

**Evaluating Functions from a Numerical Perspective (GIVEN A TABLE OF VALUES)**

**Target 1: I understand and can read function notation.**

Explain in words what the following statements written in function Notation mean:

1.  $f(1)$ : Find the output of  $f(x)$  when the input is  $x=1$
2.  $f(a)$ : Find the output of  $f(x)$  when the input is  $x=a$
3.  $f(x) = 8$ : The output of  $f(x)$  is 8 when the input is  $x$
4.  $f(3) + g(2)$ : Find the sum of  $f(x)$ 's output when input is  $x=3$  and  $g(x)$ 's output when input is  $x=2$
5.  $f^{-1}(0)$ : Find the output of  $f^{-1}(x)$  for an input of  $x=0$  or find input of  $f(x)=0$
6.  $f(g(-2))$ : Find  $f(x)$ 's input evaluated at the output of  $g(-2)$

**Target 2: Given a table I can determine outputs of a function given a specified input and vice-versa.**

x	-1	0	1	2	5
f(x)	7	6	7	10	31

<p><b>EXAMPLE 1 :</b> Determine the value of <math>f(1)</math>  <math>f(1) = 7</math>  <i>Justification:</i>  <math>f(1)</math> is asking you to find the output for the <math>f(x)</math> function when the input (<math>x</math> value) is 1. From the table the output (<math>f(x)</math>) at an <math>x</math> value of 1 is 7.</p>	<p><b>EXAMPLE 2:</b> Determine <math>x</math> if <math>f(x)=6</math>  <math>x=0</math>  <i>Justification:</i>  <math>f(x)=6</math> is asking you to find the input (<math>x</math>-value) of the <math>f(x)</math> function when the output is 6. According to the table an input of <math>x=0</math> had an output of 6.</p>
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7.  $f(0) = \underline{6}$

8.  $f(-1) = \underline{7}$

9.  $f(5) = \underline{31}$

10. Determine  $x$  if  $f(x) = 10$

$x=2$

11. Determine  $x$  if  $f(x) = 7$

$x=-1$  or  $1$

12.  $f^{-1}(31) = \underline{5}$

**Target 3: I understand how to evaluate combinations and compositions of functions given a table of values.**

Use the table below to answer questions 13 and 14

x	f(x)	g(x)
-1	$\frac{1}{2}$	2
0	4	-1
$\frac{1}{2}$	$\frac{3}{2}$	0

13.  $f(g(\frac{1}{2})) = \underline{4}$

14.  $f^{-1}(\frac{3}{2}) = \underline{\frac{1}{2}}$

Given the following table of values for the functions  $f(x)$  and  $g(x)$ , and  $k(x)$  determine the following:

x	-4	-3	-2	0	a	2	3	5	h	a+h
f(x)	-3	a	2	-2	-3	5	-1	3	-2.5	-3.5
g(x)	3	2	2	-2	-1	0	2	-4	-1.5	-2
k(x)	.5	-4	a	2	-3	0	-1	3	3	3

15. $f(0) = -2$	16. $4k(5) = 12$	17. $f(-4) + g(2) = -3$
18. $\frac{3g(-3)}{k(a)} = -2$	19. $f(-2) - 4g(3) = -6$	20. $\frac{f^{-1}(3)}{k^{-1}(a)} = -5/2$
21. $k(-2) + 3g(a) = a-3$	22. $k(g(2)) = 2$	23. $g(f(-3)) = -1$
24. $k(g(-2)) = 0$	25. $g^{-1}(f(3)) = a$	26. $f(k(a)) = a$
27. $k(g(f(2))) = .5$	28. $g(k(f(a))) = 3$	29. $g(f(g(-3))) = -4$
30. If $k(x) = 2x + 10$ , then for what value(s) of x is $k(x) = f(g(k(a)))$ ?  <b>X=-5/2</b>	31. $f(a) + f(h) = -5.5$	32. Is $f(a) + f(h) = f(a + h)$ ?  <b>No, <math>-5.5 \neq -3.5</math></b>