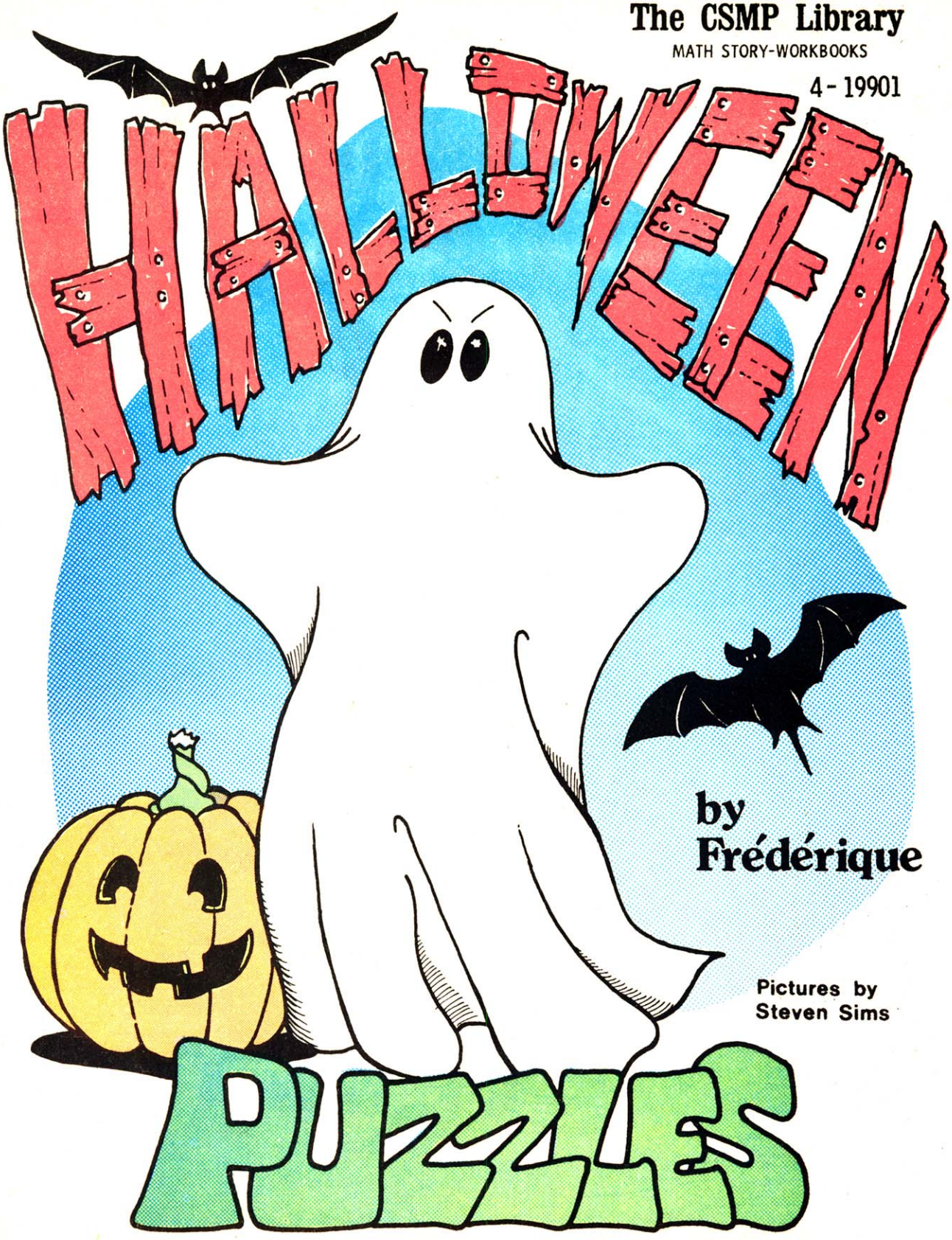
The CSMP Library

MATH STORY-WORKBOOKS

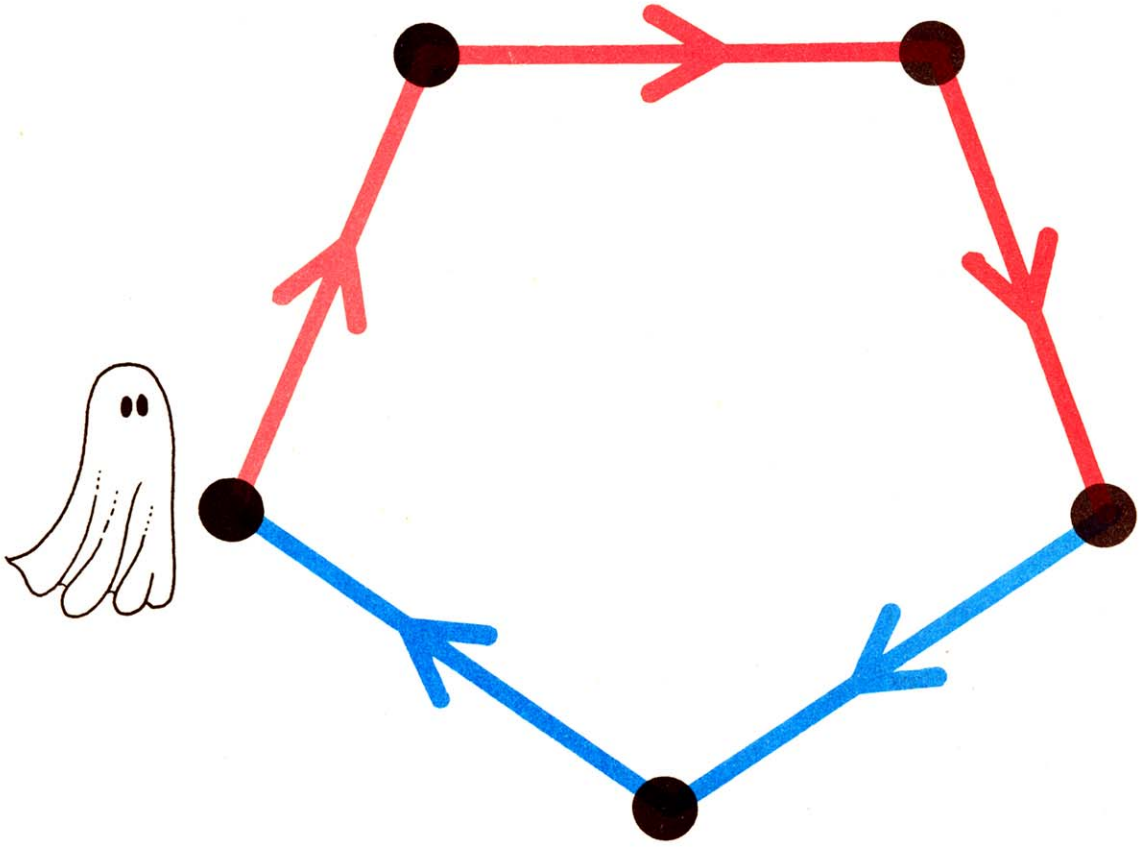
4-19901




Something is hidden under this white sheet,
or
someone is hidden under this white sheet.

What? or Who?

+6 -9



It's a number! But which number?

"If we knew, then we'd know who else can play this Halloween game," answer the numbers.

"If I were under the sheet," says 2, "then 8, 14, 20, and 11 would play with me because $2 + 6 = 8$; $8 + 6 = 14$; $14 + 6 = 20$; $20 - 9 = 11$; and $11 - 9 = 2$."

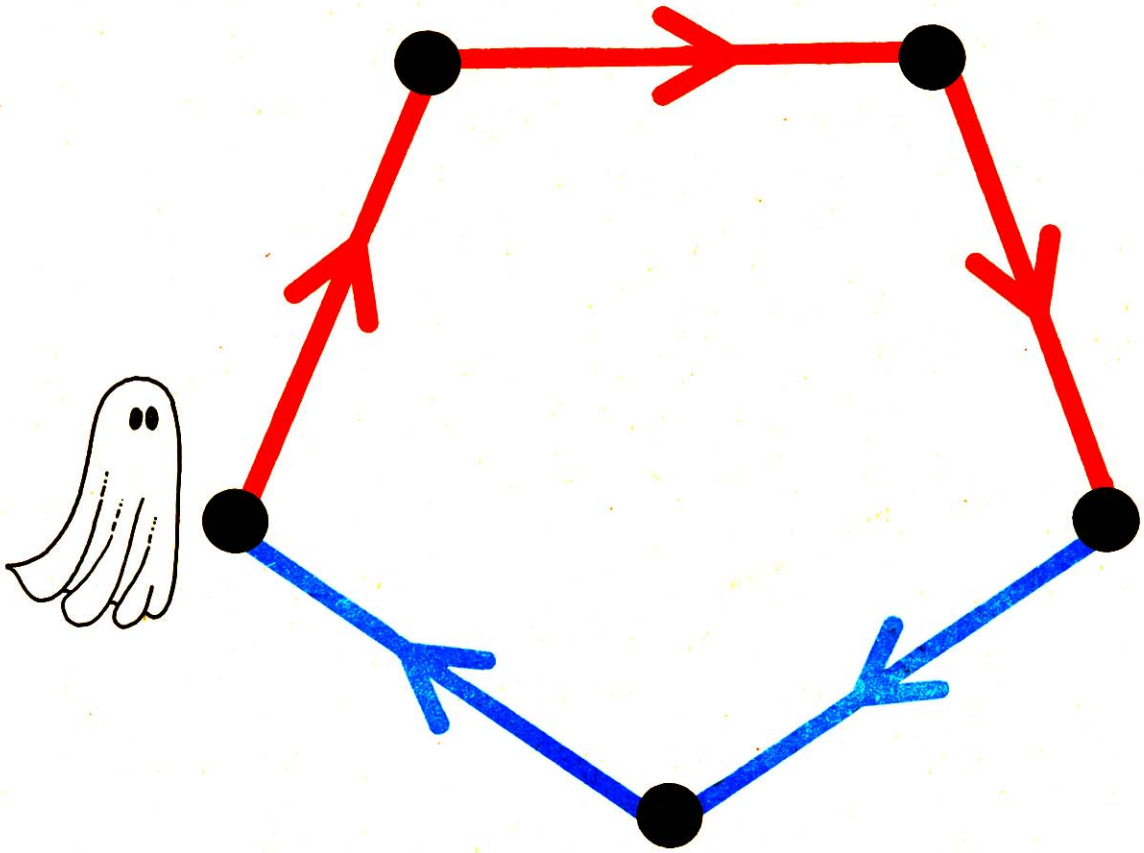
"If I were under the sheet," says 10, "then ____, ____, ____, and 19 would play with me."

"If I were under the sheet," says 15, "then ____, 27, ____, and ____ would play with me."

"If I were under the sheet," says 37, "then 43, ____, ____, and ____ would play with me."

