

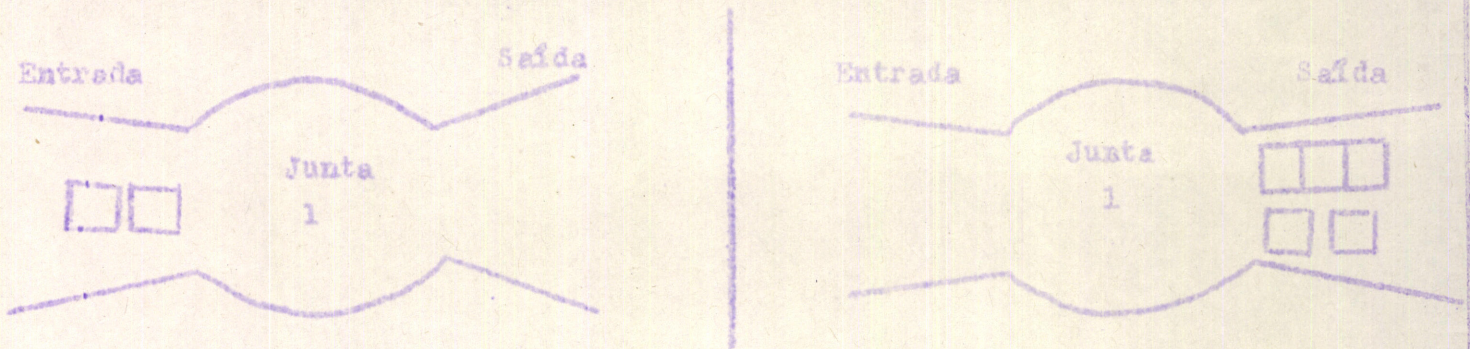
OPERADORES ADITIVOS

(Ficha 1.2)

(Base três)

- A 1 -

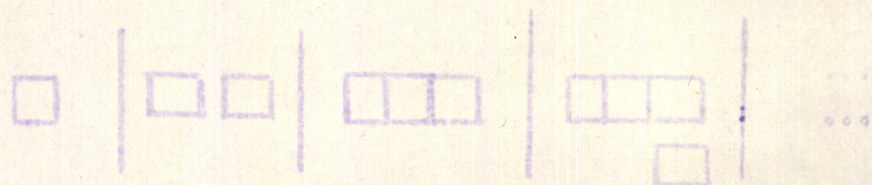
1- Encontrar o que sai ou à que se deve colocar na entrada.

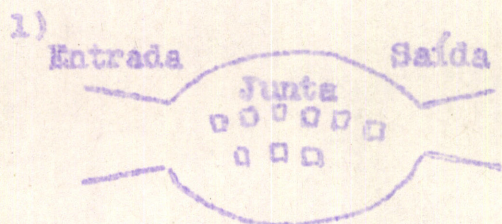


Entrada	1	0	10	12			
Saída					11	10	

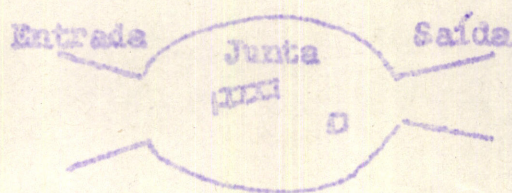
2- Faça a mesma coisa com as máquinas que juntam 10 ou 12

3- Se a máquina junta 10, quais dos blocos seguintes podem sair?





Máquina de Jacques

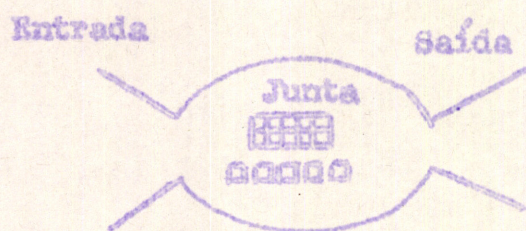


Máquina de Michel

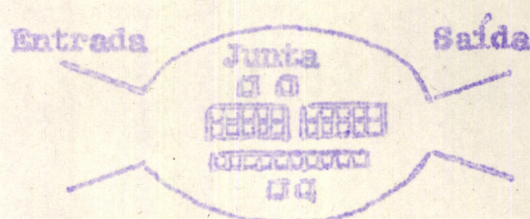
Encontra as saídas correspondentes às entradas das duas máquinas abaixo:

Entradas						
	13	14	15	16	17	23
Saídas para Jacques						
Saídas para Michel						

2)



Máquina de Carole



Máquina de Valérie

Encontra as saídas correspondentes às entradas das máquinas abaixo:

