Functions and equations

- Representing an equation using a flow diagram
- Solving an equation using inverse operations

Keywords

You should know

explanation 1a | explanation 1b

1 Write the output of each function machine.

a 5 → [− 3] →

b 12 → [÷ 3] →

c 3 → [+ 7] →

d 0.5 → [× 2] →

e 7 → [− 7] →

f −1 → [+ 1] →

2 Write an expression for the output of each function machine.

a x → [+ 2] →

b x → [÷ 3] →

c x → [× 5] →

d x → [− 9] →

e y → [− 4] →

f g → [× 8] →

g t → [+ 11] →

h n → [÷ 5] →

3 Write an expression for the output of each function machine.

a x → [× 6] → [+ 5] →

b x → [× 4] → [− 3] →

c x → [÷ 3] → [− 7] →

d x → [÷ 8] → [+ 1] →

e x → [+ 4] → [× 5] →

f x → [− 5] → [÷ 10] →

4 Draw a function machine to represent each expression.

a $2g + 7$

b $3(h - 9)$

c $4(t + 3)$

d $5r - 10$

e $\frac{x}{4} - 5$

f $\frac{m}{9} + 6$

g $\frac{f + 4}{2}$

h $\frac{k - 12}{7}$

explanation 2 online

5 Here are some reverse function machines. Write the value of x for each one.

a $x \leftarrow$ [+ 2] $\leftarrow 8$

b $x \leftarrow$ [÷ 3] $\leftarrow 12$

c $x \leftarrow$ [+ 4] $\leftarrow$ [× 5] $\leftarrow 7$

d $x \leftarrow$ [÷ 9] $\leftarrow$ [+ 7] $\leftarrow 11$

6 Write the inverse of each operation.

a Add 6	**b** Multiply by 5	**c** Subtract 1	**d** Divide by 2
e + 5	**f** × 6	**g** ÷ 3	**h** – 9
i × 10	**j** + 3.4	**k** – 9.8	**l** ÷ 7.2

7 This function machine represents the equation $\frac{x}{4} - 5 = 6$.

$x \rightarrow$ [÷ 4] $\rightarrow$ [− 5] $\rightarrow 6$

a Copy and complete the reverse function machine using inverse operations.

$x \leftarrow$ [□] $\leftarrow$ [□] $\leftarrow 6$

b Use the reverse function machine to solve the equation $\frac{x}{4} - 5 = 6$.

8 Follow the instructions for each equation.

i Draw a function machine.

ii Draw the reverse function machine.

iii Use the reverse function machine to solve the equation.

a $x + 11 = 37$	**b** $k - 17 = 6$	**c** $3t = 36$
d $4x + 12 = 20$	**e** $3n - 14 = 22$	**f** $5(y - 7) = 45$
g $3(q + 10) = 39$	**h** $2t + 9 = 20$	**i** $2(m - 8) = 3$
j $\frac{a}{3} - 9 = 5$	**k** $\frac{r}{10} + 1 = 16$	**l** $\frac{k - 12}{7} = 10$