

$$\frac{2 \times 3}{5}$$
$$\frac{3 \times 1}{2}$$



EDUKACIJA

„Želimo se naučiti to teško matematiko“
"Želimo naučiti tu tešku matematiku“

Murska Sobota, 07.06.2014.

mr.sc. Dinka Vuković, dipl. ing.
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Program edukacije 07.06.2014.

10.00-10.15 Uvod

10.15-11.15 Zašto je matematika teška?

**Kada i kako krenuti u učenju
matematike?**

Koraci u učenju matematike

11.15-11.30 Pauza

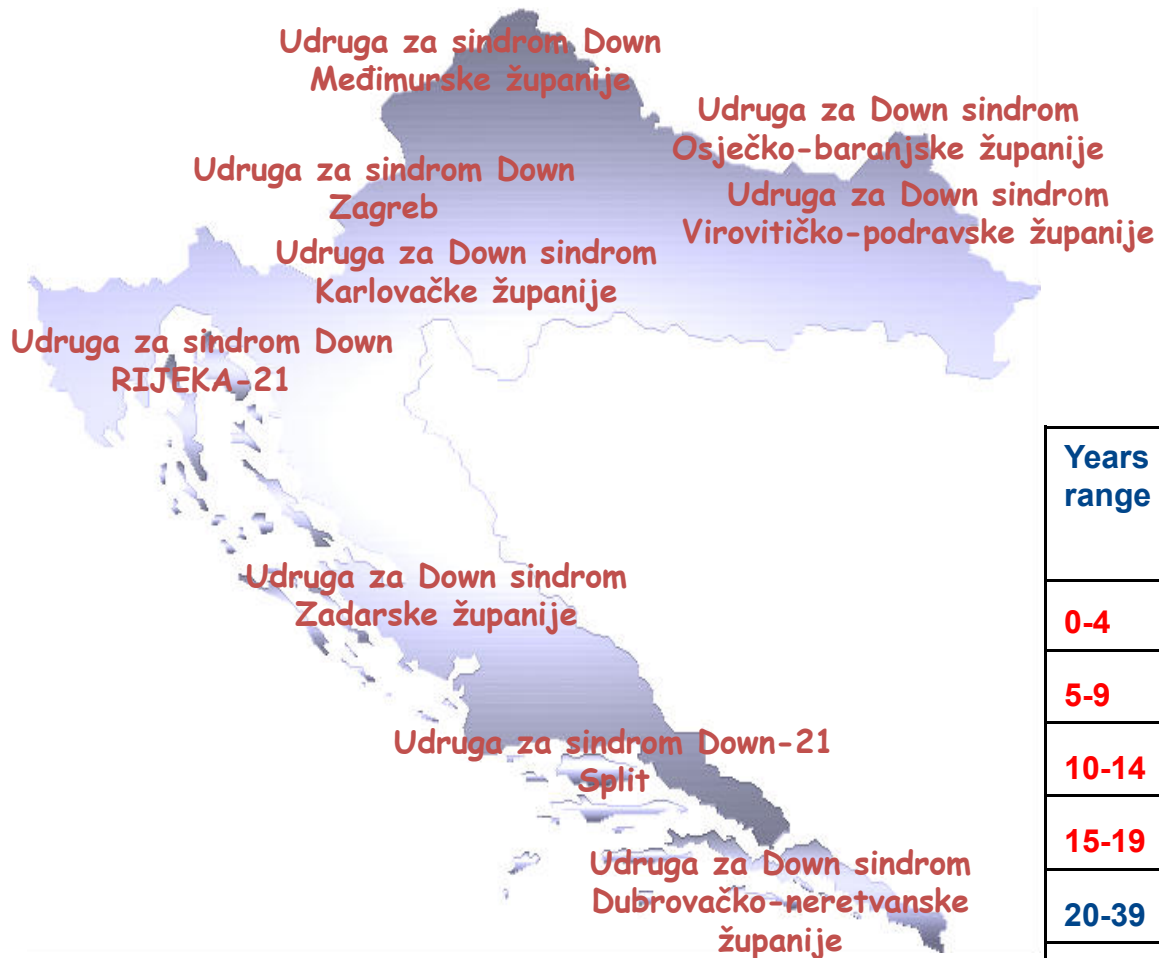
11.30-12.30 Nastavak

**Edukativni materijali – kada ih
koristiti i kako**

Uvod - dijete s Down sindromom u školi



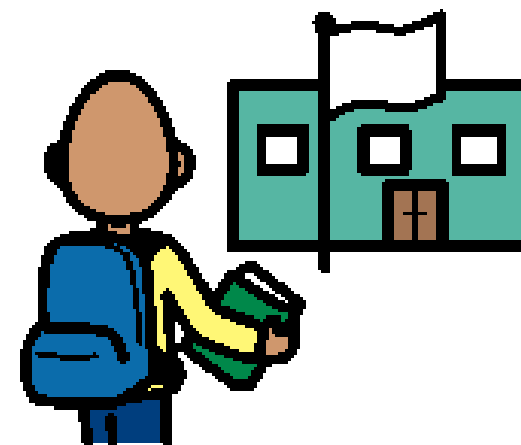
Hrvatska zajednica za Down sindrom (HZDS) (Croatian Down Syndrome Association)



