

I.

Introdução

Todos os estudos que fizemos neste curso são de importância capital para nós, professores primários. Se nos fosse dado escolher o assunto pela sua importância para um trabalho de pesquisa, ser-nos-ia difícil escolher um, porque não só um, mas vários, se colocariam no mesmo grau.

Por mim, foi escolhido a "Introdução da Subtração no 1º ano", não só por considerá-la essencial como também, para completar a série de pesquisas realizadas pela equipe do Piauí.

Assim, levaremos um estudo mais sistemático e completo sobre assuntos diversos da matemática para o 1º ano, que muito nos irão servir e que mudarão completamente o caráter rotineiro de nossas aulas. Isto porque, foram pesquisas ricas em sugestões, fundamentadas e ampliadas por aulas inteligentes e claras que nos foram ministradas.

II.

Desenvolvimento

O ensino da matemática é de capital importância na escola primária; devendo ser bem utilizada para levar a criança à descoberta, e alcançar um dos seus objetivos — "Desenvolver o pensamento lógico e raciocínio que capacitem a criança a usar habilidades intelligen-

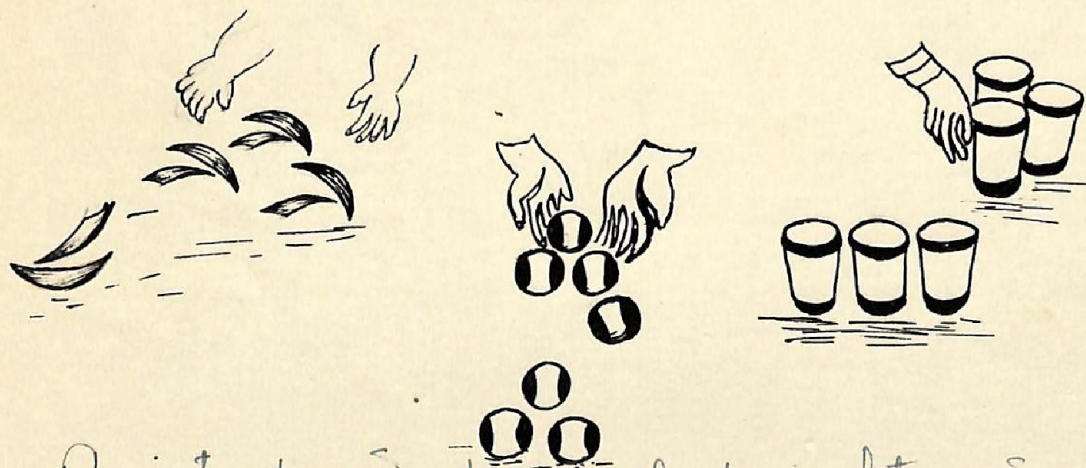
temente nas situações diárias que ela encontra".

Devido a má aplicação, poucos são os resultados obtidos, pois o grande mal da escola primária é levar a criança ao campo das ideias abstratas antes que ela tenha desenvolvimento preciso.

A princípio, a ^{adição} soma e a subtração são ensinadas paralelamente.

Para isto, usaremos materiais: concretos, manipulativos, visuais semi-concretos ou gráficos.

A situação inicial para o aprendizado consiste em agrupar e desagrupar, para dar noção de que a coleção nada mais é do que um conjunto de coisas e que a retirada ou entrada de elementos iguais podem aumentá-la ou diminuir-la, porém será sempre uma coleção.



A introdução do sinal da subtração no 1º ano, deve ser feita quando já tivermos trabalhado com a ^{adição} soma, de maneira que a criança já tenha dominado mais ou menos esta última operação. Só então, a partir deste momento, devemos introduzir o sinal da subtração como o inverso da adição e como desagrupamento de coleções.

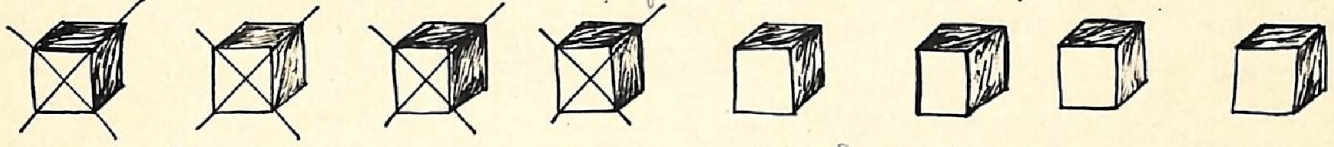
A maioria dos autores apresenta 3 situações para o aprendizado da subtração:

1. Decomposição - consiste em desagrupar coleções, "tirar fora" parte da coleção.

Neste processo cabem às perguntas:

Quanto resta? Quanto sobra? Quanto fica?

a - Tenho 8 cubinhos. Ciro 4, quantos restam?



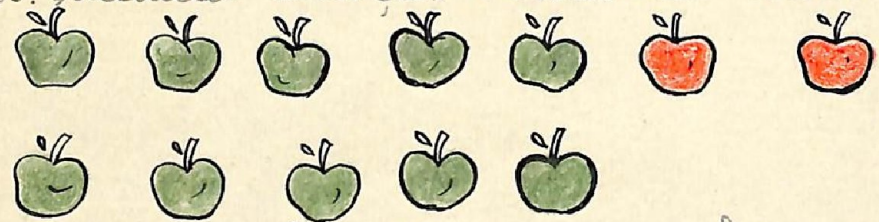
b - De 5 bolinhas, perdi 2. Quantas bolinhas me ficaram ainda?



2. Comparação - consiste em comparar coleções de modo que responda às perguntas:

Qual a diferença - "quanto mais?" "quanto menos?"

a - Juquinha ganhou 7 maçãs. 5 destas maçãs estão verdes. Quantas maçãs verdes são mais que as vermelhas?



3. Processo por adição - dão-se o subtraendo e o resto para achar-se o minuendo. Este é o processo mais comum na vida real.

a. Tenho 3 bolinhas. Quantas bolinhas mais, necessito para ter 5 bolinhas?



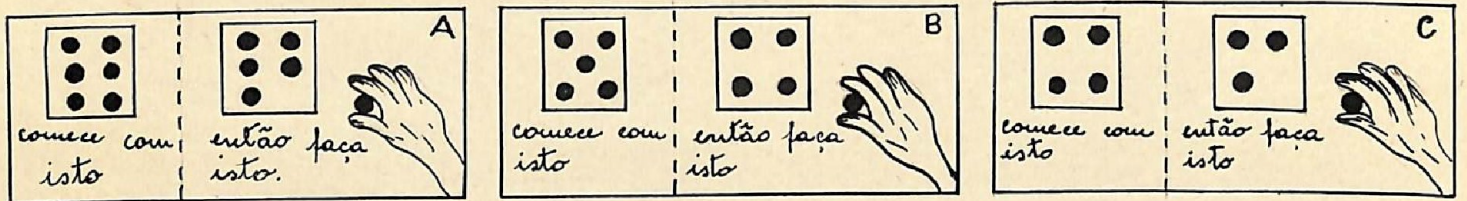
Além dessas 3 situações já apresentadas, Grossnickle ainda considera outra:

Tenho 5 bolitas. Destas bolitas, ^{umas} são verdes e outras são vermelhas. Se as verdes forem 3, quantas são as vermelhas?



Para ilustrar este trabalho, segue-se uma série de material, colhido de vários autores Grossnickle, Carpenter Swenson, Esther Swenson, Maurice K. Hartung, Henry V. Engen, onde vamos encontrar questões ricas para o aprendizado da subtração no 1º ano.

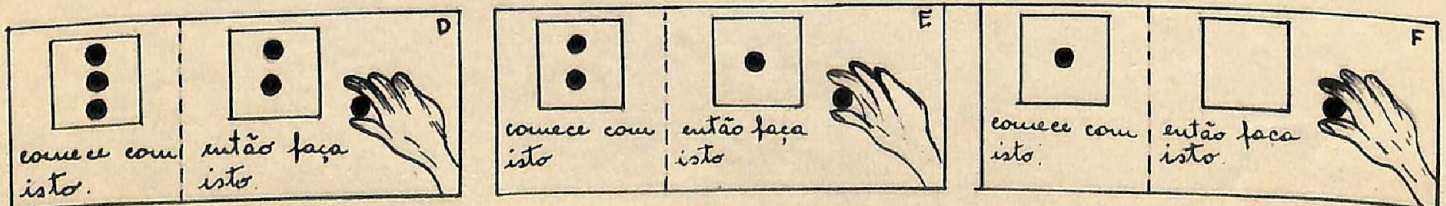
Descobrimos números.



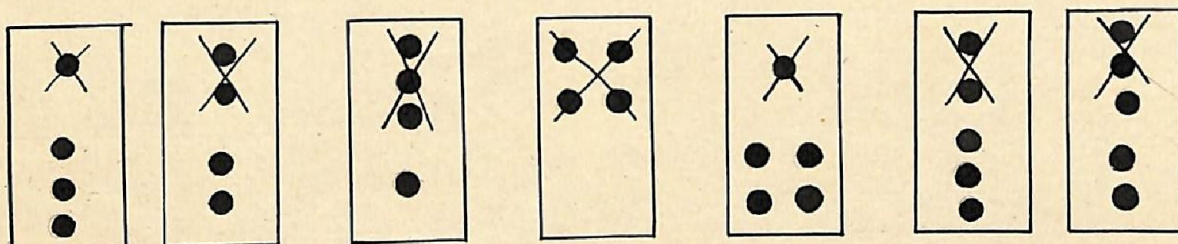
Aprender fazendo: Como subtrair.

Nesta lição você encontrará que resposta é quando você subtrai 1 de um número. Subtrair significa "tirar fora". Corte 6 círculos de papel ou use 6 discos.

1. Estenda uma coleção de 6 discos sobre um papel, como na figura A acima. Tire um disco como na figura A. Você aprendeu a mostrar o fato numérico $6 - 1$. O sinal $-$ significa "tirar fora".
2. Estenda uma coleção de 5 discos sobre o papel como na figura B. Tire fora um disco. Como você vê quantos sobraram? $5 - 1$?
3. A figura C acima mostra a você como descobrir o fato numérico $4 - 1$ com os discos. Faça o que a figura mostra. Escreva o fato numérico e a resposta.
4. Mostre com os discos cada uma das figuras abaixo. Escreva o fato que você descobre quando tira fora 1 de um número.