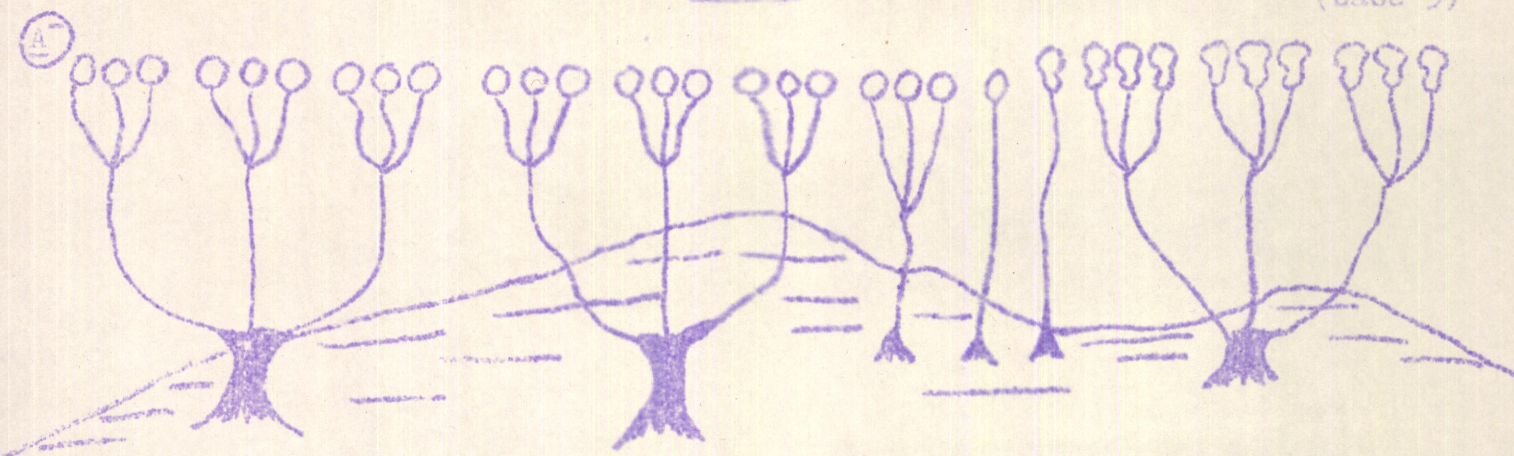
Entradas					
	12	23	31	12	23
Saídas para Carole					
Saídas para Valérie					

OPERADORES ADITIVOS

(figura 1.1)

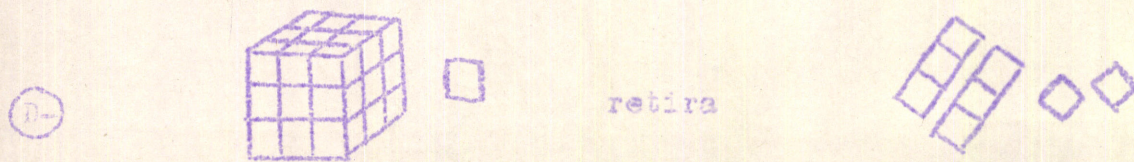
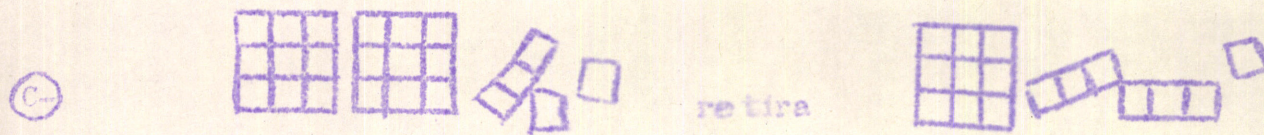
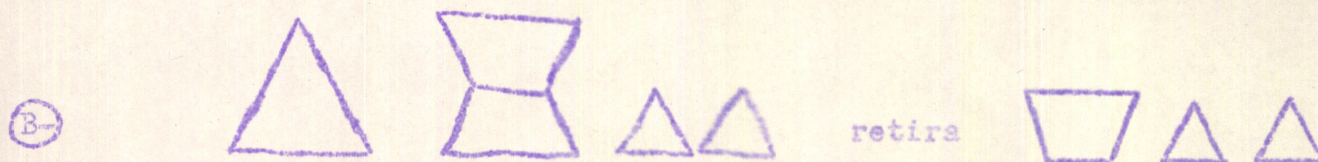
(base 3)

- 4 2 -



- (1) Quantas frutas há em todas as árvores juntas?
- (2) Quantas peras há?
- (3) Se retirarmos as peras, restam.....laranjas

	b^3	b^2	b^1	b^0
Todas as frutas				
As peras				
As laranjas que restam				



E- Faça outros exercícios semelhantes.

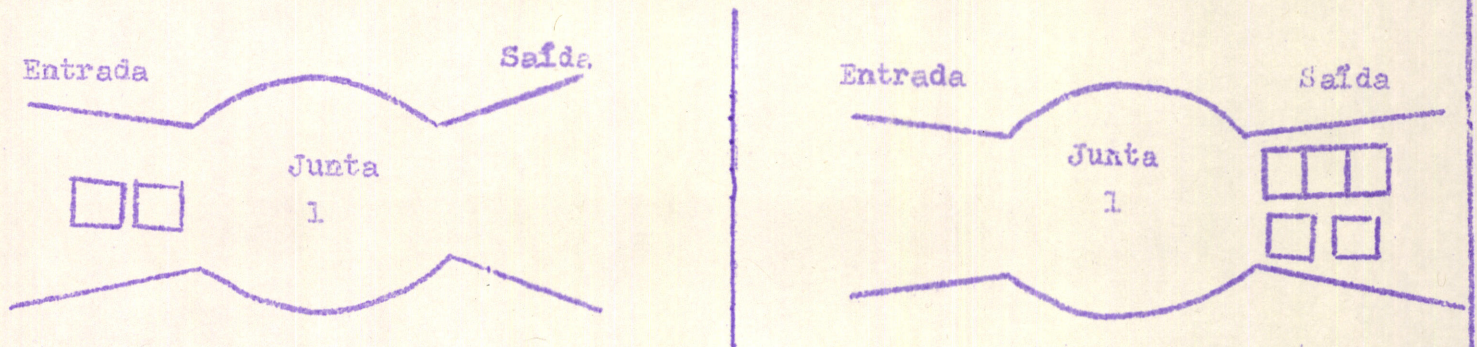
OPERADORES ADITIVOS

(Figura 1.2)

