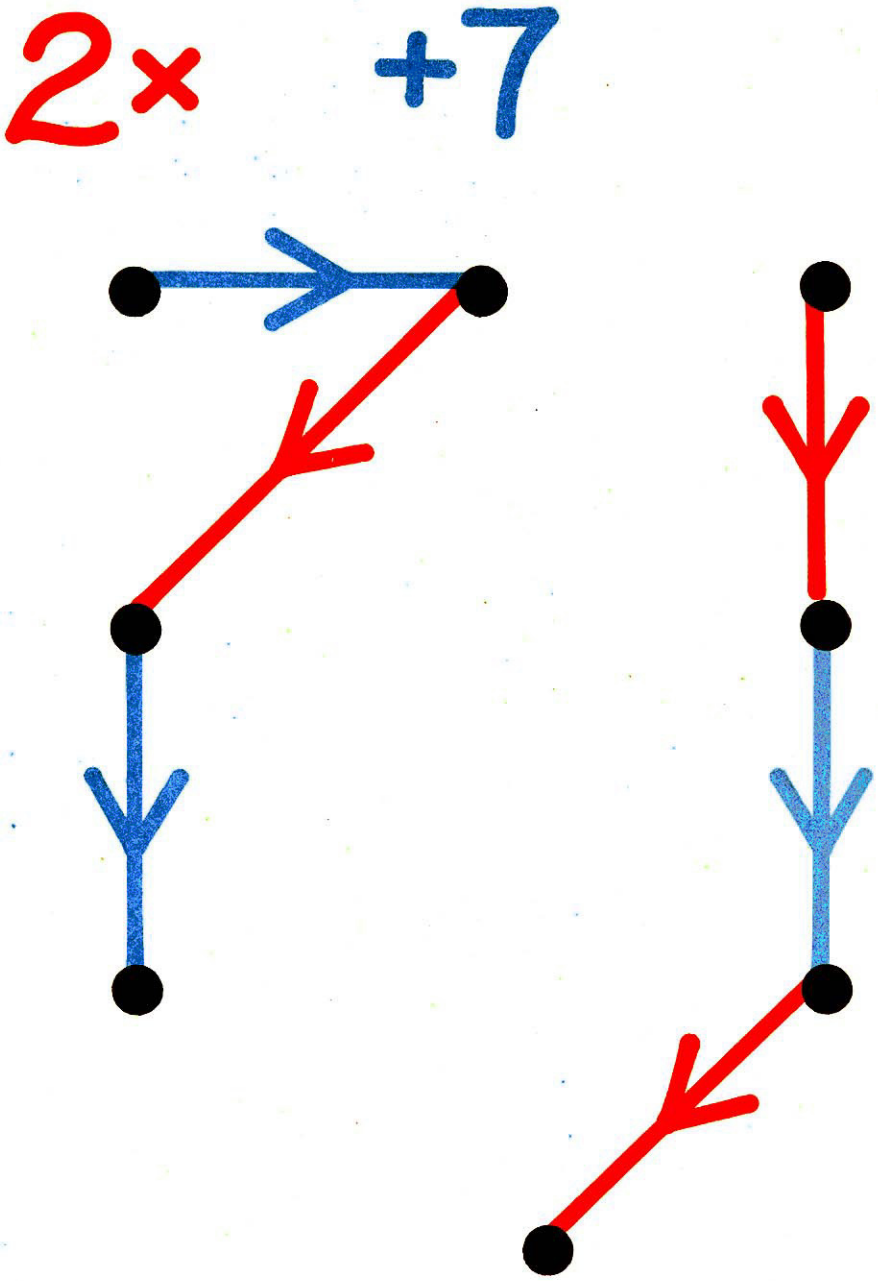


CAN YOU SOLVE THE PROBLEM? LABEL THE DOTS ON PAGE 14.

"Look at the picture and forget about the gray arrows," suggested 50.