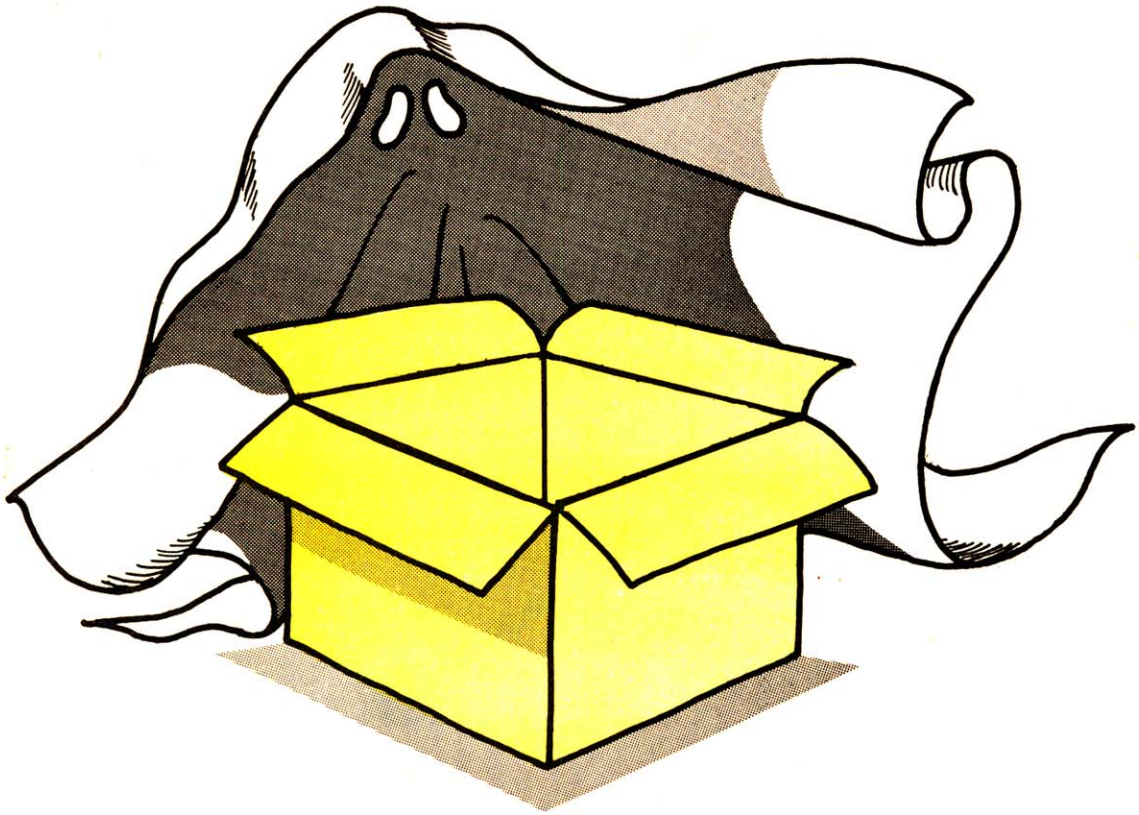
"If I were under the sheet," says 125, "then ____, ____, 143, and ____ would play with me."

+6 -9

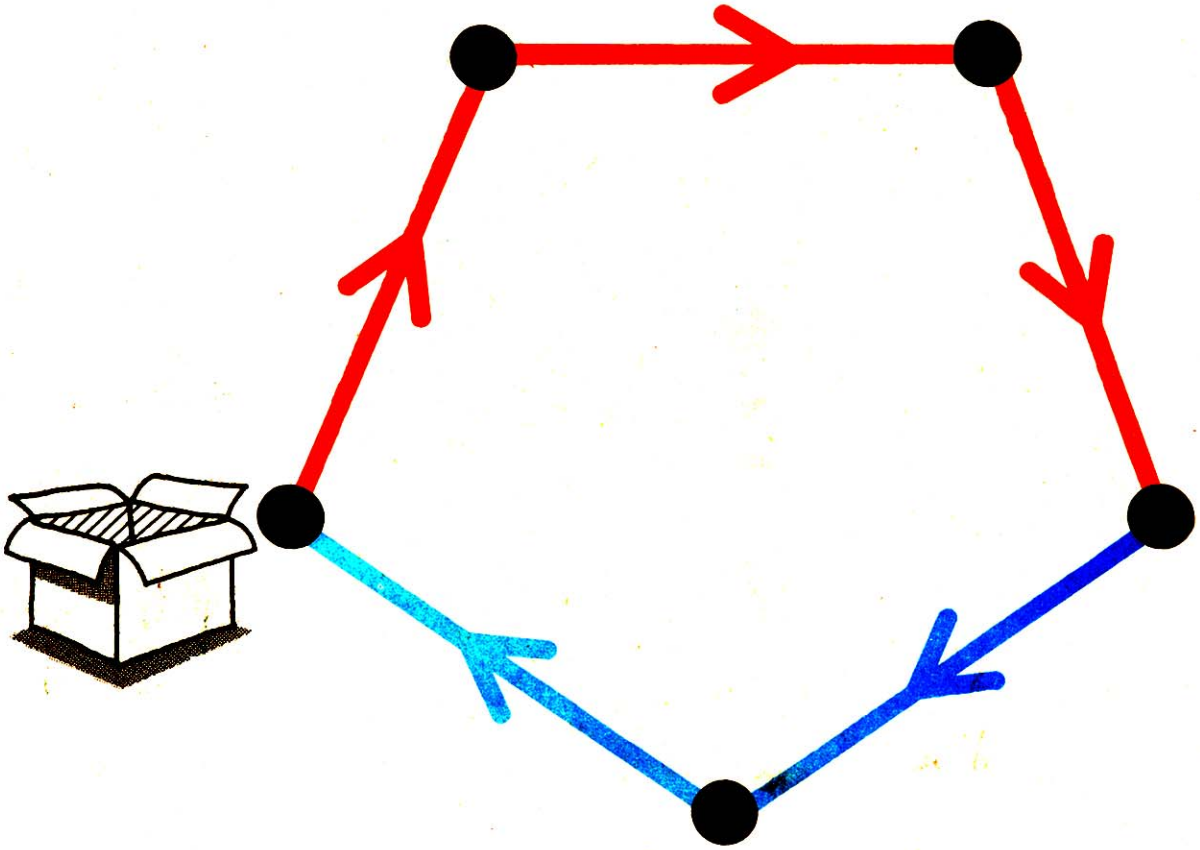


"If. . . If. . . If. . . ," yell the numbers. "But we still don't know who or what is hidden under the white sheet."

Very excited, they pull it off and find just a box!



+6 -9



"If I jump into the box," says 0, "then 6, 12, 18, and 9 play with me."

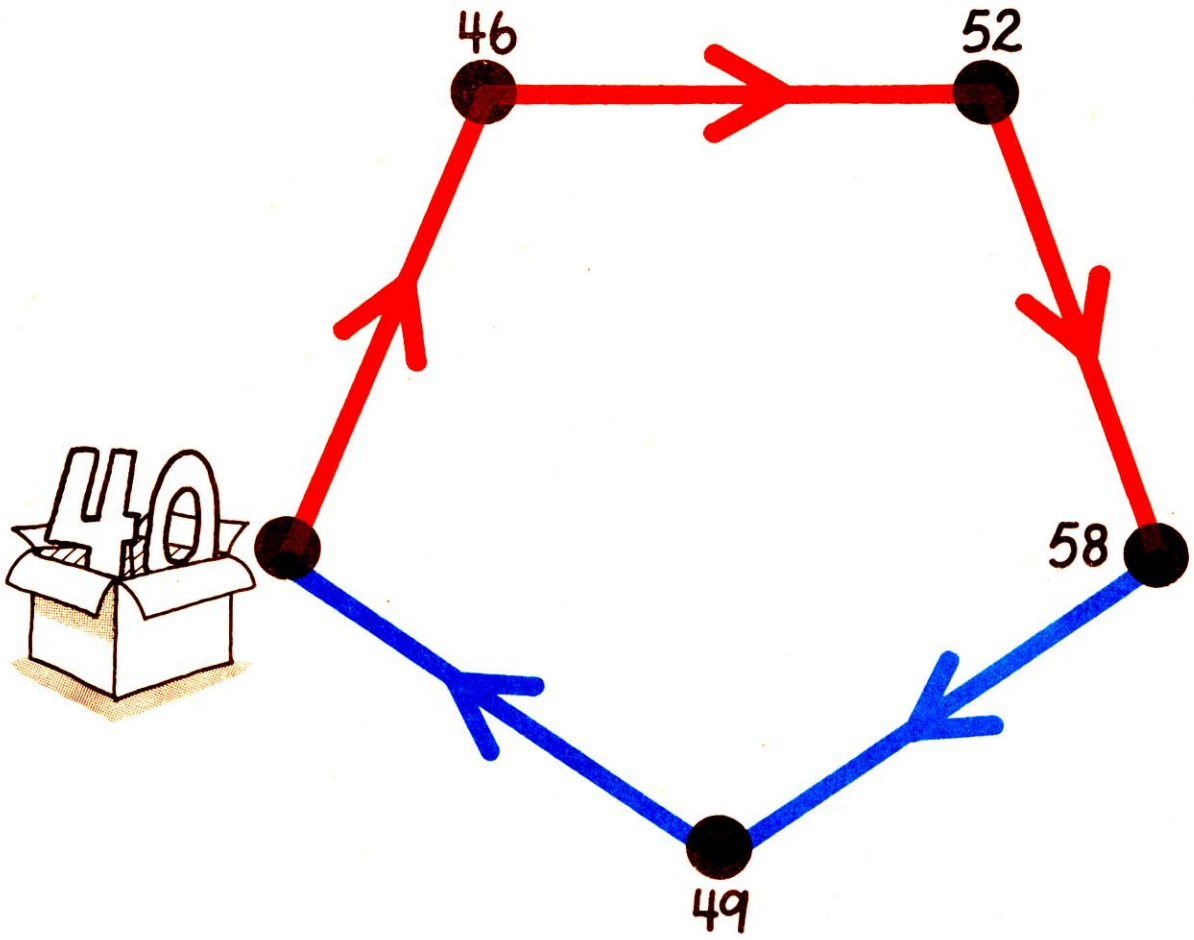
"If I jump into the box," says 13, "then ____, ____, 31, and ____ play with me."

"Anyone of us can jump into the box!" observe the numbers. "When one of us gets into the box, then we can figure out who else plays."

