

## Sievennä

$$\begin{aligned} \text{a) } & (5x + 4) - (3x - 2) \\ & = 5x + 4 - 3x + 2 \\ & = 2x + 6 \end{aligned}$$

$$\begin{aligned} \text{b) } & -3(2x + 5) + 5(3x - 4) \\ & = -6x - 15 + 15x - 20 \\ & = 9x - 35 \end{aligned}$$

$$\begin{aligned} \text{c) } & (-4m + 3 \cdot 5m) \cdot 10m \\ & = (-4m + 15m) \cdot 10m \\ & = 11m \cdot 10m \\ & = 110m^2 \end{aligned}$$

## Ratkaise yhtälöt

$$\begin{aligned} \text{a) } & 2x + 1 = 11 \quad || -1 \\ & 2x + 1 - 1 = 11 - 1 \\ & \frac{2x}{2} = \frac{10}{2} \quad || :2 \\ & x = 5 \end{aligned}$$

$$\begin{aligned} \text{b) } & 3x = x + 4 \quad || -x \\ & 3x - x = x + 4 - x \\ & \frac{2x}{2} = \frac{4}{2} \quad || :2 \\ & x = 2 \end{aligned}$$

## Ratkaise yhtälöt

$$\begin{aligned} \text{a) } & 5x - 4 = 5x + 5 \quad || -5x \\ & 5x - 4 - 5x = 5x + 5 - 5x \\ & -4 = 5 \\ & \text{ei ratkaisua} \end{aligned}$$

$$\begin{aligned} \text{b) } & -5y - 8 = 19 + 4y \quad || -4y \\ & -5y - 8 - 4y = 19 + 4y - 4y \\ & -9y - 8 = 19 \quad || +8 \\ & -9y - 8 + 8 = 19 + 8 \\ & \frac{-9y}{-9} = \frac{27}{-9} \quad || :(-9) \\ & y = -3 \end{aligned}$$

Ratkaise yhtälöt

a)  $6(x - 2) = 4(2x - 4)$

$$\begin{aligned}
 6x - 12 &= 8x - 16 \quad | -8x \\
 6x - 12 - 8x &= 8x - 16 - 8x \\
 -2x - 12 &= -16 \quad | +12 \\
 -2x - 12 + 12 &= -16 + 12 \\
 -2x &= -4 \quad | :(-2) \\
 \frac{-2x}{-2} &= \frac{-4}{-2}
 \end{aligned}$$

$x = 2$

Ratkaise yhtälöt

a)  $x^2 + 5x = 5x + 25$

$$\begin{aligned}
 x^2 + 5x - 5x &= 5x + 25 - 5x \\
 x^2 &= 25 \\
 x &= \pm \sqrt{25} \\
 x &= \pm 5
 \end{aligned}$$

b)  $2(x - 3) = -2(5 + 2x)$

$$\begin{aligned}
 2x - 6 &= -10 - 4x \quad | +4x \\
 2x - 6 + 4x &= -10 - 4x + 4x \\
 6x - 6 &= -10 \quad | +6 \\
 6x - 6 + 6 &= -10 + 6 \\
 6x &= -4 \quad | :6 \\
 \frac{6x}{6} &= \frac{-4}{6} \\
 x &= -\frac{2}{3}
 \end{aligned}$$

b)  $-3x^2 + 3 = 0$

$$\begin{aligned}
 -3x^2 + 3 - 3 &= 0 - 3 \\
 -3x^2 &= -3 \quad | :(-3) \\
 \frac{-3x^2}{-3} &= \frac{-3}{-3} \\
 x^2 &= 1 \\
 x &= \pm \sqrt{1} \\
 x &= \pm 1
 \end{aligned}$$

Kirjoita yhtälönä ja vastaa kysymykseen.

Matilla on 5 kertaa enemmän rahaa, kuin Jannella. Yhteensä heillä on 540 euroa. Kuinka paljon rahaa Matilla on?

Janne  $x$  €  
 Matti  $5x$  €

Matilla on

$5 \cdot 90 \text{ €} = 450 \text{ €}$

$x + 5x = 540$

$$\frac{6x}{6} = \frac{540}{6} \quad | :6$$

$x = 90$