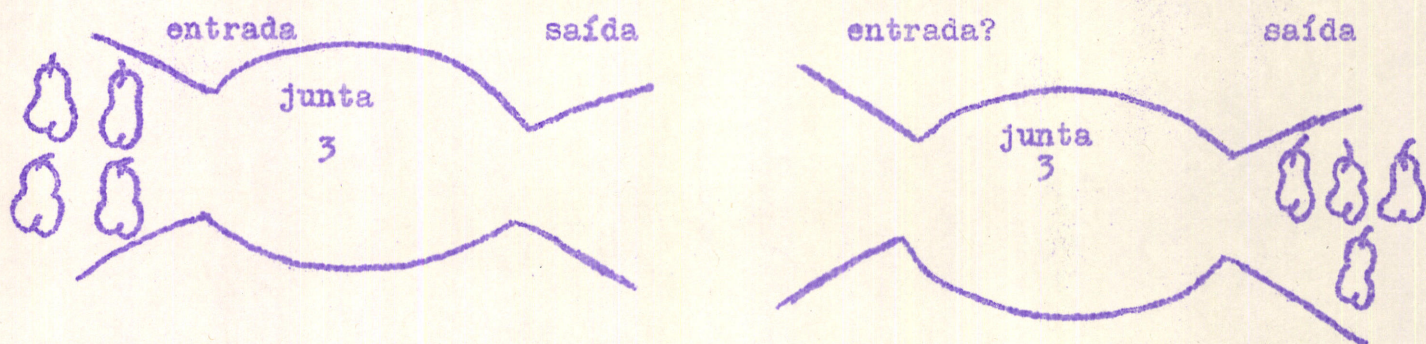


ADIÇÃO E SUBTRACÃO

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.

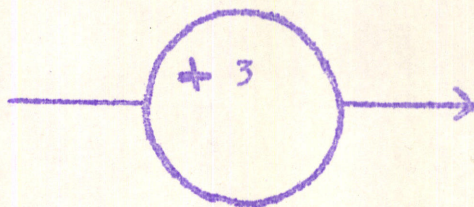


entrada	1	2	5		8		peras
saída				6		10	peras

Faça outros jogos do mesmo tipo.

Utiliza pinos, pequenos cubos, tampinhas, etc.

Podes desenhar máquinas tão simples como esta:



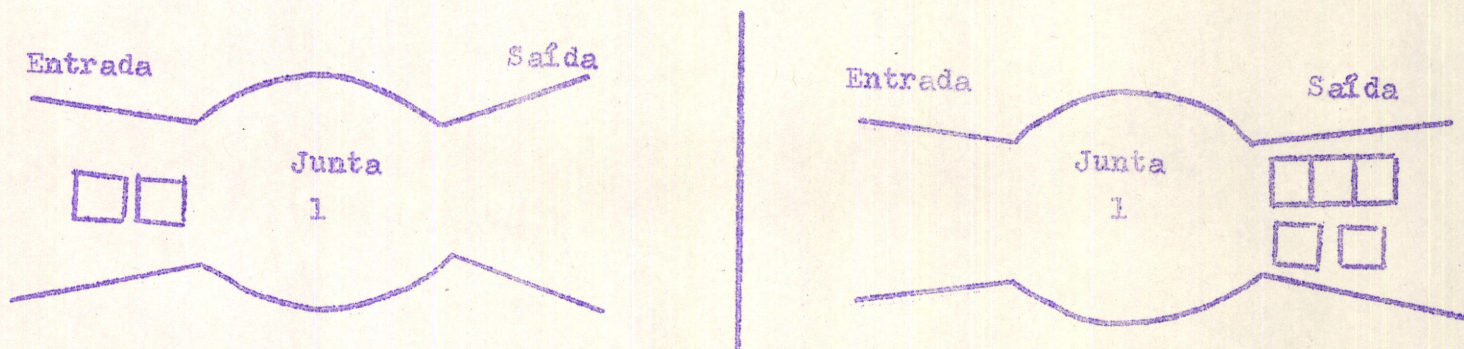
OPERADORES ADITIVOS

( Ficha 1.2)

- A 1 -

( Base três)

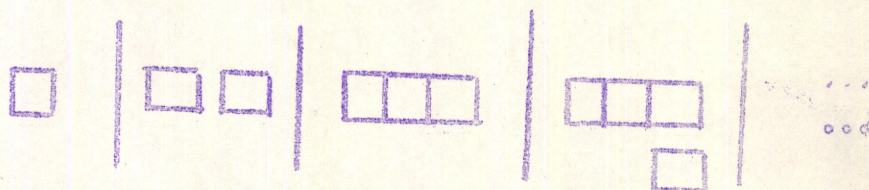
1- Encontrar o que sai ou o que se deve colocar na entrada.