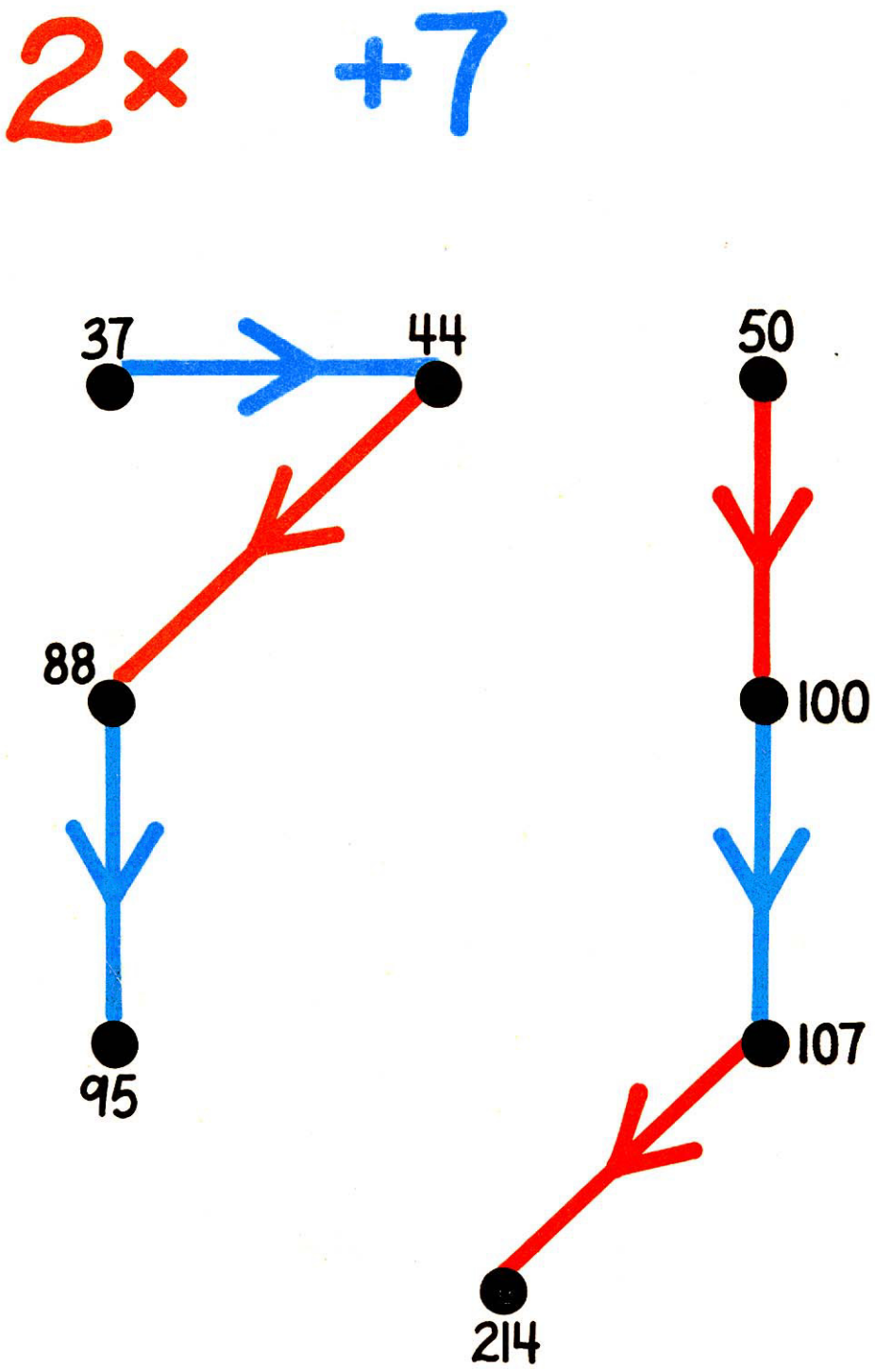


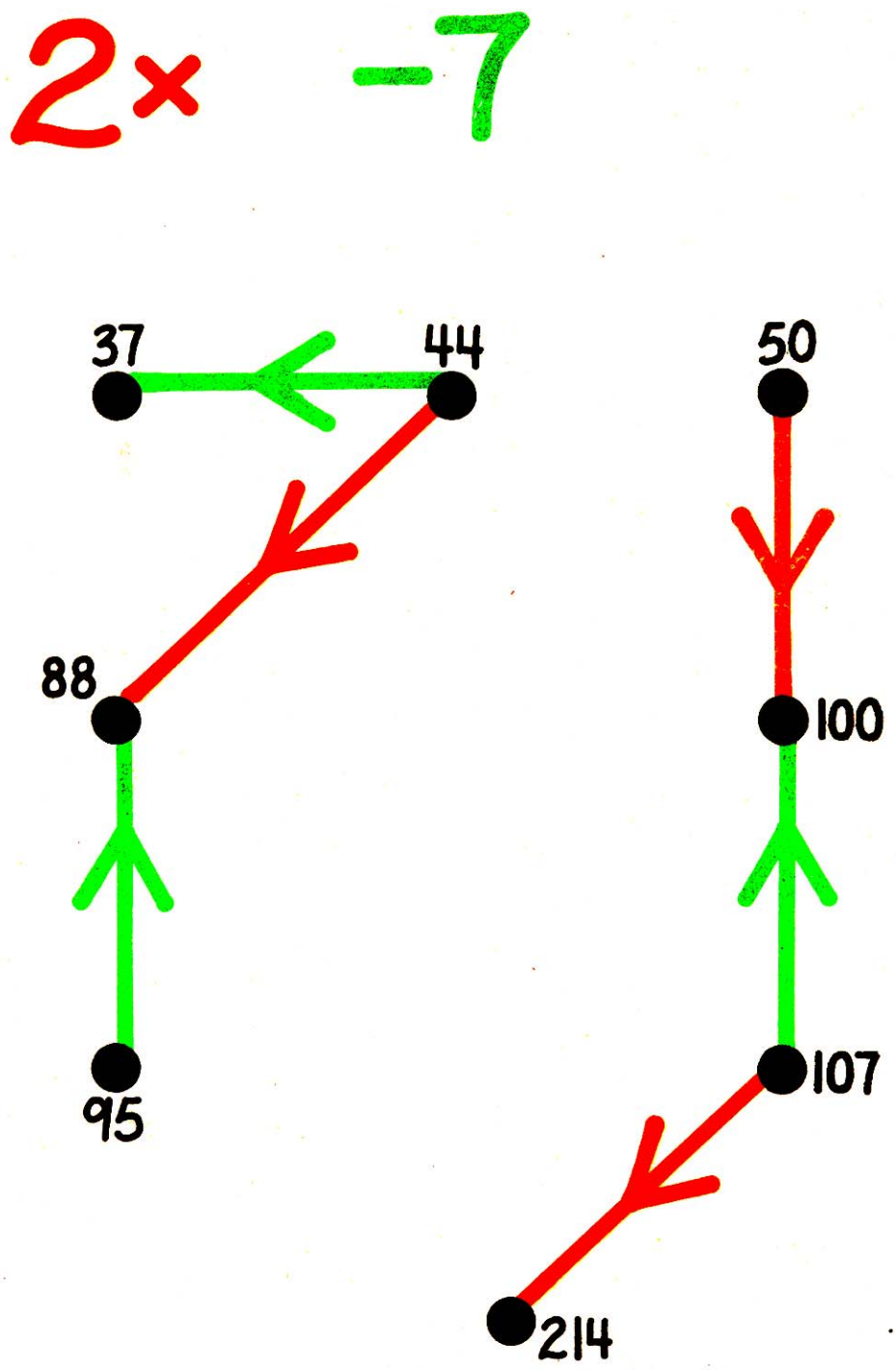
"Replace each -7 arrow by its return arrow," 50 went on.



