

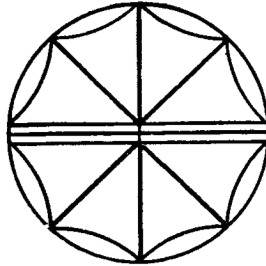
Answers

I. Amusing Problems

1. OBSERVANT CHILDREN

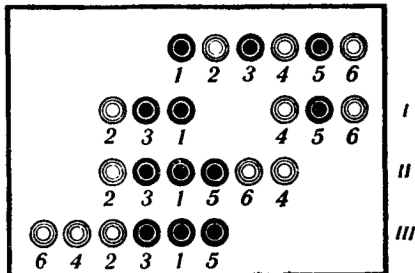
Note the smoke coming out of the locomotive chimney. If the locomotive was standing, its smoke would be going in the wind's direction. If it was moving forward in the absence of a wind, its smoke would be inclined backward. As shown on opposite page 1, the smoke of the moving locomotive is straight up. Therefore, the train is moving at a speed equal to the wind's speed: 20 miles per hour.

2. THE STONE FLOWER



3. MOVING CHECKERS

Number the checkers from left to right, as shown. If the open space is on the left, move checkers 2 and 3 to the left (move I in the picture). In the space now vacant place checkers 5 and 6 (move II). Now move checkers 6 and 4 to the left (move III).



The Moscow Puzzles

4. THREE MOVES

First pile to second; second to third; third to first:

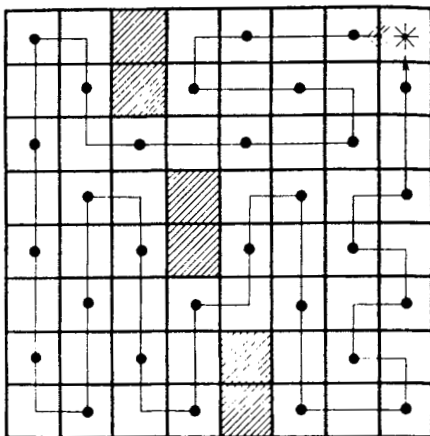
Pile	Initial number	First move	Second move	Third move
First	11	$11 - 7 = 4$	4	$4 + 4 = 8$
Second	7	$7 + 7 = 14$	$14 - 6 = 8$	8
Third	6	6	$6 + 6 = 12$	$12 - 4 = 8$

5. COUNT!

Thirty-five.

6. THE GARDENER'S ROUTE

A possible route is shown in the diagram.



7. FIVE APPLES

Give the fifth girl her apple in the basket.

8. DON'T THINK TOO LONG

Four cats, each near the tail of a cat in an adjacent corner.

9. DOWN AND UP

At the start, 1 inch of the yellow pencil gets smeared with wet paint. As the blue pencil is moved downward, a second inch of the blue pencil's length is smeared. After the next upward movement the second inch of the blue pencil smears a second inch of the yellow pencil.

Each pair of down-up moves of the blue pencil smears 1 more inch of each pencil. Five pairs of moves will smear 5 inches. This, together with the initial inch, makes 6 inches for each pencil.

(Looking at his boots, Leonid Mikhailovich noticed that their entire lengths were muddied where they usually rub each other while he walks.

"How puzzling," he thought. "I didn't walk in any deep mud, yet my boots are muddied up to the knees."

Now you understand the origin of the puzzle.)

10. CROSSING A RIVER

First the boys cross the river. One stays ashore while the other brings the boat to the soldiers and gets out. A soldier gets in the boat and crosses. The boy who has stayed there brings the boat back to the soldiers, then takes the other boy to the other shore. Again a boy brings the boat back, gets out, a second soldier crosses over . . . until all the soldiers have crossed.

11. WOLF, GOAT, AND CABBAGE

A wolf does not eat cabbage, so the crossing can start with the goat.