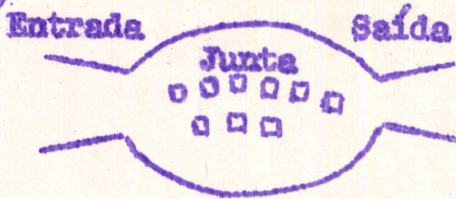
Entrada	1	0	10	12			
Saída					11	10	

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

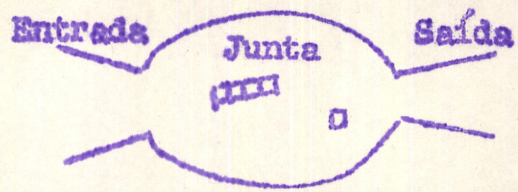
3- Se a máquina junta 10, quais dos blocos seguintes podem sair?



1)



Máquina de Jacques

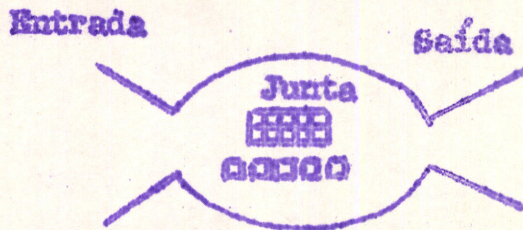


Máquina de Michel

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

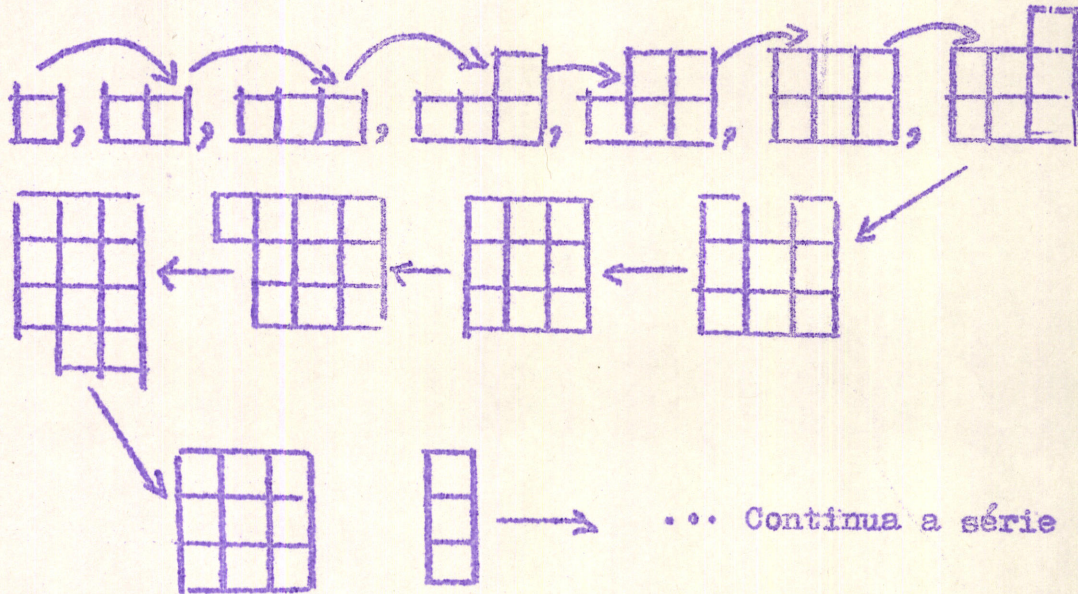


Máquina de Valérie

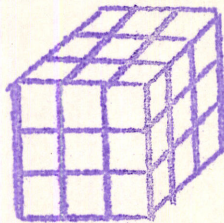
Encontra as saídas correspondentes às entradas das máquinas abaixo:

Entradas	 42	 23	 31	 12	 23
Saídas para Carole					
Saídas para Valérie					

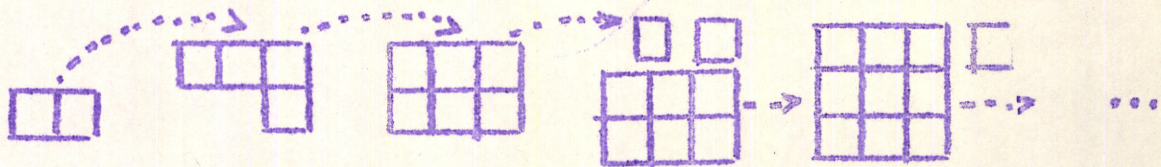
1) Faça a série com os blocos-:



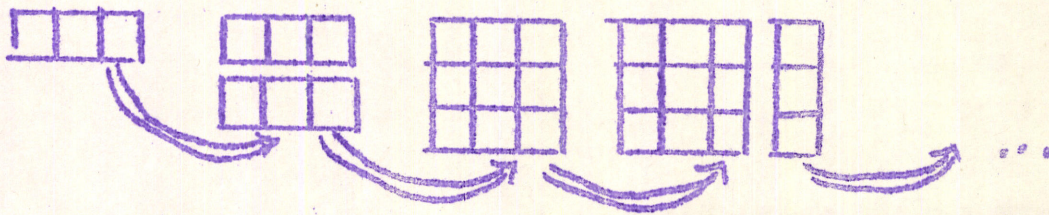
até



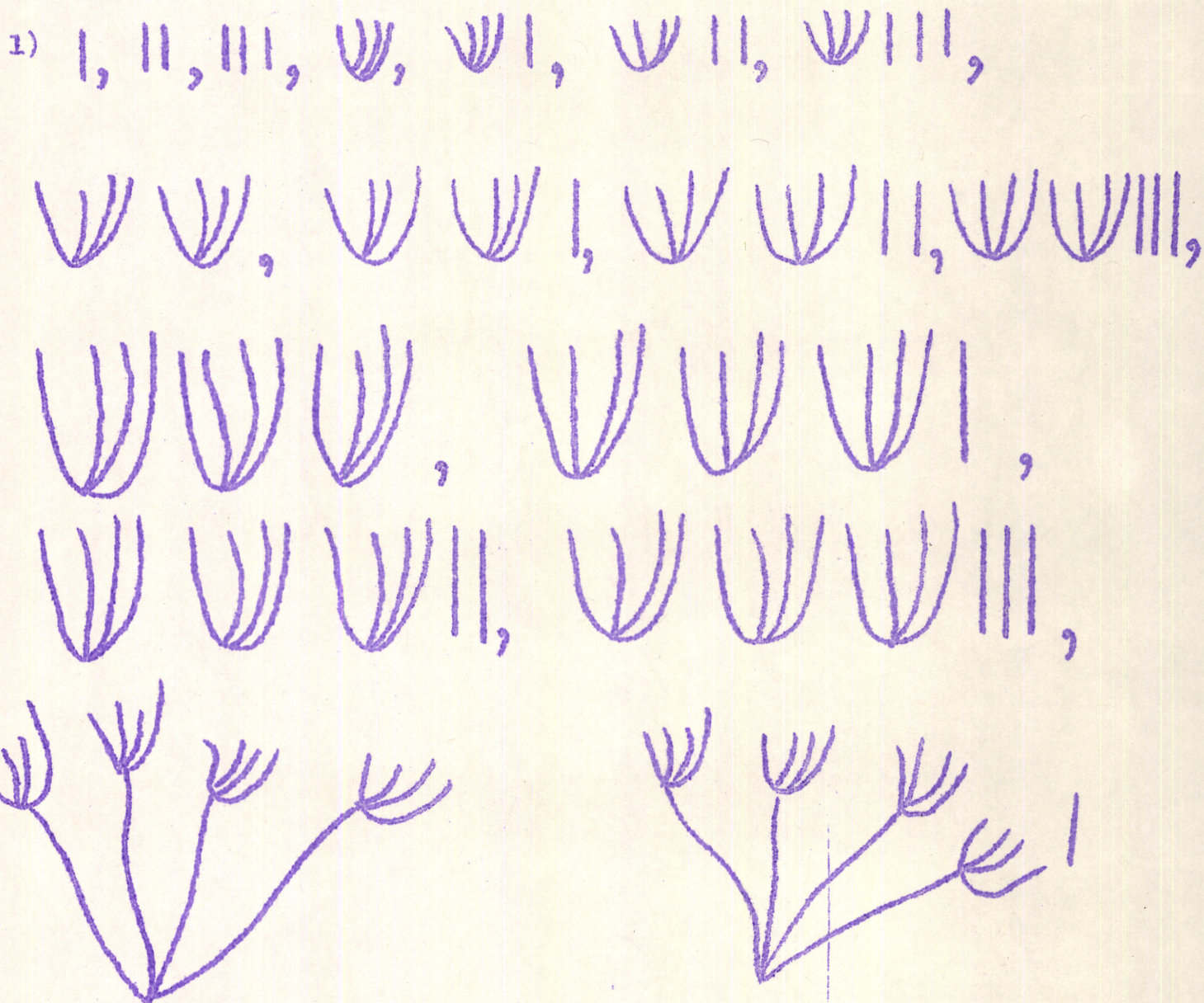
2) Faça a série seguinte com os blocos e continua-a tanto quanto podes-:



3) Faça o mesmo com a série :



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



Continua a série:

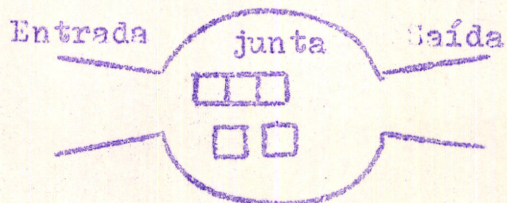
- 2) Faça uma série semelhante e m base três.
- 3) Faça uma série "2aa mais" e m base três.
- 4) Faça uma série " 3 a mais" em base quatro.