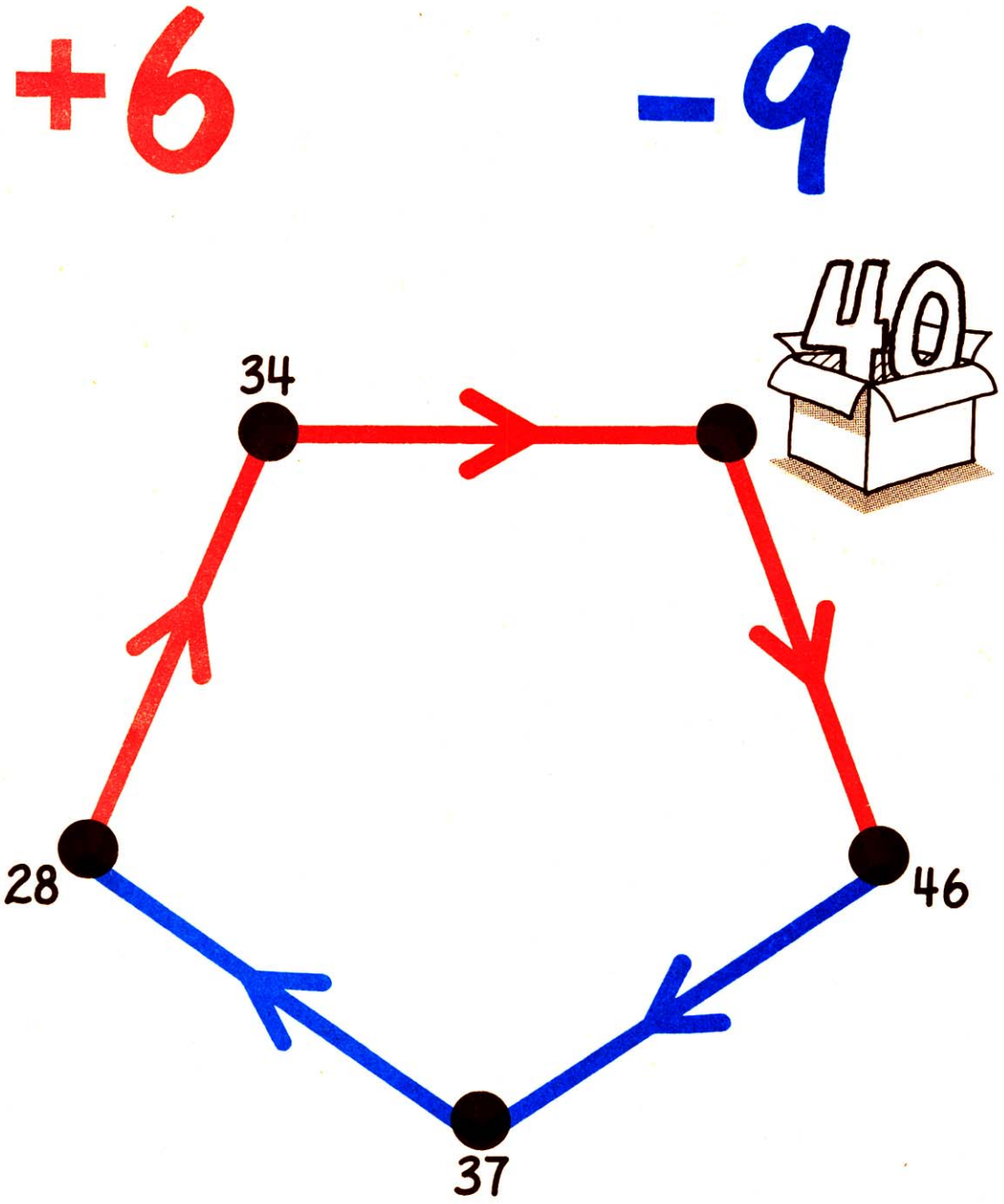
"We can take turns playing this game," the numbers agree.

"If I jump into the box," says 40, "then 46, 52, 58, and 49 play with me."

+6 -9



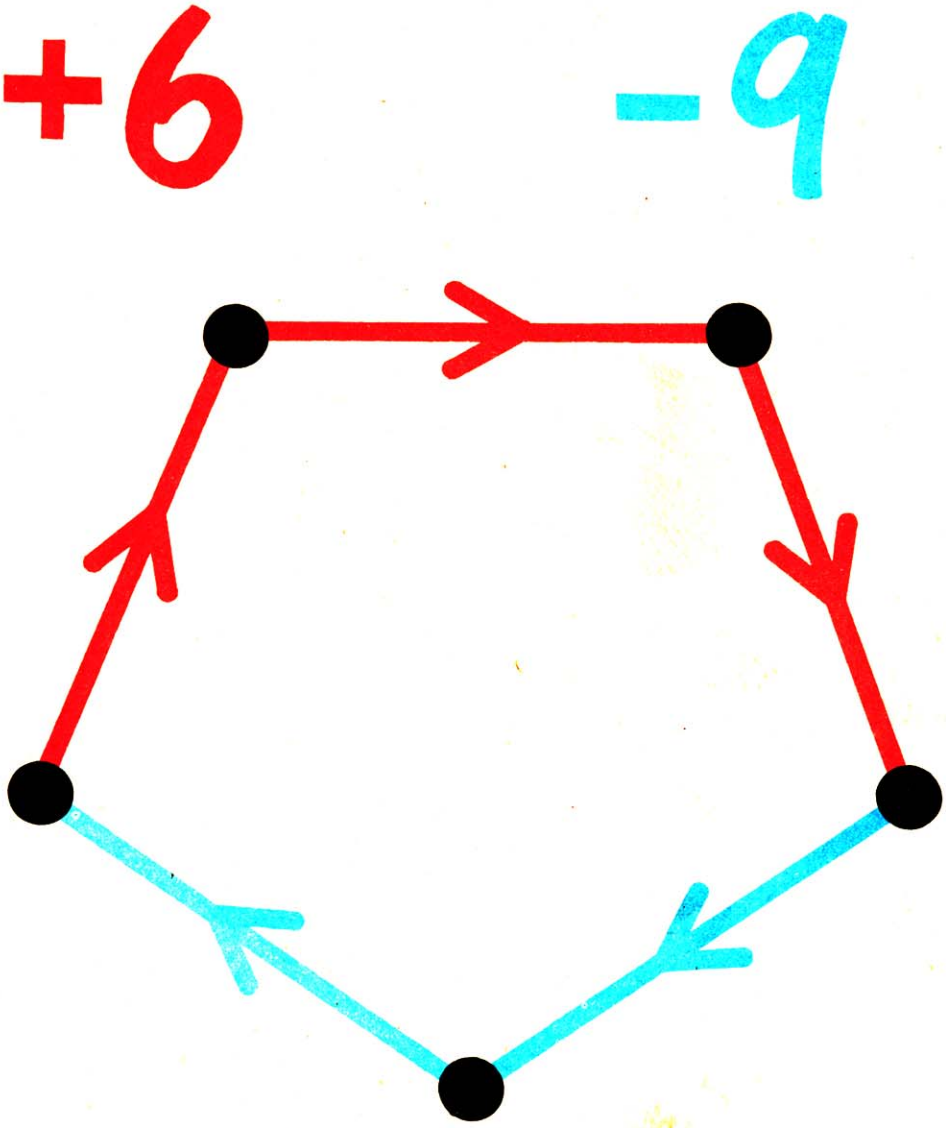
"If I move the box here," says 40, "46, 37, 28, and 34 play with me."



"But I would like to play a game with 43."

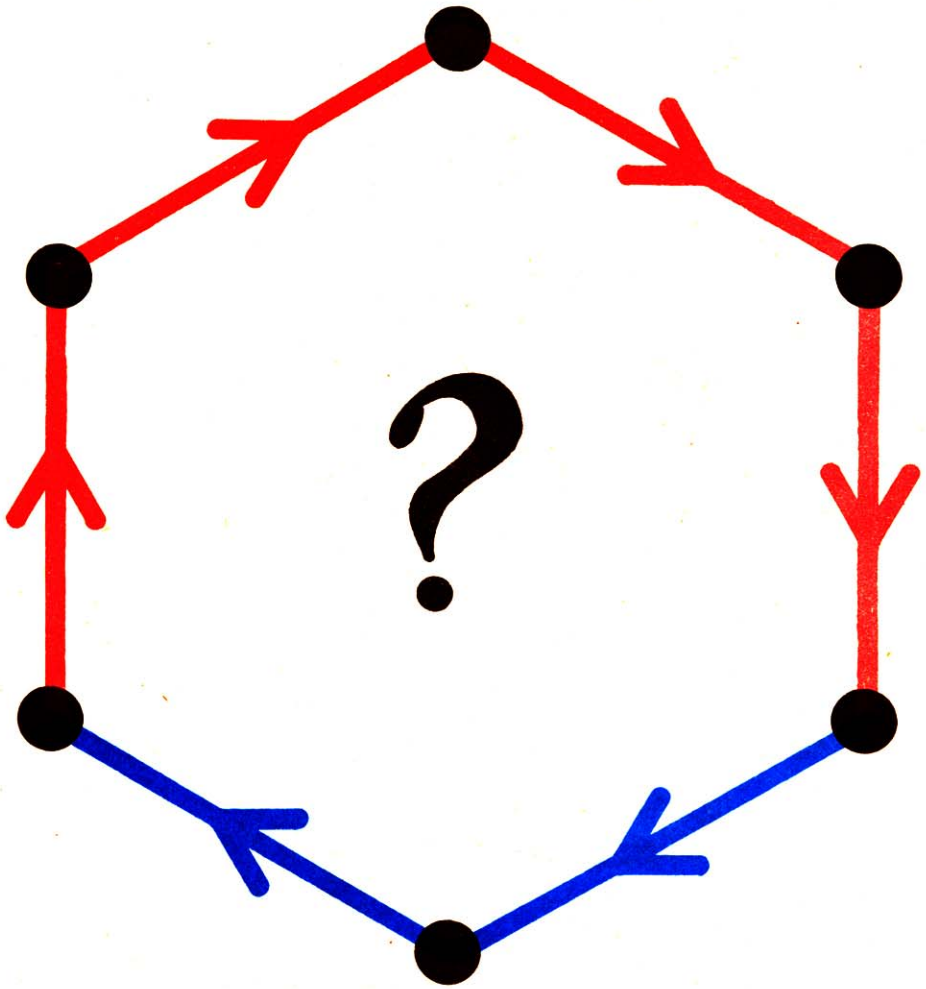
"Can we play this game together?" asks 40.

IF THEY CAN, SHOW THEM IN THE PICTURE BELOW.



During the night, a witch draws a picture on the ground.

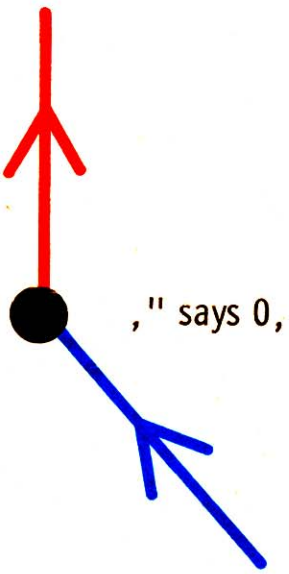
+6 -10



The numbers gather around the picture and wonder if this is a new Halloween game for them to play.