The man leaves the goat and returns, puts the cabbage in the boat and takes it across. On the other bank, he leaves the cabbage but takes the goat.



He leaves the goat on the first bank and takes the wolf across. He leaves the cabbage with the wolf and rows back alone.

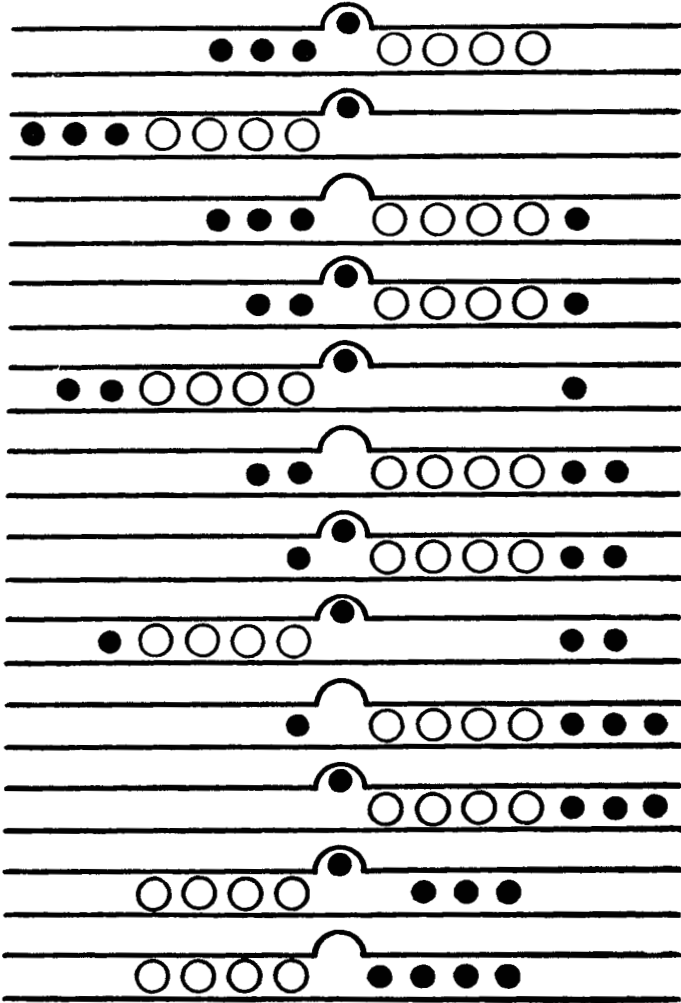


He takes the goat across.



The Moscow Puzzles

12. ROLL THEM OUT

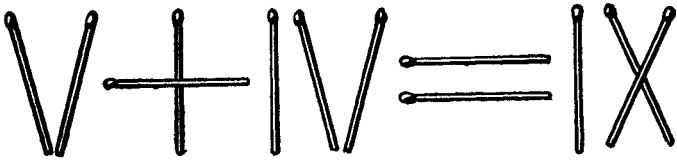
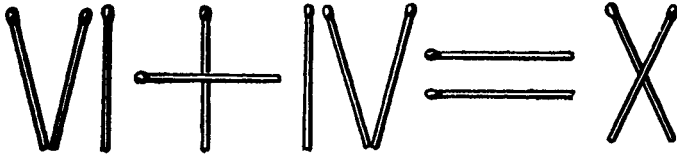


13. REPAIRING A CHAIN

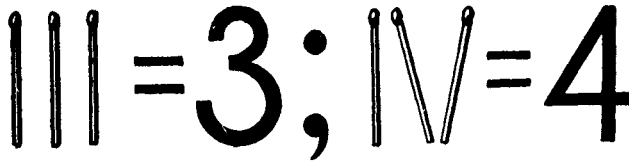
He opens all 3 rings of 1 piece (3 operations). With these he links the other 4 pieces together. Total: 6 operations.