Courmy, pense bem, diga: "tirando fora 1 de um número é fácil. A resposta sempre é o número seguinte menor." Prove que Courmy tem razão.

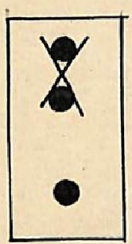
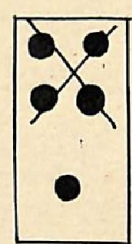


Aprender fatos de subtração

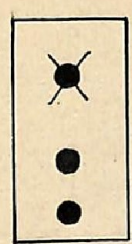
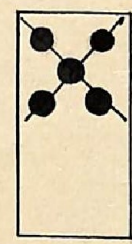
Ache o desenho que mostra cada um destes fatos numéricos.



- $\frac{1}{-1}$
- $\frac{2}{-2}$
- $\frac{2}{-1}$
- $\frac{3}{-3}$
- $\frac{3}{-2}$
- $\frac{3}{-2}$
- $\frac{4}{-4}$



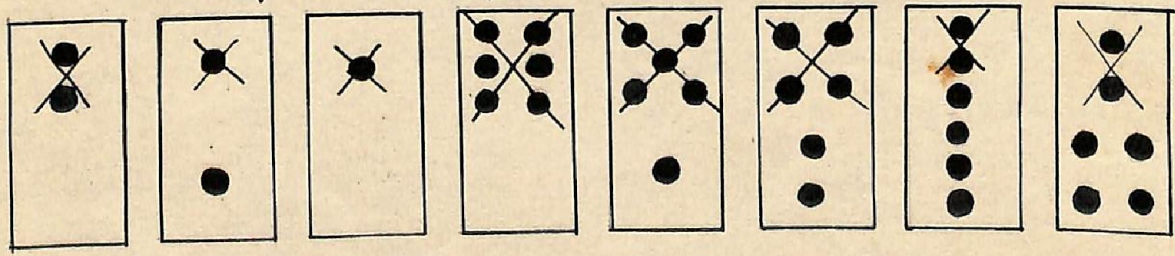
- $\frac{4}{-1}$
- $\frac{4}{-3}$
- $\frac{4}{-2}$
- $\frac{5}{-1}$
- $\frac{5}{-4}$
- $\frac{5}{-2}$
- $\frac{5}{-3}$



- $\frac{5}{-5}$
- $\frac{6}{-1}$
- $\frac{6}{-5}$
- $\frac{6}{-2}$
- $\frac{6}{-4}$
- $\frac{6}{-3}$
- $\frac{6}{-6}$



Copie cada fato e seu desenho.



Praticando fatos de subtração.

Diga os restos. Então copie os fatos e escreva os restos. Faça um cartão como exercício para cada fato que você não sabe. Ou são mostrados nas respostas.

$$\begin{array}{r} 6 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -6 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 1 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -2 \\ \hline \end{array}$$

Desenhando para comparar números nos proble-
mas.



7	livros
- 3	livros
4	livros

1. Bob tem 7 livros vermelhos. Ana tem 3 livros vermelhos. Quantos livros vermelhos Bob tem mais do que Ana?
2. Mary tem 5 bonecas. Sua irmã Helena tem 4 bonecas. Quantas bonecas tem Mary mais do que Helena?
3. Suzana tem 6 lápis. Patricia tem 5 lápis. Quantos lápis mais tem Patricia?

Praticando fatos de subtração.

Diga os restos. Então escreva-os em um papel dobrado.

$\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -4 \\ \hline \end{array}$
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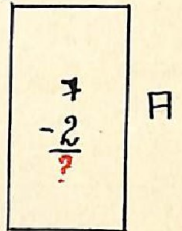
$\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$
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$\begin{array}{r} 6 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$
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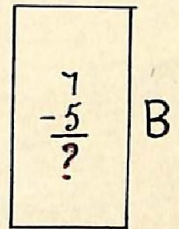
Descobriundo a subtração pela separação de 7 discos

Nesta lição, você pode descobrir quantos sobraram de 7 se você tirar alguns. Você precisará 7 círculos de papel ou 7 discos.

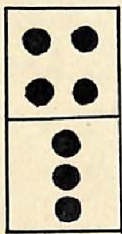
1. Isto é uma descoberta do Rogério. Ele colocou os 7 discos em 2 coleções como está no quadro A. Quais duas coleções menores ele fez? Então Rogério retirou a coleção de 2 discos como aparece na figura B. Quantos ele descobriu que sobraram?



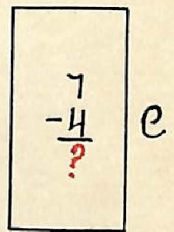
2. Então Rogério pôs os discos atrás, como aparece na figura A. Então ele retirou a coleção de 5 discos, como mostra o quadro C. Quantos ele descobriu que sobraram?



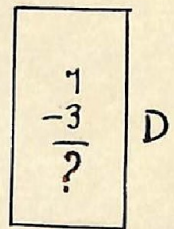
3. Agora faça algumas descobertas sozinho. Estenda os 7 discos como você vê à esquerda. Retire a coleção de cima de 4 discos. Quantos você vê que sobraram?



4. Ponha os 4 discos de costas sobre o papel. Retire a coleção de 3 discos. Quantos você vê que sobraram?

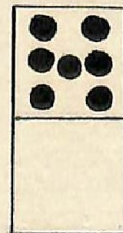
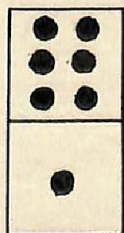


5. Que fatos numéricos da subtração você pode descobrir se você fizer as coleções abaixo com seus discos?

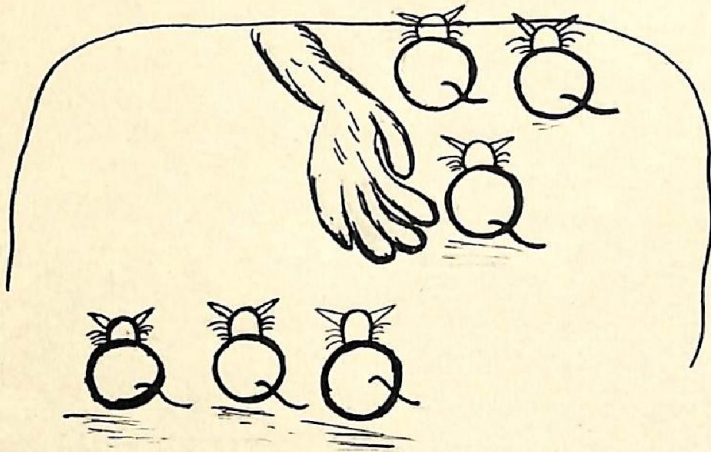


$$\begin{array}{r} 7 \\ -6 \\ \hline ? \end{array}$$

$$\begin{array}{r} 7 \\ -1 \\ \hline ? \end{array}$$



$$\begin{array}{r} 7 \\ -7 \\ \hline ? \end{array}$$

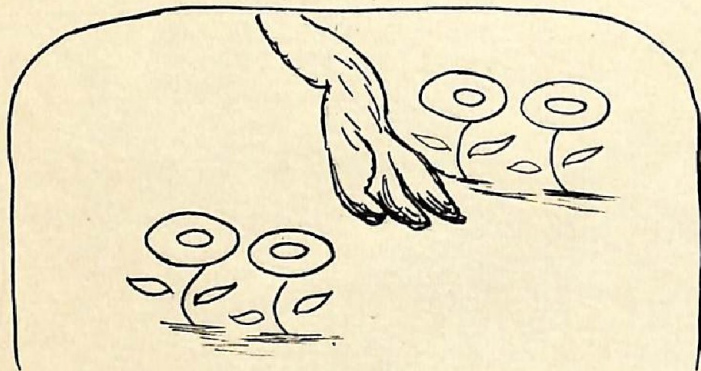


6 ratinhos estão sobre a mesa.

Quantos ratinhos Carol tirou fora?

Então ratinhos ficaram na mesa.

Subtraia 3 de 6. $6 - 3 = \square$

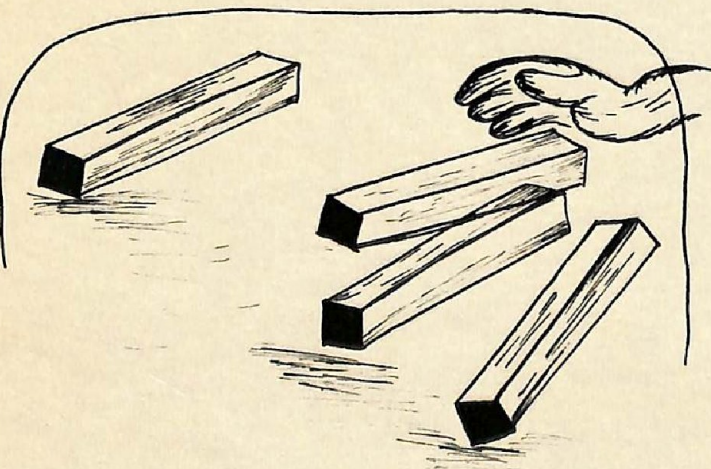


4 flores estão sobre a mesa.

Quantas flores Betty tirou fora?

Então flores ficaram na mesa.

Subtraia 2 de 4. $4 - 2 = \square$



4 paizinhos estão sobre a mesa.

Quantos paizinhos Nancy tirou fora?

Então paizinhos ficaram na mesa.