Operadores aditivos

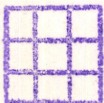
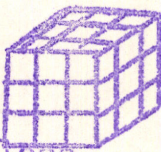

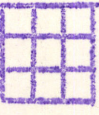
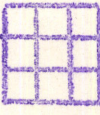

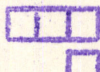



(Ficha 1.6)

(Base três)

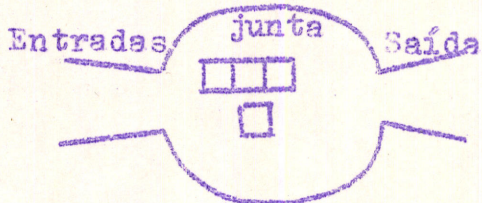
1-)






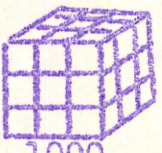


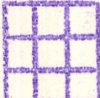


Encontre as entradas para as seguintes saídas:

Entradas						
Saídas	 100	 1000	 20	  200	   21	  101

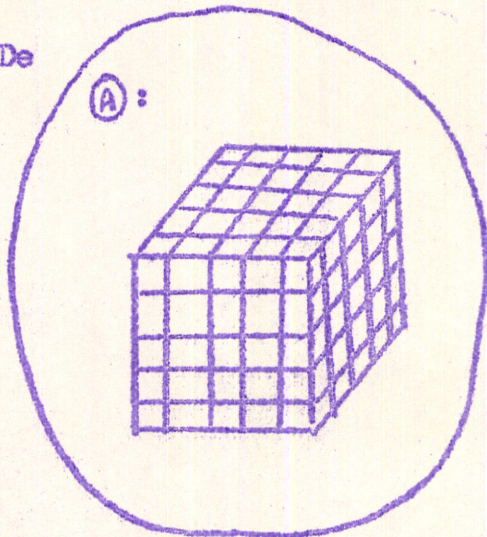
2-)



Encontre as entradas para as seguintes saídas:

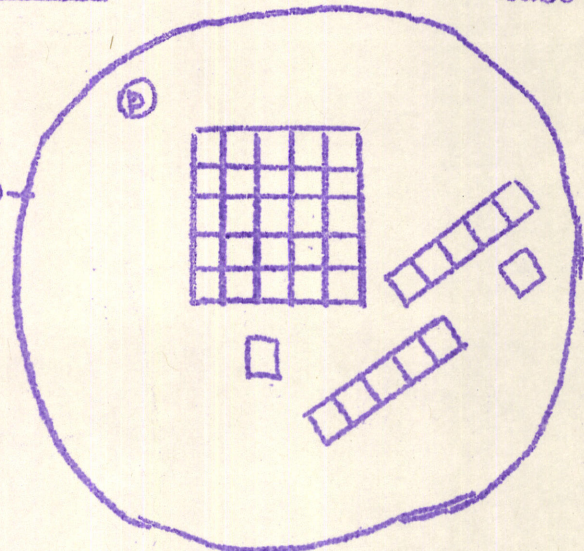
Entradas					
Saídas	 100	  110	 1000	  20	   201

1) De



(A):

retira  
tanto  
quanto



(B)

Em A tu tens

1 0 0 0

pequenos cubos

tu retiras :

1 2 3

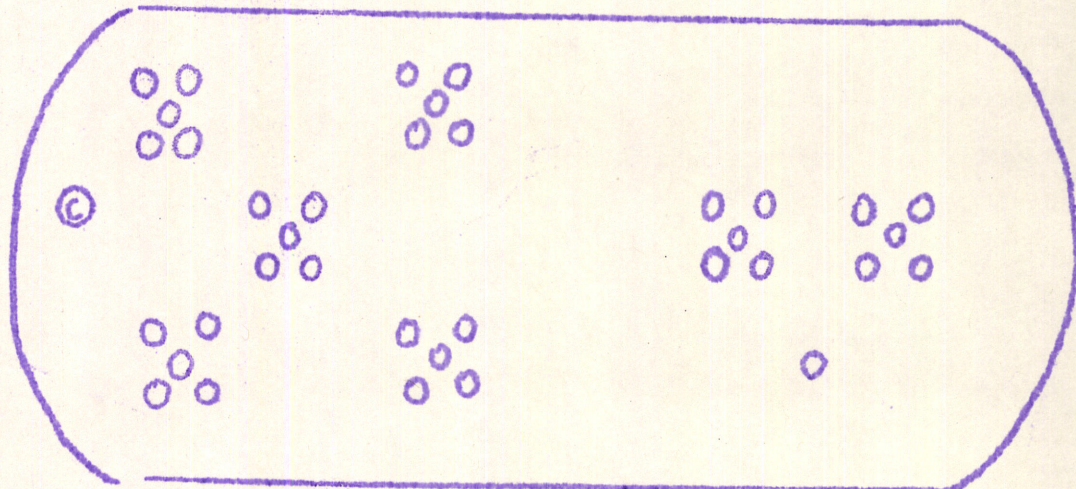
(tanto como em B ).

Restam :



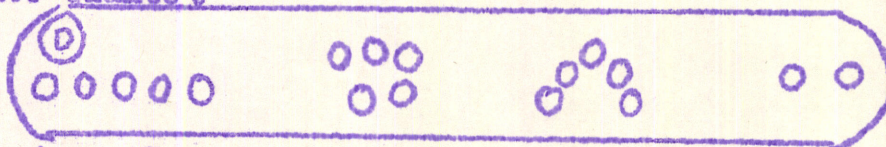
2)

De



(C)

retira tanto quanto ↓



(D)