| Years - range | M or F | | Total | % |
|---------------|------------|------------|-------------|------------|
| | M | F | | |
| 0-4 | 88 | 82 | 170 | 11,1 |
| 5-9 | 125 | 126 | 251 | 16,5 |
| 10-14 | 149 | 105 | 254 | 16,6 |
| 15-19 | 108 | 91 | 199 | 13 |
| 20-39 | 226 | 239 | 465 | 30,3 |
| 40-59 | 81 | 88 | 169 | 11,1 |
| 60-84 | 7 | 11 | 18 | 1,2 |
| Total | 784 | 742 | 1526 | 100 |

Obrazovni sustav u RH

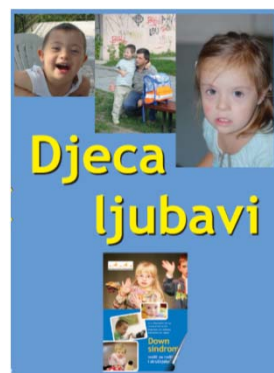
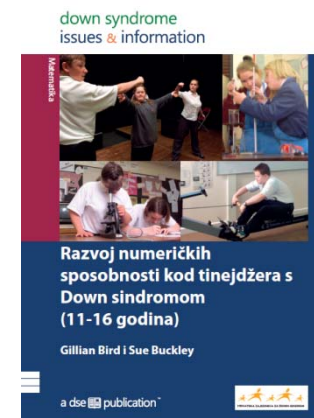
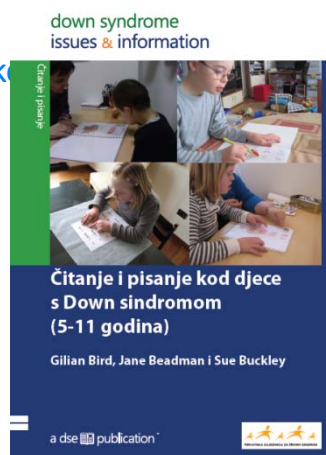
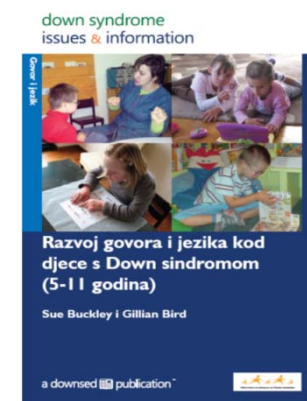
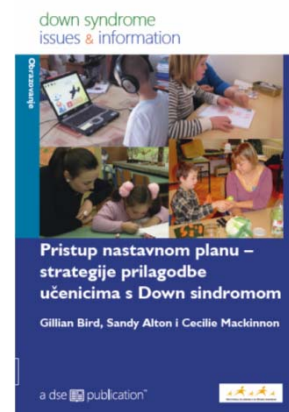
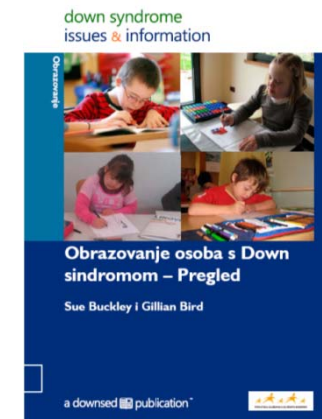
- potpuna integracija (čl. 4) – mogućnost uz pomoćnika u nastavi
- djelomična integracija (čl. 7) – mat, hr, pid s rehabilitatorom, ostale sate u redovnom razredu
- posebni programi (čl. 10 i čl. 12) – od 1.-8. razreda i do 21. godine



INTEGRACIJA

- **Preduvjeti integracije**
 - Rana intervencija, kontinuirani rad s djetetom
 - Priprema vrtića i škola
 - Priprema odgajatelja i učitelja
 - Zakonska regulativa
 - Podrška lokalne zajednice
 - Literatura
- Rana intervencija u mnogim županijama nije riješena - udruge pokušavaju organizirati stručne tretmane kroz projekte
- Edukacija odgajatelja i učitelja ne postoji ili nije adekvatna niti dovoljna
- Pomoćnici u nastavi (udruga IDEM,...)
- Mobilni timovi (udruga IDEM,...)