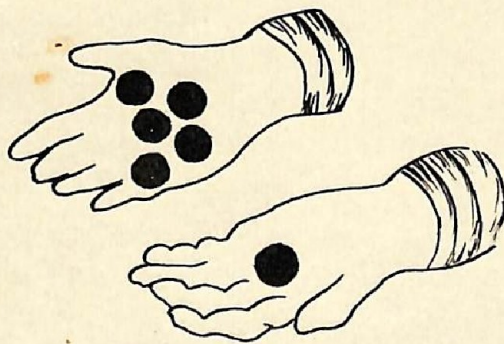
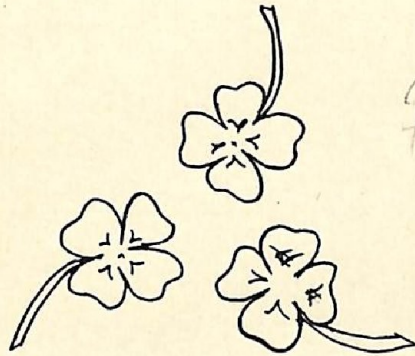
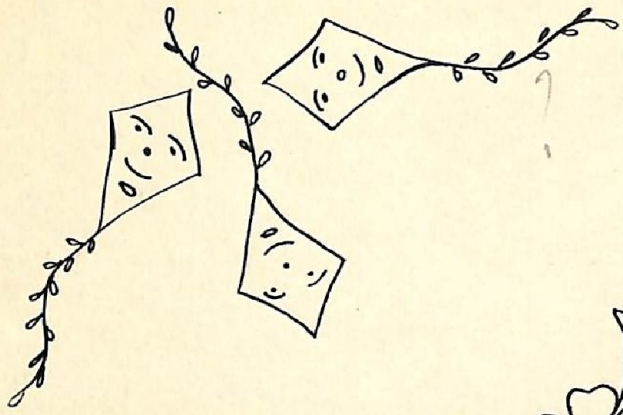
Subtraia 1 de 4. $4 - 1 = \square$

7 - 1 = □

$\frac{7}{1}$

7 - 6 = □

$\frac{7}{6}$



Adição e subtração

(Relação da adição e subtração)

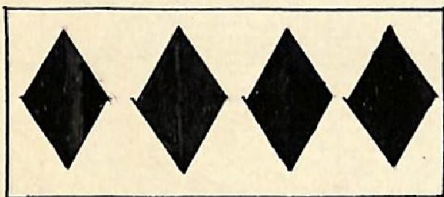
1. Qual figura conta estas histórias?
 $5 + 1 = 6$ $6 - 1 = 5$
 $1 + 5 = 6$ $6 - 5 = 1$
2. Qual figura conta estas histórias?
 $3 + 3 = 6$ $6 - 3 = 3$

Que é quatro?

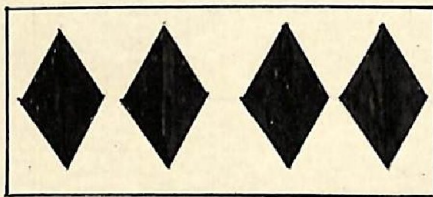
4 é 1 e 3.

4 é 2 e 2.

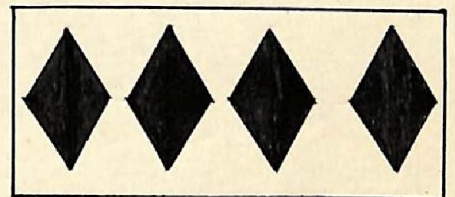
4 é 3 e 1.



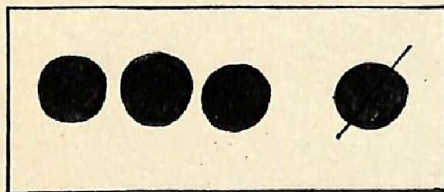
$$1 + 3 = 4$$



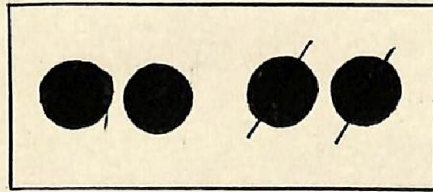
$$2 + 2 = 4$$



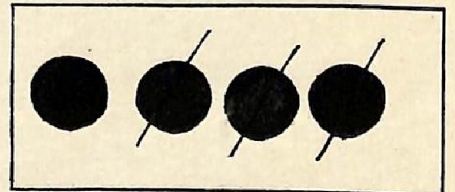
$$3 + 1 = 4$$



$$4 - 1 = 3$$



$$4 - 2 = 2$$



$$4 - 3 = 1$$

Que é cinco?

5 é 1 e 4.

5 é 4 e 1.

5 é 2 e 3.

5 é 3 e 2.

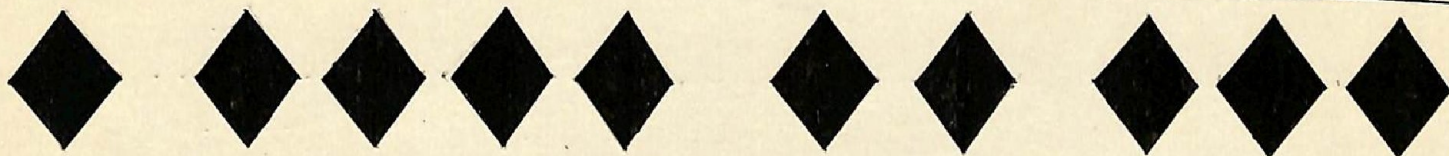


$$1 + 4 = 5$$

$$4 + 1 = 5$$

$$2 + 3 = 5$$

$$3 + 2 = 5$$

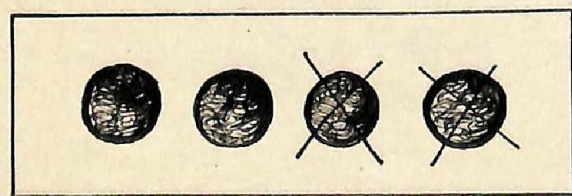
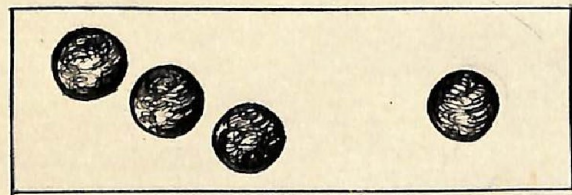
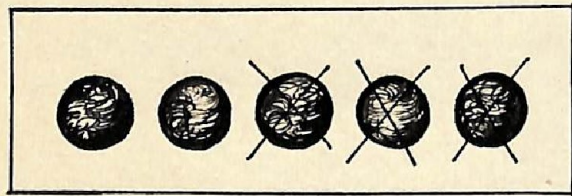
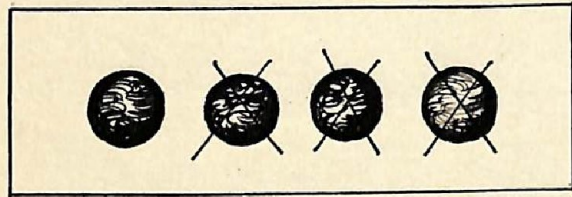
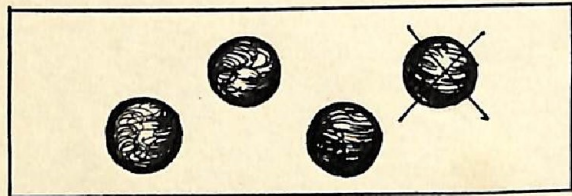
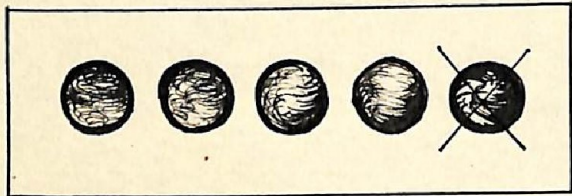
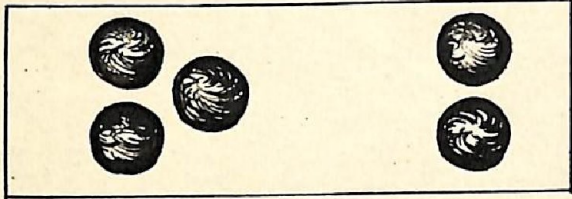
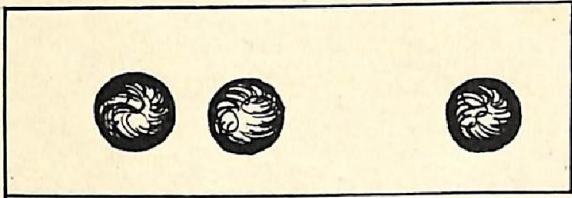


$$5 - 1 = 4$$

$$5 - 4 = 1$$

$$5 - 2 = 3$$

$$5 - 3 = 2$$



$$5 - 1 = \underline{\hspace{1cm}}$$

$$4 - 3 = \underline{\hspace{1cm}}$$

$$2 + 1 = \underline{\hspace{1cm}}$$

$$3 + 2 = \underline{\hspace{1cm}}$$

$$4 - 1 = \underline{\hspace{1cm}}$$

$$4 - 2 = \underline{\hspace{1cm}}$$

$$5 - 3 = \underline{\hspace{1cm}}$$

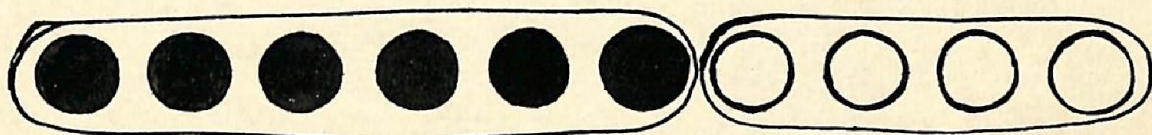
$$3 + 1 = \underline{\hspace{1cm}}$$

Trace uma linha de cada desenho à sua história correspondente.
Escreva a resposta de cada história.

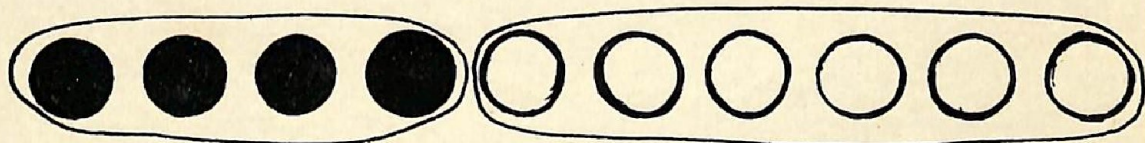
Novas famílias de números.

