

Inverse Value Hunt

Read an input by starting with an output.

HIGH SCHOOL • HSF-BF.B.4c

CCSS.Math.Content.HSF-BF.B.4c "(+) Read values of an inverse function from a graph or a table, given that the function has an inverse."

NAME _____

DATE _____

PART 1: READ BACKWARD

For $f^{-1}(y)$, find y in the output column of the table. Then report the input paired with that output, because an inverse reverses inputs and outputs.

WORKED EXAMPLE

The table represents a function r with an inverse. Find $r^{-1}(-19)$. $x \mid 17 \mid -13 \mid 26 \mid r(x) \mid 31 \mid -19 \mid 42$

1. Find -19 in the $r(x)$ output row.
2. The output -19 is paired with the input -13 .
3. Therefore, $r^{-1}(-19) = -13$.

Answer: $r^{-1}(-19) = -13$

PRACTICE 6 problems

- 1** The table represents a function f with an inverse. Find $f^{-1}(-6)$. $x \mid -3 \mid 0 \mid 5 \mid f(x) \mid 8 \mid -6 \mid 1$

ANSWER _____

- 2** The table represents a function g with an inverse. Find $g^{-1}(10)$. $x \mid 2 \mid 7 \mid 11 \mid g(x) \mid -4 \mid 6 \mid 10$

ANSWER _____

- 3** The table represents a function m with an inverse. Find $m^{-1}(3)$. $x \mid -9 \mid -1 \mid 4 \mid m(x) \mid 3 \mid 12 \mid -2$

ANSWER _____

- 4** The table represents a function h with an inverse. Find $h^{-1}(-5)$. $x \mid 1 \mid 6 \mid 9 \mid h(x) \mid 14 \mid -5 \mid 7$

ANSWER _____

- 5** The table represents a function p with an inverse. Find $p^{-1}(4)$. $x \mid -8 \mid 3 \mid 12 \mid p(x) \mid 5 \mid -10 \mid 4$

ANSWER _____

- 6** The table represents a function t with an inverse. Find $t^{-1}(11)$. $x \mid -7 \mid 2 \mid 8 \mid t(x) \mid 11 \mid 0 \mid -3$

ANSWER _____

APPLY IT Show your work

- 1 A student records music in a studio. The table shows the total charge C for h hours of studio time. The function has an inverse. Find $C^{-1}(14)$, and state what it means. h , hours | 1 | 2 | 4 | $C(h)$, dollars | 9 | 14 | 24

WORK SPACE

ANSWER _____

- 2 At a school festival, a photo booth sells s photo strips for a total cost $P(s)$. The table represents a function with an inverse. Find $P^{-1}(19)$, and state what it means. s , strips | 2 | 4 | 6 | $P(s)$, dollars | 7 | 13 | 19

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

The table represents a function q with an inverse. Find $q^{-1}(16) - q^{-1}(6)$. Explain how you used the table. x | -4 | 3 | 10 | $q(x)$ | 16 | -1 | 6

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	The table represents a function f with an inverse. Find $f^{-1}(-6)$. $x \mid -3 \mid 0 \mid 5$ $f(x) \mid 8 \mid -6 \mid 1$	$f^{-1}(-6) = 0$
2	The table represents a function g with an inverse. Find $g^{-1}(10)$. $x \mid 2 \mid 7 \mid 11$ $g(x) \mid -4 \mid 6 \mid 10$	$g^{-1}(10) = 11$
3	The table represents a function m with an inverse. Find $m^{-1}(3)$. $x \mid -9 \mid -1 \mid 4$ $m(x) \mid 3 \mid 12 \mid -2$	$m^{-1}(3) = -9$
4	The table represents a function h with an inverse. Find $h^{-1}(-5)$. $x \mid 1 \mid 6 \mid 9$ $h(x) \mid 14 \mid -5 \mid 7$	$h^{-1}(-5) = 6$
5	The table represents a function p with an inverse. Find $p^{-1}(4)$. $x \mid -8 \mid 3 \mid 12$ $p(x) \mid 5 \mid -10 \mid 4$	$p^{-1}(4) = 12$
6	The table represents a function t with an inverse. Find $t^{-1}(11)$. $x \mid -7 \mid 2 \mid 8$ $t(x) \mid 11 \mid 0 \mid -3$	$t^{-1}(11) = -7$

PART 2 • APPLY IT

- $C^{-1}(14) = 2$, so a \$14 charge is for 2 hours of studio time. Locate 14 in the total-charge row. It is paired with 2 hours.
- $P^{-1}(19) = 6$, so \$19 buys 6 photo strips. Locate 19 in the cost row. It is paired with 6 photo strips.

CHALLENGE

-14. The output 16 is paired with -4, so $q^{-1}(16) = -4$. The output 6 is paired with 10, so $q^{-1}(6) = 10$, and $-4 - 10 = -14$.

Accept equivalent inverse notation and answers that correctly identify the matching input from the output row. For the word problems, accept the numerical inverse value with a correct interpretation in context.