"Doesn't that look like the game we played on page 4?"

"That's true," agreed the other numbers. "Now it's easy to find our dots."

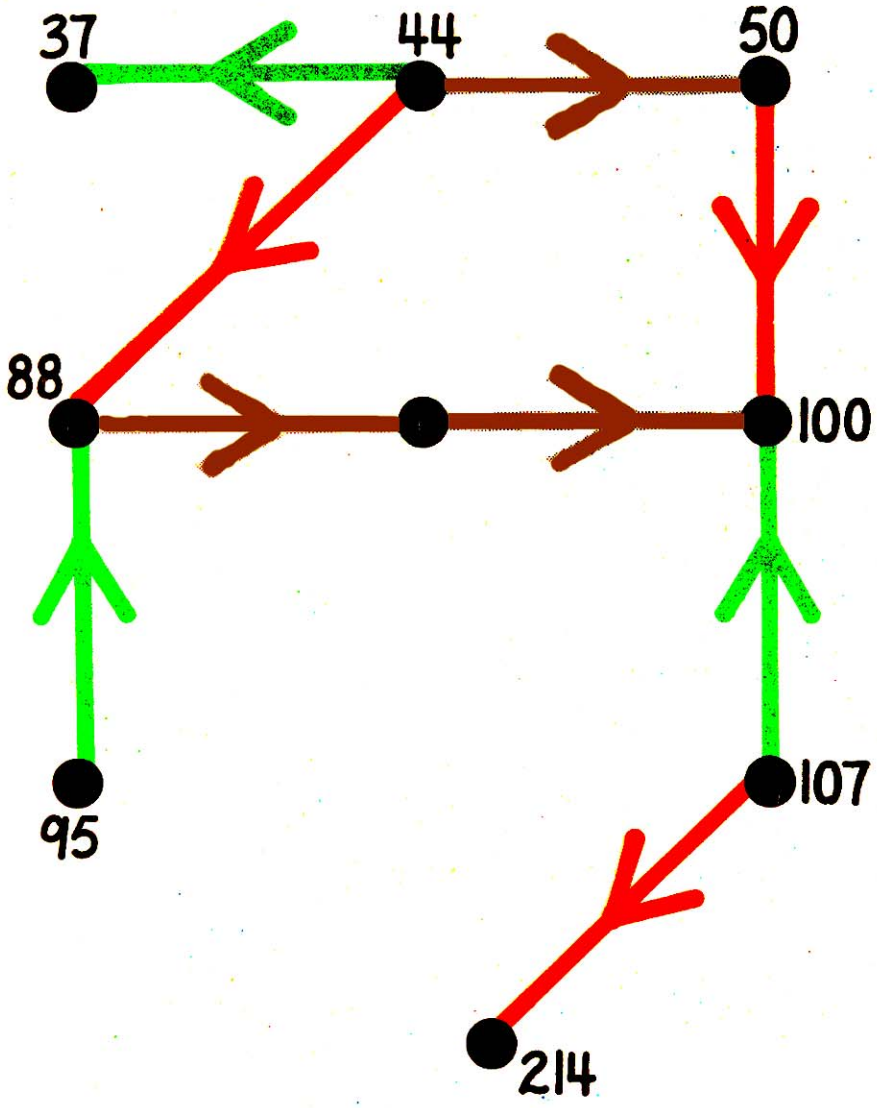

2×
+7
37
44
88
95
50
100
107
214



"It's a kind of magic game!" observed 95.

"But we should not forget to add the gray arrows," said 100.