Aqui nós temos bolinhas para mostrar a família de fato numérico por 6, 4, e 10. Há 10 bolinhas em cada figura.

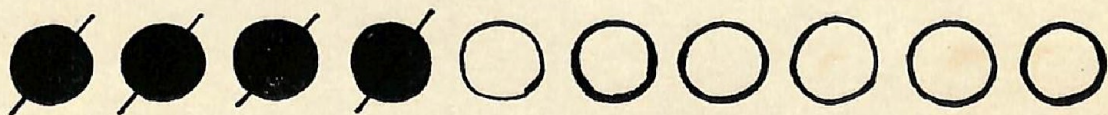
$6 + 4 = 10$



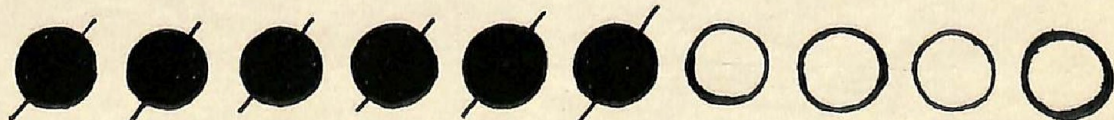
$4 + 6 = 10$

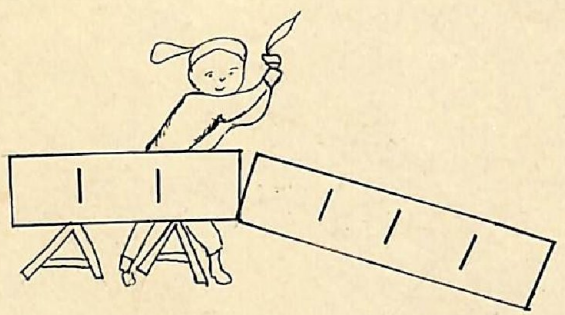


$10 - 4 = 6$

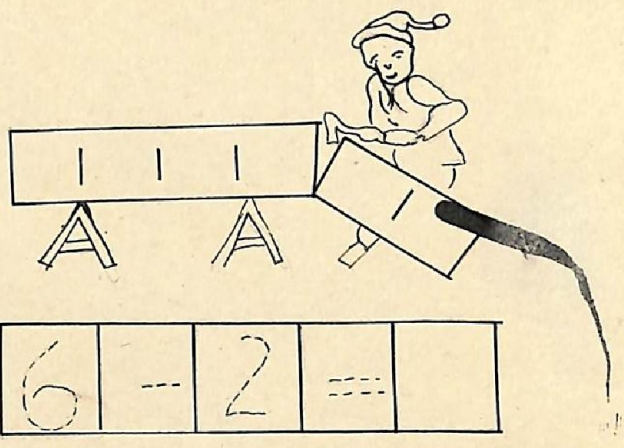


$10 - 6 = 4$

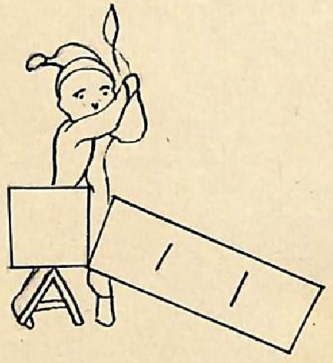




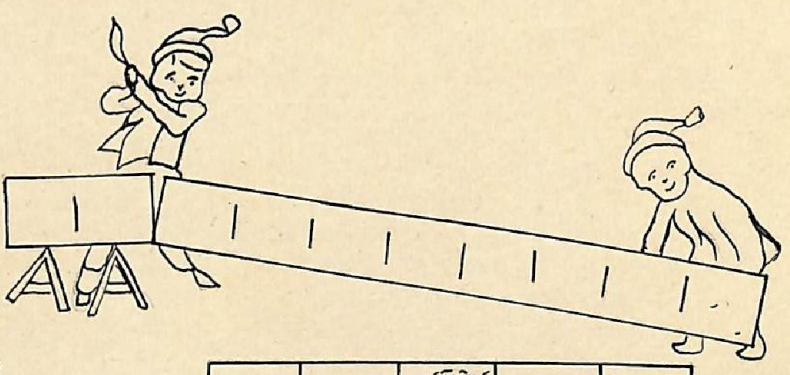
$$7 - 4 = \square$$



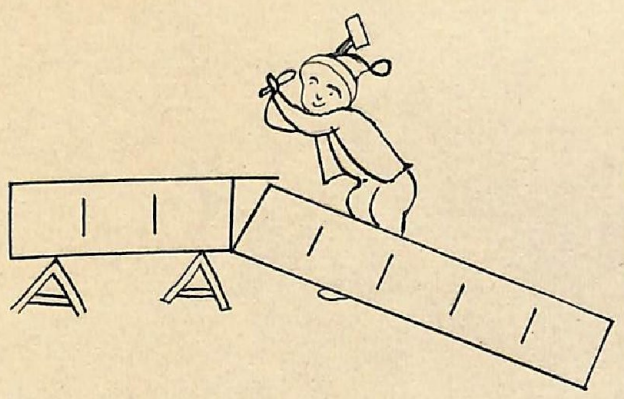
$$6 - 2 = \square$$



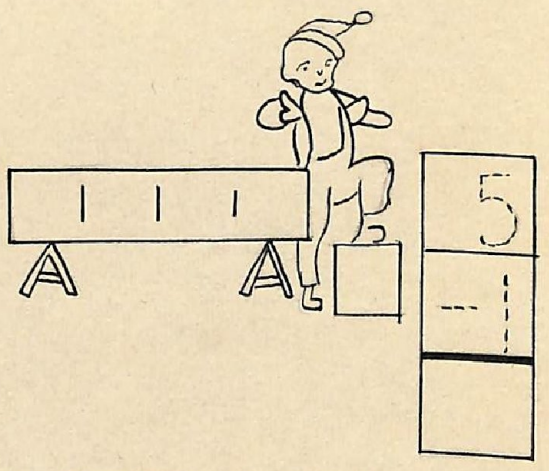
$$4 - 3 = \square$$



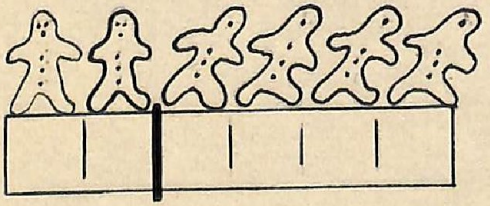
$$10 - 8 = \square$$



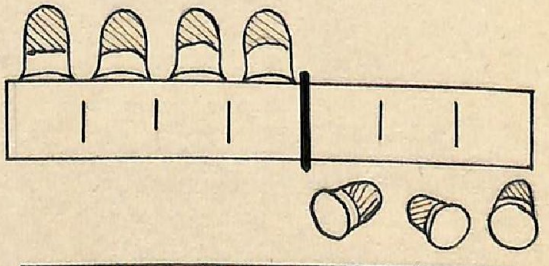
$$\begin{array}{|c|} \hline 8 \\ \hline - 5 \\ \hline \square \\ \hline \end{array}$$



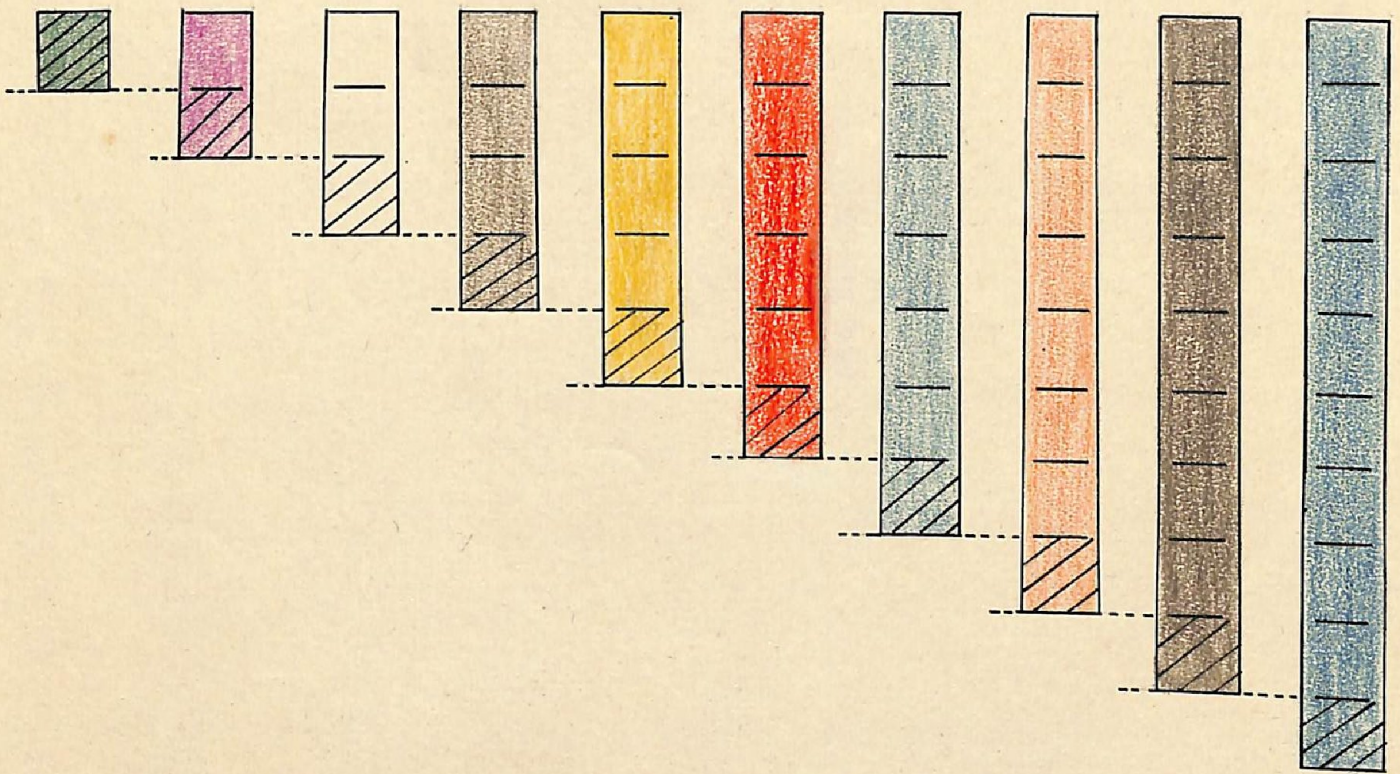
$$\begin{array}{|c|} \hline 5 \\ \hline - 1 \\ \hline \square \\ \hline \end{array}$$