- Roditelji se izmore prolazeći kroz sve administrativne, ljudske druge barijere



Promjene u 2008/2009

- Pedagoški standard (predškolski, osnovno školski i srednja škola) usvojeni u Vladi i Saboru, NN 63/2008
 - članak 15. stavak 7 – pomoćnik u nastavi
- **(7) Škola može osigurati pomoćnika u nastavi, prevoditelja znakovnog jezika i osobnog pomoćnika učenicima kojima je rješenjem o primjerenom obliku školovanja potrebna pomoć u učenju, kretanju i obavljanju školskih aktivnosti i zadataka.**
- Novi zakon o odgoju i obrazovanju u osnovnoj i srednjoj školi, NN 87/2008
 - u pripremi pravilnik

HZDS organizira:

- edukacije učitelja razredne i predmetne nastave (3+3 edukacije)
- edukacije pomoćnika u nastavi (2 edukacije)
- kontinuirane edukacije roditelja
- kontinuirane edukacije roditelja, učitelja, pomoćnika u nastavi i stručnih suradnika (4)
- kontinuirana nabavka edukativnog materijala
- izdavanje priručnika iz UK (6)

| Školska godina | Broj djece uključene po čl. 4. |
|----------------|--------------------------------|
| 2007/2008 | 7 |
| 2008/2009 | 16 |
| 2009/2010 | 24 |
| 2010/2011 | 30 |
| 2011/2012 | 42 |
| 2012/2013 | 59 |
| 2013/2014 | 68 |

Inkluzija djece s DSom uz pomoćnika u nastavi

- Zagreb – 2007/2008 prvi učenik s DSom uz pomoćnika u nastavi
- U školskoj godini 2012/2013 – 59 učenika (I-VIII razreda+1.r. sr.šk.)
- Zagreb i okolica (28)
- Split i okolica (7)
- Pula (2)
- Sisak (1)
- Karlovac i okolica (2)
- Dubrovnik (2)
- Čakovec i okolica (3)
- Požega (1)
- Zadar i okolica (4)
- Rijeka i okolica (5)
- Piškorevci (1)
- Vinkovci i okolica (2)
- Slavonski Brod (1)



- U školskoj godini 2013/2014 –
..68 učenika
(I-VIII razreda+1-2.r. sr.šk.)

| Školska godina | Broj djece uključene po čl. 4. |
|----------------|--------------------------------|
| 2007/2008 | 7 |
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Inkluzija djece s DSom uz pomoćnika u nastavi

- djeca sa sindromom Down pokazuju značajne rezultate koje mnogi nisu ni sanjali da djeca sa sindromom Down sindromom mogu ostvariti
- djeci je dana prilika i oni su pokazali što vole, što im je jača strana, što sve mogu naučiti i koristiti u svakodnevnom životu
- mi roditelji, kao i stručnjaci trebamo im omogućiti što više poticaja, prilika i načina rada u kojima oni mogu biti uspješni i zadovoljni



Računajte na nas! Count on us!





"Želimo naučiti tu tešku matematiku"

$$\begin{array}{r} 2 \\ \times 3 \\ \hline 6 \end{array} \quad \begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$$

ŠKOLA

PRIJE ŠKOLE

VRTIĆ

Individualno
učenje uz
roditelja,
defektologa,
Logopeda.

**PRVI
RAZRED**

**DRUGI
RAZRED**

**TREĆI
RAZRED**

**ČETVRTI
RAZRED**

**PETI
RAZRED**

**ŠESTI
RAZRED**

**SEDMI
RAZRED**

**OSMI
RAZRED**

REDOVNA ŠKOLA

PRVI RAZRED

- geometrijski
oblici i likovi, nizovi

- brojevi do 5
- zbrajanje i
oduzimanje do 5

- brojevi do 10
- zbrajanje i
oduzimanje do 10

- brojevi do 20
- zbrajanje i
oduzimanje do 20

DRUGI RAZRED

- brojevi do 100

- zbrajanje i
oduzimanje
do 100

- množenje

- dijeljenje

TREĆI RAZRED

- brojevi do
1 000

- zbrajanje i
oduzimanje
do 1 000

- množenje
do 1 000

- dijeljenje
do 1 000

- geometrija
(ravnina,
pravac,
krug,
kružnica)

ČETVRTI RAZRED

- brojevi do
1 000 000

- zbrajanje i
oduzimanje
do 1 000 000

- množenje
do 1 000 000

- dijeljenje
do 1 000 000

- geometrija
(kutovi,
opseg,
površina,
volumena)

REDOVNA ŠKOLA

PETI RAZRED

- geometrija
- razlomci
- decimalni brojevi

ŠESTI RAZRED

- geometrija
- razlomci
različitih
nazivnika
- cijeli i
racionalni
brojevi

SEDMI RAZRED

- geometrija
(mnogokuti,..)
- koordinatni
sustavi
- postotak
- linearne
jednadžbe

OSMI RAZRED

- geometrija
- kvadriranje
- Pitagorin
poučak
- realni brojevi
- kvadratni
korijen
- vektori

Zašto je matematika teška?

