
ODF
b
exx
eix
1
3
8
4
S

ACTIVITY

- Identify all the items in the picture
- Is there a relation that exists between the items named from the picture? What relation exists and explain your response
- Which of the pictures show a multiple change process? Give an explanation of your choice

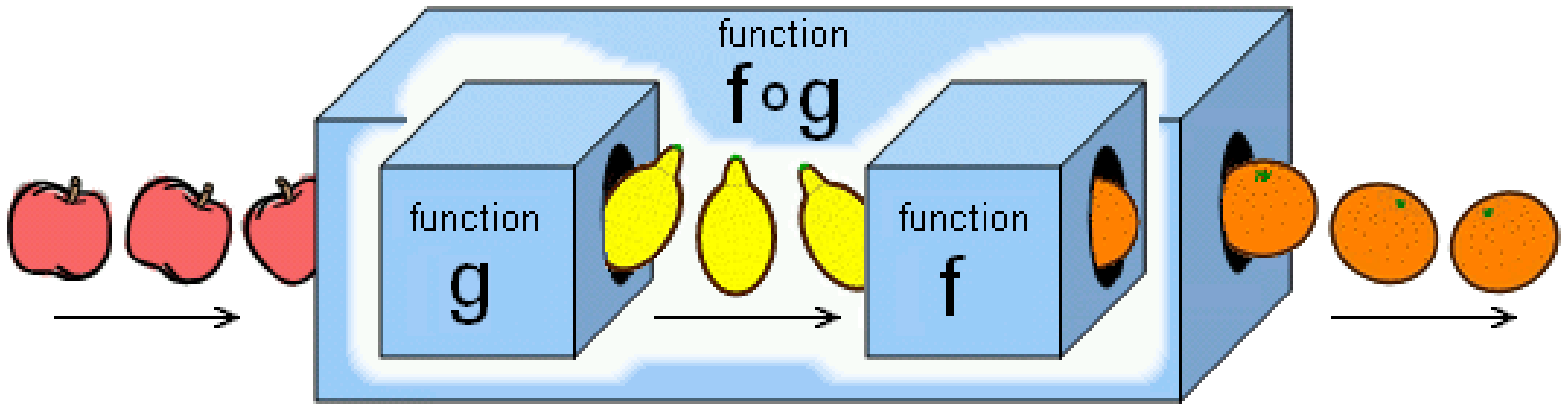
Multiple Change Process

Sugarcane → Sugar → Sweets

Sugarcane → Sugar → Medicine

COMPOSITE FUNCTIONS

Kaziba stephen



KEY WORDS

N	N	A	A	P	S	L	B	V	O	N	N	F	A
O	N	I	N	G	N	I	P	P	A	M	N	U	I
I	C	I	I	E	R	N	T	A	N	I	T	N	N
T	T	R	P	N	P	R	T	A	N	H	T	C	O
A	O	N	G	I	V	S	T	I	M	A	R	T	D
T	L	I	H	O	E	E	E	T	G	T	T	I	E
O	N	A	N	L	A	G	R	A	C	A	R	O	T
N	H	M	G	T	N	I	I	S	G	B	A	N	I
I	S	O	I	G	A	R	I	V	E	L	N	N	S
N	N	D	A	A	S	O	I	N	P	E	G	A	O
U	P	E	U	O	F	C	M	C	N	A	E	M	P
P	N	O	P	L	A	C	I	H	P	A	R	G	M
G	U	R	P	T	E	R	P	A	P	S	C	V	O
O	N	P	P	S	I	N	O	I	T	F	O	I	C

INVERSE
MAPPING
DOMAIN
RANGE
COMPOSITE
FUNCTION
GRAPHICAL
TABLE
NOTATION

N	N	A	A	P	S	L	B	V	O	N	N	F	A
O	N	I	N	G	N	I	P	P	A	M	N	U	I
I	C	I	I	E	R	N	T	A	N	I	T	N	N
T	T	R	P	N	P	R	T	A	N	H	T	C	O
A	O	N	G	I	V	S	T	I	M	A	R	T	D
T	L	I	H	O	E	E	E	T	G	T	T	I	E
O	N	A	N	L	A	G	R	A	C	A	R	O	T
N	H	M	G	T	N	I	I	S	G	B	A	N	I
I	S	O	I	G	A	R	I	V	E	L	N	N	S
N	N	D	A	A	S	O	I	N	P	E	G	A	O
U	P	E	U	O	F	C	M	C	N	A	E	M	P
P	N	O	P	L	A	C	I	H	P	A	R	G	M
G	U	R	P	T	E	R	P	A	P	S	C	V	O
O	N	P	P	S	I	N	O	I	T	F	O	I	C