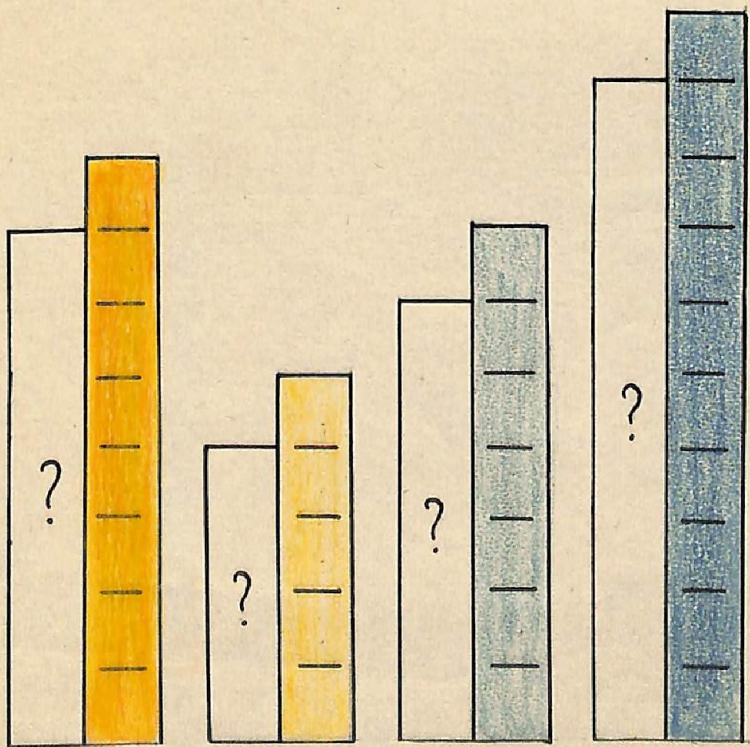
$$6 - 4 = \square$$



$$7 - 3 = \square$$



10	9	8							
-1	-1								



$$7 - 1 = \underline{\hspace{1cm}}$$

$$10 - 1 = \underline{\hspace{1cm}}$$

$$5 - 1 = \underline{\hspace{1cm}}$$

$$8 - 1 = \underline{\hspace{1cm}}$$

$$3 - 1 = \underline{\quad}$$

$$2 - 0 = \underline{\quad}$$

$$6 - 0 = \underline{\quad}$$

$$8 - 1 = \underline{\quad}$$

$$9 - 1 = \underline{\quad}$$

$$5 - 0 = \underline{\quad}$$

$$4 - 0 = \underline{\quad}$$

$$2 - 1 = \underline{\quad}$$

$$1 - 1 = \underline{\quad}$$

$$1 - 0 = \underline{\quad}$$

$$7 - 0 = \underline{\quad}$$

$$4 - 1 = \underline{\quad}$$

$$1 - 1 = \underline{\quad}$$

$$6 - 1 = \underline{\quad}$$

$$3 - 0 = \underline{\quad}$$

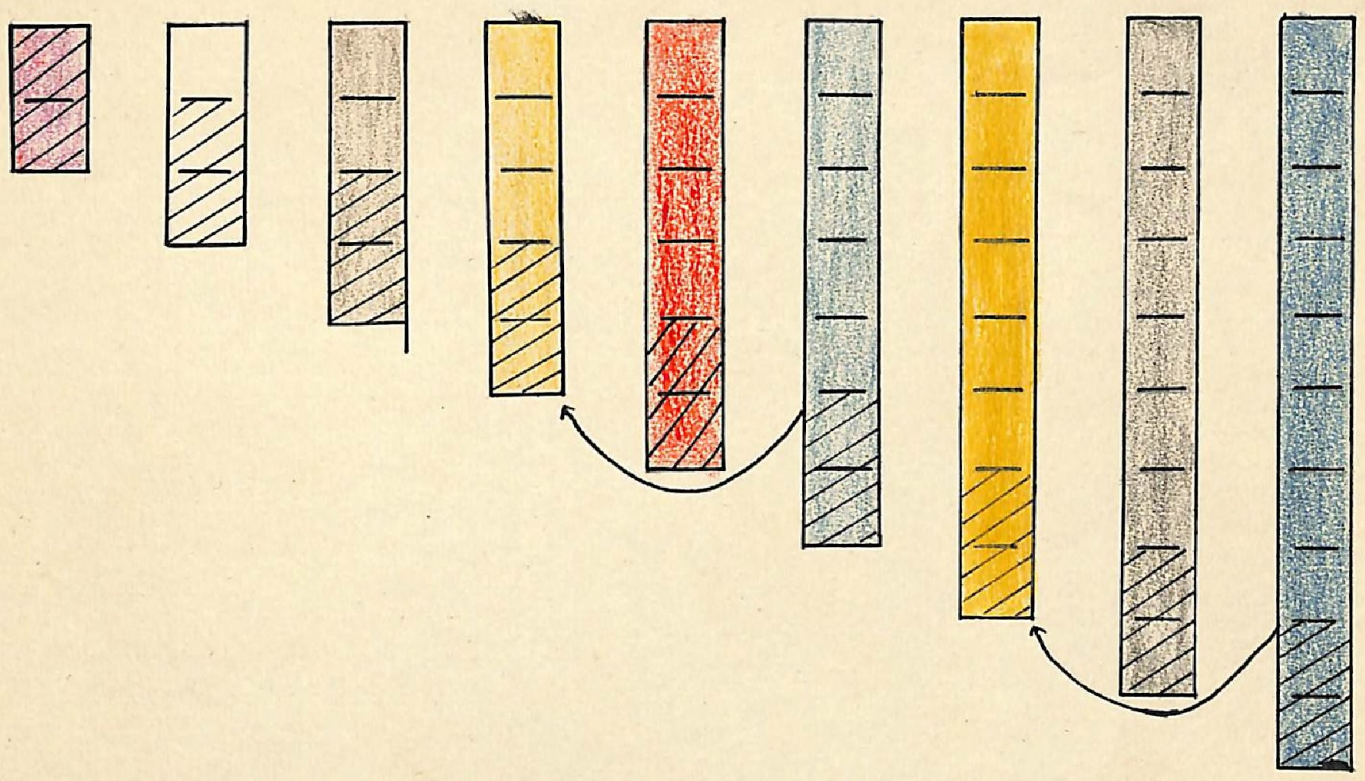
$$9 - 0 = \underline{\quad}$$

$$5 - 1 = \underline{\quad}$$

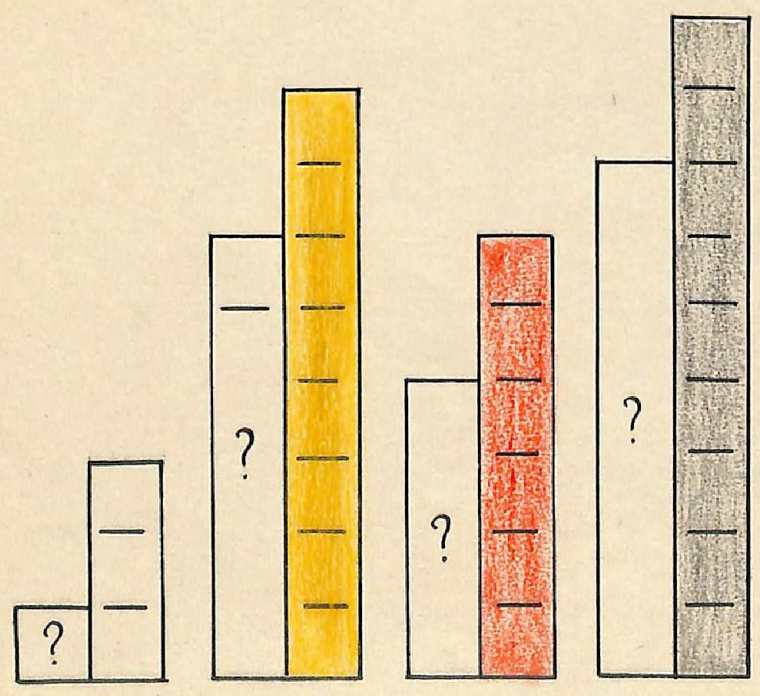
$$7 - 1 = \underline{\quad}$$

$$8 - 0 = \underline{\quad}$$

$$10 - 0 = \underline{\quad}$$



10	9	8						
-2	-2							



$$8 - 2 = \underline{\quad}$$

$$9 - 2 = \underline{\quad}$$

$$3 - 2 = \underline{\quad}$$

$$6 - 2 = \underline{\quad}$$

$5 - 2 = \underline{\quad}$

$2 - 1 = \underline{\quad}$

$9 - 1 = \underline{\quad}$

$10 - 2 = \underline{\quad}$

$2 - 2 = \underline{\quad}$

$5 - 1 = \underline{\quad}$

$7 - 1 = \underline{\quad}$

$8 - 1 = \underline{\quad}$

$4 - 2 = \underline{\quad}$

$6 - 2 = \underline{\quad}$

$1 - 1 = \underline{\quad}$

$3 - 1 = \underline{\quad}$

$3 - 2 = \underline{\quad}$

$9 - 2 = \underline{\quad}$

$6 - 1 = \underline{\quad}$

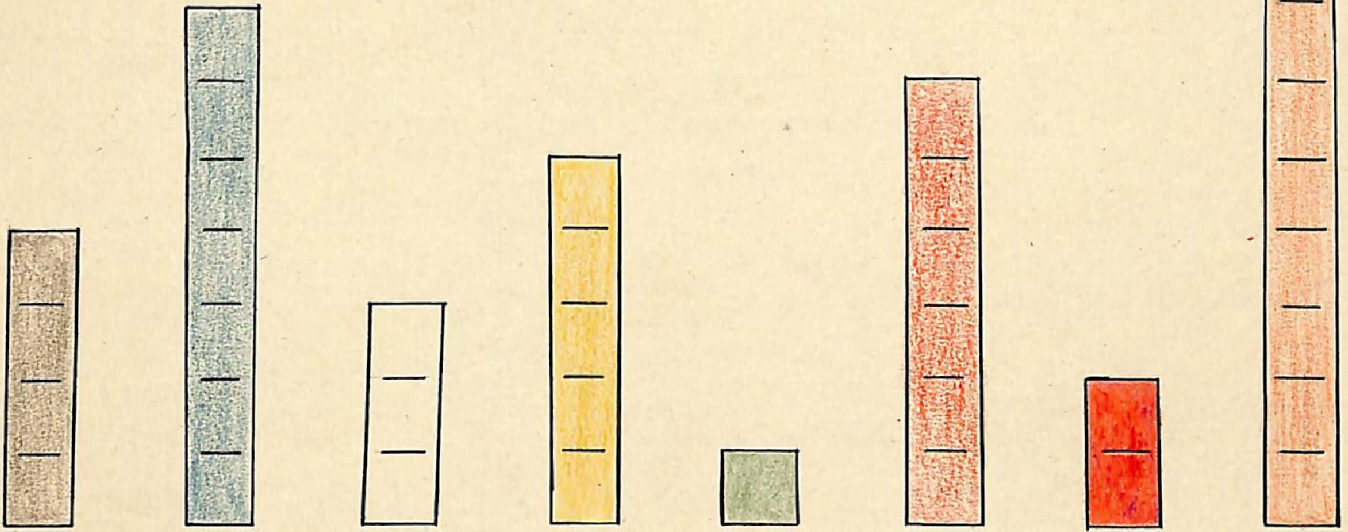
$5 - 0 = \underline{\quad}$

$8 - 2 = \underline{\quad}$

$4 - 1 = \underline{\quad}$

$10 - 1 = \underline{\quad}$

$7 - 2 = \underline{\quad}$



4	-	4	=	
7	-	7	=	
3	-			



$7 - 7 = \underline{\quad}$

$10 - 2 = \underline{\quad}$

$3 - 2 = \underline{\quad}$

$8 - 8 = \underline{\quad}$

$9 - 9 = \underline{\quad}$

$2 - 1 = \underline{\quad}$

$8 - 0 = \underline{\quad}$

$5 - 5 = \underline{\quad}$