(Base três)

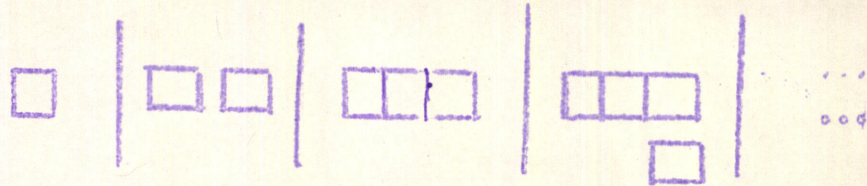
- A 1 -

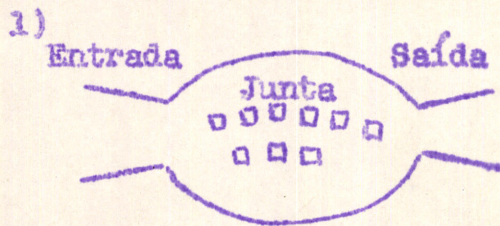
1- Encontrar o que sai ou ã que se deve colocar na entrada.



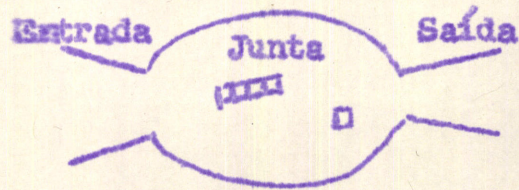
Entrada	1	0	10	12		
Saída					11	10

- 2- Faça a mesma coisa com as máquinas que juntam 10 ou 12
- 3- Se a máquina junta 10, quais dos blocos seguintes podem sair?





Máquina de Jacques

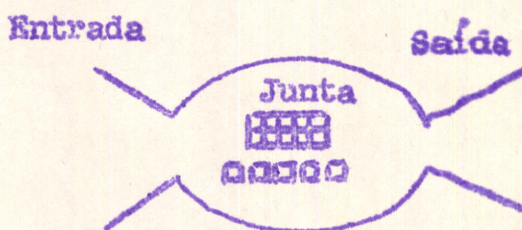


Máquina de Michel

Encontra as saídas correspondentes às entradas das duas máquinas abaixo:

Entradas	 13	 14	 15	 16	 17	 23
Saídas para Jacques						
Saídas para Michel						

2)



Máquina de Carole

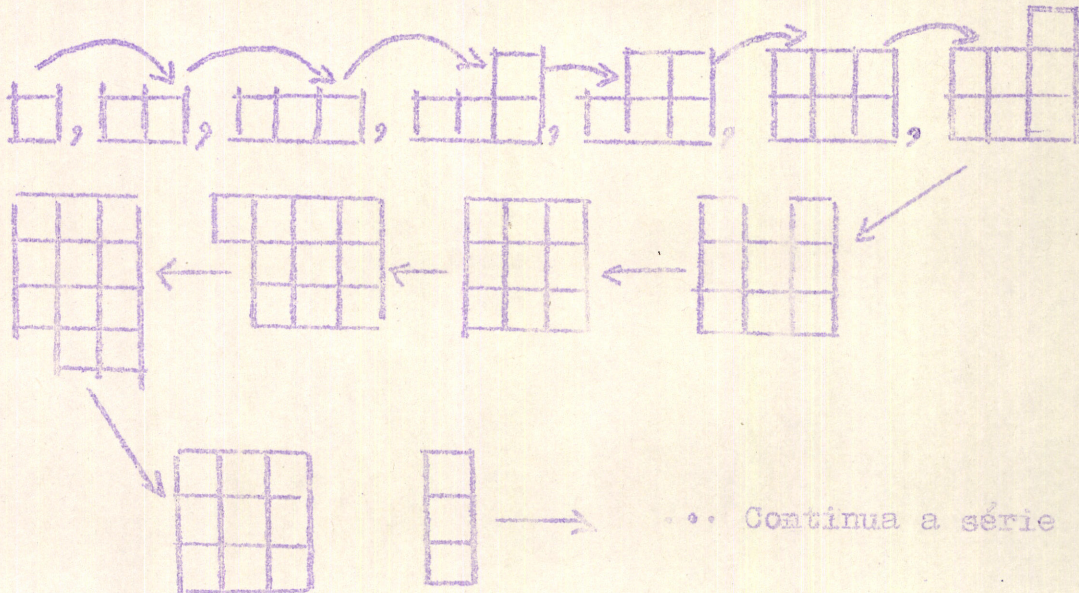


Máquina de Valérie

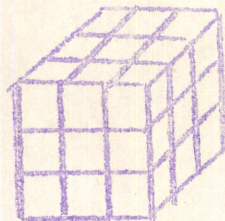
Encontra as saídas correspondentes às entradas das máquinas abaixo:

Entradas	 12	 23	 31	 12	 23
Saídas para Carole					
Saídas para Valérie					

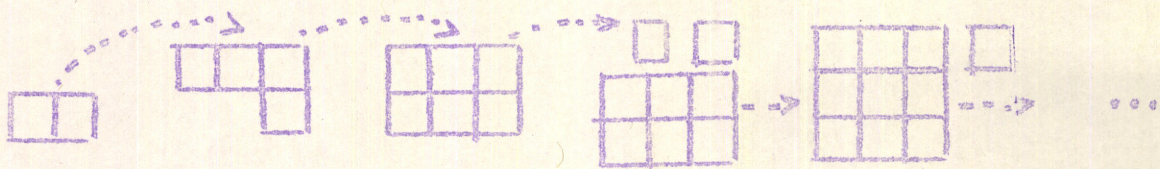
1) Faça a série com os blocos-:



