



Functions and equations

- Using function machines
- Using inverse functions
- Using inverse operations to solve problems

Keywords

You should know

explanation 1

1 Copy and complete these function machines.

a $\begin{array}{ccc} 1 & & 3 \\ 8 & \rightarrow & \boxed{+ 2} \rightarrow \\ \bullet & & \end{array}$

b $\begin{array}{ccc} 2 & & \\ 5 & \rightarrow & \boxed{\times 2} \rightarrow \\ \blacktriangle & & \end{array}$

c $\begin{array}{ccc} 10 & & \\ 24 & \rightarrow & \boxed{\div 2} \rightarrow \\ \star & & \end{array}$

d $\begin{array}{ccc} 8 & & \\ 20 & \rightarrow & \boxed{- 2} \rightarrow \\ \heartsuit & & \end{array}$

2 Copy and complete these function machines.

a $\begin{array}{ccc} 3 & & 6 \\ 5 & \rightarrow & \boxed{} \rightarrow \\ \blacktriangle & & \end{array}$

b $\begin{array}{ccc} 1 & & 5 \\ 8 & \rightarrow & \boxed{} \rightarrow \\ \bullet & & \end{array}$

c $\begin{array}{ccc} 6 & & 2 \\ 9 & \rightarrow & \boxed{} \rightarrow \\ \star & & \end{array}$

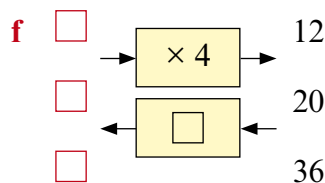
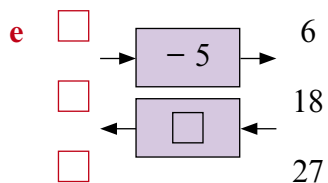
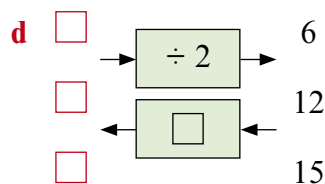
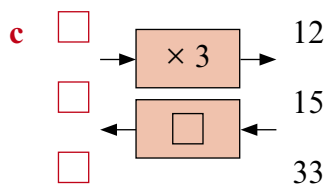
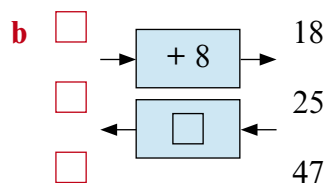
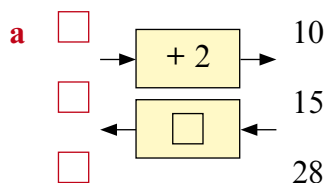
d $\begin{array}{ccc} 10 & & 1 \\ 19 & \rightarrow & \boxed{} \rightarrow \\ \clubsuit & & \end{array}$

explanation 2

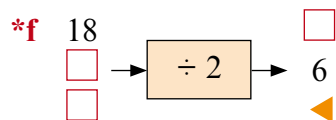
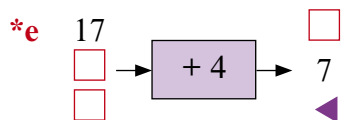
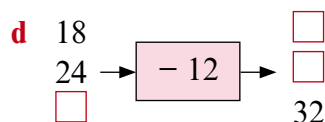
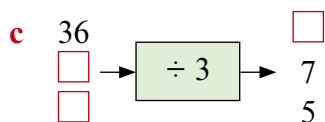
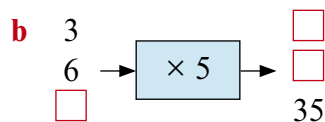
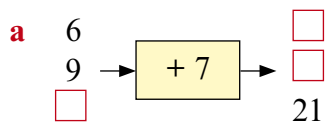
3 Write down the inverse operation for each of these operations.

- | | | | |
|---------------|---------------|---------------------|-------------------|
| a $+4$ | b -8 | c $\times 3$ | d $\div 2$ |
| e -5 | f $+7$ | g $\times 6$ | h $\div 3$ |

4 Find the missing inputs for these function machines using inverse operations.



5 Copy and complete these function machines.

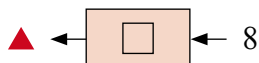
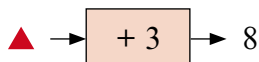


explanation 3a

explanation 3b

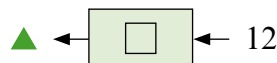
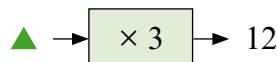
6 Copy and complete the function machines to find the value of the symbol.

a $\blacktriangle + 3 = 8$



$\blacktriangle = \square$

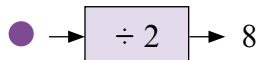
b $3\blacktriangle = 12$



$\blacktriangle = \square$

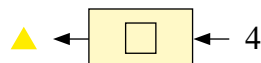
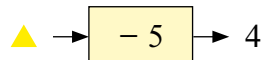
7 Copy and complete the function machines to find the value of the symbol.

a $\bullet \div 2 = 8$



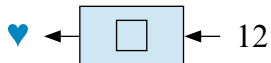
$\bullet = \square$

b $\blacktriangle - 5 = 4$



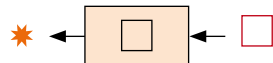
$\blacktriangle = \square$

c $\heartsuit + 5 = 12$



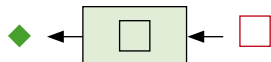
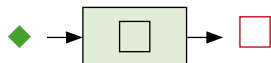
$\heartsuit = \square$

d $5\star = 15$



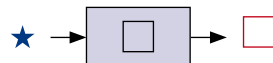
$\star = \square$

e $\blacklozenge \div 3 = 8$



$\blacklozenge = \square$

f $4\star = 20$



$\star = \square$

8 Solve the problems using function machines and inverse operations.

a $\blacktriangle + 34 = 90$

b $3\blacklozenge = 180$

c $\star + 145 = 360$

d $56 + \heartsuit = 180$

e $4\bullet = 360$

f $\star - 48 = 42$