$1 - 1 = \underline{\quad}$

$9 - 0 = \underline{\quad}$

$5 - 2 = \underline{\quad}$

$4 - 4 = \underline{\quad}$

$10 - 10 = \underline{\quad}$

$8 - 2 = \underline{\quad}$

$6 - 1 = \underline{\quad}$

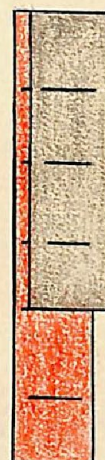
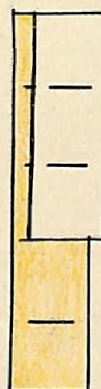
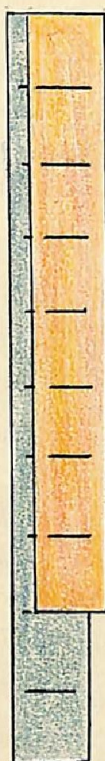
$6 - 6 = \underline{\quad}$

$3 - 3 = \underline{\quad}$

$4 - 2 = \underline{\quad}$

$7 - 2 = \underline{\quad}$

$2 - 2 = \underline{\quad}$



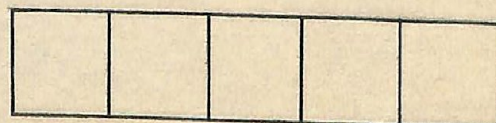
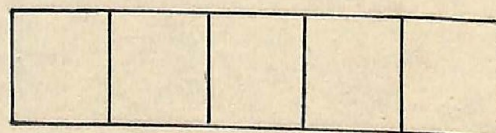
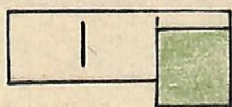
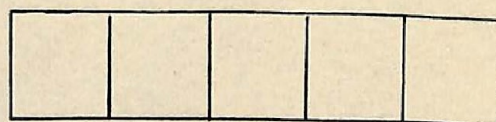
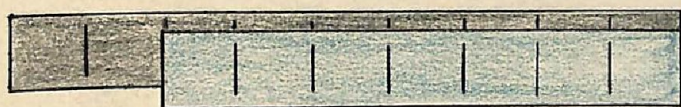
$$8 - \underline{\quad} = 2$$

$$5 - \underline{\quad} = 2$$

$$4 - \underline{\quad} = 2$$

$$6 - \underline{\quad} = 2$$

$$10 - \underline{\quad} = 2$$



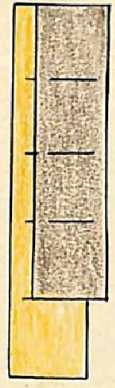
$$\begin{array}{r} 10 \\ -8 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -6 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ -7 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 1 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -9 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ -0 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -7 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -5 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -9 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ -6 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -8 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ -0 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ -8 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -3 \\ \hline \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ -2 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ -4 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ -1 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ -10 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ -6 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ -5 \\ \hline \end{array}$$