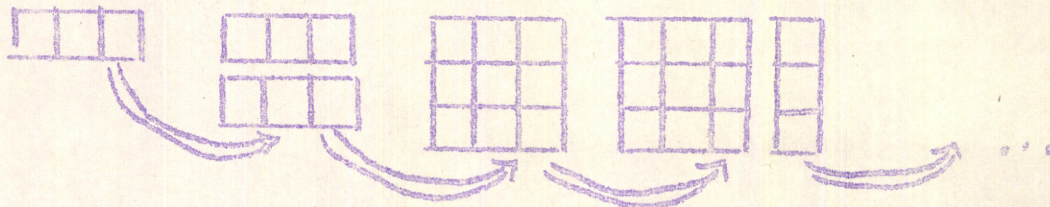
até



2) Faça a série seguinte com os blocos e continua-a tanto quanto podes-:

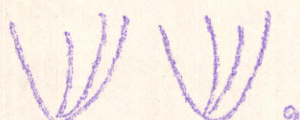
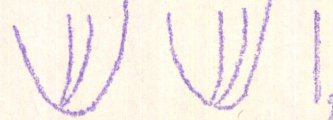




3) Faça o mesmo com a série :

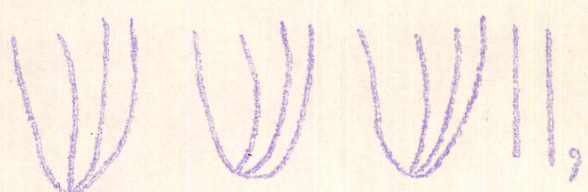
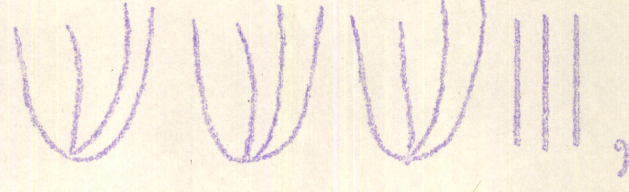


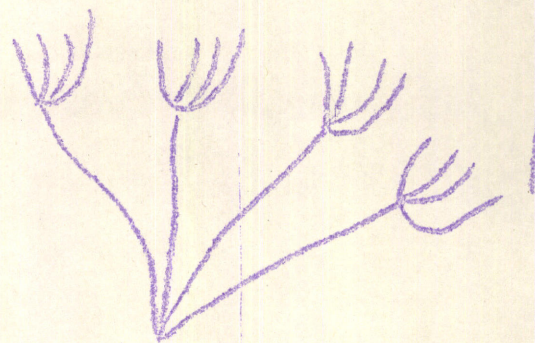
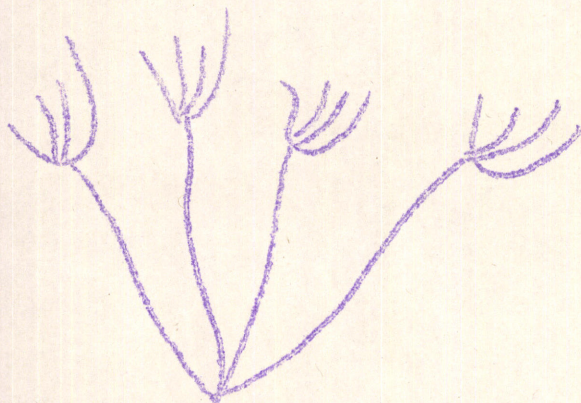
4) Que fazem as máquinas \rightarrow , \dashrightarrow , \Rightarrow ?

1) |, ||, |||, , , , ,

, , , ,

, ,

, ,



Continue a série:

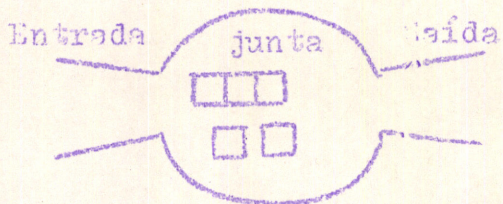
- 2) Faça uma série semelhante e m base três.
- 3) Faça uma série "2aa mais" e m base três.
- 4) Faça uma série " 3 a mais" em base quatro.

Operadores aditivos


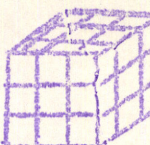
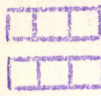
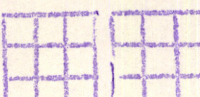
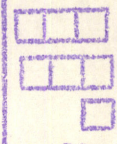
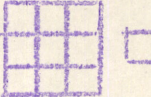
(Ficha 1.6)

(Base três)

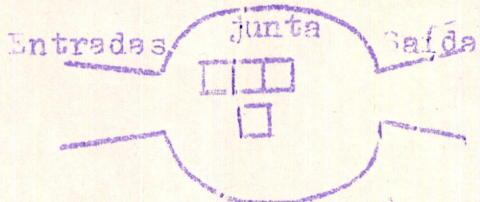
1-)



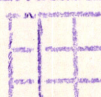

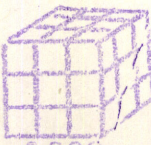
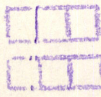
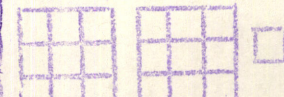
Encontre as entradas para as seguintes saídas:

Entradas						
Saídas	 100	 1000	 20	 200	 21	 101

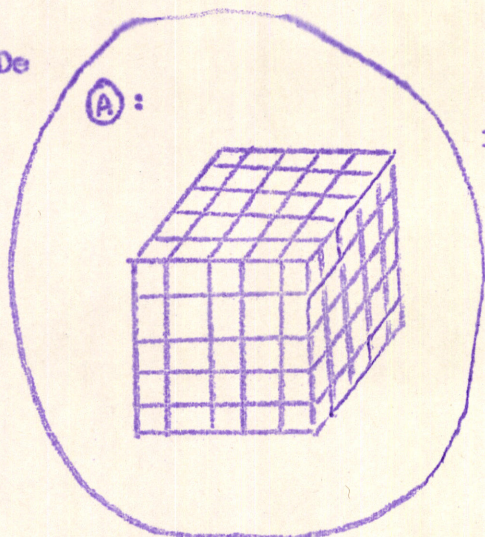
2-)



Encontre as entradas para as seguintes saídas:

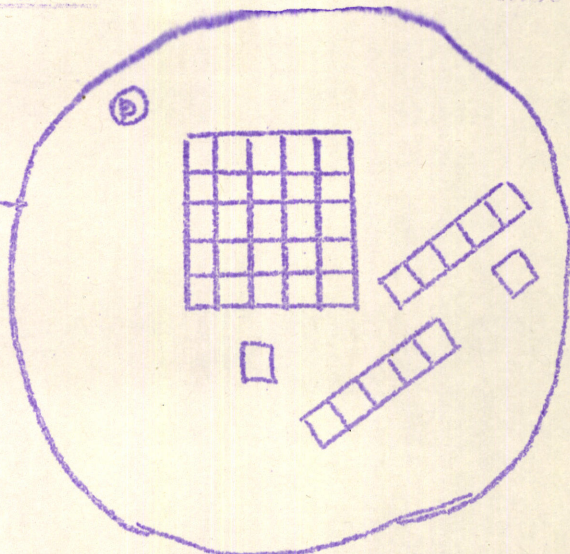
Entradas					
Saídas	 100	 110	 1000	 20	 201

1) De



(A):

retira
tanto
quanto



(B)

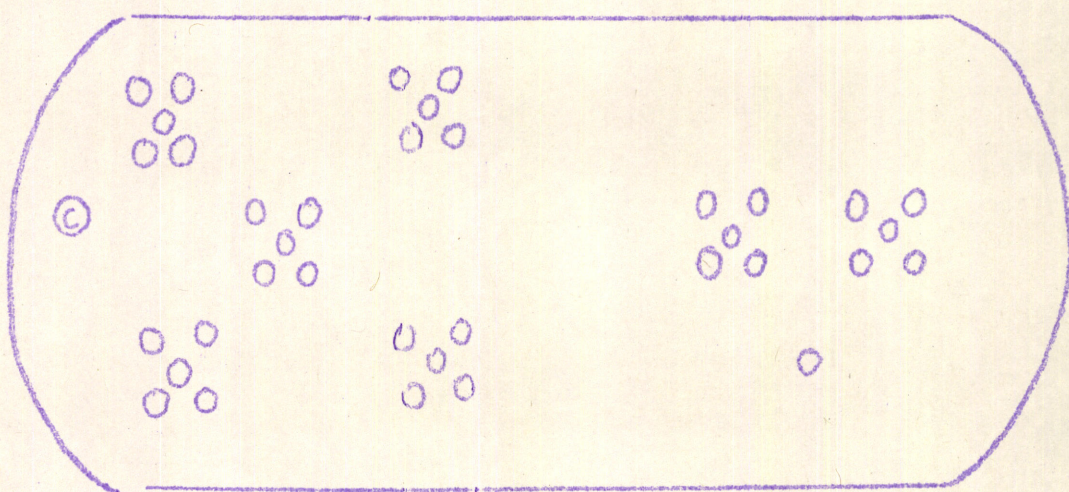
Em A tu tens $1\ 0\ 0\ 0$ pequenos cubos
tu retiras : $1\ 2\ 3$ (tanto como em B).

Restam :

--	--	--	--	--	--

2)

De



(C)

retira tanto quanto ↓
(D)

D	○○○○○	○○○	○○○	○○
---	-------	-----	-----	----

Em C tu tens $2\ 1$
tu retiras $3\ 2$ tanto quanto em D

Restam

--	--	--

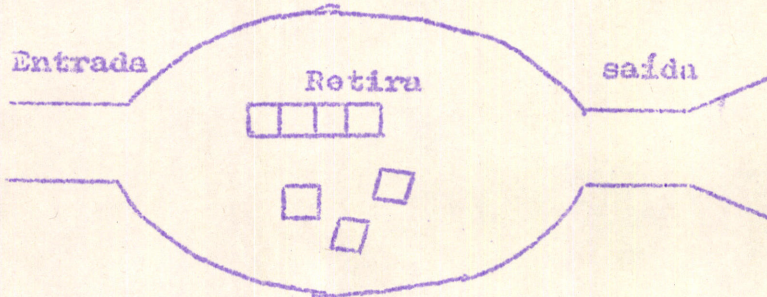
3) Faça outros exercicios paralelos.