"There are places for six of us in the picture," murmurs 0.

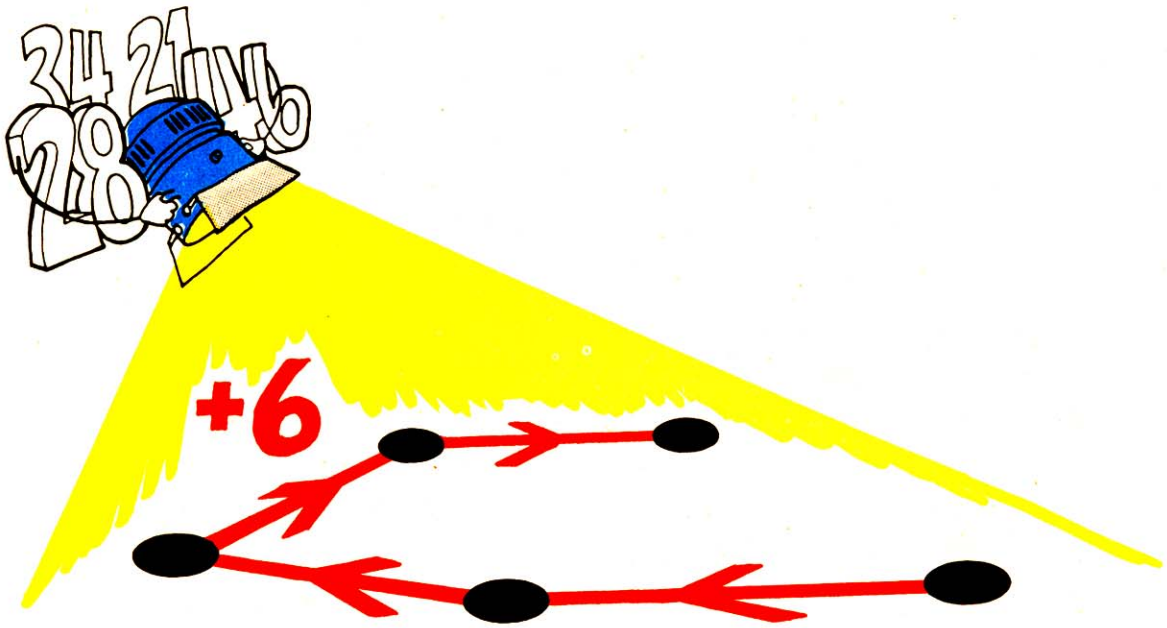
0 looks at the picture and seems worried.

"If I go here  ," says 0,

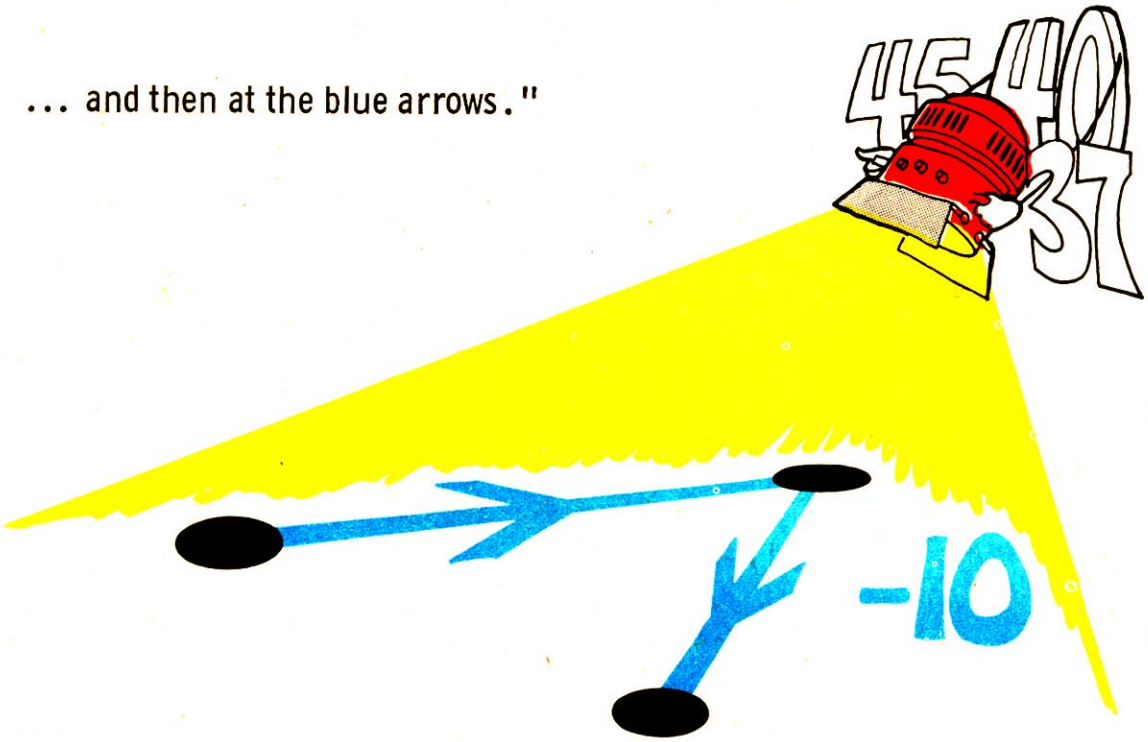
"then who plays with me?"

WHY IS IT STRANGE? WRITE WHAT YOU THINK BELOW.

"There is something wrong with this picture," says 0. "Let's look first at the red arrows...

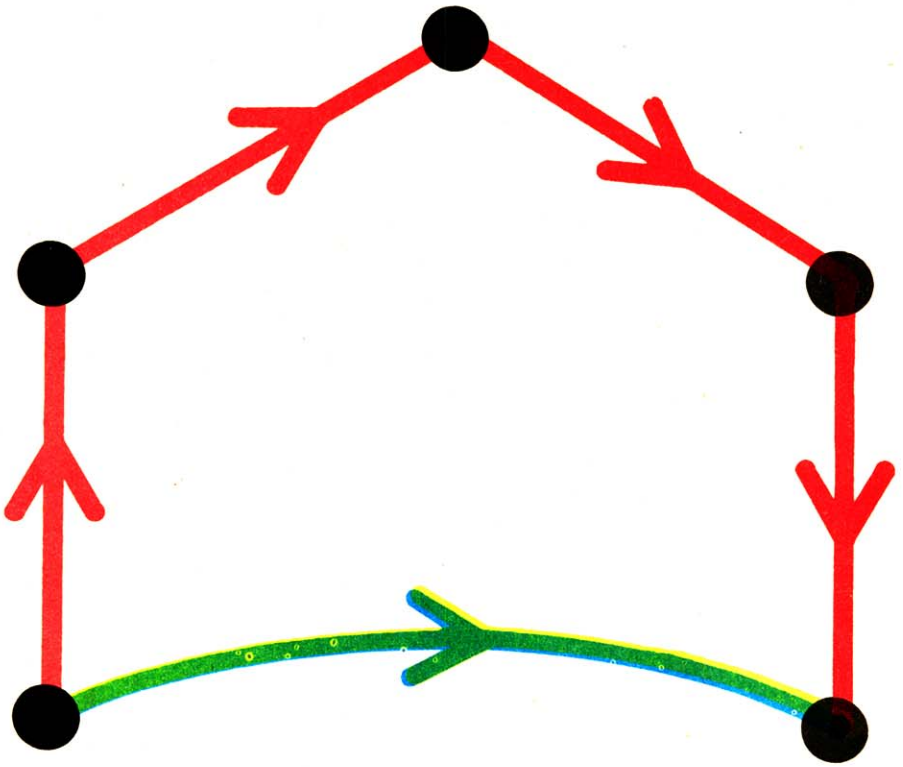


... and then at the blue arrows."

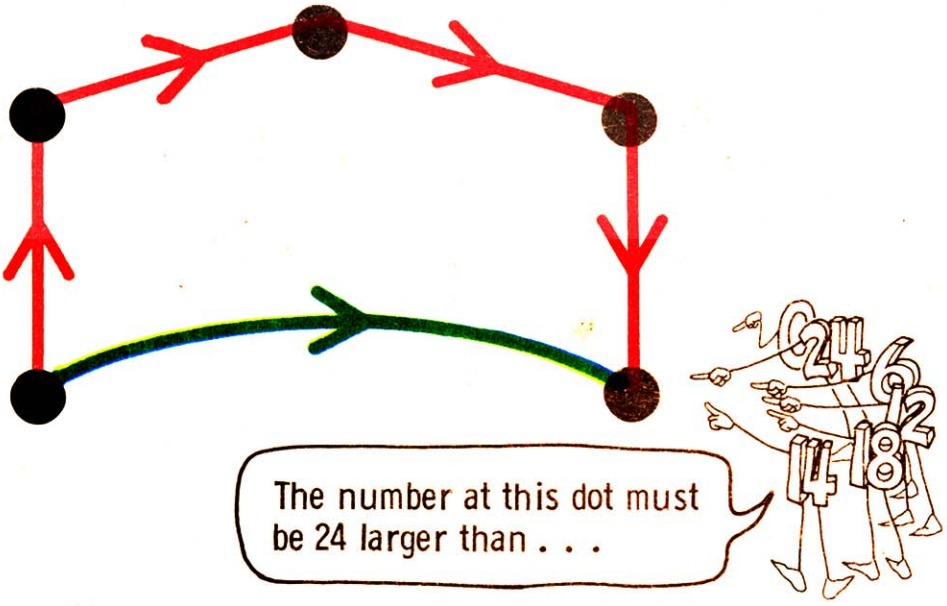


Looking at the red arrows, the numbers decide to add a green arrow.

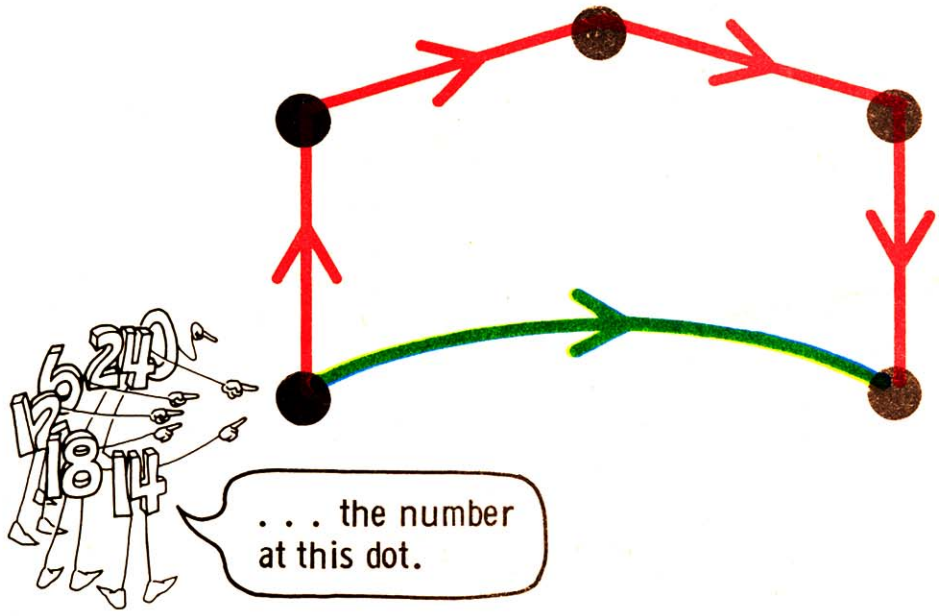
+6



WHAT COULD THE GREEN ARROW BE FOR?