14. CORRECT THE ERROR

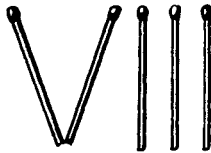
Two solutions are shown:



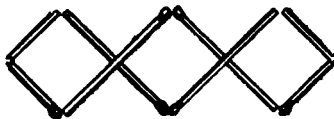
15. FOUR OUT OF THREE (A JOKE)



16. THREE AND 2 IS 8 (ANOTHER JOKE)



17. THREE SQUARES

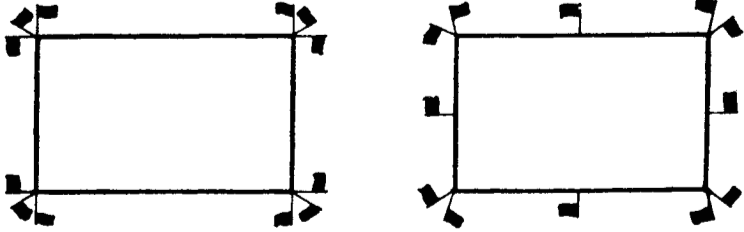


The Moscow Puzzles

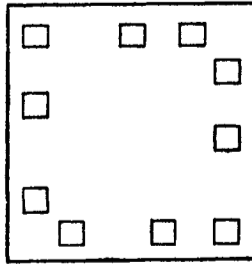
18. HOW MANY ITEMS?

From 36 blanks, 36 items are made. The lead shavings are enough to make 6 blanks, which make 6 more items. But don't stop here. The new shavings are good for 1 more item. Total: 43.

19. ARRANGING FLAGS

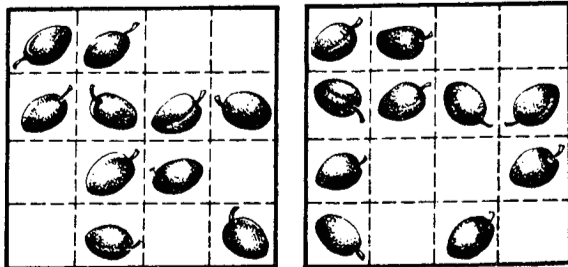


20. TEN CHAIRS



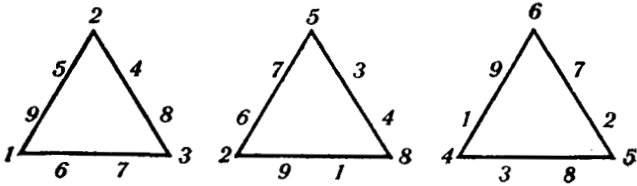
21. KEEP IT EVEN

Two solutions are shown.



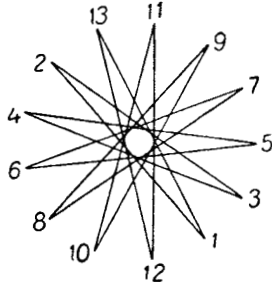
22. A MAGIC TRIANGLE

The triangles show a 17-solution and then two 20-solutions.



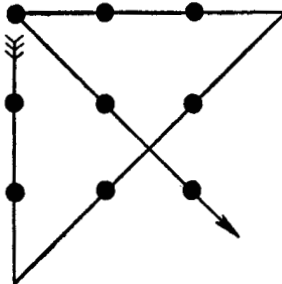
23. GIRLS PLAYING BALL

The diagram shows that all 13 girls play ball when they play by skipping 5. Skipping 6 gives the same order, but in the other direction.