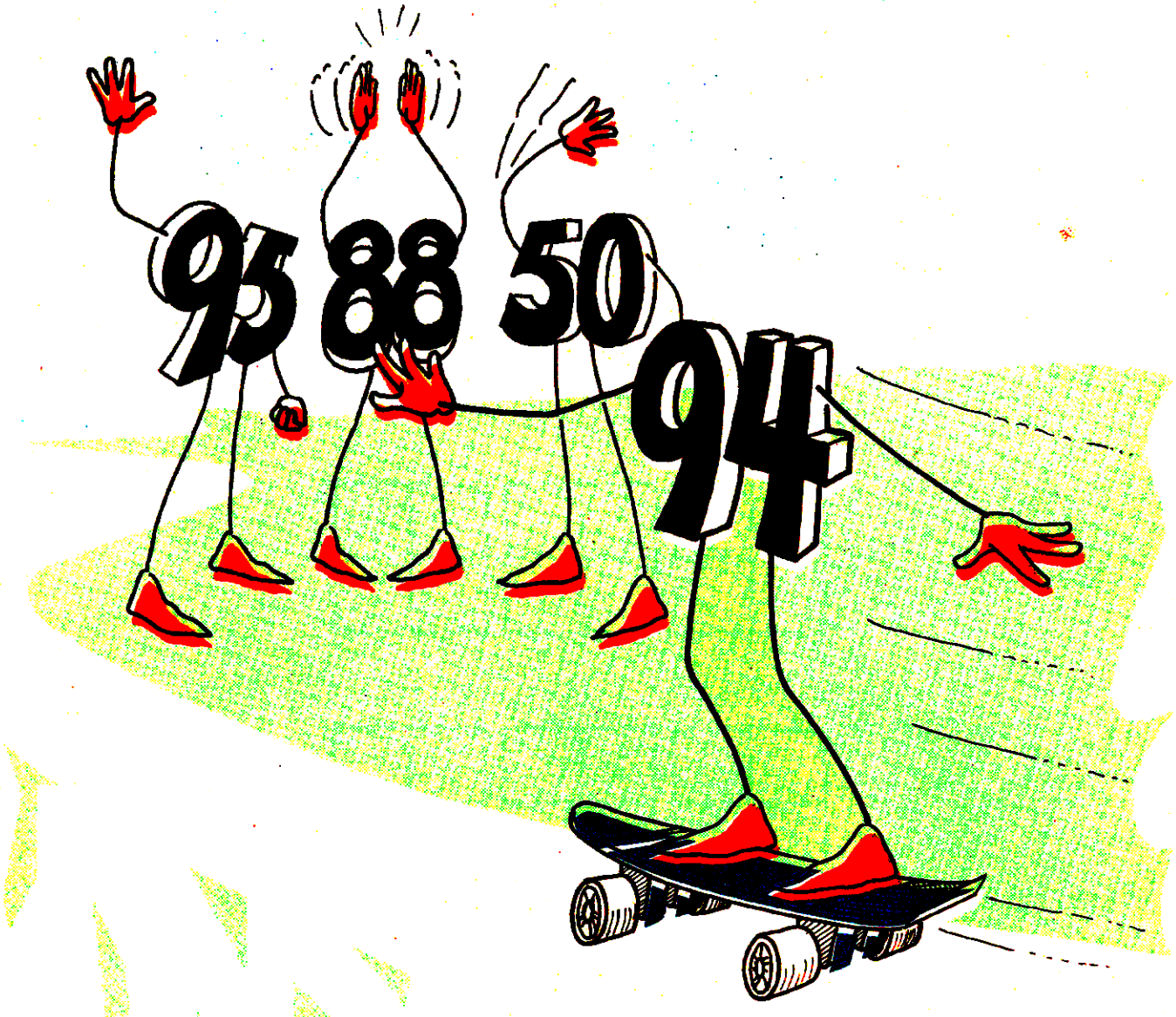
2× −7 +6



DID YOU FIND THE SAME SOLUTION? COMPARE THIS PICTURE TO PAGE 14.

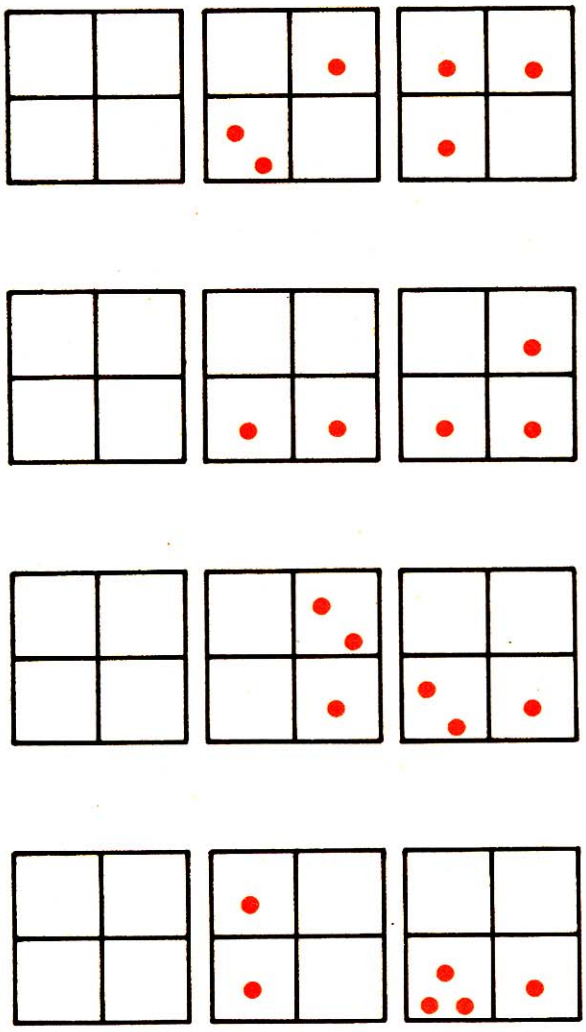
"You are really clever," said 88 to 50. "But we still need another friend to complete our picture."

