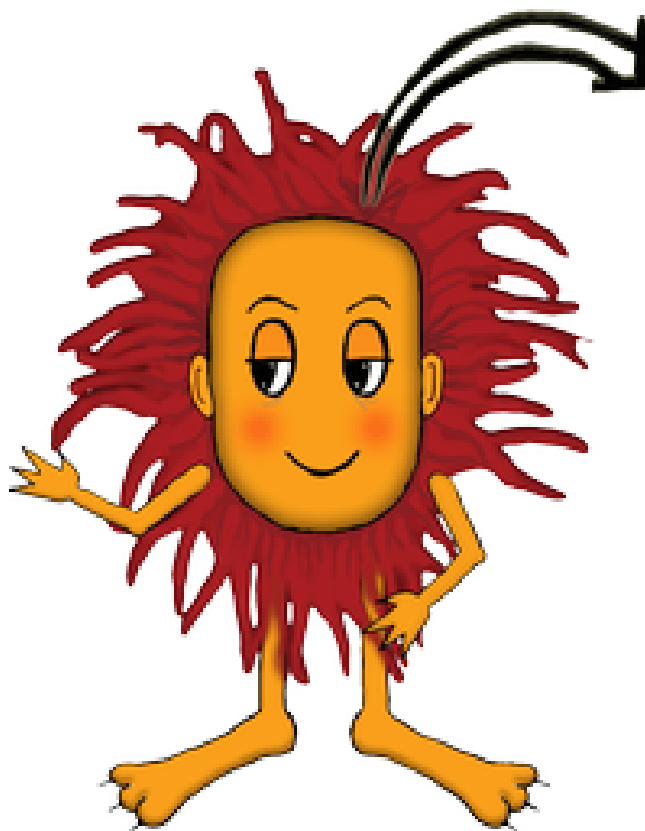


Velika logična pošast



Enačbe v naravnih številih

Velike črke predstavljajo različne kroglice.
Poiskati moramo čim manjša naravna števila,
ki izpolnjujejo enačbo.
Število kroglic vsake vrste mora biti na levi in desni strani enako.

Enačba je zapisana v treh oblikah.

Če enačba nima rešitev v množici naravnih števil, ugotovi, zakaj je tako.

1.

$$x(6A) = y(3A)$$

$$\square(6A) = \square(3A)$$

$$xA_6 = yA_3$$

2.

$$x(A) = y(30 A)$$

$$\square(A) = \square(30 A)$$

$$xA = yA_{30}$$

3.

$$x(4 A) = y(5 A)$$

$$\square(4 A) = \square(5 A)$$

$$xA_4 = yA_5$$

4.

$$x(7 A) = y(9 A)$$

$$\square(7 A) = \square(9 A)$$

$$xA_7 = yA_9$$

5.

$$x(12 A) = y(9 A)$$

$$\square(12 A) = \square(9 A)$$

$$xA_{12} = yA_9$$

6.

$$x(A) + y(A + 3 B) = z(A + 4 B)$$

$$\square(A) + \square(A + 3 B) = \square(A + 4 B)$$

$$xA + yAB_3 = zAB_4$$

7.

$$x(A + 3 B) + y(2 A) = z(2 A + 2 B)$$

$$\square(A + 3 B) + \square(2 A) = \square(2 A + 2 B)$$

$$xAB_3 + yA_2 = zA_2B_2$$

8.

$$x(3 A + 4 B) + y(2 A) = z(2 A + 3 B)$$

$$\square(3 A + 4 B) + \square(2 A) = \square(2 A + 3 B)$$

$$xA_3B_4 + yA_2 = zA_2B_3$$

9.

$$x(3 A + 2 B) + y(2 A) = z(5 A + 3 B)$$

$$\square(3 A + 2 B) + \square(2 A) = \square(5 A + 3 B)$$

$$xA_3B_2 + yA_2 = zA_5B_3$$

10.

$$x(2 A + 4 B) + y(2 A) = z(2 A + 3 B)$$

$$\square(2 A + 4 B) + \square(2 A) = \square(2 A + 3 B)$$

$$xA_2B_4 + yA_2 = zA_2B_3$$

11.

$$x(3 A + 7 B) + y(2 A) = z(2 A + 3 B)$$

$$\square(3 A + 7 B) + \square(2 A) = \square(2 A + 3 B)$$

$$xA_3B_7 + yA_2 = zA_2B_3$$

12.

$$x(3 A + 2 B) + y(B + 6 C) = z(2 A + 2 B + 4 C)$$

$$\square(3 A + 2 B) + \square(B + 6 C) = \square(2 A + 2 B + 4 C)$$

$$xA_3B_2 + yBC_6 = zA_2B_2C_4$$

13.

$$\begin{aligned}x(3A) + y(3B + 2C) &= z(2A + 3B + 2C) \\ \square(3A) + \square(3B + 2C) &= \square(2A + 3B + 2C) \\ xA_3 + yB_3C_2 &= zA_2B_3C_2\end{aligned}$$

14.

$$\begin{aligned}x(7A + 6B + 2C) + y(2C) &= z(A + 2C) + w(2B + C) \\ \square(7A + 6B + 2C) + \square(2C) &= \square(A + 2C) + \square(2B + C) \\ xA_7B_6C_2 + yC_2 &= zA_1C_2 + wB_2C\end{aligned}$$

15.

$$\begin{aligned}x(2A + 2B + 4C) + y(2B + D + 2E) &= z(2A + B + 3C) + w(2C + D) + s(2B + E) \\ \square(2A + 2B + 4C) + \square(2B + D + 2E) &= \square(2A + B + 3C) + \square(2C + D) + \square(2B + E) \\ xA_2B_2C_4 + yDE_2B_2 &= zA_2BC_3 + wDC_2 + sB_2E\end{aligned}$$