24. FOUR STRAIGHT LINES

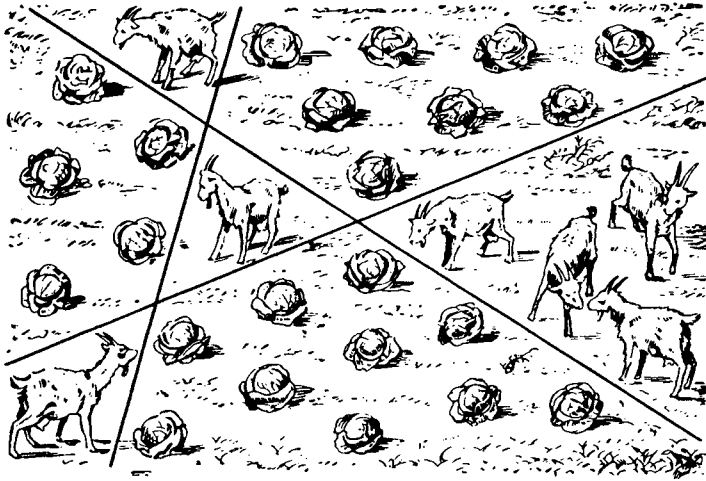
The figure shows one solution.



The Moscow Puzzles

25. GOATS FROM CABBAGE

The picture shows the solution.



26. TWO TRAINS

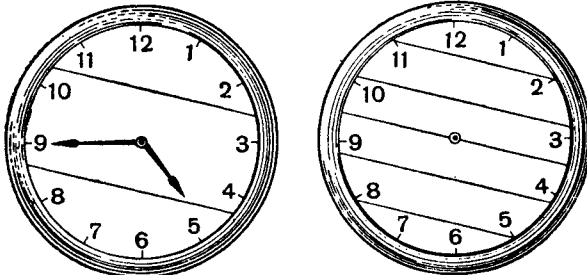
100 miles (60 + 40).

27. THE TIDE COMES IN (A JOKE)

When a problem deals with a physical phenomenon, the phenomenon should be considered as well as the numbers given. As the water rises, so does the rope ladder. The water will never cover the rung.

28. A WATCH FACE

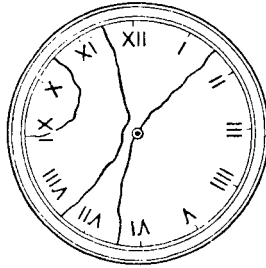
The sum of the numbers on the watch face is 78. If the two lines cross, there must be 4 equal parts, but 78 is not divisible by 4. Then the lines do not cross, giving 3 parts with sums of 26



each. Once you see the pairs on the face that add to 13 ($12 + 1$, $11 + 2$, and so on), the answer shown to the first question is easy to find. And the answer shown to the second question immediately follows.

29. A BROKEN CLOCK FACE

There are three adjacent Xs in IX, X, and XI, and two of them must be in one part. The crack must split IX, not XI, so that the numbers add to 80.



30. THE WONDROUS CLOCK

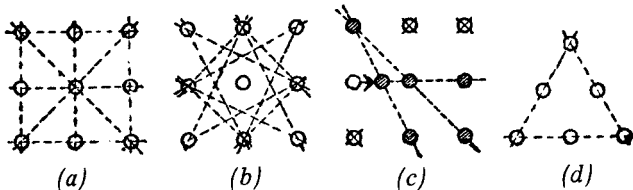
As the problem says, the apprentice mixed up the clock hands so that the minute hand was short and the hour hand long.

The first time the apprentice returned to the client was about 2 hours and 10 minutes after he had set the clock at six. The long hand moved only from 12 to a little past 2. The short hand made 2 full circles and an additional 10 minutes. Thus the clock showed the correct time.

Next day around 7:05 a.m. he came a second time, 13 hours and 5 minutes after he had set the clock for six. The long hand, acting as hour hand, covered 13 hours to reach 1. The short hand made 13 full circles and 5 minutes, reaching 7. So the clock showed the correct time again.

31. THREE IN A ROW

20: 8 rows of 3 buttons (see *a*) and 12 rows of 2 buttons (*b*).

