

1. x je število učencev

$$\begin{aligned}\frac{x}{7} + \frac{x}{4} + \frac{x}{2} + 1 + 2 &= x \quad / \cdot 28 \\ 4x + 7x + 14x + 3 \cdot 28 &= 28x \\ 25x - 28x &= -84 \\ -3x &= -84 \quad / : (-3) \\ x &= 28\end{aligned}$$

2. x je iskano število

$$\begin{aligned}3x + 5 &= 5x - 3 \\ -2x &= -8 \quad / : (-2) \\ x &= 4\end{aligned}$$

3. x je število vseh glasovalcev

$$\begin{aligned}\frac{x}{3} + 8 + \frac{x}{2} + 6 &= x \quad / \cdot 6 \\ 2x + 48 + 3x + 36 &= 6x \\ 5x + 84 &= 6x \\ x &= 84\end{aligned}$$

4. x in y sta iskani števili

$$\begin{aligned}x : y &= 5 : 6 \\ 6x &= 5y \quad (\text{ali } x = 5t, y = 6t, \text{ glej nalogo 16}) \\ x &= \frac{5 \cdot y}{6} \\ x + y + x - 5 &= 2 \cdot y + 3 \\ \frac{5 \cdot y}{6} + y + \frac{5 \cdot y}{6} - 5 &= 2y + 3 \quad / \cdot 6 \\ 5y + 6y + 5y - 30 &= 12y + 18 \\ 16y - 12y &= 18 + 30 \\ 4y &= 48 \\ y &= 12\end{aligned}$$

5. x je starost sina, ATA pa je starost ateja

$$\begin{aligned}5x + 21 &= 2(x + 21) \\ 5x + 21 &= 2x + 42 \\ 3x &= 21 \\ x &= 7 \\ \text{ATA} &= 5x \quad \text{ATA} = 35\end{aligned}$$

6. x je Janezova starost

$$\begin{aligned}x + 18 &= 3x - 12 \\ -2x &= -30 \quad / : (-2) \\ x &= 15\end{aligned}$$

7. x je starost očeta, y mame, z pa sina

$$\begin{aligned}\frac{(2x + 12)}{6} &= \frac{x}{6} + 8 \quad / \cdot 6 \\ 2x + 12 &= x + 48 \\ x &= 36 \\ y &= x - 4 \quad y = 36 - 4 \quad y = 32 \\ z &= \frac{x}{6} \quad z = \frac{36}{6} = 6\end{aligned}$$

8. x je število let, pred katerimi je bil oče trikrat starejši od sina!

$$\begin{aligned}54 - 3x &= 44 - x \\ -2x &= -10 \quad / : (-2) \\ x &= 5\end{aligned}$$

9. x je trenutna Jožetova starost

$$\begin{aligned}3x - 6 &= x + 10 \\ 2x &= 16 \quad / : 2 \\ x &= 8\end{aligned}$$

10. $N = \overline{xyz} = 100x + 10y + z$

$$\begin{aligned}x &= y + 1 \\ z &= x + y \\ (z &= y + 1 + y) \\ (z &= 2y + 1) \\ 100x + 10y + z + 297 &= 100z + 10y + x \\ 99x - 99z &= -297 \\ 99(y + 1) - 99(2y + 1) &= -297 \\ 99y + 99 - 198y - 99 &= -297 \\ -99y &= -297 \quad / : (-99) \\ y &= 3 \\ x &= y + 1 \quad x = 3 + 1 = 4 \\ z &= x + y \quad z = 4 + 3 = 7 \\ N &= 437\end{aligned}$$

11. $N = \overline{xy} = 10x + y$
 $x + y = 12 \quad (x = 12 - y)$

$$\begin{aligned}10x + y &= 12 \cdot 4 + 9 \\ 10x + y &= 48 + 9 \\ 10x + y &= 57 \\ 10(12 - y) + y &= 57 \\ 120 - 10y + y &= 57 \\ -9 &= -63 \quad / : (-9) \\ y &= 7 \\ x &= 12 - y \quad x = 12 - 7 = 5 \\ N &= 57\end{aligned}$$

$$\begin{aligned}
12. \quad N = \overline{xy} &= 10x + y \\
x + y &= 11 \quad x = 11 - y \\
(\overline{yx} &= 10y + x) \\
10x + y &= (10y + x) \cdot 3 + 5 \\
10x + y &= 30y + 3x + 5 \\
7x - 29y &= 5 \\
7(11 - y) - 29y &= 5 \\
77 - 7y - 29y &= 5 \\
-36 &= -72 \quad / : (-36) \\
y &= 2 \\
x = 11 - y \quad x &= 11 - 2 = 9 \\
N &= 92
\end{aligned}$$