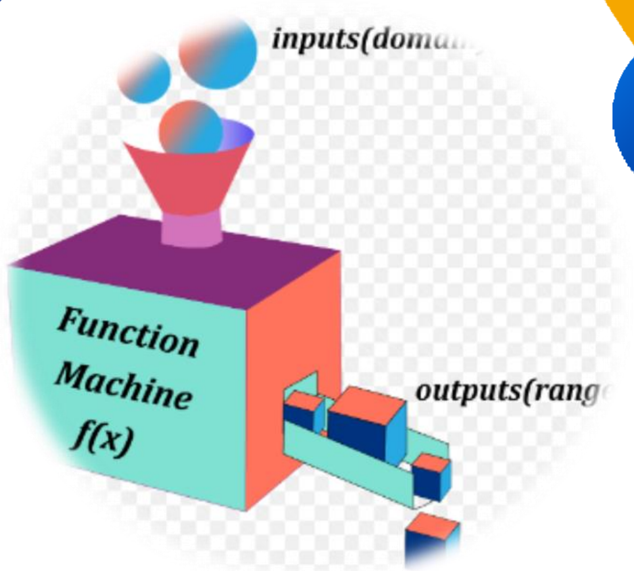
Learning Objectives

By the end of the lesson you should be able to

Understand and use function notation

By the end of the lesson you should be able to

Describe and understand a composite function



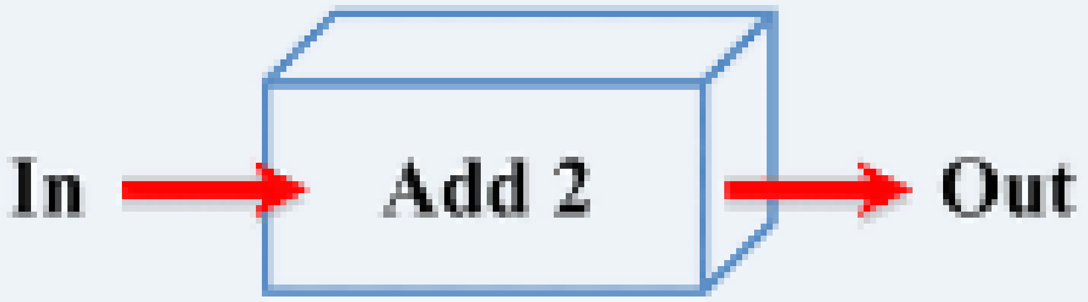
Function Notation

Functions are often described by equations. For example, the equation $y = 2x + 1$ describes y as a function of x. By giving the function the symbol 'f' we write this equation in function notation as $f(x) = 2x + 1$ and so $y = f(x)$.

f (x) is read as 'f of x' and means the value of function f at x.

$f(x)$ can also be written like this: $f : x \rightarrow 2x + 1$.
An ordered pair (x, y) can be written as $(x, f(x))$.
Finding $f(x)$ for a particular value of x means evaluating the function f at that value.

ACTIVITY



What are the OUT numbers?
Follow the rule. Complete the table.

Rule: Add 2

In	Out
1	3
4	
3	
0	
5	

Think 1 + 2 = 3

ACTIVITY

Given that $h(x) = 6x + 2$, Find

(a) $h(-4)$ (b) $h(0)$ (c) $h(1)$ (d) $h(3)$

ACTIVITY

Evaluate the function $f(x) = 2x + 1$ at $x = 3$.

ACTIVITY

The function $f(x) = bx^2 - 2$ and $f(2) = 18$. Find:

(a) the value of b

(b) $f(2)$

(c) $f(0)$

ACTIVITY

Find **i** $f(7)$ **ii** $f(-3)$ **iii** $f(\frac{1}{2})$ **iv** $f(0)$ **v** $f(a)$
for these functions.

a $f(x) = x - 2$ **b** $f(x) = 3x$ **c** $f(x) = \frac{1}{4}x$

d $f(x) = 2x + 5$ **e** $f(x) = x^2 + 2$

ACTIVITY

The velocity of a particle is given by v (t) = t^2- 9 m/s.

a) Find the initial velocity .
b) Find the velocity after 4 seconds.
c) Find the velocity after 10 seconds.
d) At what time does the particle come to rest?

The initial velocity means the velocity at the start, when t = 0.

The particle comes to rest when v = 0.

a If $h(x) = \frac{1}{x-6}$ find $h(-3)$.

b Is there a value where $h(x)$ does not exist? Explain.

If $g(x) = 4x - 5$ and $h(x) = 7 - 2x$

a find x when $g(x) = 3$

b find x when $h(x) = -15$

c find x when $g(x) = h(x)$.

Composite functions

A composite function is a combination of two functions. You apply one function to the result of another.

→ The composition of the function f with the function g is written as $f(g(x))$, which is read as 'f of g of x', or $(f \circ g)(x)$, which is read as 'f composed with g of x'.

→ A **composite function** applies one function to the result of another and is defined by $(f \circ g)(x) = f(g(x))$.

- $fg(x)$ can also be written as $f[g(x)]$
- $fg(x)$ means $g(x)$ is substituted for x in $f(x)$
- A composite function $g^2(x)$ is the same as $gg(x)$.
- A function is undefined or meaningless if its denominator part is equal to zero.
- $fg(x) \neq gf(x)$

ACTIVITY

Given that $f(x) = 6x + 5$ and $g(x) = 2x - 7$, find

(a) $fg(x)$
(b) $fg(2)$

ACTIVITY

Given that $f(x) = x + 3$ and $g(x) = 6 - 2X$, find

(a) $fg(x)$

(b) $gf(x)$

(c) Comment on $fg(x)$ and $gf(x)$

ACTIVITY

If $f(x) = 5 - 3x$ and $g(x) = x^2 + 4$, find $(f \circ g)(x)$.

Exercise

1. Given that $f(x) = 8x + 5$ and $g(x) = 3x - 5$,find

   (a) $fg(x)$ (b) $fg(2)$ (c) $gf(x)$ (d) $gf(2)$

2. Given that $h(x) = 3x - 5$ and $g(x) = x^2 + 1$,find $hg(-2)$

3. Given that $h(x) = x^2 - 4x + 3$ and $g(x) = \frac{1}{x}$,find

   (a) $gh(x)$

   (b) $gh(-2)$

4. Given that $g(x) = x^2 + 1$ and $h(x) = x - 3$,find

   (a) $h^2(x)$

   (b) the value of x for which $gh(x) = hg(x)$

Thank You

For Your Attention