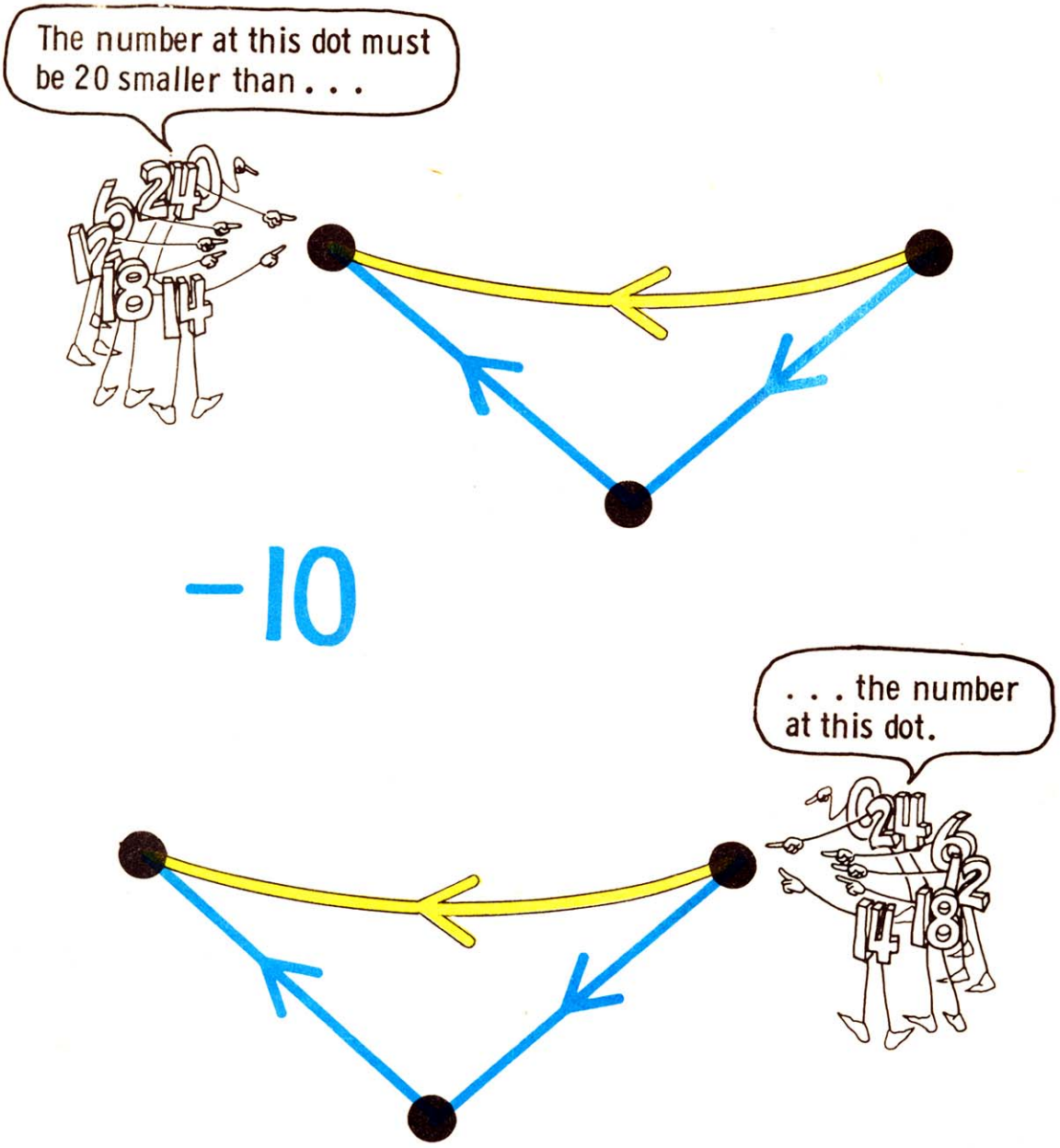


+6



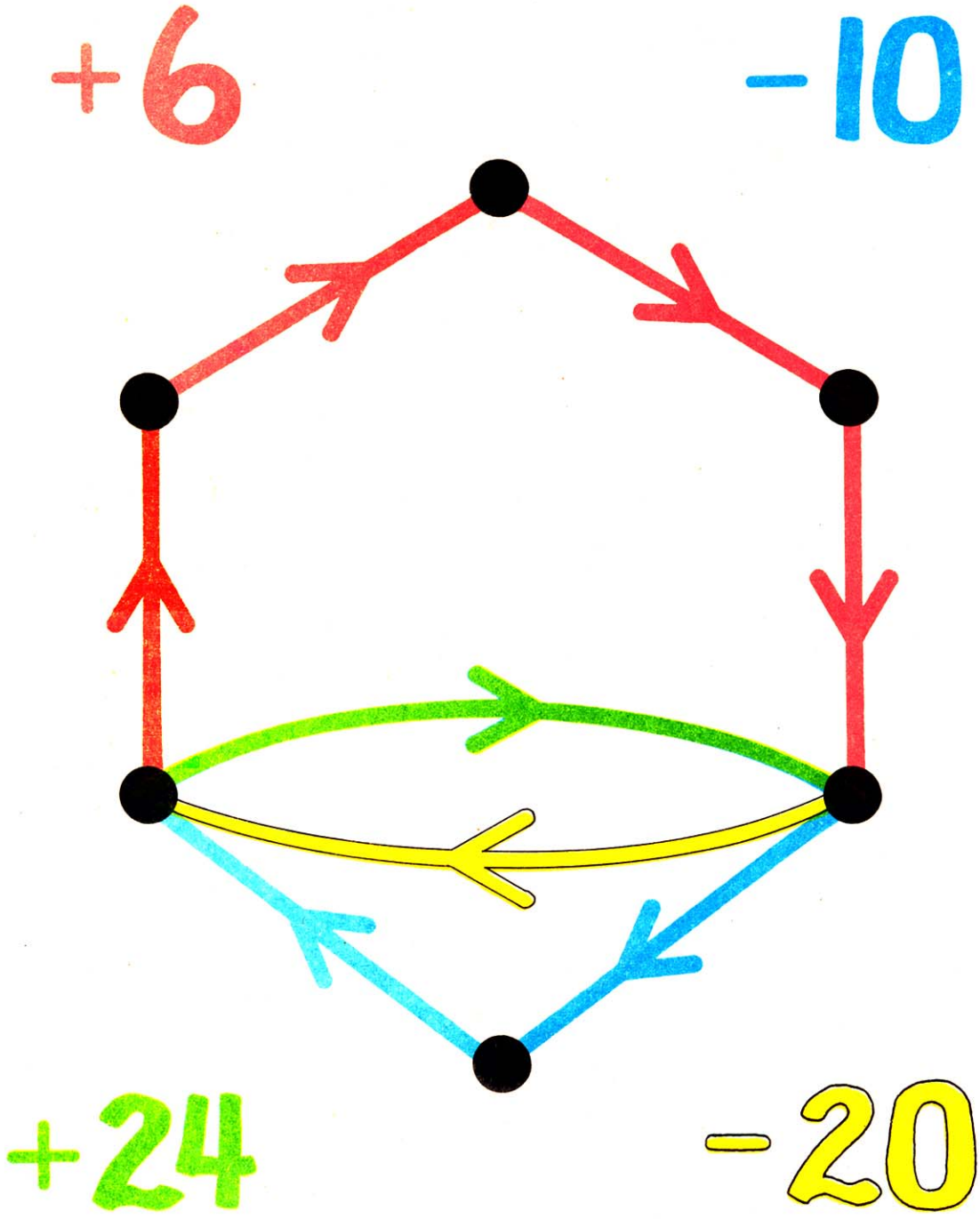
The numbers label the green arrow "+24".

Looking at the blue arrows, the numbers decide to add a yellow arrow.

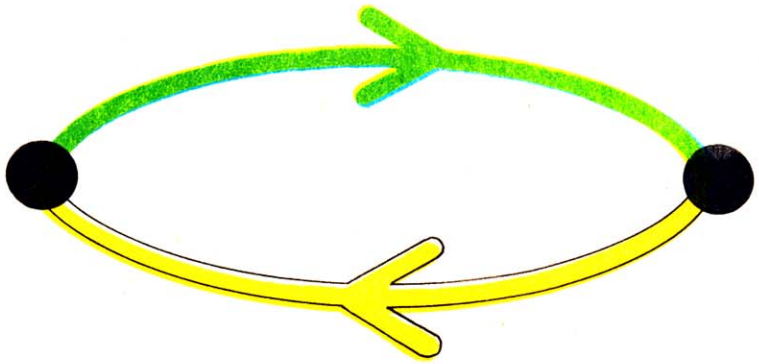


The numbers label the yellow arrow "−20".

The numbers put the pieces of the picture back together.



0 studies this part of the arrow picture.