$$\begin{aligned}
13. \quad x \text{ in } y \text{ sta iskani števili} \\
x : y = 7 : 3 \quad 3x = 7y \quad (x = \frac{7 \cdot y}{3}) \\
x - 4 = y + \frac{x}{2} \quad / \cdot 2 \\
2x - 8 = 2y + x \\
x - 2y = 8 \\
(\frac{7 \cdot y}{3}) - 2y = 8 \quad / \cdot 3 \\
7y - 6y = 24 \\
y = 24 \\
x = \frac{7 \cdot y}{3} \quad x = \frac{7 \cdot 24}{3} \quad x = 56
\end{aligned}$$

$$\begin{aligned}
14. \quad N = \overline{xy} &= 10x + y \\
y &= x - 4 \\
\overline{yx} &= 10y + x \\
(10x + y)(10y + x) &= (10x + y)^2 - 1836 \\
100xy + 10x^2 + 10y^2 + xy &= 100x^2 + 20xy + y^2 - 1836 \\
1836 &= 90x^2 - 9y^2 - 81xy \\
1863 &= 90x^2 - 9(x - 4)^2 - 81x(x - 4) \\
1836 &= 90x^2 - 9(x^2 - 8x + 16) - 81x^2 + 324x \\
1836 &= 90x^2 - 9x^2 + 72x - 144 - 81x^2 + 324x \\
1836 + 144 &= 396x \\
1980 &= 396x \quad / : 396 \\
x &= 5 \\
y = x - 4 \quad y &= 5 - 4 = 1 \\
N &= 51
\end{aligned}$$

$$\begin{aligned}
15. \quad x \text{ je število dečkov,} \\
y \text{ je št. deklic (na začetku)} \\
x = 120 - y \quad y = 120 - x \\
120 - y - 2 = 2(120 - x - 1 + 3) \\
118 - y = 240 - 2x + 4 \\
114 - y = 240 - 2(120 - y) \\
114 - y = 240 - 240 + 2y \\
114 = 2y + y \\
114 = 3y \quad / : 3 \\
y = 38 \\
x = 120 - y \\
x = 120 - 38 \\
x = 82
\end{aligned}$$

$$\begin{aligned}
16. \quad x \text{ je število delavcev,} \\
y \text{ število delavk} \\
x : y = 8 : 11 \rightarrow x = 8d \quad y = 11d \\
x + y = 8d + 11d \\
442 + 14 = 8d + 11d \\
456 = 19d \quad / : 19 \\
d = 24 \\
x = 8d \quad x = 8 \cdot 24 = 192 \\
y = 11d \quad y = 11 \cdot 24 = 264
\end{aligned}$$

$$\begin{aligned}
17. \quad \frac{x}{(x-5)} \\
\frac{2 \cdot x}{(21 \cdot (x-5))} = \frac{1}{3} \\
2x \cdot 3 = 21(x-5) \cdot 1 \\
6x = 21x - 105 \\
-15x = -105 \quad / : (-15) \\
x = 7
\end{aligned}$$

$$\frac{x}{(x-5)} = \frac{7}{(7-5)} = \frac{7}{2}$$

$$\begin{aligned}
18. \quad x \text{ je dolžina (m), za koliko metrov moramo} \\
\text{skrajšati dolžino, da ostane ploščina} \\
\text{nespremenjena} \\
135 \cdot 80 = 90 \cdot (135 - x) \\
10800 = 12150 - 90x \\
1350 = 90x \quad / : 90 \\
x = 15
\end{aligned}$$

19. x je dolžina višine (v cm),
 y pa dolžina kraka (v cm)

$$c^2 = a^2 + b^2$$

$$(x+4)^2 = x^2 + 12^2$$

$$x^2 + 8x + 16 = x^2 + 144$$

$$8x = 128 \quad / : 8$$

$$x = 16$$

$$y = x + 4 \quad y = 16 + 4 = 20$$

20.

$$A + B + C + D = 50000$$

$$D = x \quad C = 2x \quad B = x + 4000 \quad A = x + 6000$$

$$x + 6000 + x + 4000 + 2x + x = 50000$$

$$5x = 40000 \quad / 5$$

$$x = 8000$$

$$A = 14000 \quad B = 12000 \quad C = 16000 \quad D = 8000$$

Avtor rešitev: Nejc Legat, 1. A