$$9 - \underline{\quad} = 1$$

$$8 - \underline{\quad} = 1$$

$$3 - \underline{\quad} = 1$$

$$2 - \underline{\quad} = 1$$

$$5 - \underline{\quad} = 1$$



$$6 - \underline{\quad} = 1$$

$$7 - \underline{\quad} = 1$$

$$4 - \underline{\quad} = 1$$

$$10 - \underline{\quad} = 1$$



$4 - 1 = \underline{\quad}$

$9 - 8 = \underline{\quad}$

$7 - 6 = \underline{\quad}$

$3 - 3 = \underline{\quad}$

$1 - 0 = \underline{\quad}$

$6 - 5 = \underline{\quad}$

$9 - 2 = \underline{\quad}$

$10 - 0 = \underline{\quad}$

$5 - 4 = \underline{\quad}$

$6 - 2 = \underline{\quad}$

$7 - 1 = \underline{\quad}$

$8 - 7 = \underline{\quad}$

$10 - 9 = \underline{\quad}$

$2 - 1 = \underline{\quad}$

$3 - 0 = \underline{\quad}$

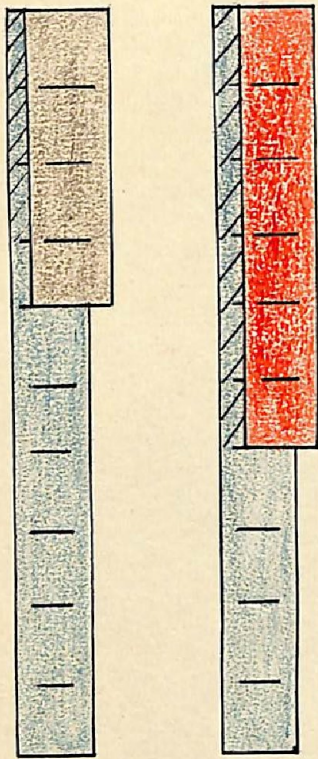
$3 - 2 = \underline{\quad}$

$4 - 3 = \underline{\quad}$

$5 - 1 = \underline{\quad}$

$5 - 2 = \underline{\quad}$

$6 - 6 = \underline{\quad}$

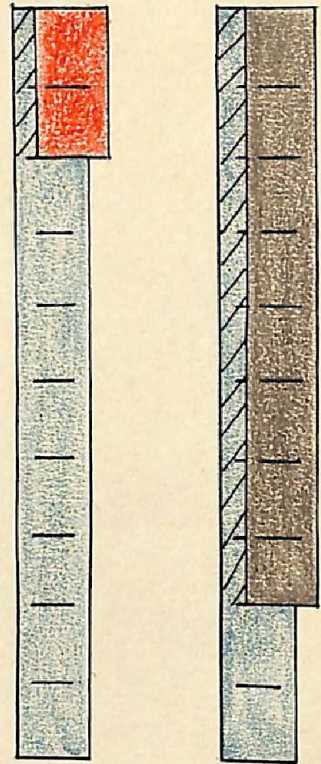


$$10 - 4 = \underline{\quad}$$

$$10 - 6 = \underline{\quad}$$

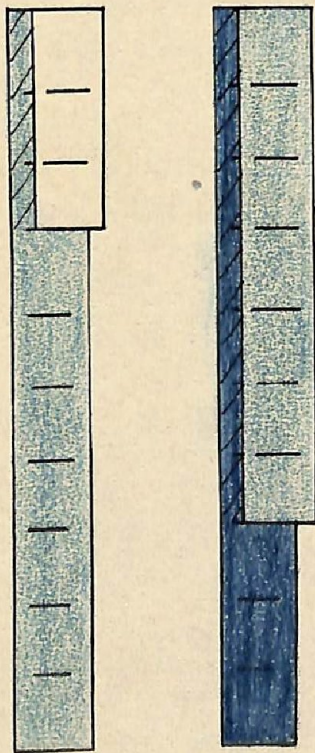


$$10 - 5 = \underline{\quad}$$



$$10 - 2 = \underline{\quad}$$

$$10 - 8 = \underline{\quad}$$

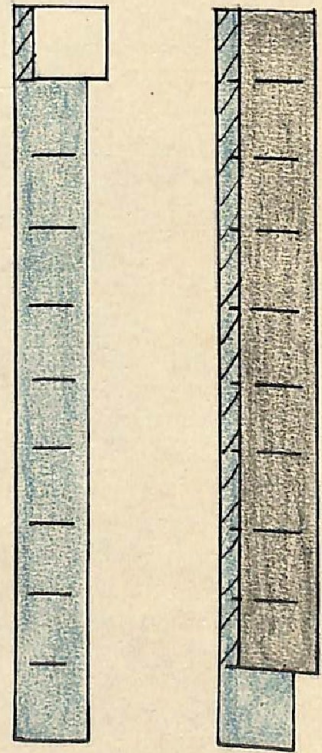


$$10 - 3 = \underline{\quad}$$

$$10 - 7 = \underline{\quad}$$



$$10 - 10 = \underline{\quad}$$



$$10 - 1 = \underline{\quad}$$

$$10 - 9 = \underline{\quad}$$

$$7 - 1 = \underline{\hspace{2cm}}$$

$$10 - 10 = \underline{\hspace{2cm}}$$

$$10 - 8 = \underline{\hspace{2cm}}$$

$$8 - 2 = \underline{\hspace{2cm}}$$

$$6 - 0 = \underline{\hspace{2cm}}$$

$$10 - 5 = \underline{\hspace{2cm}}$$

$$10 - 3 = \underline{\hspace{2cm}}$$

$$2 - 1 = \underline{\hspace{2cm}}$$

$$7 - 2 = \underline{\hspace{2cm}}$$

$$10 - 6 = \underline{\hspace{2cm}}$$

$$5 - 5 = \underline{\hspace{2cm}}$$

$$1 - 0 = \underline{\hspace{2cm}}$$

$$10 - 7 = \underline{\hspace{2cm}}$$

$$10 - 1 = \underline{\hspace{2cm}}$$

$$10 - 4 = \underline{\hspace{2cm}}$$

$$8 - 8 = \underline{\hspace{2cm}}$$

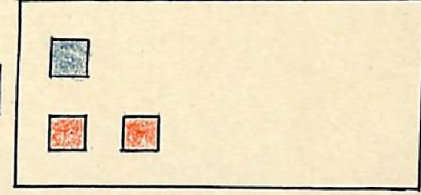
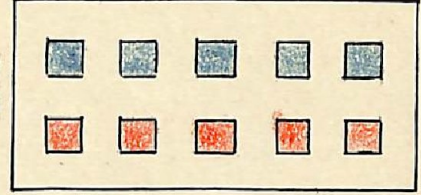
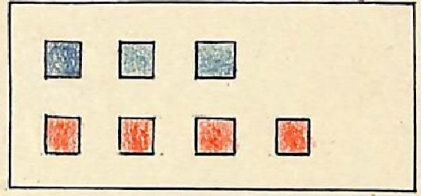
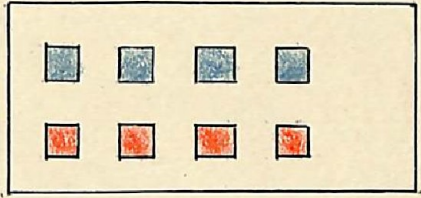
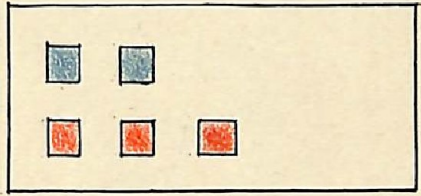
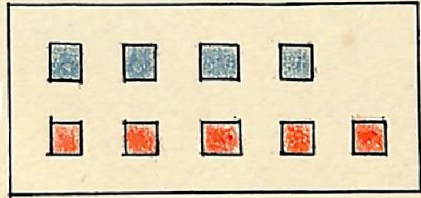
$$4 - 2 = \underline{\hspace{2cm}}$$

$$10 - 0 = \underline{\hspace{2cm}}$$

$$10 - 9 = \underline{\hspace{2cm}}$$

$$10 - 2 = \underline{\hspace{2cm}}$$

9



9 - 4 =

5 - 2 =

8 - 4 =

3 - 1 =

4 - 2 =

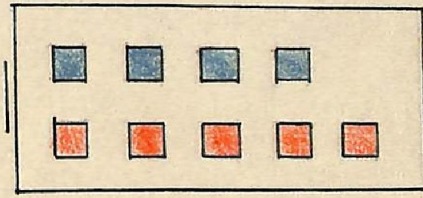
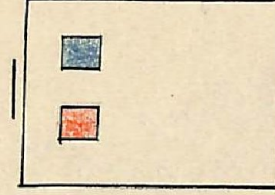
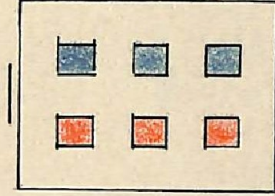
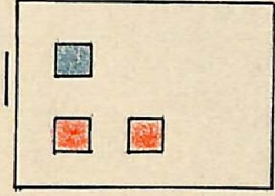
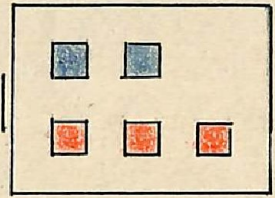
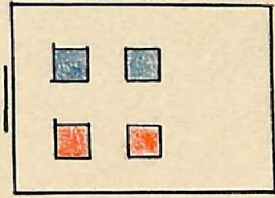
3 - 2 =

7 - 3 =

10 - 5 =

5 - 3 =

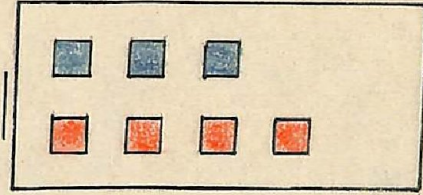
2 - 1 =



9 - 3 =

6 - 5 =

7 - 4 =



$10 - 7 = \underline{\quad}$

$7 - 7 = \underline{\quad}$

$3 - 2 = \underline{\quad}$

$10 - 5 = \underline{\quad}$

$9 - 4 = \underline{\quad}$

$2 - 1 = \underline{\quad}$

$6 - 3 = \underline{\quad}$

$9 - 5 = \underline{\quad}$

$1 - 1 = \underline{\quad}$

$7 - 4 = \underline{\quad}$

$8 - 4 = \underline{\quad}$

$10 - 6 = \underline{\quad}$

$10 - 3 = \underline{\quad}$

$3 - 1 = \underline{\quad}$

$5 - 3 = \underline{\quad}$

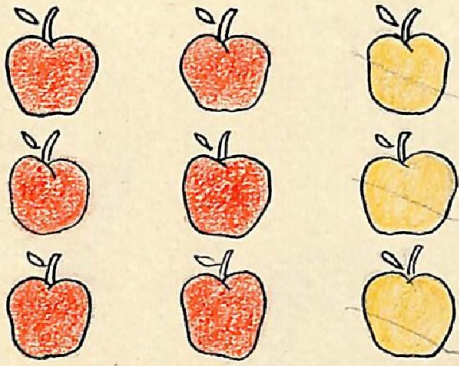
$1 - 0 = \underline{\quad}$

$7 - 0 = \underline{\quad}$

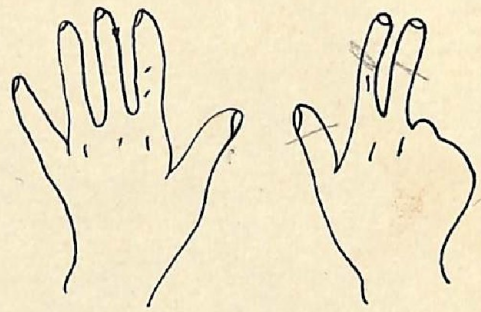
$5 - 2 = \underline{\quad}$

$4 - 2 = \underline{\quad}$

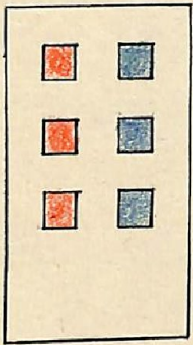
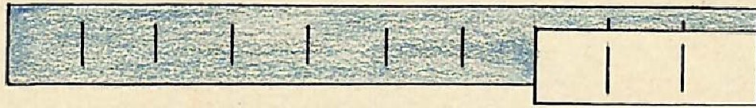
$7 - 3 = \underline{\quad}$



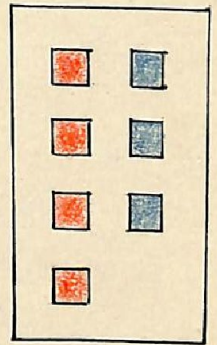
$$9 - 3 = \underline{\quad}$$



$$8 - 3 = \underline{\quad}$$



$$10 - 3 = \underline{\quad}$$



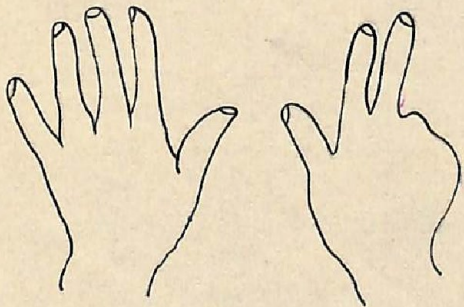
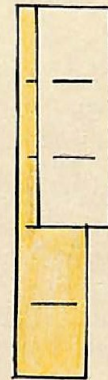
$$7 - 3 = \underline{\quad}$$



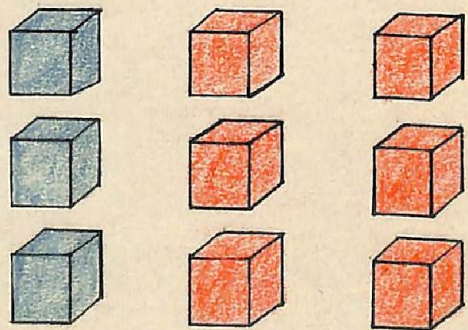
$$4 - 3 = \underline{\quad}$$

$$6 - 3 = \underline{\quad}$$

$$5 - 3 = \underline{\quad}$$



$$8 - 5 = \underline{\quad}$$



$$9 - 6 = \underline{\quad}$$

10	2	9	1	7	9	5
<u>-1</u>	<u>-2</u>	<u>-6</u>	<u>-0</u>	<u>-4</u>	<u>-8</u>	<u>-3</u>