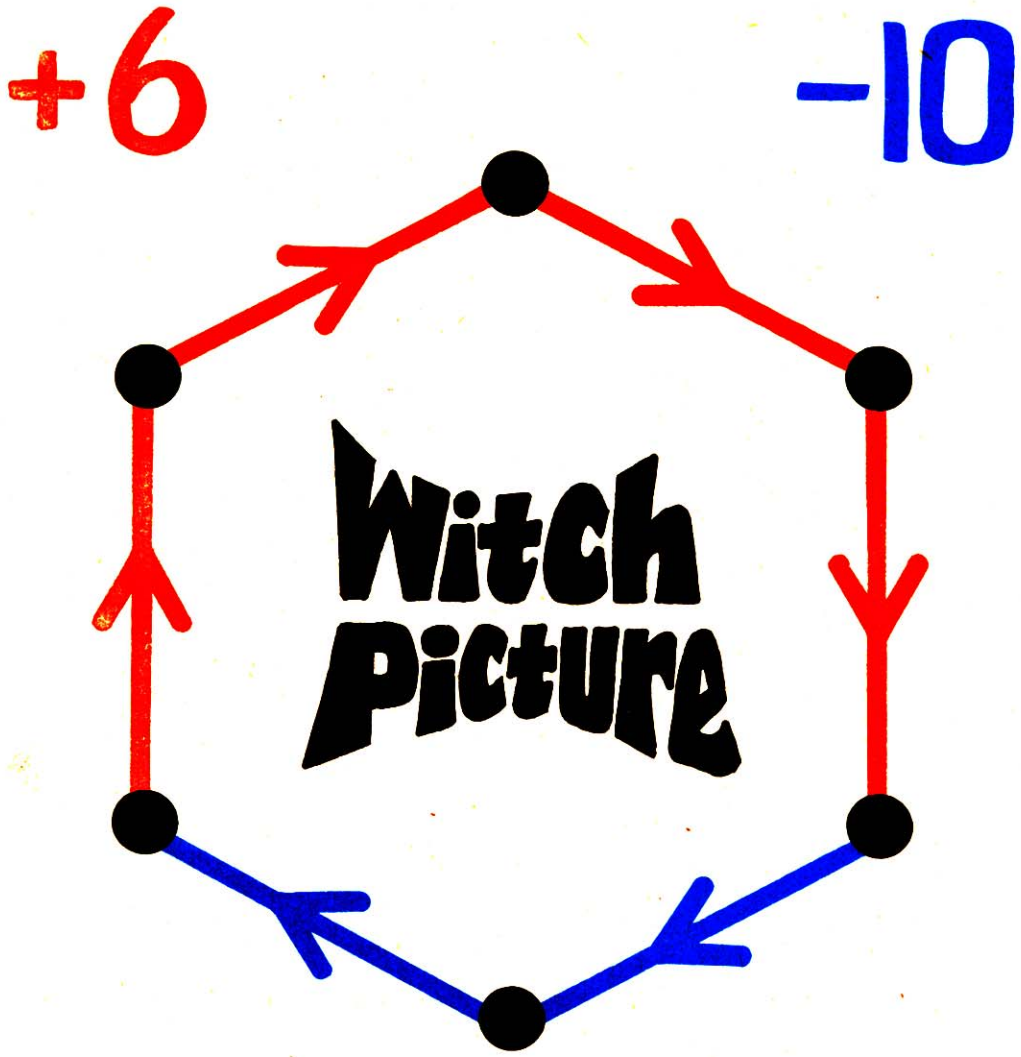
+24 −20

"Look," says 0. "I have a feeling that the witch was teasing us."

USE THIS SPACE TO EXPLAIN WHY.

"Between two of us, there can never be both a +24 arrow and a -20 arrow, no matter which direction they go," says 0.

0 writes in the middle of the picture:



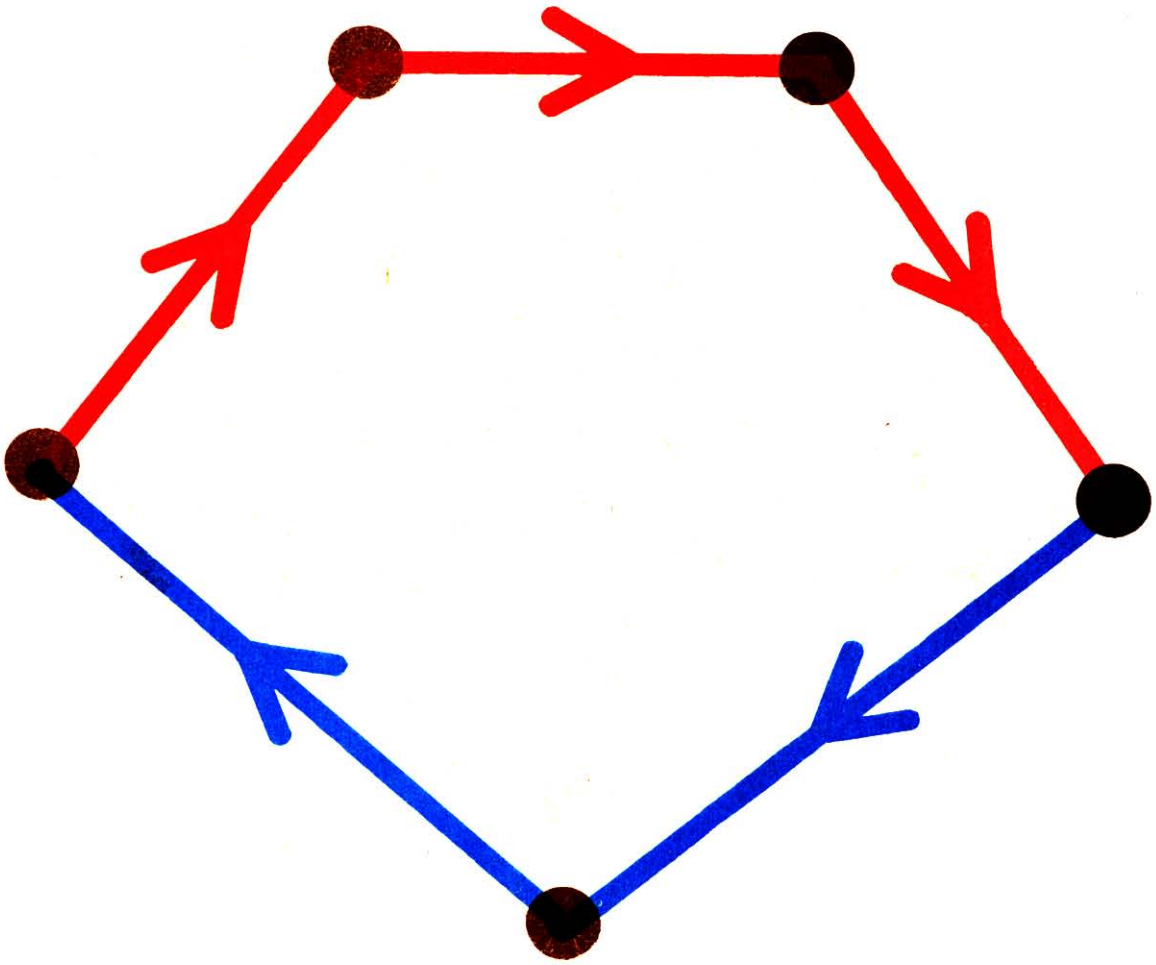
"A picture like this makes no sense," says 0.

The numbers would like to take turns playing in this picture.

WHAT COULD THE BLUE ARROWS BE FOR?

BE CAREFUL NOT TO MAKE A "WITCH" PICTURE.

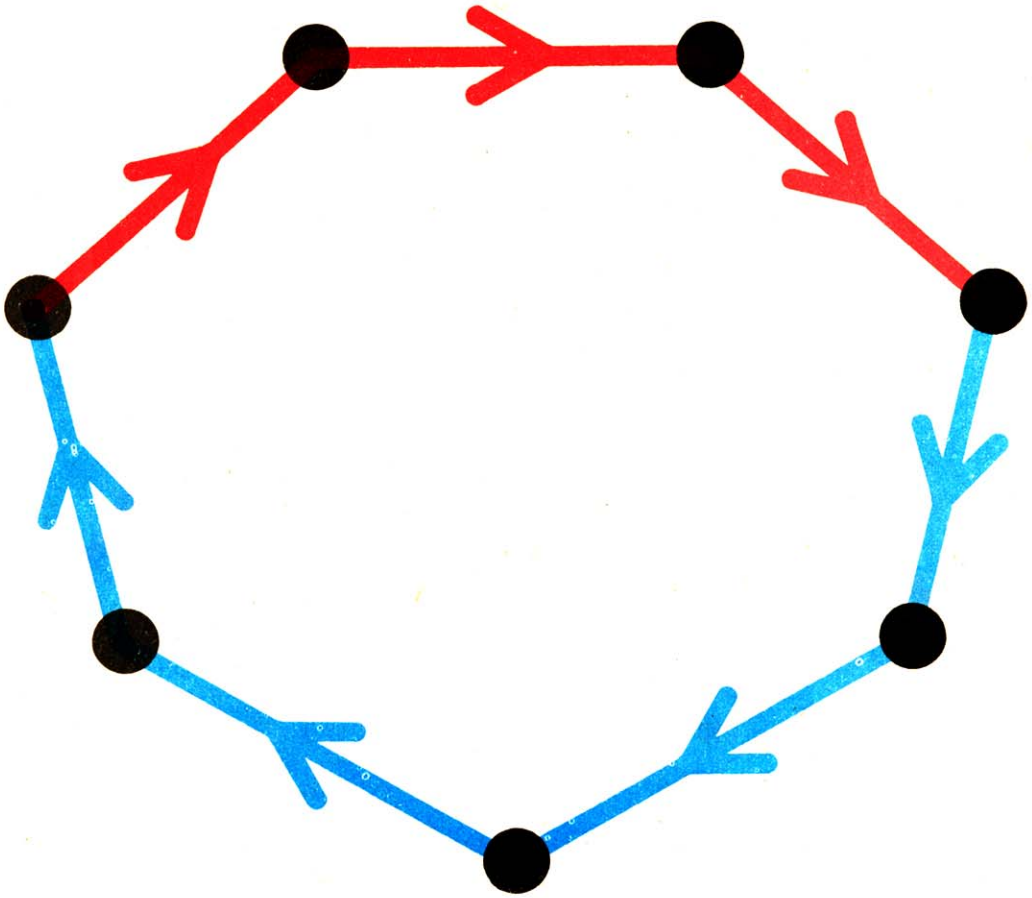
+8



The numbers would like to take turns playing in this picture.

WHAT COULD THE RED ARROWS BE FOR?