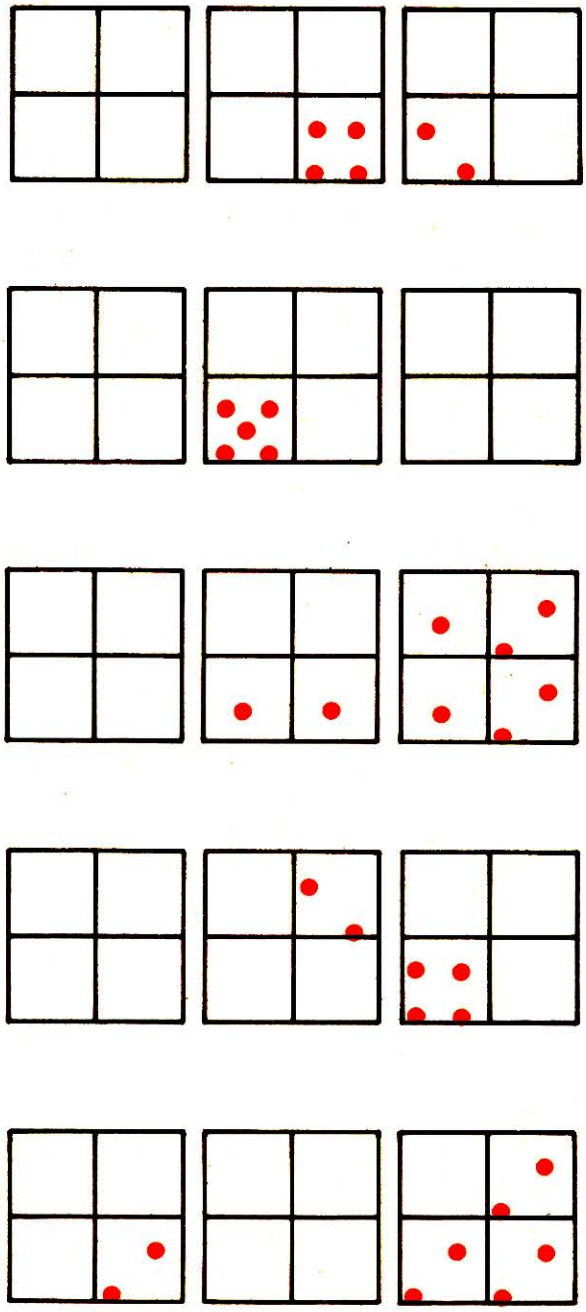
"Let's invite 94," suggested 95. "94 is the missing number because 88 + 6 = 94 and 94 + 6 = 100."



"I am tired of all this thinking," said 37. "I have an awful headache. Let's rest on our Minicomputer boards."

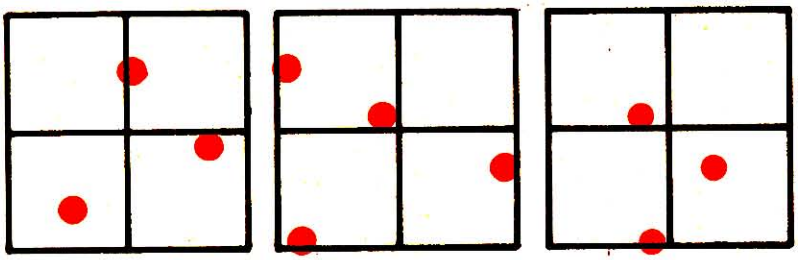
The numbers sat down quietly.



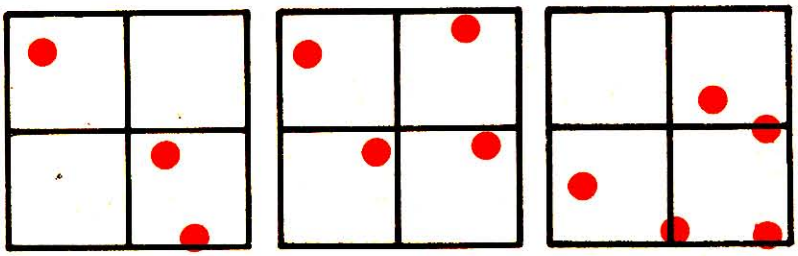


DO YOU RECOGNIZE EACH OF OUR FRIENDS? WRITE THEIR NAMES TO THE RIGHT OF THE MINICOMPUTERS.

"I'm getting bored with all this resting," yawned 50, getting up. 50 mixed up all the checkers and threw a lot of new checkers onto the Minicomputer boards of 100 and 88.



100?



88?