Operadores aditivos

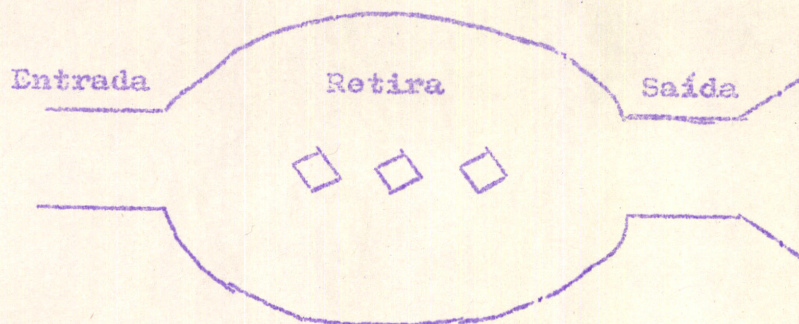
(Ficha 1.9)

- A 1 -

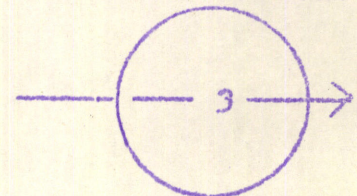
(Base quatro)



Entrada				
	100	31	22	33
Saída	?	?	?	?



É uma máquina de subtrair desenhada de forma muito simples:



Entrada				
	100	31	22	33
		?	?	?

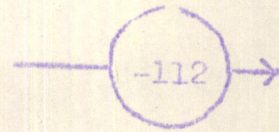
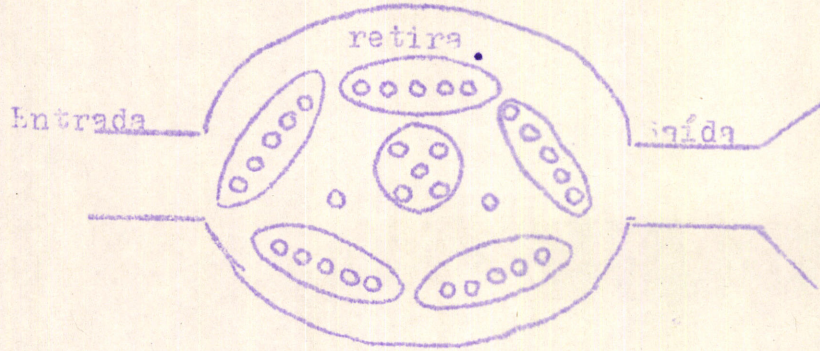
Operadores editivos :

- A 1 -

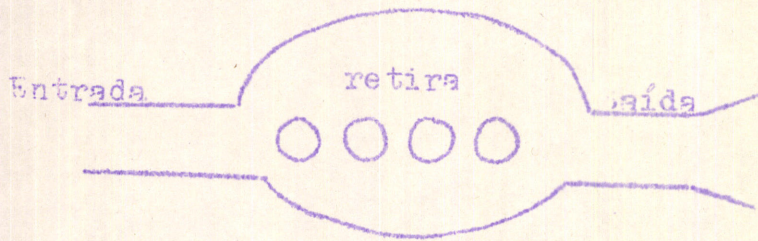
(Mecha 1.10)

(Base cinco)

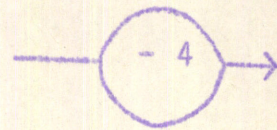
ou mais simples :



Entradas	 200	 131	 222
Saídas	?	?	?



ou mais simples :

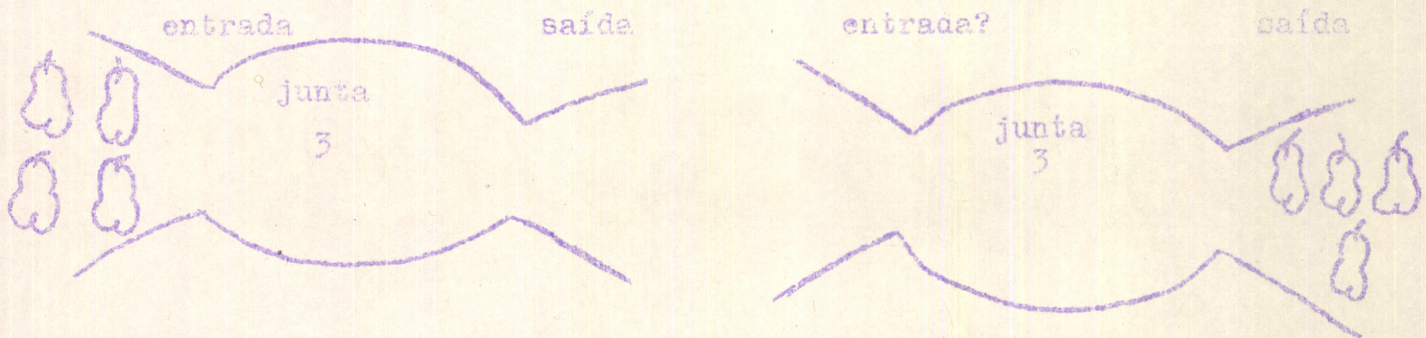


Entradas	 200	 131	 222
Saídas	?	?	?

ADIÇÃO E SUBTRAÇÃO

a 1 entrada

Esta máquina junta sempre 3 aquilo que se coloca na entrada. Encontra a saída ou o que se deve colocar na entrada.

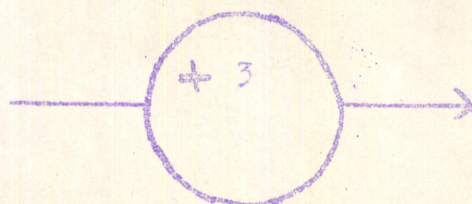


entrada	1	2	5		8		peras
saída				6		10	peras

Faça outros jogos do mesmo tipo.