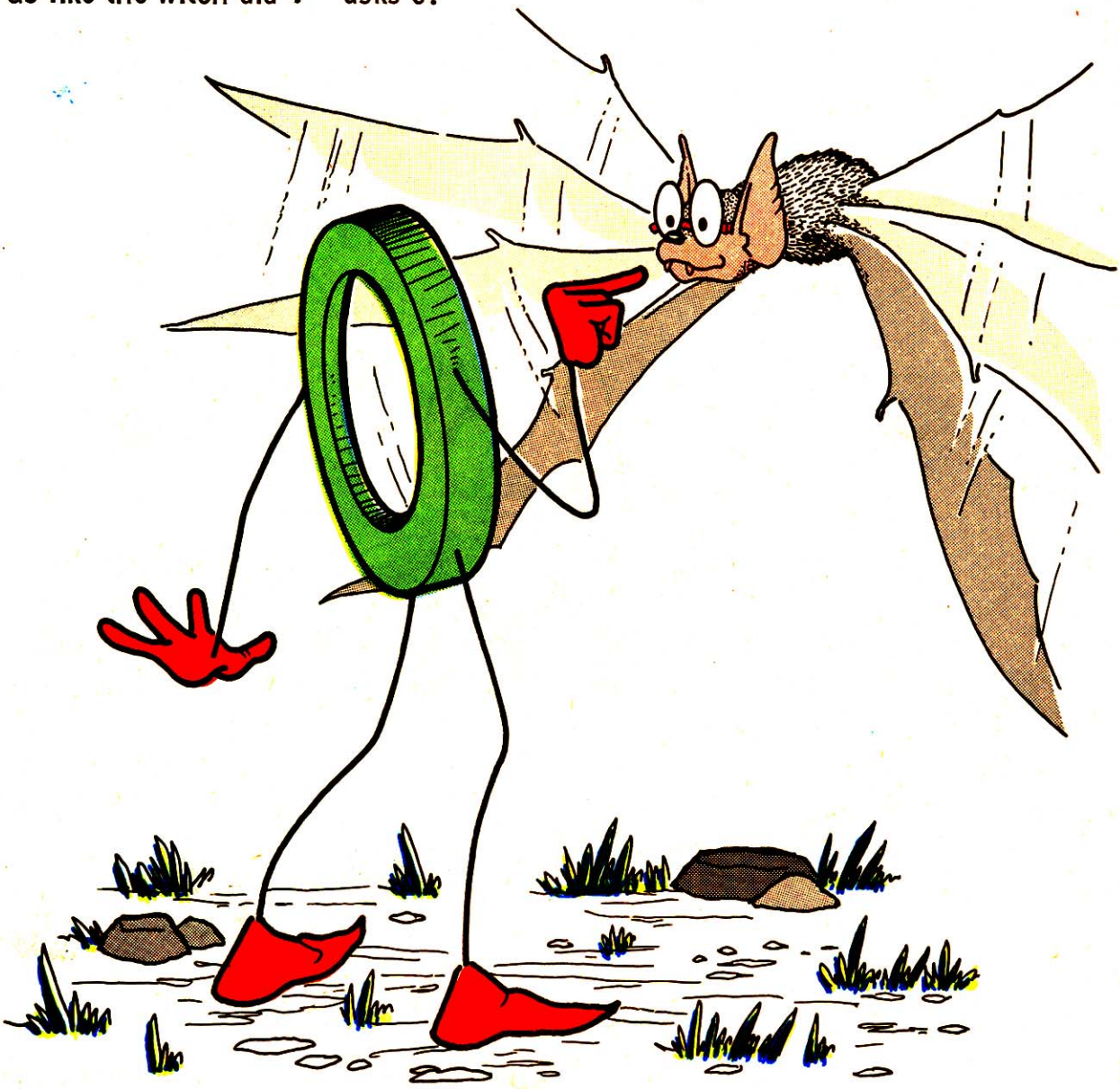
BE CAREFUL NOT TO MAKE A "WITCH" PICTURE.



+3

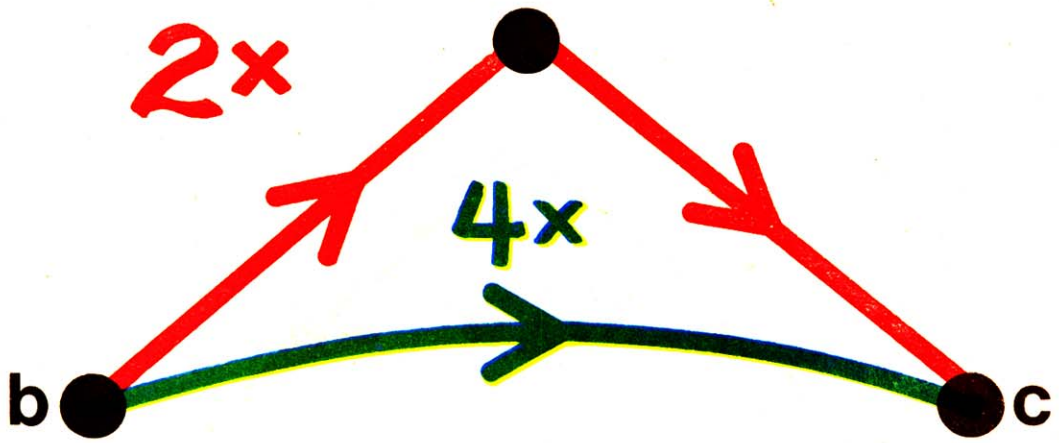
A bat, who has been watching the numbers, drops this picture on the ground.

"Is this a Halloween game that we can take turns playing, or are you teasing us like the witch did ?" asks 0.

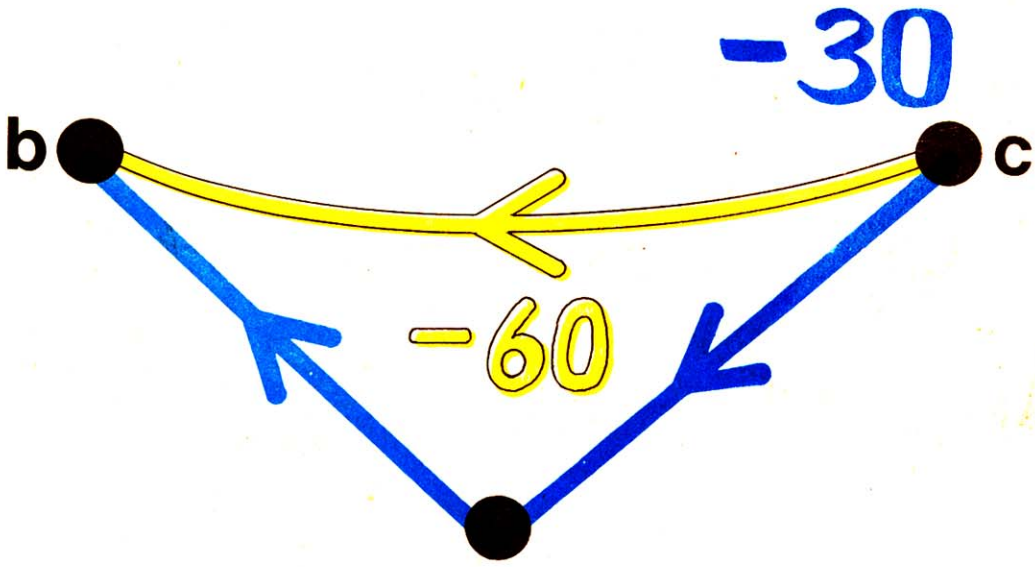


Smiling, the bat replies, "Mine is a riddle: some numbers can play; most cannot."

The numbers are eager to find out who could play this game. They gather around 0. "Let's look first at the red arrows and then at the blue arrows," suggests 0 to the other numbers.

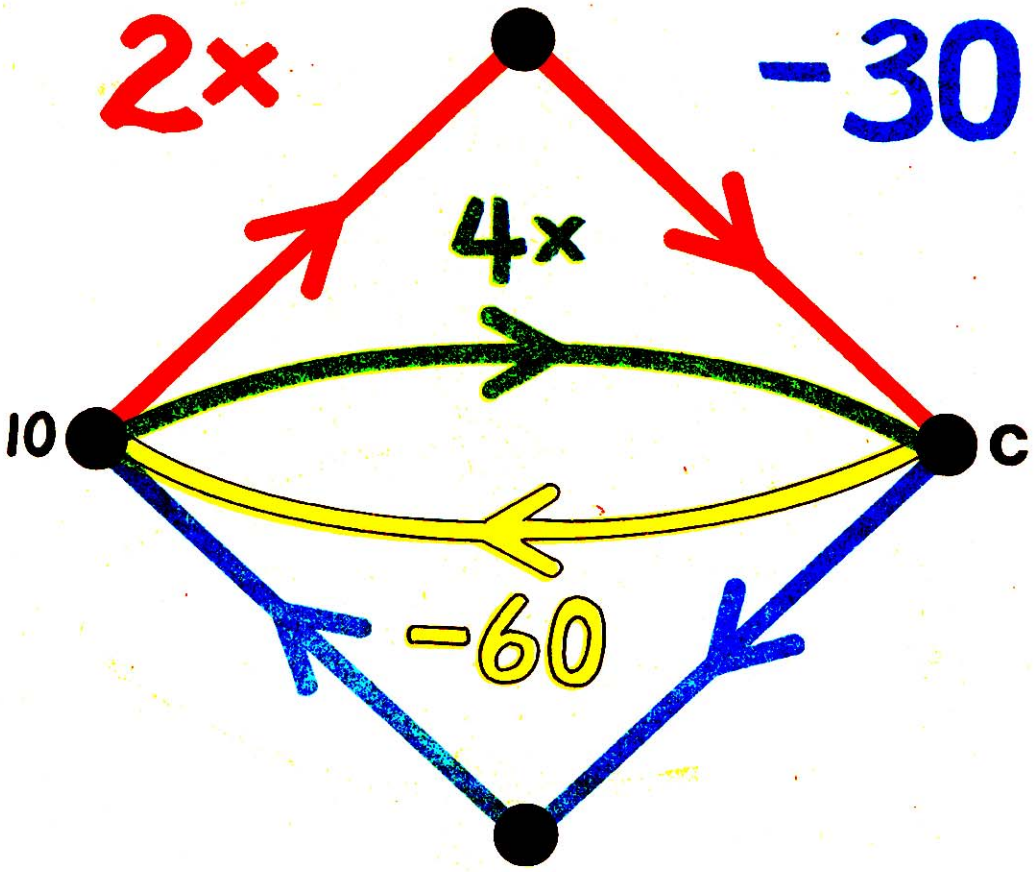


"The number at c must be 4 x the number at b," the numbers conclude.

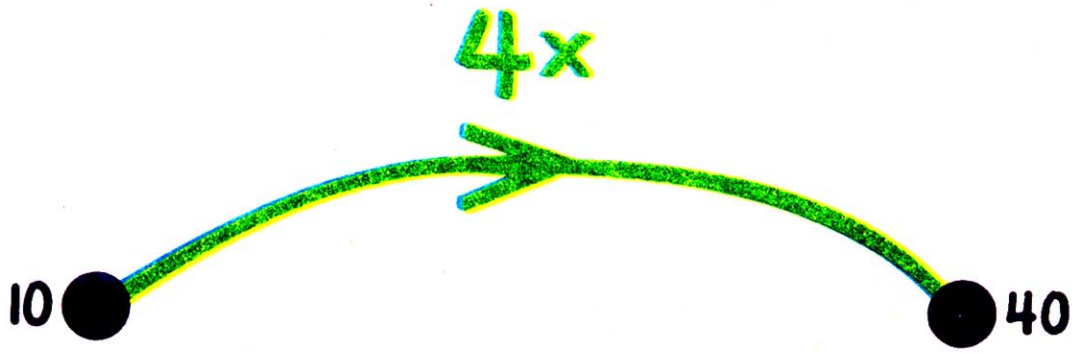


"And the number at c must be 60 larger than the number at b."