- matematika je apstraktna
- ne uči se s razumijevanjem - djeca ne razumiju količinu, ne razumiju pojam jedan više odnosno jedan manje
- djeca nauče brojiti no ne razumiju što znači koji broj i koliko je to nečega
- 1 2 3 4 5 6 7 8 9 10 – djeca nauče automatski, pa i na više jezika
- nemaju dovoljno vizualnih poticaja (najčešće se koriste brojeva crta i abacus, rijetko i domino koncept)
- veći problemi se uočavaju kod učenja zbrajanja preko 10 te oduzimanja (učenje brojeva do 20 i računске operacije)
- nerazumijevanje što znači svaka računska operacija

- djeci s teškoćama mnoge stvari su apstraktne pa tako im je još teža matematika i shvaćanje količine i matematičkih operacija

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

Kada i kako krenuti u učenju matematike?

- radna terapija, rehabilitacijske terapije
- metode kao FU i ABA
- igra



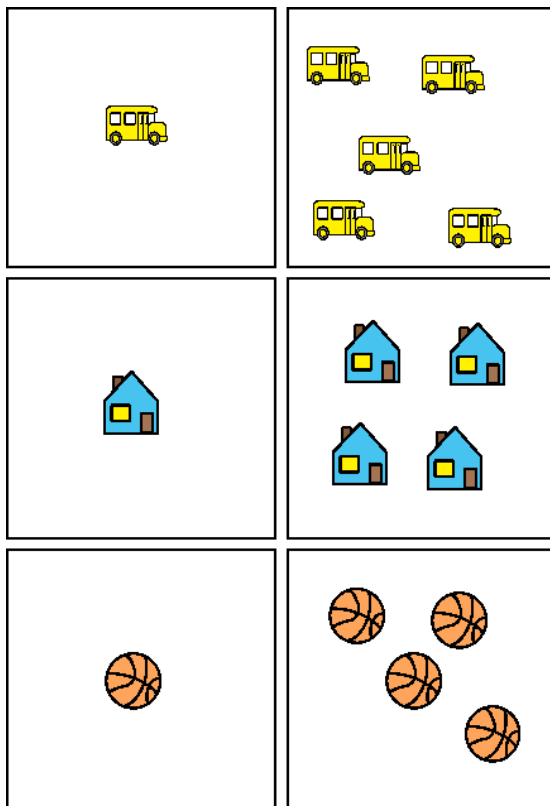
Kada i kako krenuti u učenju matematike?

- parovi – predmeti, sličice u boji, crno-bijele sličice
- nizovi – predmeti, sličice u boji, crno-bijele sličice



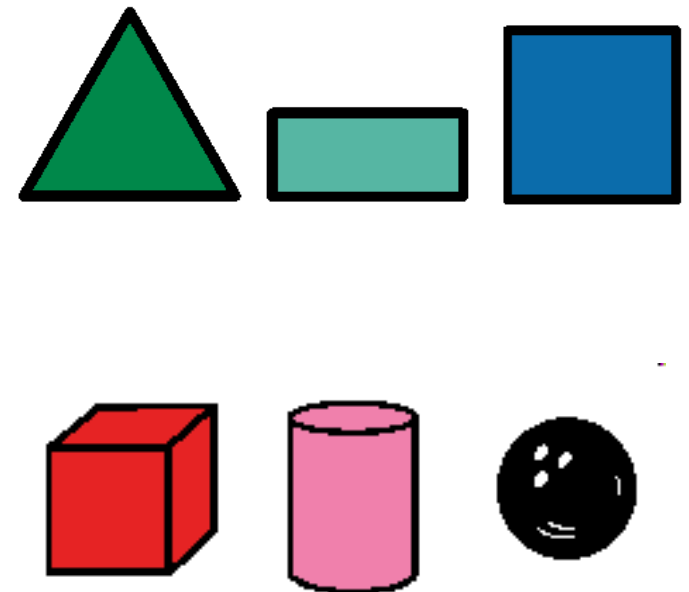
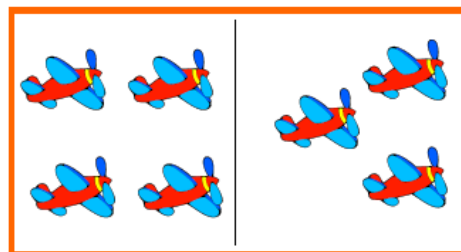
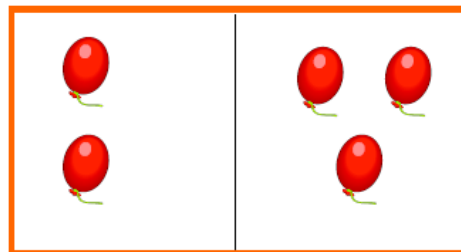
Kada i kako krenuti u učenju matematike?