Em C tu tens

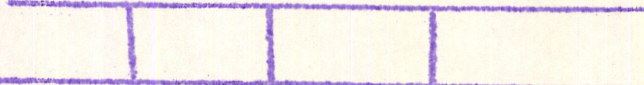
2 1

tu retiras

3 2

tanto quanto em D

Restam



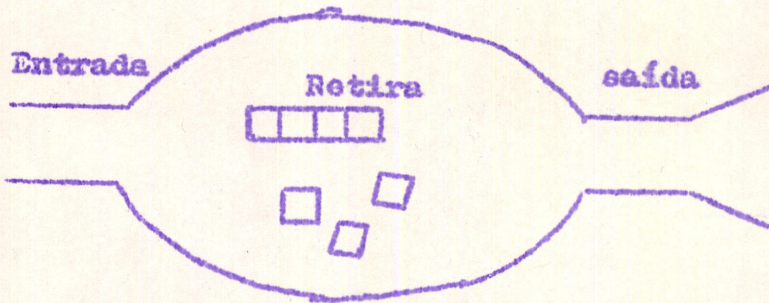
3) Faça outros exercicios paralelos.

Operadores aditivos

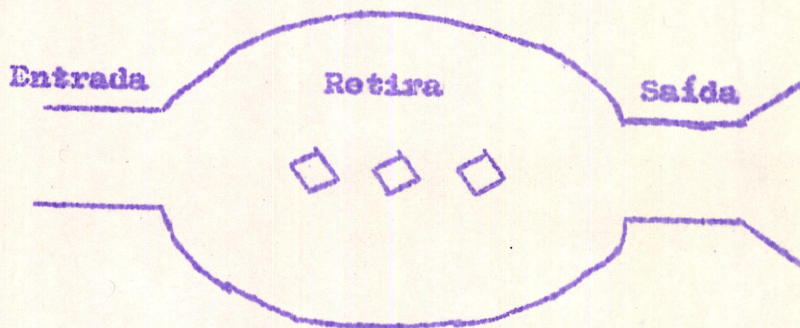
(Ficha 1.9)

- A 1 -

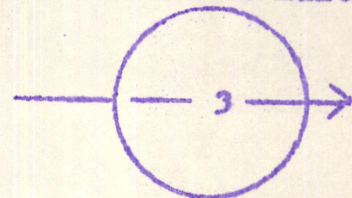
(Base quatro)



Entrada				
	100	31	22	33
Saída	?	?	?	?



É uma máquina de subtrair desenhada de forma muito simples:



Entrada				
	100	31	22	33
		?	?	?



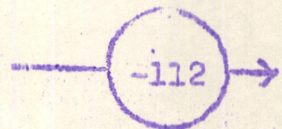
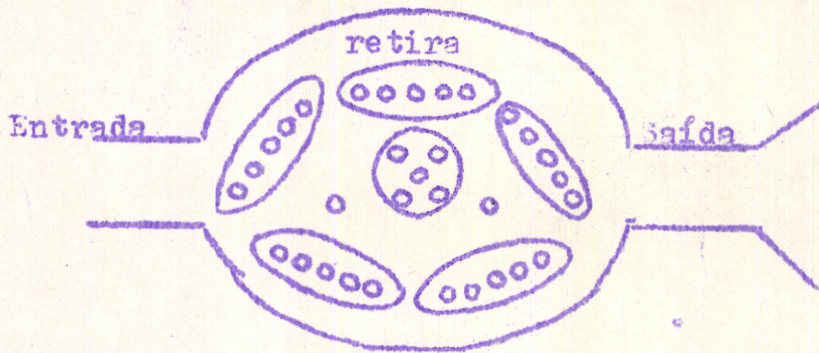
Operadores editivos

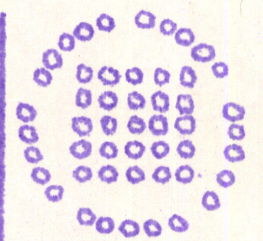
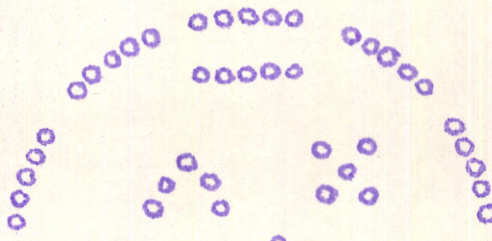
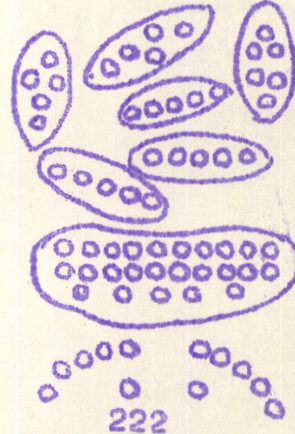
- A 1 -

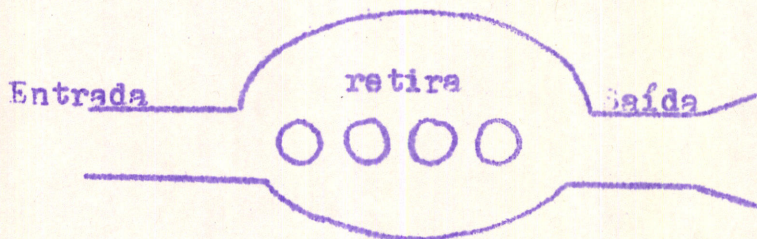
(Ficha 1.10)