"Why did you do that?" cried 88. "I am all confused.
I can't recognize myself anymore.

The other numbers cheered for 100 and 88.

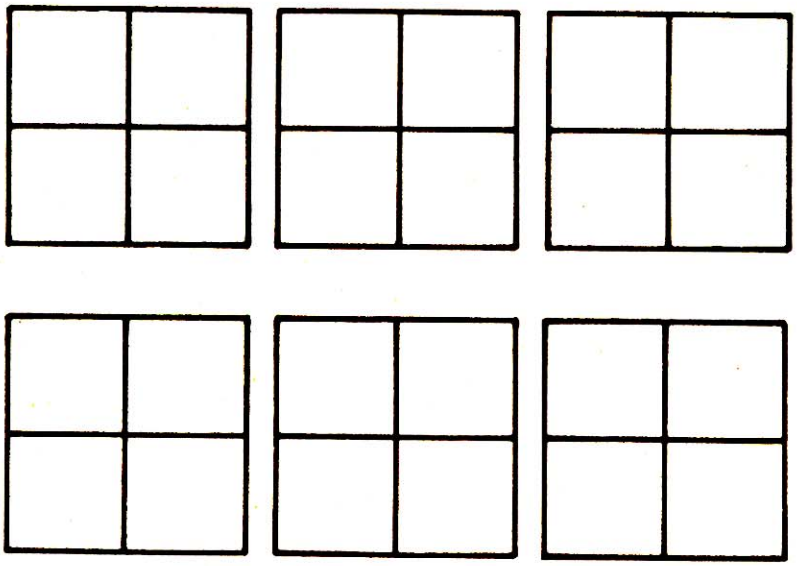
"Let's see who can use the most checkers to sit on the Minicomputer," said 95.

CAN YOU GUESS WHICH OF THESE NINE NUMBERS CAN USE THE MOST CHECKERS?

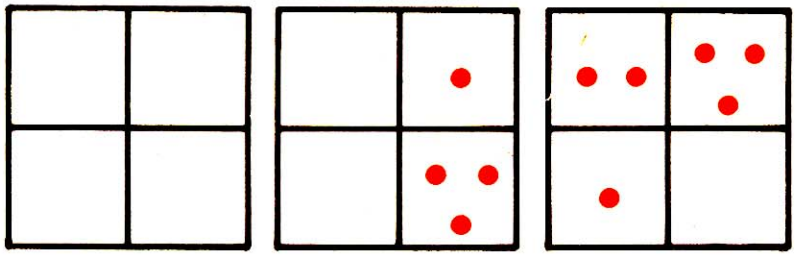
"Let's see who can use the fewest checkers to sit on the Minicomputer," suggested 37.

CAN YOU GUESS WHICH OF THESE NINE NUMBERS CAN USE THE FEWEST CHECKERS?

SHOW YOUR ANSWERS BELOW.

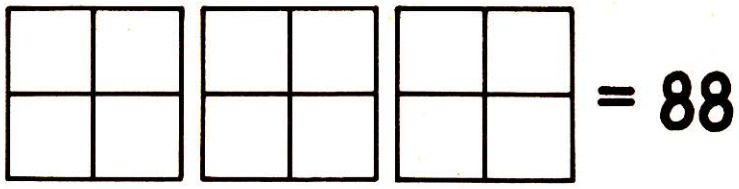


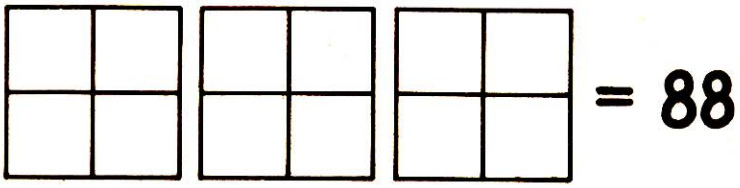
"And again."



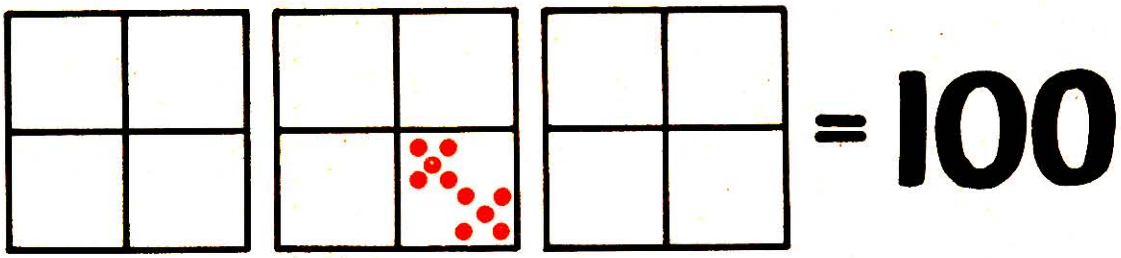
"Your game is fun," said 88. "I will play it with my twelve checkers."

PLAY THE GAME FOR 88. BE SURE TO USE EXACTLY TWELVE CHECKERS. WRITE YOUR ANSWERS BELOW.