16.

$$\begin{aligned}x(A + 3B) + y(4C) + z(2D) &= w(A + C) + s(B + D) \\ \square(A + 3B) + \square(4C) + \square(2D) &= \square(A + C) + \square(B + D) \\ xAB_3 + yC_4 + zD_2 &= wAC + sDB\end{aligned}$$

17.

$$\begin{aligned}x(4A) + y(3B) &= z(A + 2B) \\ \square(4A) + \square(3B) &= \square(A + 2B) \\ xA_4 + yB_3 &= zAB_2\end{aligned}$$

18.

$$\begin{aligned}x(4A) + y(3B) &= z(A + 4B) \\ \square(4A) + \square(3B) &= \square(A + 4B) \\ xA_4 + yB_3 &= zAB_4\end{aligned}$$

19.

$$\begin{aligned}x(A + 2B) + y(2C) &= z(2A + 3C) + w(B + 2C) \\ \square(A + 2B) + \square(2C) &= \square(2A + 3C) + \square(B + 2C) \\ xAB_2 + yC_2 &= zA_2C_3 + wBC_2\end{aligned}$$

20.

$$\begin{aligned}x(A + B + 4C) + y(10C + 4D) &= z(3A + 4C + D) + w(2B + 7C) \\ \square(A + B + 4C) + \square(10C + 4D) &= \square(3A + 4C + D) + \square(2B + 7C) \\ xABC_4 + yD_4C_{10} &= zA_3DC_4 + wB_2C_7\end{aligned}$$

21.

$$\begin{aligned}x(6A + 5B + C) + y(4C + D) + z(E) &= w(24A + 20B + D) + s(C + E) \\ \square(6A + 5B + C) + \square(4C + D) + \square(E) &= \square(24A + 20B + D) + \square(C + E) \\ xA_6B_5C + yDC_4 + zE &= wA_{24}B_{20}D + sEC\end{aligned}$$

22.

$$\begin{aligned}x(2A + 3B) + y(C + D) &= z(A + 3C + 6D) + w(B + 2C) \\ \square(2A + 3B) + \square(C + D) &= \square(A + 3C + 6D) + \square(B + 2C) \\ xA_2B_3 + yCD &= zC_3AD_6 + wC_2B\end{aligned}$$

23.

$$\begin{aligned}x(A + B) + y(C + 3D) &= z(3A + C) + w(B + C + 4D) \\ \square(A + B) + \square(C + 3D) &= \square(3A + C) + \square(B + C + 4D) \\ xAB + yCD_3 &= zCA_3 + wCD_4B\end{aligned}$$

24.

$$\begin{aligned}x(A + 2B) + y(2C + D) &= z(A) + w(2D) + s(B + C) \\ \square(A + 2B) + \square(2C + D) &= \square(A) + \square(2D) + \square(B + C) \\ xAB_2 + yC_2D &= zA + wD_2 + sCB\end{aligned}$$

25.

$$\begin{aligned}x(A + 2B) + y(2C + D) &= z(A) + w(3D) + s(B + C) \\ \square(A + 2B) + \square(2C + D) &= \square(A) + \square(3D) + \square(B + C) \\ xAB_2 + yC_2D &= zA + wD_3 + sCB\end{aligned}$$

26.

$$\begin{aligned}x(A + 2B) + y(2C + D) &= z(A) + w(3D) + s(B + 2C) \\ \square(A + 2B) + \square(2C + D) &= \square(A) + \square(3D) + \square(B + 2C) \\ xAB_2 + yC_2D &= zA + wD_3 + sC_2B\end{aligned}$$

27.

$$\begin{aligned}x(2A + B + 3C) + y(B) + z(2D) &= w(A + B + D) + s(B + C) \\ \square(2A + B + 3C) + \square(B) + \square(2D) &= \square(A + B + D) + \square(B + C) \\ xA_2BC_3 + yB + zD_2 &= wABD + sBC\end{aligned}$$

28.

$$\begin{aligned}x(A + 3B) + y(2C) &= z(2A) + w(2B + C) \\ \square(A + 3B) + \square(2C) &= \square(2A) + \square(2B + C) \\ xAB_3 + yC_2 &= zA_2 + wB_2C\end{aligned}$$

29.

$$\begin{aligned}x(6A + 6B) + y(2C) &= z(A + 2C) + w(2B + C) \\ \square(6A + 6B) + \square(2C) &= \square(A + 2C) + \square(2B + C) \\ xA_6B_6 + yC_2 &= zAC_2 + wB_2C\end{aligned}$$

30.

$$\begin{aligned}x(A) + y(A + 30B) &= z(A + 2B) \\ \square(A) + \square(A + 30B) &= \square(A + 2B) \\ xA + yAB_{30} &= zAB_2\end{aligned}$$

Rešitve:

1. {1, 2}
2. {30, 1}
3. {5, 4}
4. {9, 7}
5. {3, 4}
6. {-4, -3}
7. {2, 2, 3}
8. {-1, 8}
9. {1, 4}
10. {3, 1, 4}
11. {6, 5, 14}
- 12.
- 13.
14. {2, 15, 14, 6}
15. {2, 1, 2, 1, 2}
16. {1, 6, 4, 12}

17. {3, 8, 12}
18. {3, 16, 12}
19. {4, 11, 2, 8}
20. {12, 1, 4, 6}
21. {4, 1, 8, 1, 8}
22. {1, 12, 2, 3}
23. {3, 4, 1, 3}
24. {2, 2, 2, 1, 4}
25. {3, 3, 3, 1, 6}
26. {3, 6, 3, 2, 6}
27. {1, 4, 1, 2, 3}
28. {4, 3, 2, 6}
29. {2, 15, 12, 6}
30. {14, 1, 15}