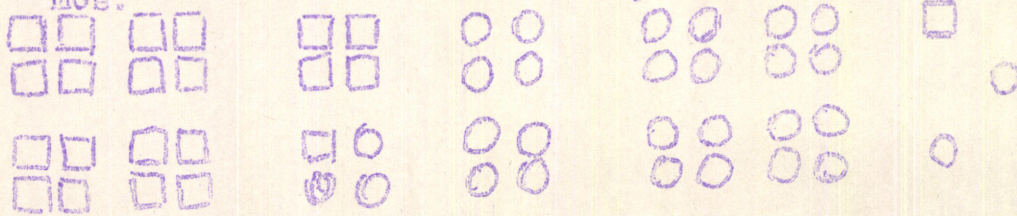
Utiliza pinos, pequenos cubos, tampinhas, etc.

Podes desenhar máquinas tão simples como esta:



(Base quatro)

(1) Os desenhos abaixo representados representam bombons; nós os agrupamos.



Quantos bombons há acima?

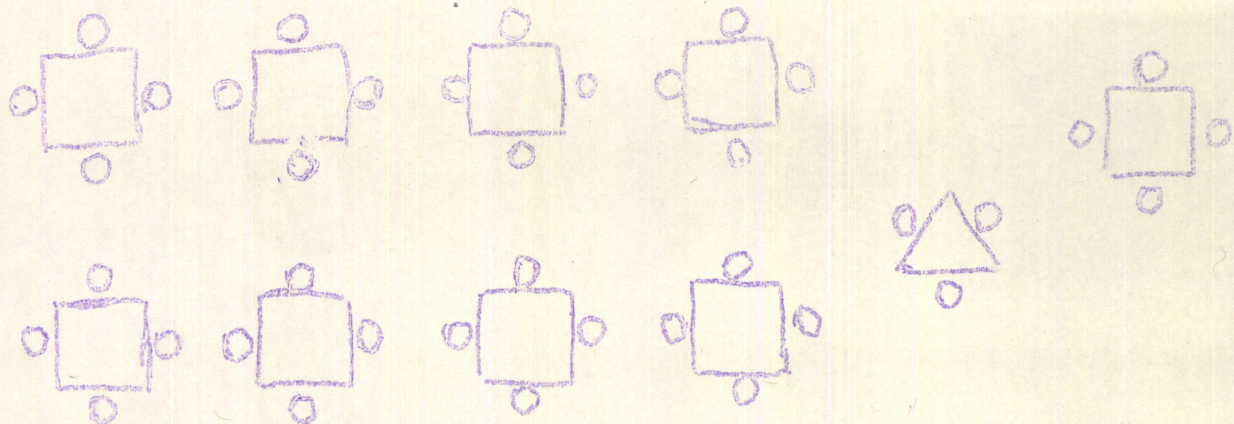
Escreve em base quatro:

	b^2	b^1	b^0
Número de bombons			
Número de bombons quadrados			

Retira os bombons quadrados; terás, então:

Número de bombons redondos			
----------------------------	--	--	--

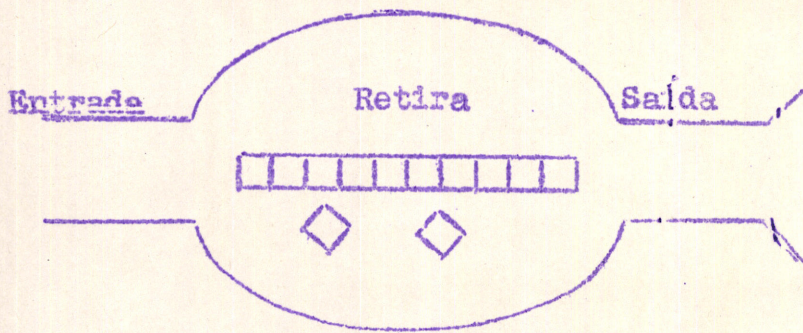
(2)



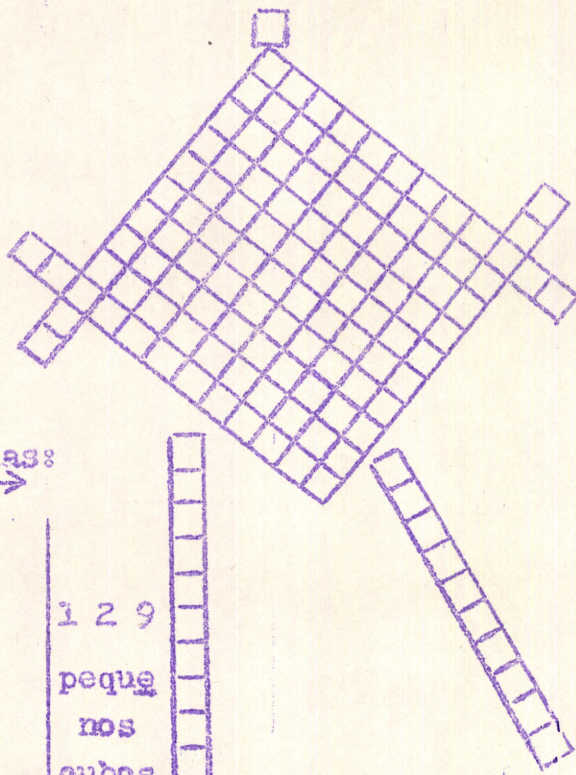
Há 2 1 3 (base quatro) crianças nesta classe:

3 1 ((base quatro) são meninas

Quantos meninos há?