- više i manje (razvrstavanja)
- prepoznavanje i imenovanja (geometrijskih oblika i likova, brojeva)



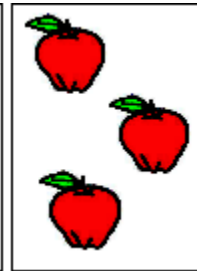
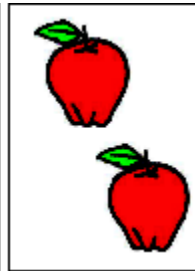
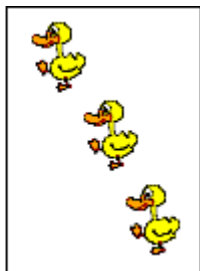
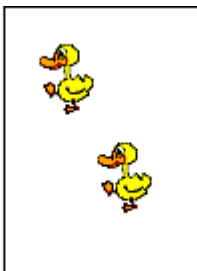
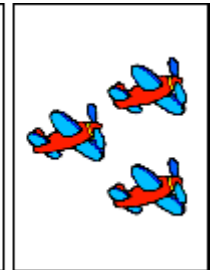
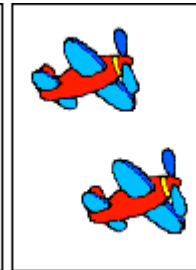
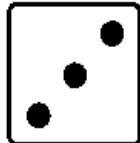
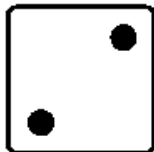
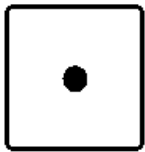
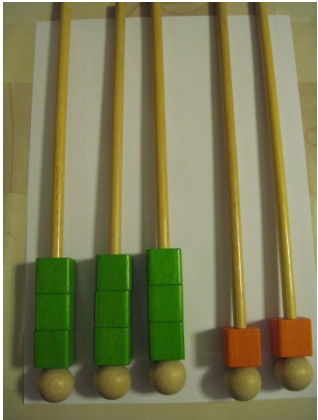
Name _____

Which group has more? Circle it.



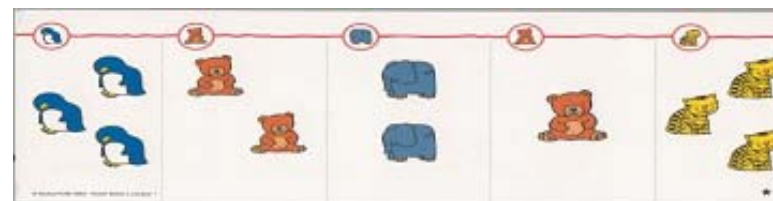
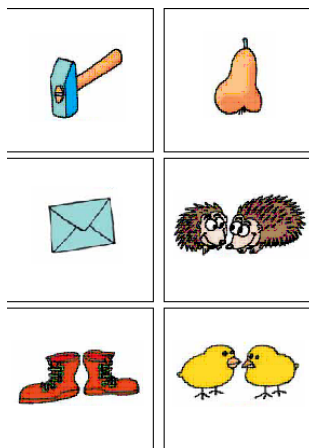
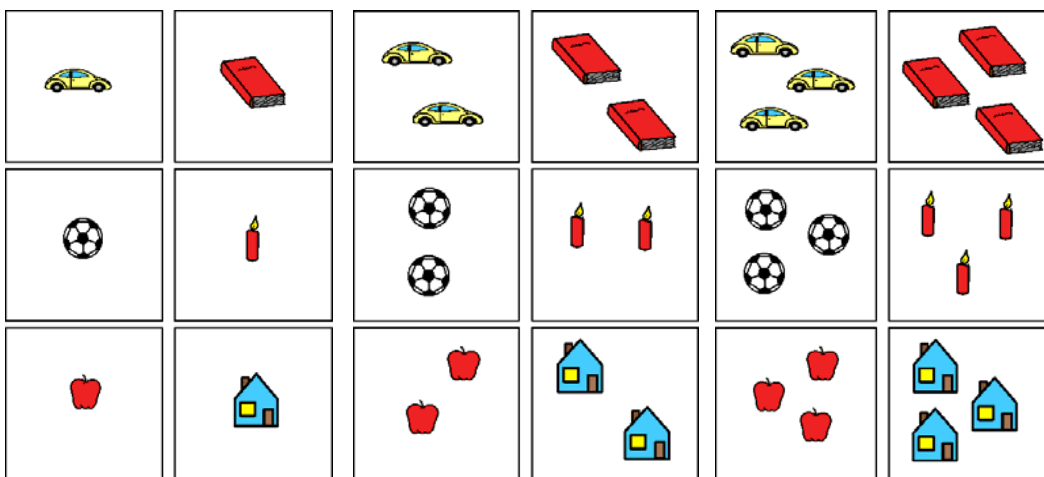
Kada i kako krenuti u učenju matematike?