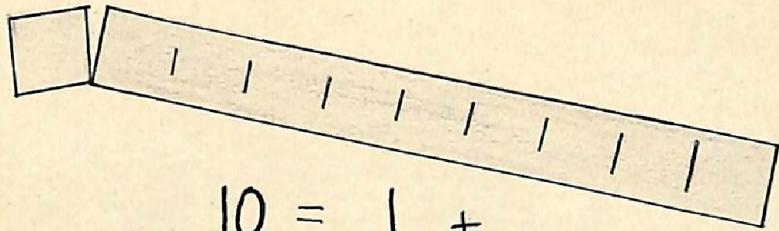
8	10	8	3	9	5	2
<u>-5</u>	<u>-4</u>	<u>-8</u>	<u>-2</u>	<u>-5</u>	<u>-4</u>	<u>-0</u>

9	6	10	2	4	9	3
<u>-9</u>	<u>-5</u>	<u>-3</u>	<u>-1</u>	<u>-2</u>	<u>-3</u>	<u>-0</u>

7	4	8	10	4	5	9
<u>-6</u>	<u>-0</u>	<u>-3</u>	<u>-2</u>	<u>-4</u>	<u>-2</u>	<u>-1</u>

5	7	6	9	10	4	6
<u>-0</u>	<u>-3</u>	<u>-6</u>	<u>-7</u>	<u>-5</u>	<u>-1</u>	<u>-2</u>

$$\begin{array}{r} 10 \\ -1 \\ \hline \end{array}$$

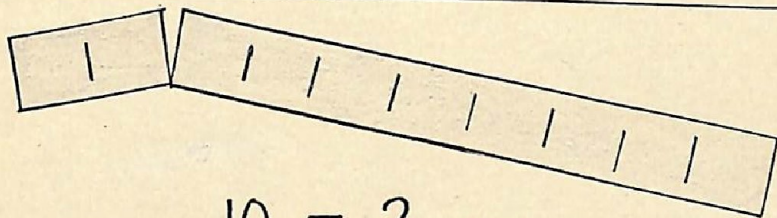


$$10 = 1 + \underline{\quad}$$

$$10 = 9 + \underline{\quad}$$

$$\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$$

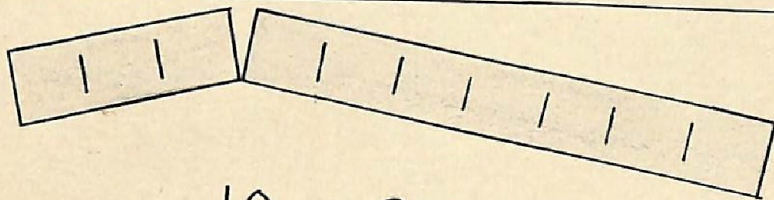


$$10 = 2 + \underline{\quad}$$

$$10 = 8 + \underline{\quad}$$

$$\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$$

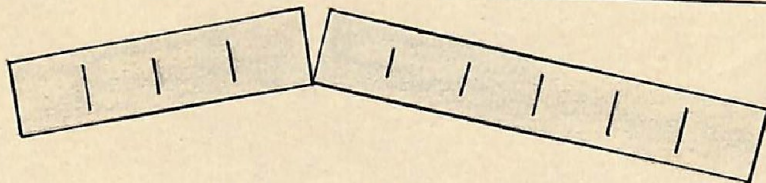


$$10 = 3 + \underline{\quad}$$

$$10 = 7 + \underline{\quad}$$

$$\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$$

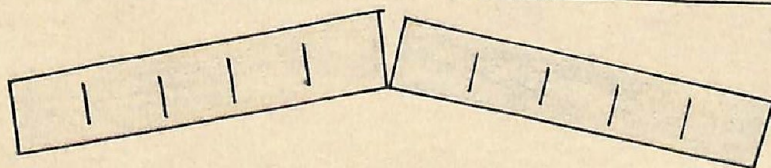


$$10 = 4 + \underline{\quad}$$

$$10 = 6 + \underline{\quad}$$

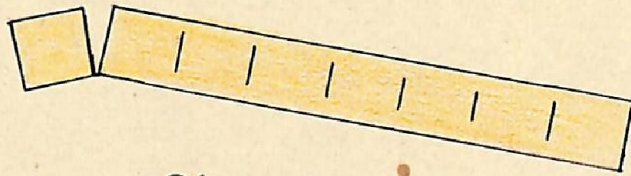
$$\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$$



$$10 = 5 + \underline{\quad}$$

$$\begin{array}{r} 8 \\ -1 \\ \hline \end{array}$$

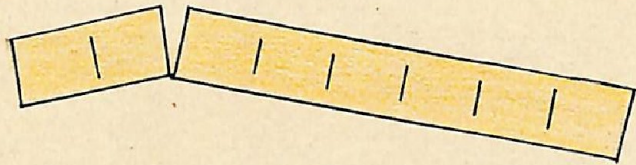


$$8 = 1 + \underline{\quad}$$

$$8 = 7 + \underline{\quad}$$

$$\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$$

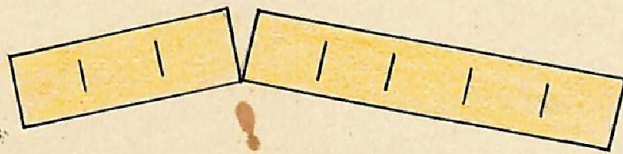


$$8 = 2 + \underline{\quad}$$

$$8 = 6 + \underline{\quad}$$

$$\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -3 \\ \hline \end{array}$$

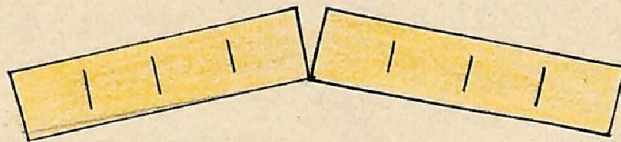


$$8 = 3 + \underline{\quad}$$

$$8 = 5 + \underline{\quad}$$

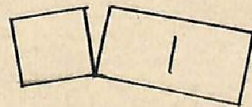
$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -4 \\ \hline \end{array}$$



$$8 = 4 + \underline{\quad}$$

$$\begin{array}{r} 3 \\ -1 \\ \hline \end{array}$$

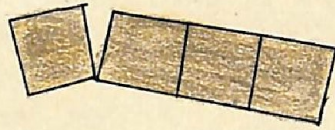


$$3 = 1 + \underline{\quad}$$

$$3 = 2 + \underline{\quad}$$

$$\begin{array}{r} 3 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ - 1 \\ \hline \end{array}$$



$$4 = 1 + \underline{\quad}$$

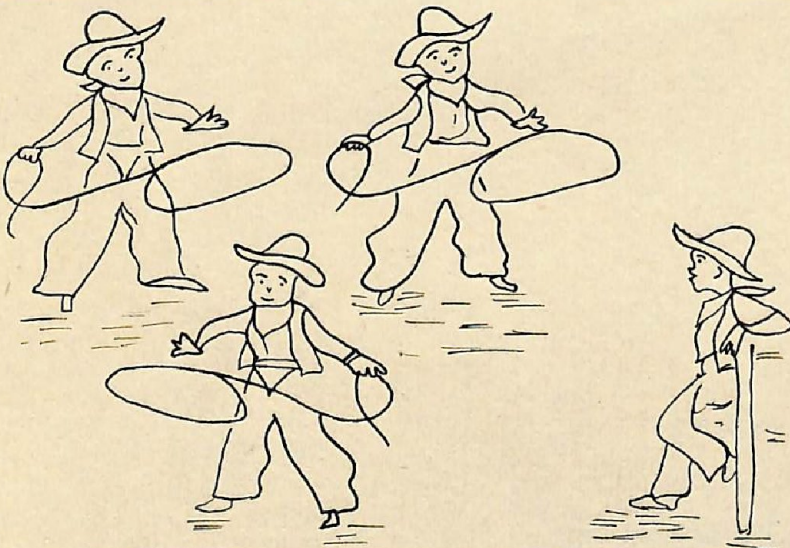
$$4 = 3 + \underline{\quad}$$

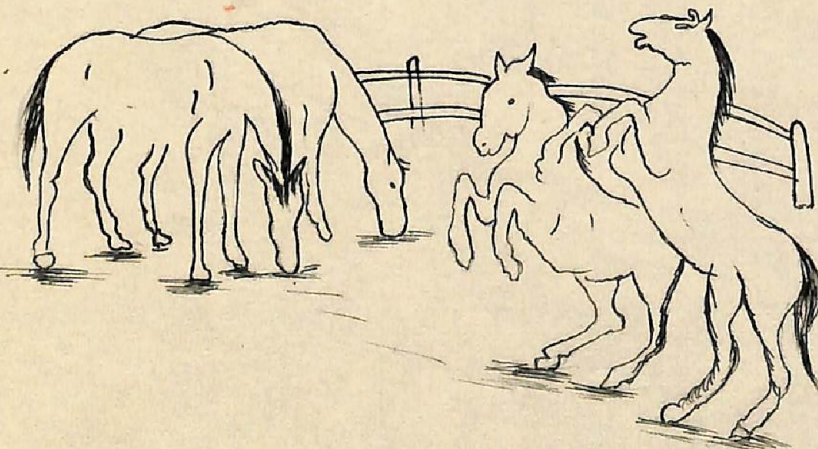
$$\begin{array}{r} 4 \\ - 3 \\ \hline \end{array}$$



$$4 = 2 + \underline{\quad}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline \end{array}$$





Conclusões:

1. O ^{aprendizado da} ~~aprendizado da~~ ^{adição} (piauá) e da subtração é feito paralelamente.
2. O material de objetivação é imprescindível para tal aprendizado.
3. Quasi todos os autores apresentam as mesmas situações para o aprendizado da subtração.

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- Bueckner Grossnickle - Making Arithmetic Meaningful.
 ... - Discovering Numbers.

Bibliografia para o aluno:

- Carpenter Swenson - Arithmetic - The World of Numbers.
 By Maurice L. Hartung, Henry Van Euden, Lois Knowles, and Catherine Mahoney - Seeing through arithmetic.
 Catherine Steu - Discovering Arithmetic
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 Odila Barros Xavier - Anotações de aula.

(Piauí) - Adelaide Celestino Ribeiro
 Porto Alegre, 22 de novembro
 de 1956.