(1)

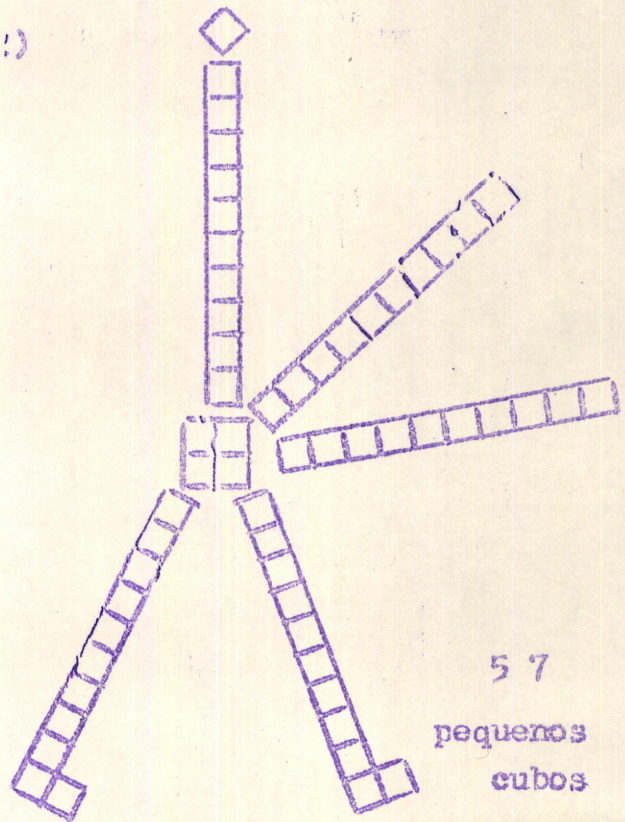


Entradas:

1 2 9
peque-
nos
cubos



(2)



5 7
peque-
nos
cubos

Saídas

(3) Procura também as entradas seguintes:

(i) 2 1 2,

(ii) 3 1 1,

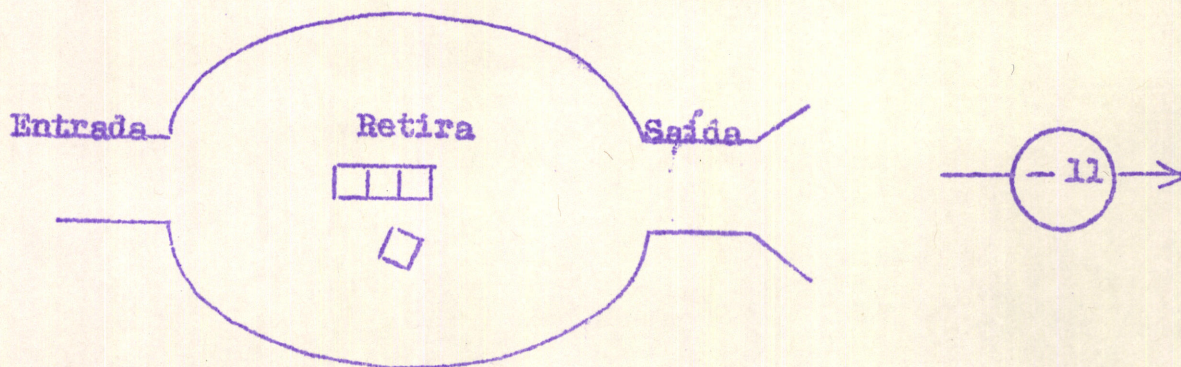
(iii) 1 2 3.

(4) Faça outras máquinas de retirar em base dez, escolhe as entradas e procura as saídas.

(Base três)

(Procura as entradas {})

(1)

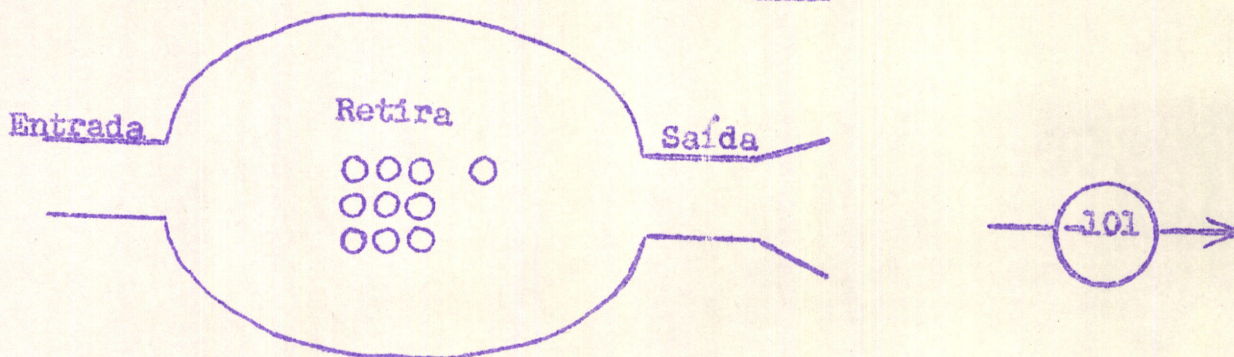


Entradas	?	?	?	?	?
Saídas					
	1	2 1	1 0 0	2	1 0

Pode-se escrever estes problemas assim:

$\boxed{?} - 11 = 1$, ou $\boxed{?} - 11 = 100$

(2)



Encontra as entradas para as saídas seguintes:

(i) 1 0 0 0,

(ii) 1 2 2,

(iii) 2 2 2.