- spoznaja količine do 3

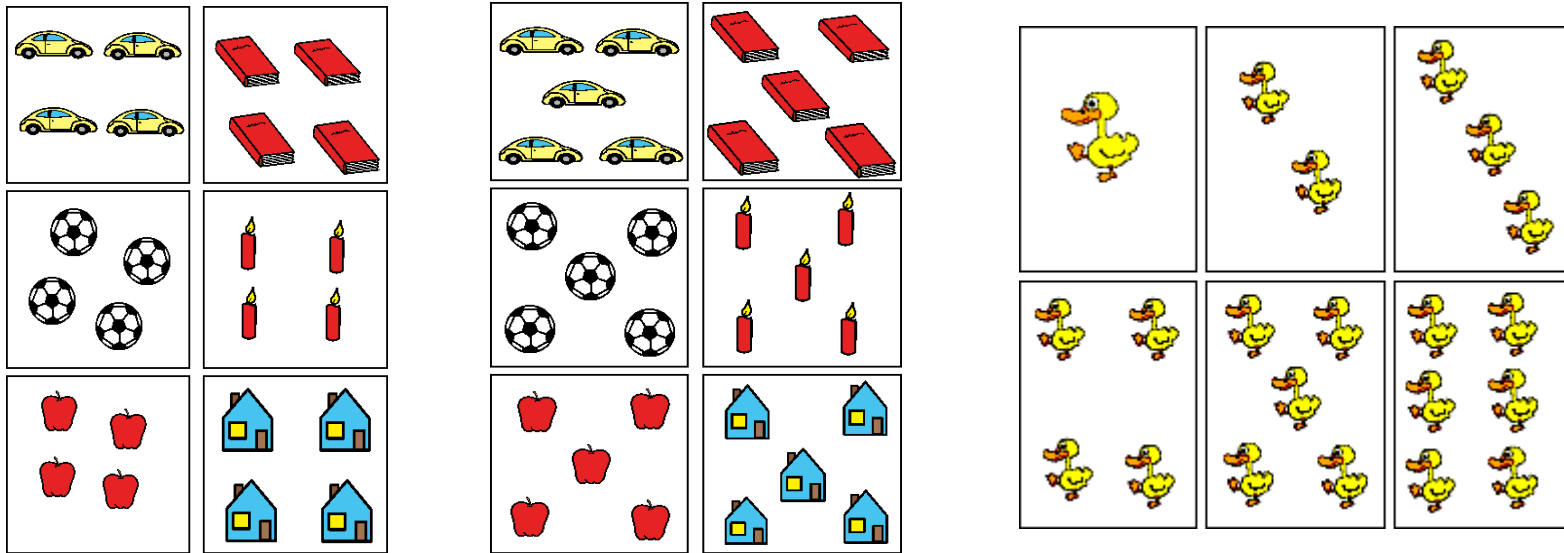


Koraci u učenju matematike

- Spoznaja količine do 3
 - koristiti sličice i materijale
 - koje je dijete već upoznalo
 - u školi koristiti slikovni materijal iz knjiga



Koraci u učenju matematike



Koraci u učenju matematike



C:\Dinka\Privatno\
KOPIJA\Edukacija

- količina do 5
- koristiti domino princip do 5

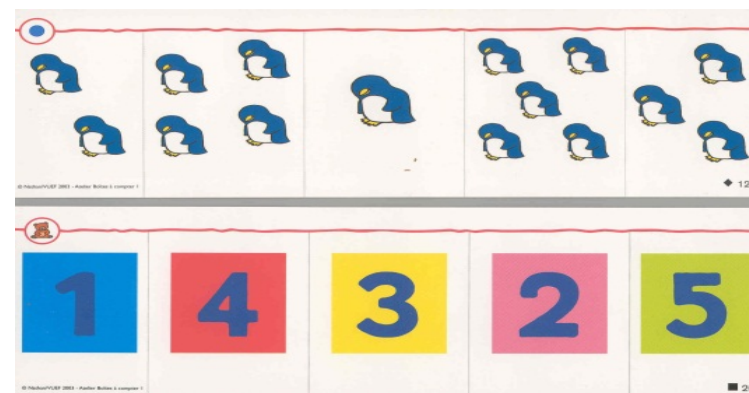
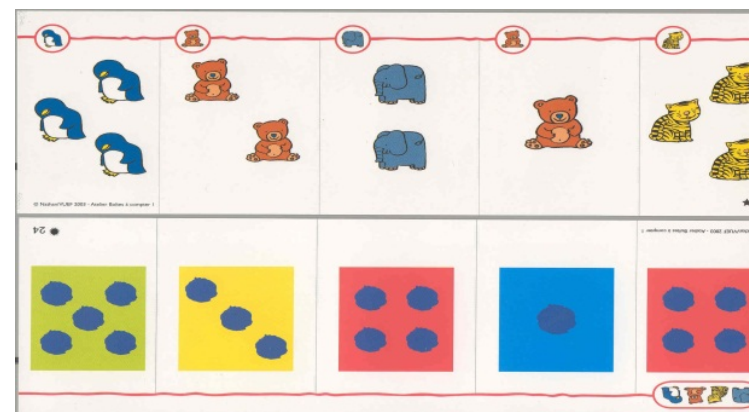


Counting Box Worksshop 1

(Nathan-www.prometal.hr)