(Base cinco)

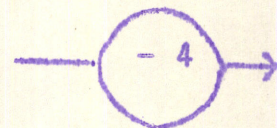
ou mais simples

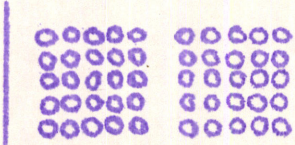
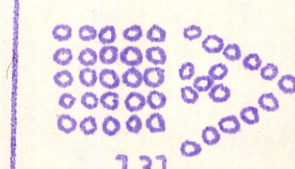
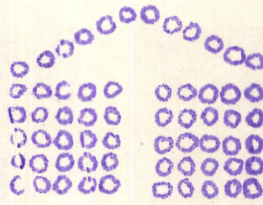


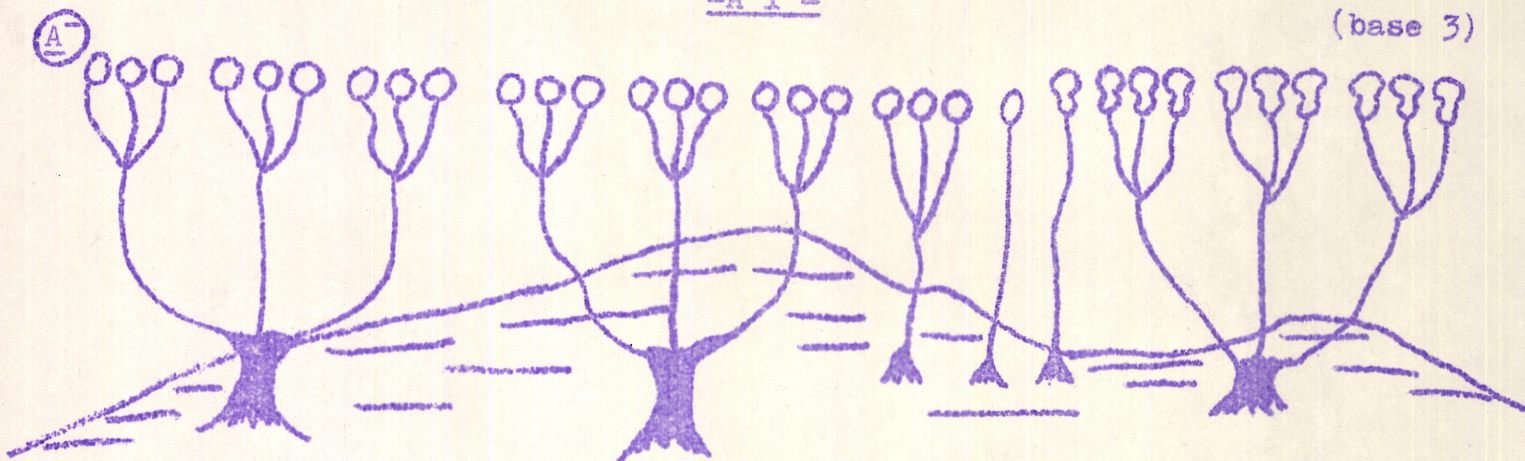
Entradas	 200	 131	 222
Saídas	?	?	?



ou mais simples



Entradas	 200	 131	 222
Saídas	?	?	?



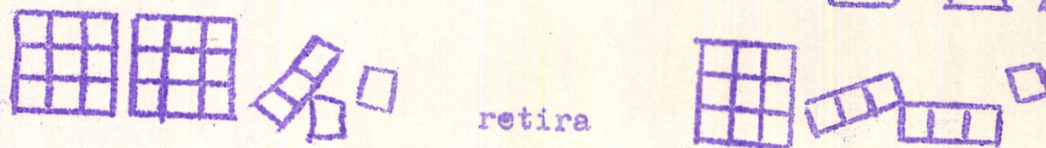
- (1) Quantas frutas há em todas as árvores juntas?
- (2) Quantas peras há?
- (3) Se retirarmos as peras, restam.....laranjas

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

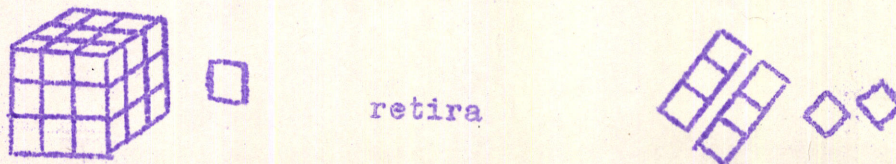
B-



C-



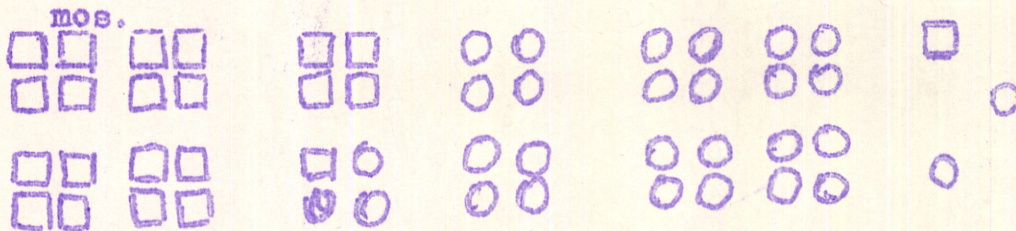
D-



E- Faça outros exercícios semelhantes.