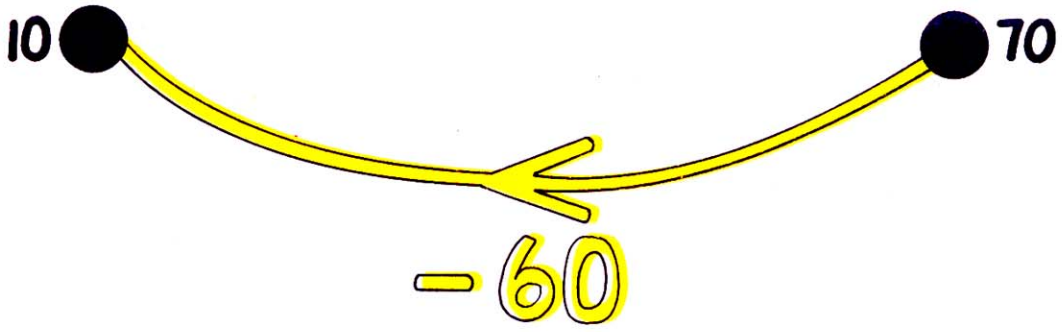
"Maybe I can go here at b," says 10. "Who would play across from me at c?"



"Me," says 40, "because I'm 4x you."

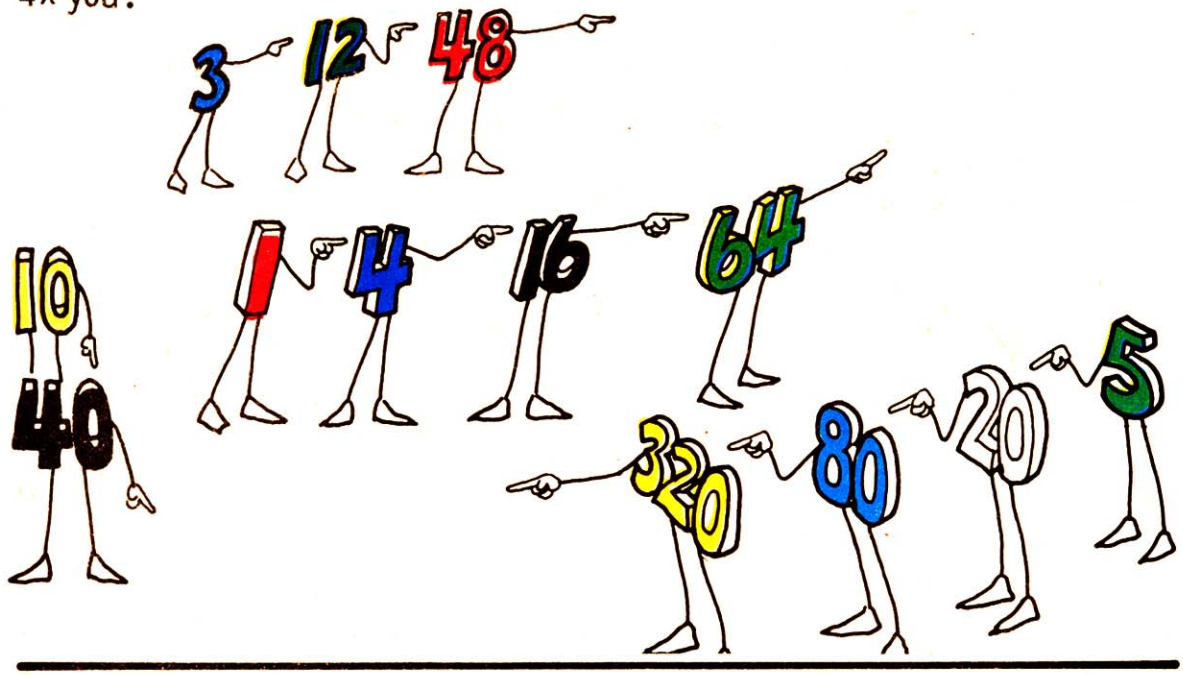


"No! You wouldn't," says 70, "because you're not 60 larger than 10. I am."

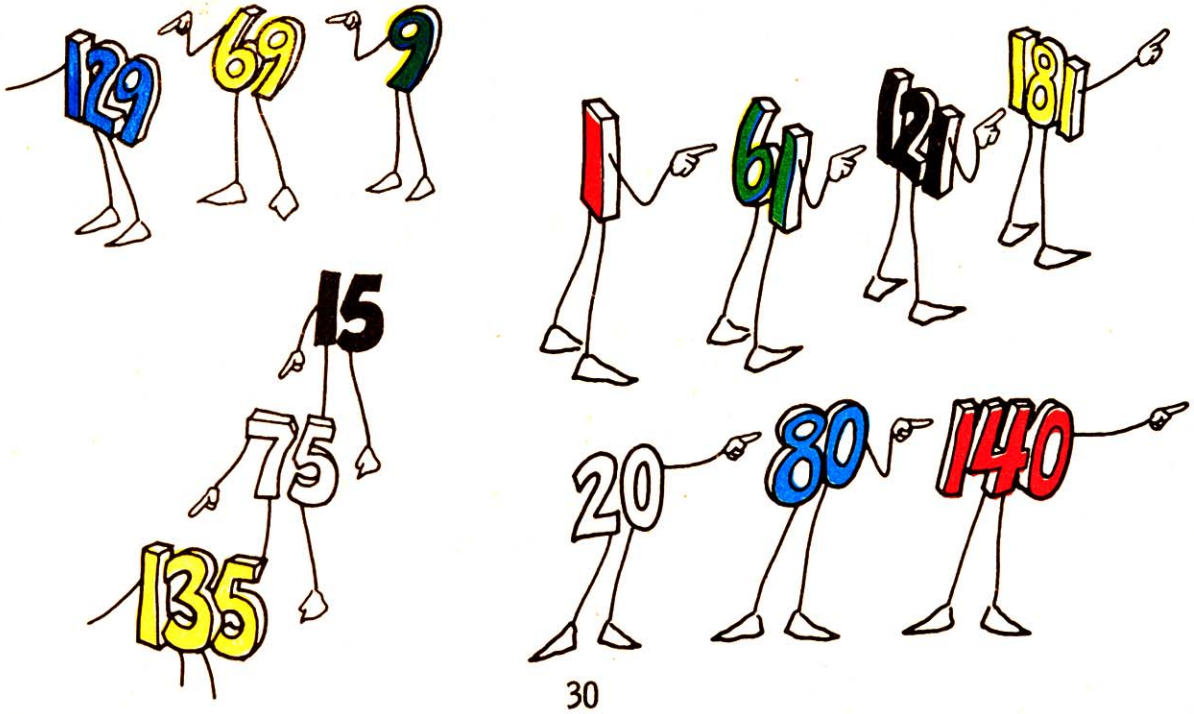


10 admits, "Well, I certainly can't play at b."

0 smiles. "I've got an idea. Each of you point to the number that is 4x you."



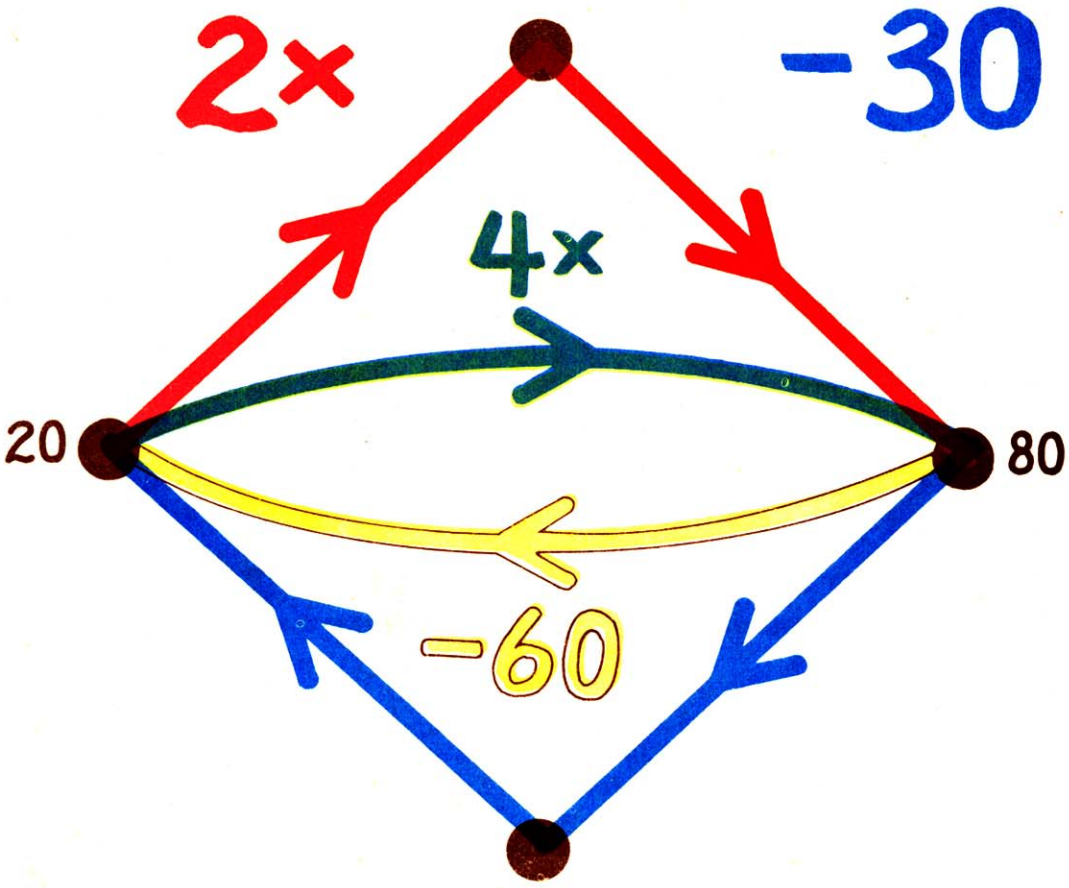
"Now each of you point to the number that is 60 larger than you," 0 says.



0 asks, "Did any of you point to the same number both times?"

"I did! I did!" shouts 20. "I pointed to 80 both times."

"20 and 80, come play at b and c," says 0.



"Who plays this game with us?" asks 20 and 80.

DO YOU KNOW? SHOW THEM IN THE PICTURE ABOVE.

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.

"Halloween Puzzles" comprises three intriguing little numerical mysteries, which are presented to the accompaniment of all the trappings of the season of Halloween. All three puzzles are stated in the language of arrows, and they each require that the reader attempt to identify the numbers involved in the puzzle. This task is tailored to the reader's capabilities by the progressive introduction of a graduated sequence of questions and examples. Some children will be able to solve the puzzles at a very early stage, while others will benefit from reading the development of each puzzle right through to the presentation of the last example.

From an adult point of view, this collection of puzzles is interesting because it contains examples of situations that have an infinity of solutions, no solutions, and exactly one solution, respectively. Thus the children see even at this early stage in their study of mathematics that not all mathematical situations have the traditional unique solution.

Edward Martin