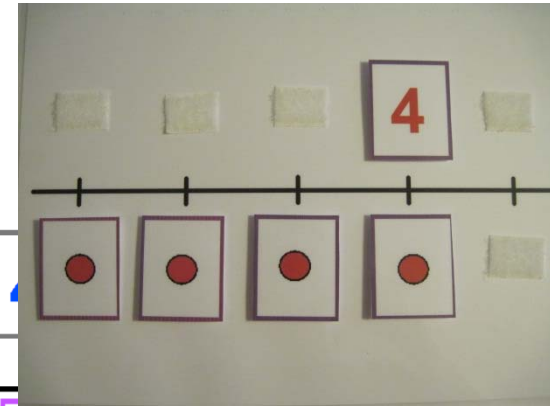
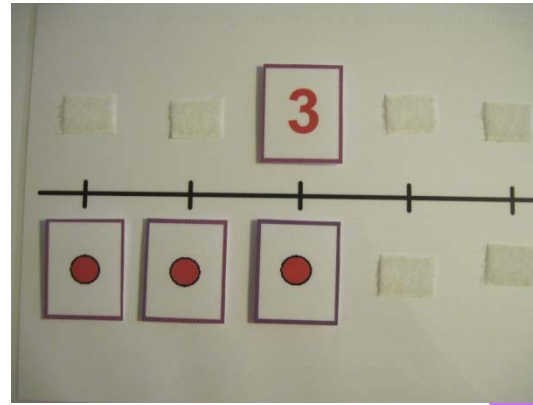
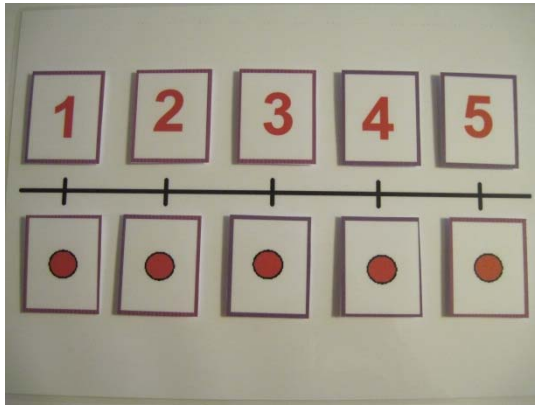


HRVATSKA ZAJEDNICA ZA DOWN SINDROM

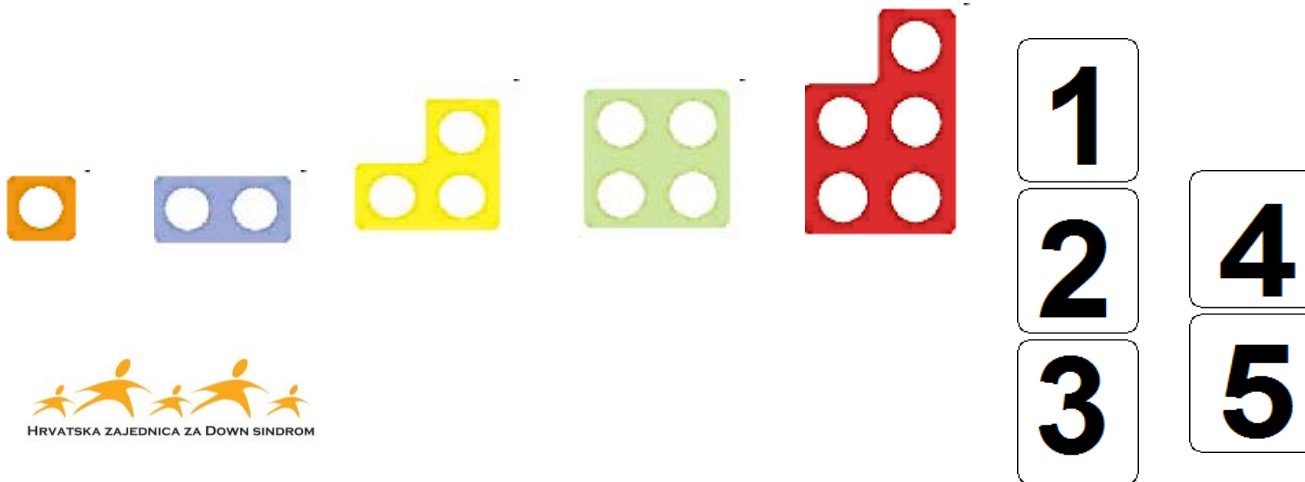


Koraci u učenju matematike

količina do 5 (materijali s čičkom i interaktivni)