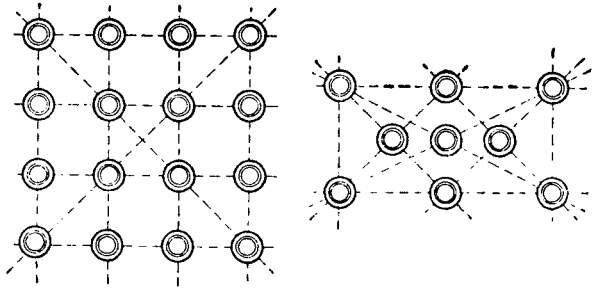


In *c*, the x-ed-out buttons are removed. The dotted-line circle moves slightly to the right, as the arrow shows.

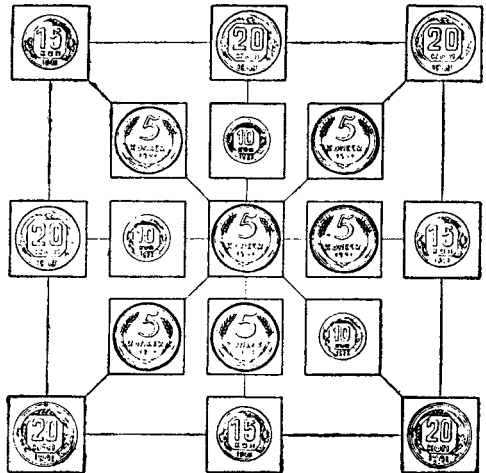
A second arrangement of 6 buttons in 3 rows is shown in *d*.

The Moscow Puzzles

32. TEN ROWS

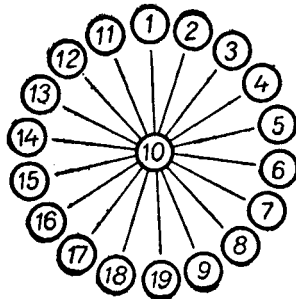


33. PATTERN OF COINS



34. FROM 1 THROUGH 19

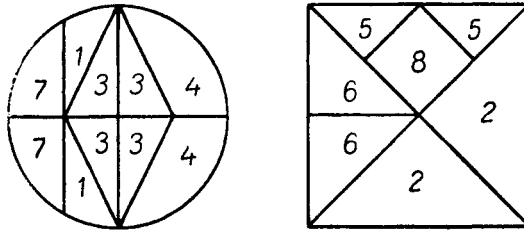
There are nine pairs of numbers that total 20 (1 + 19, 2 + 18, and so on). The remaining number, 10, goes in the center to make 30.



35. SPEEDILY YET CAUTIOUSLY

- (A) Neither.
- (B) A pound of metal is always worth more than half a pound of the same metal.
- (C) Six strokes took 30 seconds, therefore 12 strokes will take 60 seconds – such is the usual train of thought. But when the clock struck six, there were only 5 intervals between strokes, and each interval was $30 \div 5 = 6$ seconds. Between the first and twelfth strokes there will be 11 intervals of 6 seconds each; therefore, 12 strokes will take 66 seconds.
- (D) There is always a plane that contains any given 3 points.

36. A CRAYFISH FULL OF FIGURES



37. THE PRICE OF A BOOK

\$2.

38. THE RESTLESS FLY

The problem is simpler than it looks. The cyclists took 6 hours to meet. The fly traveled $6 \times 30 = 180$ miles.

39. UPSIDE-DOWN YEAR

1961.

40. TWO JOKES

- (A) \$4. She had read 86 upside down.
- (B) Turn 9 upside down and exchange it with the 8. Both columns will add to 18.

The Moscow Puzzles

41. HOW OLD AM I?

The difference in age is still 23 years, so I must be 23 if my father is twice as old.

42. TELL “AT A GLANCE”

The columns don't look like they have the same sums, but look closer: comparing digits, nine 1s match one 9; comparing tens, eight 2s match two 8s, and so on. Check by adding – the sums are equal.