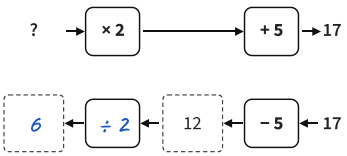
Inverse Functions

ANSWERS

1

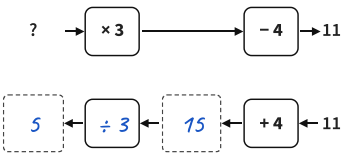
This function machine gives 17.
Find the number that went in.



Answer: 6

2

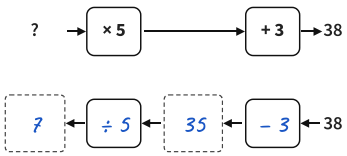
This function machine gives 11.
Find the number that went in.



Answer: 5

3

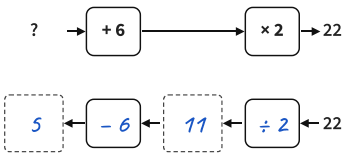
This function machine gives 38.
Find the number that went in.



Answer: 7

4

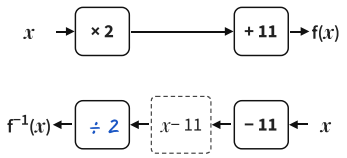
This function machine gives 22.
Find the number that went in.



Answer: 5

5

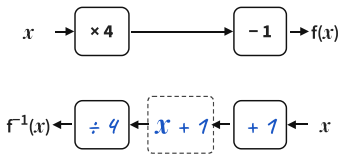
$f(x) = 2x + 11$. Find $f^{-1}(x)$.



$f^{-1}(x) = \frac{x - 11}{2}$

6

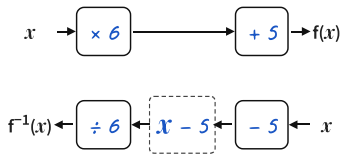
$f(x) = 4x - 1$. Find $f^{-1}(x)$.



$f^{-1}(x) = \frac{x + 1}{4}$

7

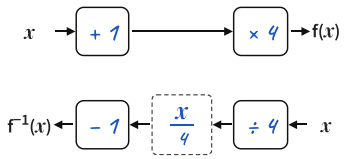
$f(x) = 6x + 5$. Find $f^{-1}(x)$.



$f^{-1}(x) = \frac{x - 5}{6}$

8

$f(x) = 4(x + 1)$. Find $f^{-1}(x)$.



$f^{-1}(x) = \frac{x}{4} - 1$

Inverse Functions *further practice*

ANSWERS

9

$f(x) = 7x - 2$. Find $f^{-1}(x)$.

× 7, then − 2

inverse: + 2, then ÷ 7

Answer: $\frac{x + 2}{7}$

10

$f(x) = \frac{x}{2} + 5$. Find $f^{-1}(x)$.

÷ 2, then + 5

inverse: − 5, then × 2

Answer: $2(x - 5)$

11

$f(x) = 4x + 9$. Find $f^{-1}(25)$.

25 − 9 = 16

16 ÷ 4 = 4

Answer: 4

12

$f(x) = \frac{x + 8}{3}$. Find $f^{-1}(x)$.

+ 8, then ÷ 3

inverse: × 3, then − 8

Answer: $3x - 8$

13

A taxi costs £3 plus £2 a mile. The cost in pounds for x miles is $f(x) = 2x + 3$.
Find $f^{-1}(x)$. Use it to find how far a £27 ride went.

$f^{-1}(x) = \frac{x - 3}{2}$

$\frac{27 - 3}{2} = 12$

Answer: 12 miles

14

A rough rule changes °C to °F: double, then add 30. So $f(x) = 2x + 30$.
Find $f^{-1}(x)$. Use it to change 70°F roughly to °C.

$f^{-1}(x) = \frac{x - 30}{2}$

$\frac{70 - 30}{2} = 20$

Answer: 20°C

15

$f(x) = 3x - 5$. Solve $f^{-1}(x) = 4$.

$\frac{x + 5}{3} = 4$

$x + 5 = 12$

Answer: $x = 7$

16

$f(x) = 4x - 8$. Tom says $f^{-1}(x) = \frac{x}{4} + 8$.
Is Tom right? Explain.

No: + 8 first, then ÷ 4

f(3) = 4, but his gives 9, not 3

Answer: $\frac{x + 8}{4}$