

Examples

Workout



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Question 1: Solve the following equations

(a)  $4x + 1 = 2x + 7$

(b)  $5x + 4 = 3x + 16$

(c)  $2x + 8 = x + 12$

(d)  $7x + 1 = 2x + 46$

(e)  $6x - 3 = 2x + 13$

(f)  $9x - 10 = 7x + 24$

(g)  $2x + 21 = 4x + 5$

(h)  $x + 2 = 5x - 2$

(i)  $6x - 9 = 4x - 1$

(j)  $5x + 2 = 16 - 2x$

(k)  $3x - 1 = 23 - x$

(l)  $6x + 8 = 38 - 4x$

(m)  $80 - x = 8x - 1$

(n)  $2x + 7 = 17 - 8x$

(o)  $15 - x = 27 - 3x$

(p)  $12x - 20 = 15x - 38$

(q)  $35x + 10 = 20x + 175$

(r)  $14x = 2x + 60$

Question 2: Solve the following equations

(a)  $3x + 3 = x + 8$

(b)  $9x + 10 = 7x + 39$

(c)  $3x + 1 = 7x - 17$

(d)  $x + 4 = 13 - x$

(e)  $16x + 3 = 6x + 24$

(f)  $9x + 12 = 6x + 14$

(g)  $7x + 24 = 12x - 12$

(h)  $2x + 9 = 48 - 6x$

(i)  $34 - 12x = 28x - 36$

Question 3: Solve the following equations

(a)  $4x + 15 = x + 3$

(b)  $8x + 40 = 3x + 5$

(c)  $9x + 7 = 11x + 20$

(d)  $7x + 9 = 2x - 16$

(e)  $9x - 70 = 2x - 91$

(f)  $4 - 5x = 3x + 28$

(g)  $10x + 136 = -8 - 2x$

(h)  $-6x + 2 = -4x + 10$

(i)  $-11x - 4 = -3x + 60$

## Equations: Letters on Both Sides

Video 113 on [www.corbettmaths.com](http://www.corbettmaths.com)

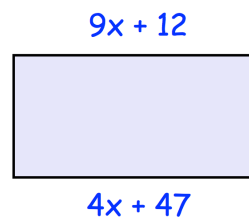
Question 4: Solve the following equations

- (a)  $5(x + 3) = 3(x + 9)$       (b)  $8(x - 1) = 4(x + 3)$       (c)  $3(x + 13) = 10(x - 1)$
- (d)  $2(4x - 3) = 5(2x - 5)$       (e)  $9(2x - 5) = 3(4x + 7)$       (f)  $2(9 - x) = 3(x + 16)$
- (g)  $5(2x + 9) + 2(x + 11) = 3(3x + 4) + 46$
- (h)  $8(x - 2) - 3(1 - x) = 9(x + 2) + 1$

### Apply

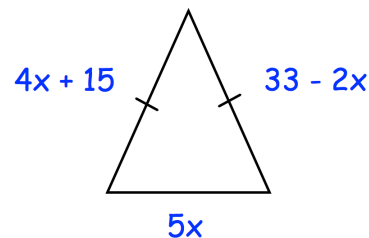
Question 1: Shown is a rectangle

- (a) Explain why  $9x + 12 = 4x + 47$
- (b) Find  $x$



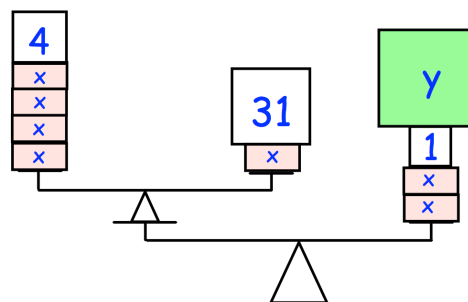
Question 2: Shown is an isosceles triangle

- (a) Explain why  $4x + 15 = 33 - 2x$
- (b) Find  $x$
- (c) Find the perimeter of the isosceles triangle



Question 3: Explain why  $8x + 3 = 2(4x + 1)$  has no solution.

- Question 4: (a) Find the value of  $x$
- (b) Find the value of  $y$

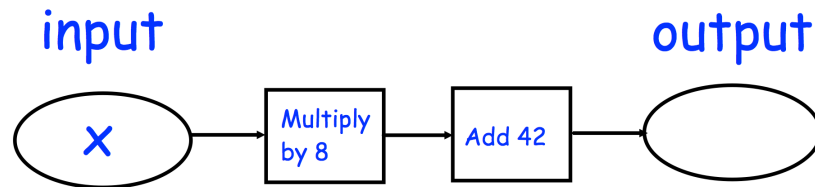


\* The mass of the balances are very small, so may be ignored

## Equations: Letters on Both Sides

Video 113 on [www.corbettmaths.com](http://www.corbettmaths.com)

Question 5: Shown below is a function machine.  
The input and output have the same value.



- (a) Write an equation in terms of  $x$ .  
(b) Solve the equation to find the value of  $x$ .

Question 6: Toby has completed his homework.  
Can you spot any mistakes?

(a)

Solve  $7x - 5 = 5x + 23$

$$\begin{array}{r} -5x \quad -5x \\ 7x - 5 = 5x + 23 \end{array}$$

$$2x - 5 = 23$$

$$\begin{array}{r} -5 \quad -5 \\ 2x - 5 = 23 \end{array}$$

$$2x = 18$$

$$\begin{array}{r} \div 2 \quad \div 2 \\ 2x = 18 \end{array}$$

$$x = 9$$

(b)

Solve  $3x + 11 = 41 - 2x$

$$\begin{array}{r} -2x \quad -2x \\ 3x + 11 = 41 - 2x \end{array}$$

$$x + 11 = 41$$

$$\begin{array}{r} -11 \quad -11 \\ x + 11 = 41 \end{array}$$

$$x = 30$$

Answers



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