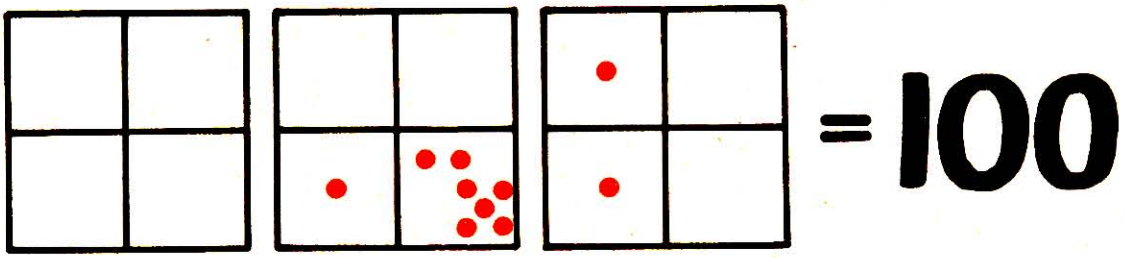




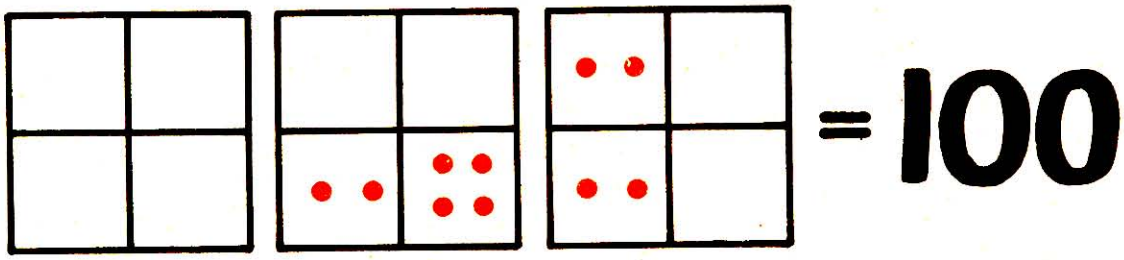
"Here I am!" said 100 happily.



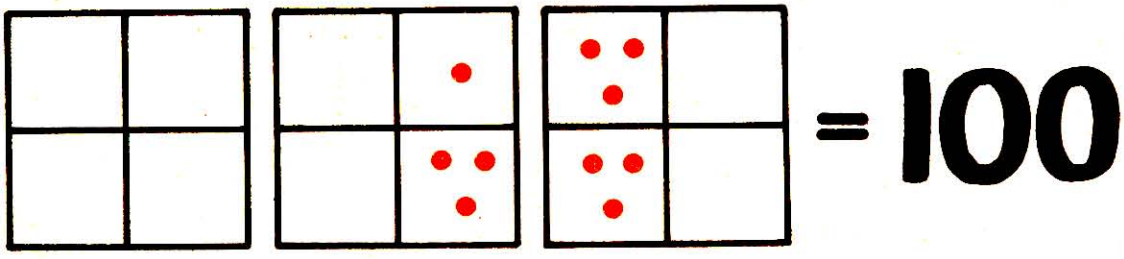
"It's me again," 100 shouted.



"And again."

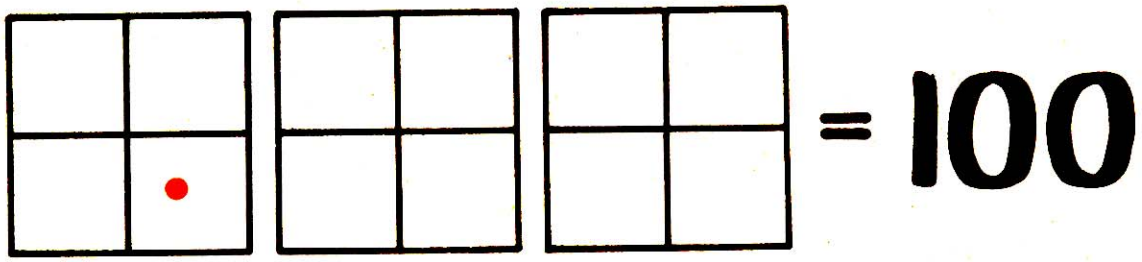


"And again."

