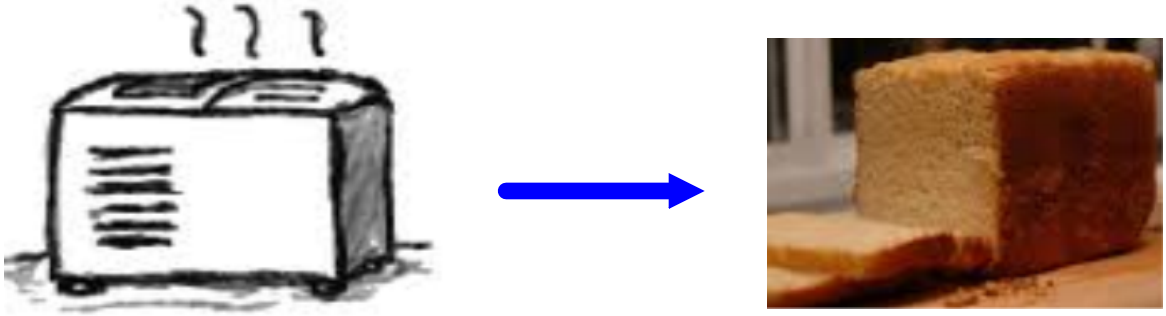
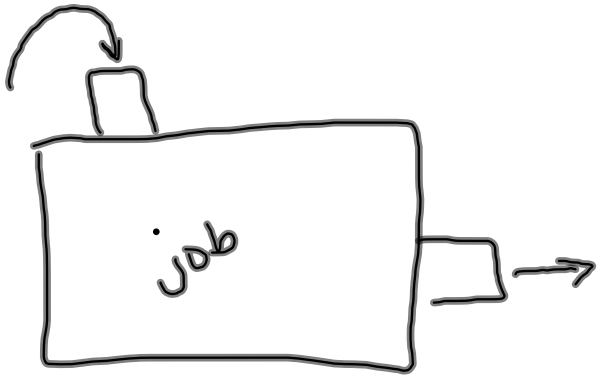
Functions

(section 2.2)





$3x+2=$

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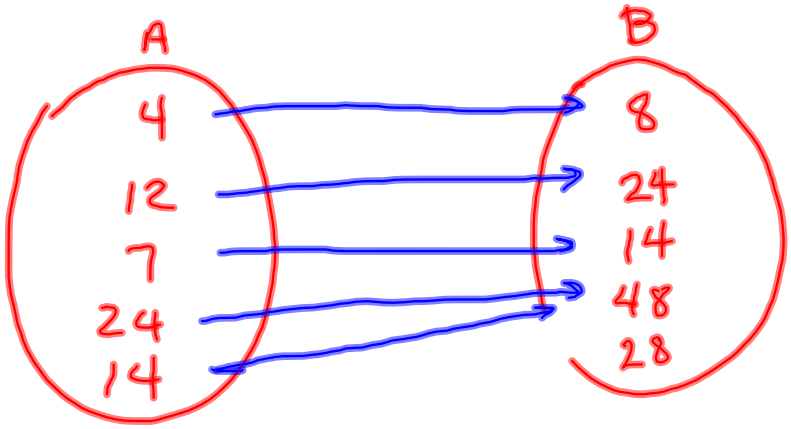
Relation- two quantities related to each other by some rule

Domain- input

Range- output

Function- a relation that matches each item from one set to exactly one item from a different set.



Decide whether the relations in Ex1 and Ex2 represent y as a function of x.

Ex1

x	y
2	11
2	10
3	8
4	5
5	1

NO!

Ex2

x	y
-3	0
-1	4
0	2
2	2
4	-1

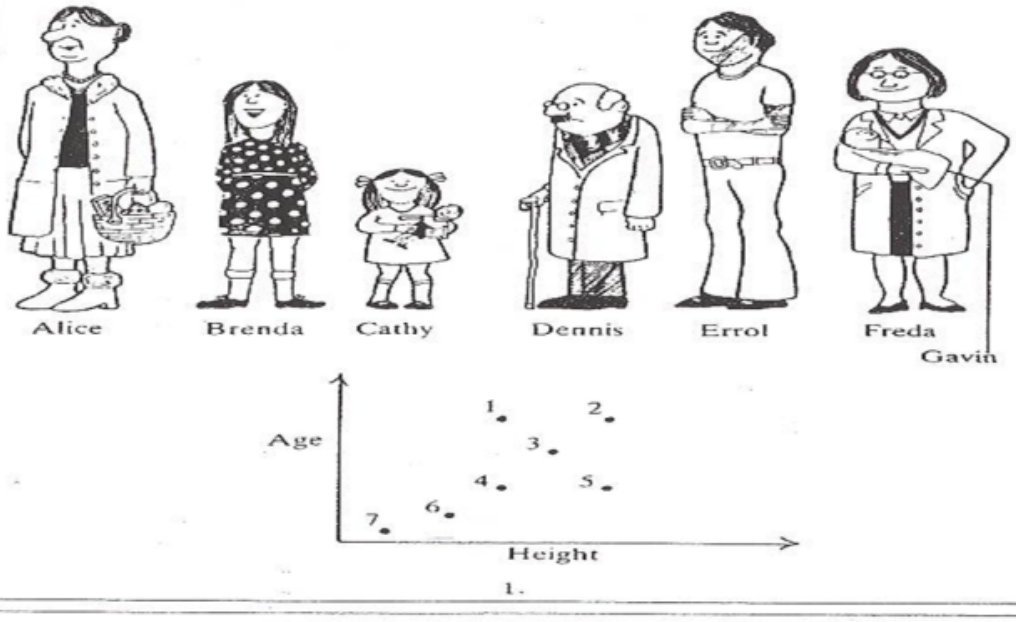
yes!

A1 INTERPRETING POINTS

As you work through this booklet, discuss your answers with your neighbours and try to come to some agreement.

1. The Bus Stop Queue

Who is represented by each point on the scattergraph, below?



1.

Ex 3

Which of the following equations represents y as a function of x?

"y depends on x"

a)

$2x^2 + y + 1 = 0$

$y = -2x^2 - 1$ yes!

b)

$x + y^2 - 6 = 0$

$y^2 = -x + 6$

$y = \pm\sqrt{-x+6}$ no!

Function Notation

Ex4

If $f(x) = x^2 - 4x$, find the following.

a) $f(3) =$ $(3)^2 - 4(3) = -3$

input

b) $f(x + h)$ $= (x+h)^2 - 4(x+h)$

$x^2 + 2xh + h^2 - 4x - 4h$

h(x)

g(x)

If $f(x) = \begin{cases} x + 1, \text{ if } x \geq 0 \\ -x, \text{ if } x < 0 \end{cases}$

Find the following.

a) $f(2) =$ $2 + 1 = 3$

b) $f(-5) =$ $-(-5) = 5$

Domain:

Ex6 Find the domain of each of the following functions.

a) $f(x) = x^3 + 3x + 1$ all $\mathbb{R}$'s

b) $f(x) = \dfrac{2}{x+2}$ all $\mathbb{R}$'s, $x \neq -2$

c) $f(x) = \sqrt{5-x}$ all $\mathbb{R}$'s, $x \leq 5$

HW: Pg. 197 # 4,8,11,12, 15-18, 28,35,36,48,53,57-62,80