(Base quatro)

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



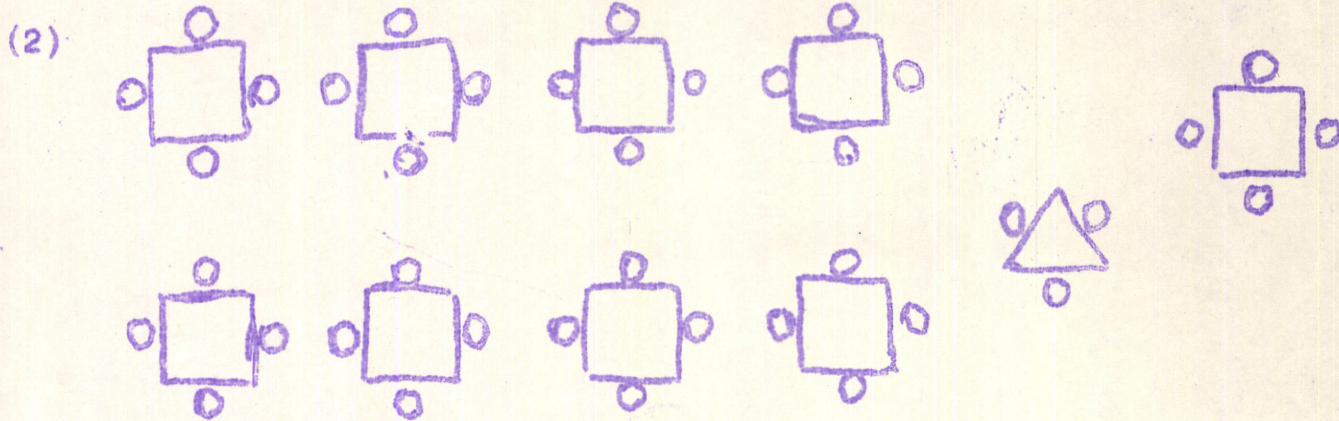
Quantos bombons há acima?

Escreve em base quatro:

	$b^2$	$b^1$	$b^0$
Número de bombons			
Número de bombons que			

Retira os bombons quadrados; terás, então:

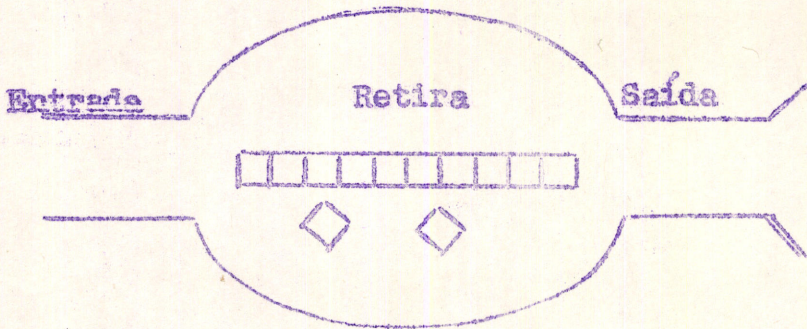
Número de bombons redondos			
----------------------------	--	--	--



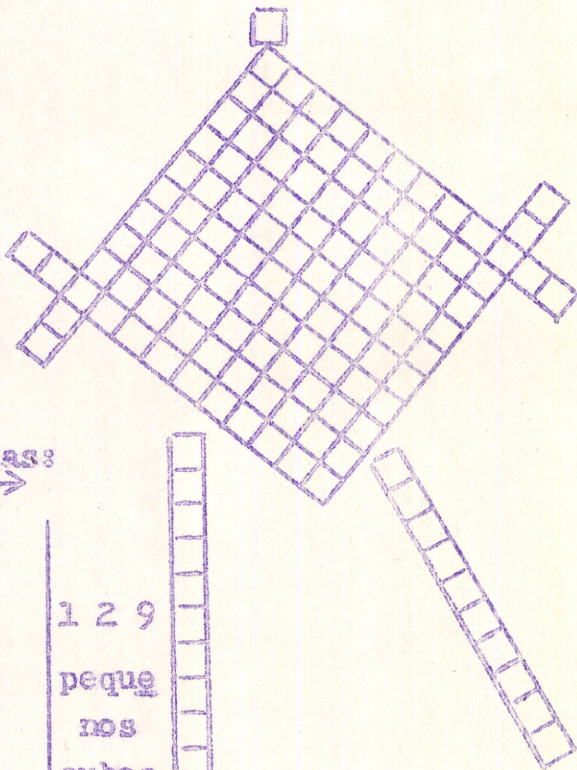
Há 2 1 3 (base quatro) crianças nesta classe:

3 1 (base quatro) são meninas

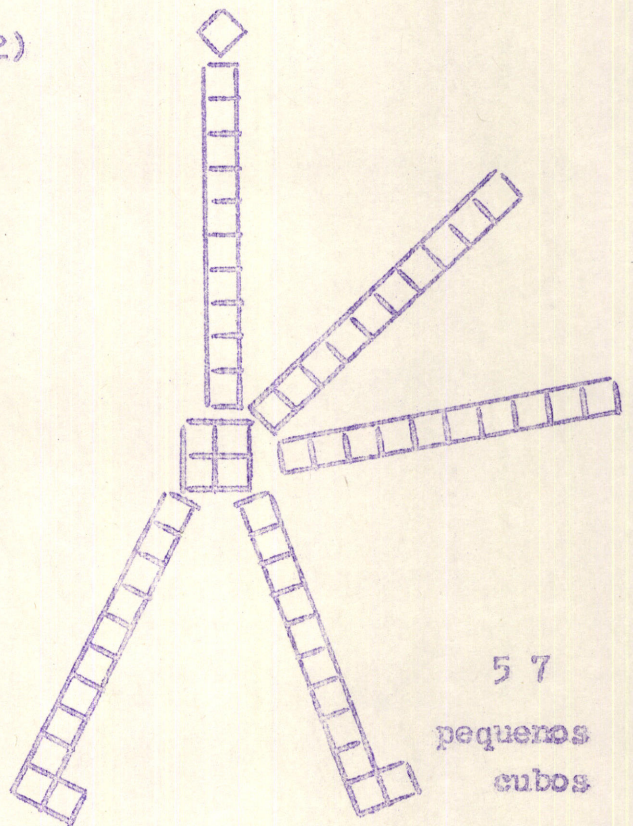
Quantos meninos há?



(1)



(2)



Entradas:

1 2 9  
pequenos  
cubos

5 7  
pequenos  
cubos

Saídas

(3) Procura também as entradas seguintes:

(1) 2 1 2,

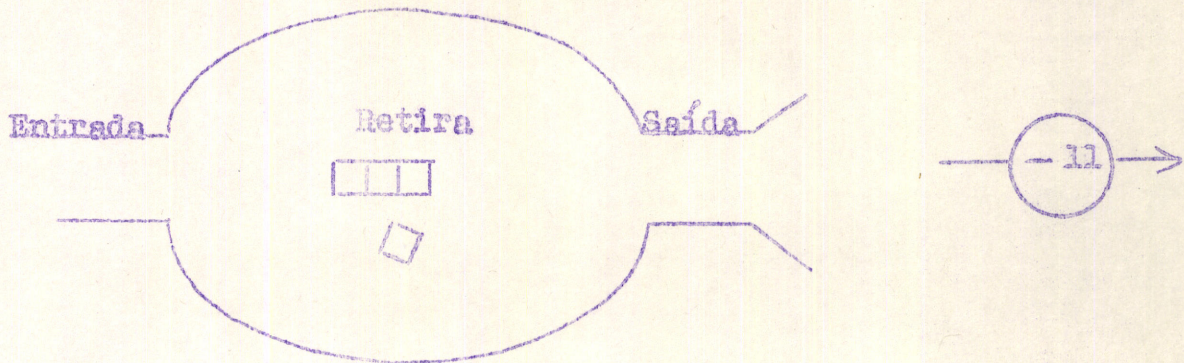
(11) 3 1 1,

(111) 1 2 3 .

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

(Procura as entradas !)

(1)

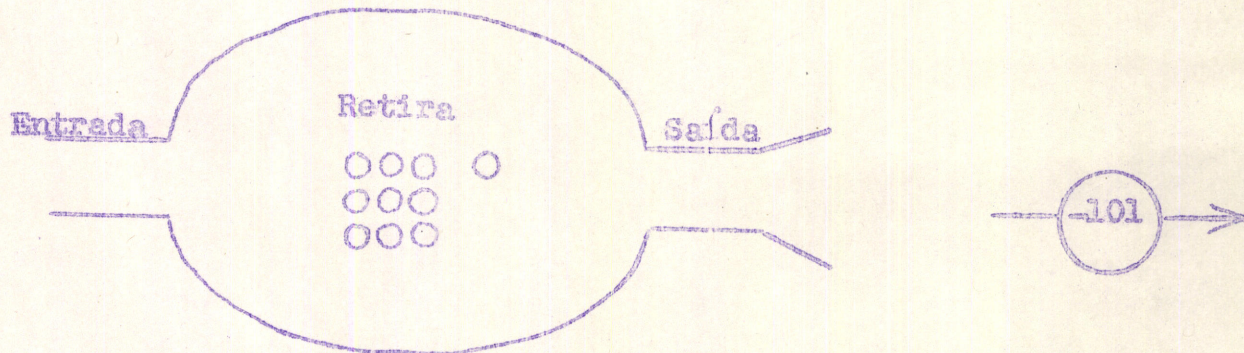


Entradas	?	?	?	?	?
Saídas					
	1	2 1	1 0 0	2	1 0

Pode-se escrever estes problemas assim:

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

(2)



Encontra as entradas para as saídas seguintes:

(1) 1 0 0 0,

(ii) 1 2 2,

(iii) 2 2 2.