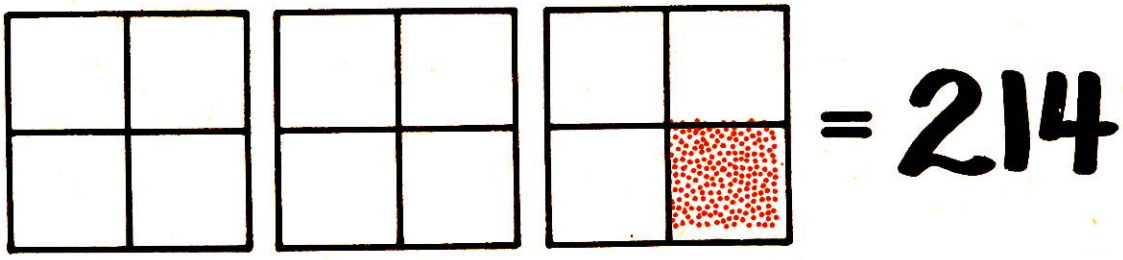


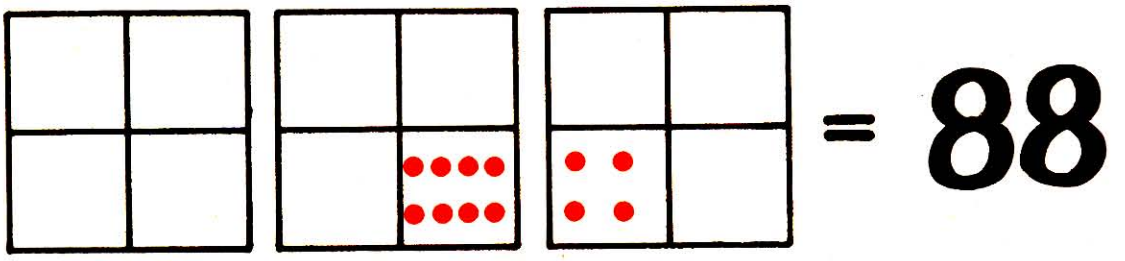
"Here I am with just one checker," said 100 proudly. "I am the only one of us who can do that."

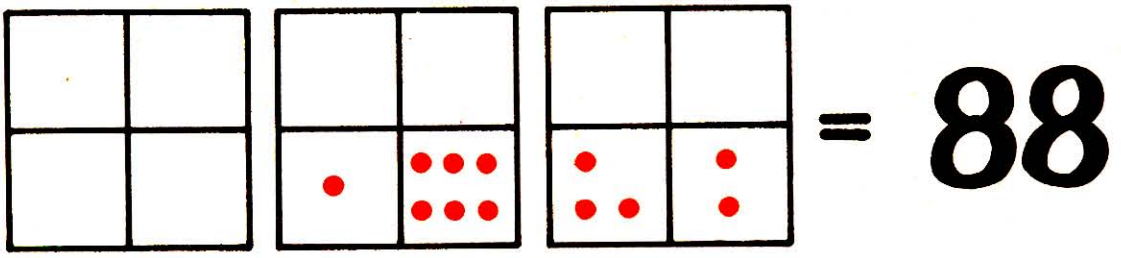
"That's right," agreed the other numbers.

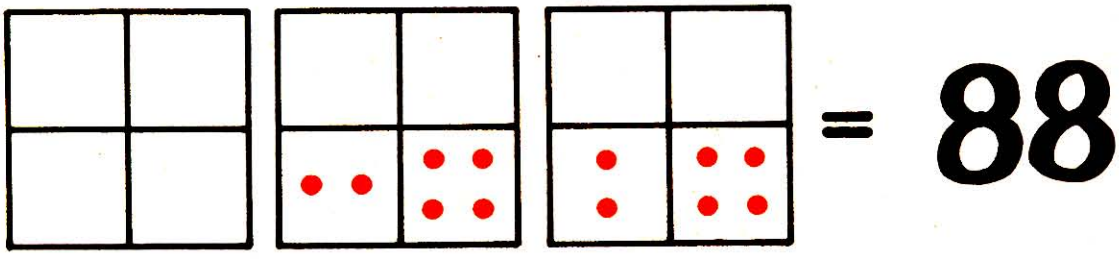


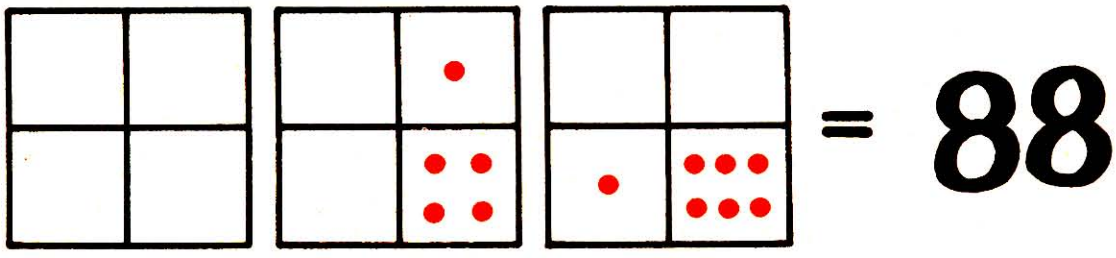
"Here I am with 214 checkers," said 214. "Can anyone do better than that?"











DID YOU FIND MANY OTHER SOLUTIONS?

WHAT DO YOU THINK OF THIS PROBLEM?

DO YOU THINK IT IS POSSIBLE FOR ANY OF THESE NUMBERS TO USE EVEN MORE THAN 214 CHECKERS TO SHOW THEMSELVES ON THE MINI-COMPUTER? IF SO, DRAW YOUR SOLUTION BELOW.

This is the end of the story of our nine friends who are happy to sign their book.

8×11

20×5

$\frac{1}{2} \times 428$

$50 - 6$

$(5 \times 7) + 2$

2×47

$120 - 13$

$\frac{1}{3} \times 150$

$(2 \times 50) - 5$

DO YOU RECOGNIZE THEM? WRITE THEIR USUAL NAMES NEXT TO THEIR SIGNATURES. CAN YOU INVENT NEW SIGNATURES FOR EACH NUMBER? WRITE THEM ON A SEPARATE PIECE OF PAPER.