

# Solutions

## Level 1:

- a)  $7 = x + 2$                       |  $-2 (7 - 2 = x + 2 - 2)$   
 $5 = x$
- b)  $8 = 2x + 2$                       |  $-2 (8 - 2 = 2x + 2 - 2)$   
 $6 = 2x$                               |  $:2 (6 : 2 = 2x : 2)$   
 $3 = x$
- c)  $6 = 5x + 1$                       |  $-1 (6 - 1 = 5x + 1 - 1)$   
 $5 = 5x$                               |  $:5 (5 : 5 = 5x : 5)$   
 $1 = x$

## Level 2:

- d)  $8 + 3x = 5x$                       |  $-3x (8 + 3x - 3x = 5x - 3x)$   
 $8 = 2x$                               |  $:2 (8 : 2 = 2x : 2)$   
 $4 = x$
- e)  $4x + 2 = 3x + 5$                       |  $-2 (4x + 2 - 2 = 3x + 5 - 2)$   
 $4x = 3x + 3$                       |  $-3x (4x - 3x = 3x + 3 - 3x)$   
 $x = 3$
- f)  $5x + 3 = 2x + 9$                       |  $-3 (5x + 3 - 3 = 2x + 9 - 3)$   
 $5x = 2x + 6$                       |  $-2x (5x - 2x = 2x + 6 - 2x)$   
 $3x = 6$                               |  $:3 (3x : 3 = 6 : 3)$   
 $x = 2$

### Level 3:

g) On one side of a beam balance there is a matchbox and six matches. On the other side are two matchboxes and two matches. In all boxes there is the same amount of matches and the balance is in equilibrium. How many matches are in the box?

Note: The weight of the matchboxes does not matter.

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Solution:

$$\begin{array}{l} x + 6 = 2x + 2 \quad | -2 (x + 6 - 2 = 2x + 2 - 2) \\ x + 4 = 2x \quad | -x (x + 4 - x = 2x - x) \\ 4 = x \end{array}$$

There are 4 matches in a box.

x stands for a box; numbers stand for additional matches

h) Lisa has 2 stickers in her album. She gets some stickers from her friend Tom, so that she has four times as many stickers as before. How many stickers did Lisa get?

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Solution:

$$\begin{array}{l} 2 + x = 4 \cdot 2 = 8 \quad | -2 (2 + x - 2 = 8 - 2) \\ x = 6 \end{array}$$

Lisa got 6 stickers from Tom.

i) In a fruit basket there are a total of nine apples and pears. There are three more apples than pears in the basket. How many apples and how many pears are in the basket?

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Solution:

$$\begin{array}{l} 9 = x + (x + 3) \quad | \text{Dissolve parenthesis} \\ 9 = 2x + 3 \quad | -3 (9 - 3 = 2x + 3 - 3) \\ 6 = 2x \quad | :2 (6 : 2 = 2x : 2) \\ 3 = x \end{array}$$

x stands for pears; (x + 3) stands for apples; brackets are not needed, because we add

There are 3 pears and 6 apples in the fruit basket.