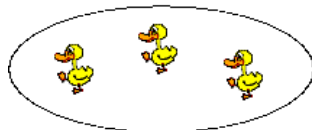
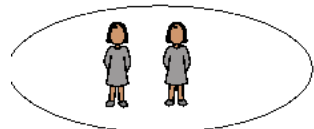
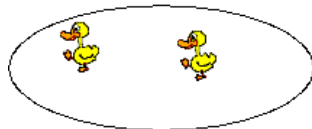
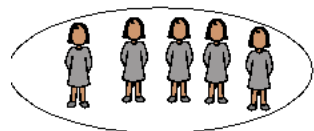
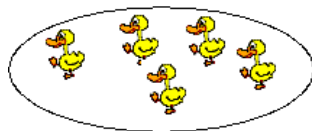
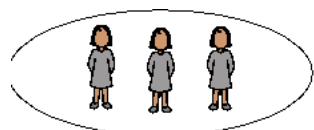
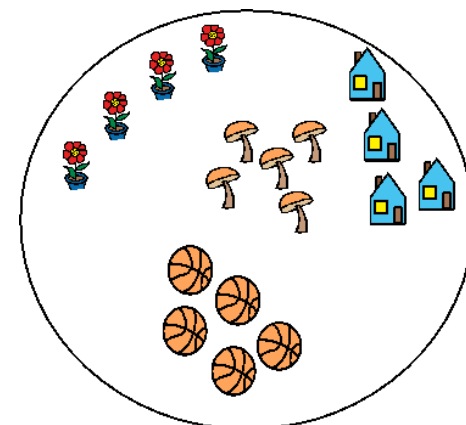
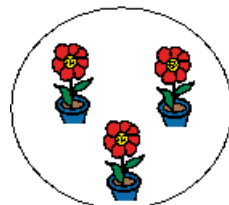
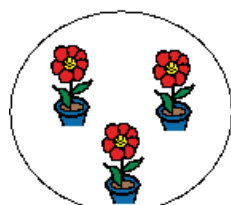
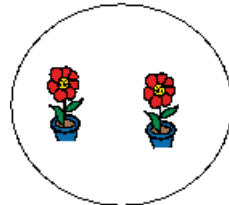
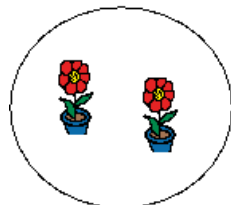
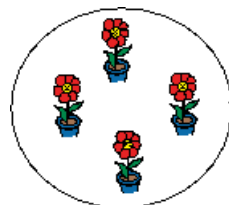
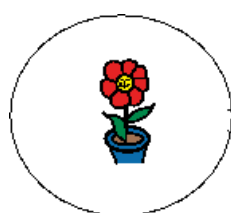


- Numicon materijali (www.numicon.com)



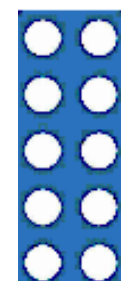
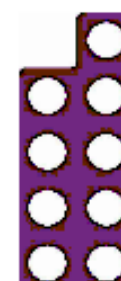
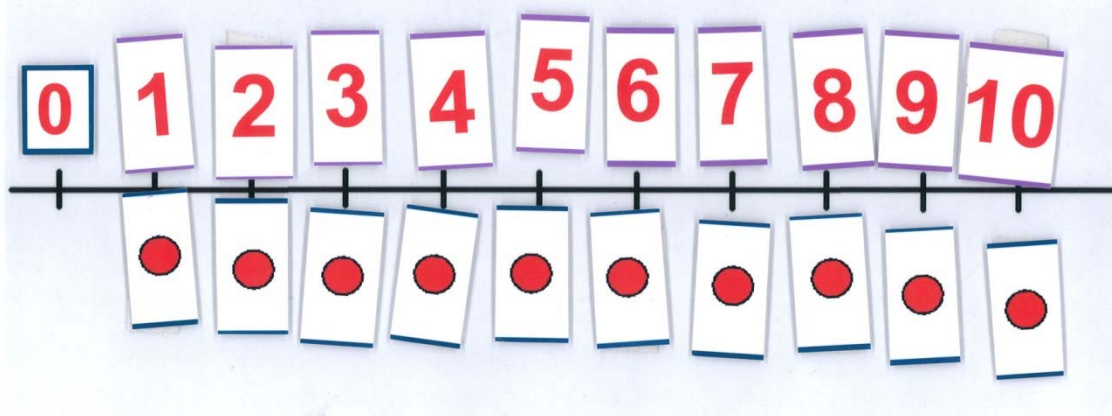
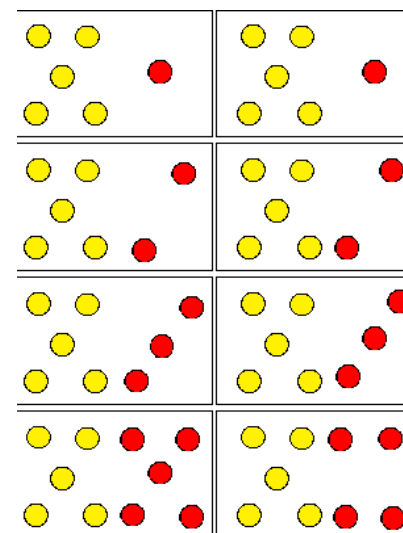
Koraci u učenju matematike

količina do 5



Koraci u učenju matematike

- količina do 10
- koristiti princip domina
- imenovati brojeve (6-10)
- razvrstavanje ili kao flashcards
- nastaviti s Numiconom (6-10)



Koraci u učenju matematike

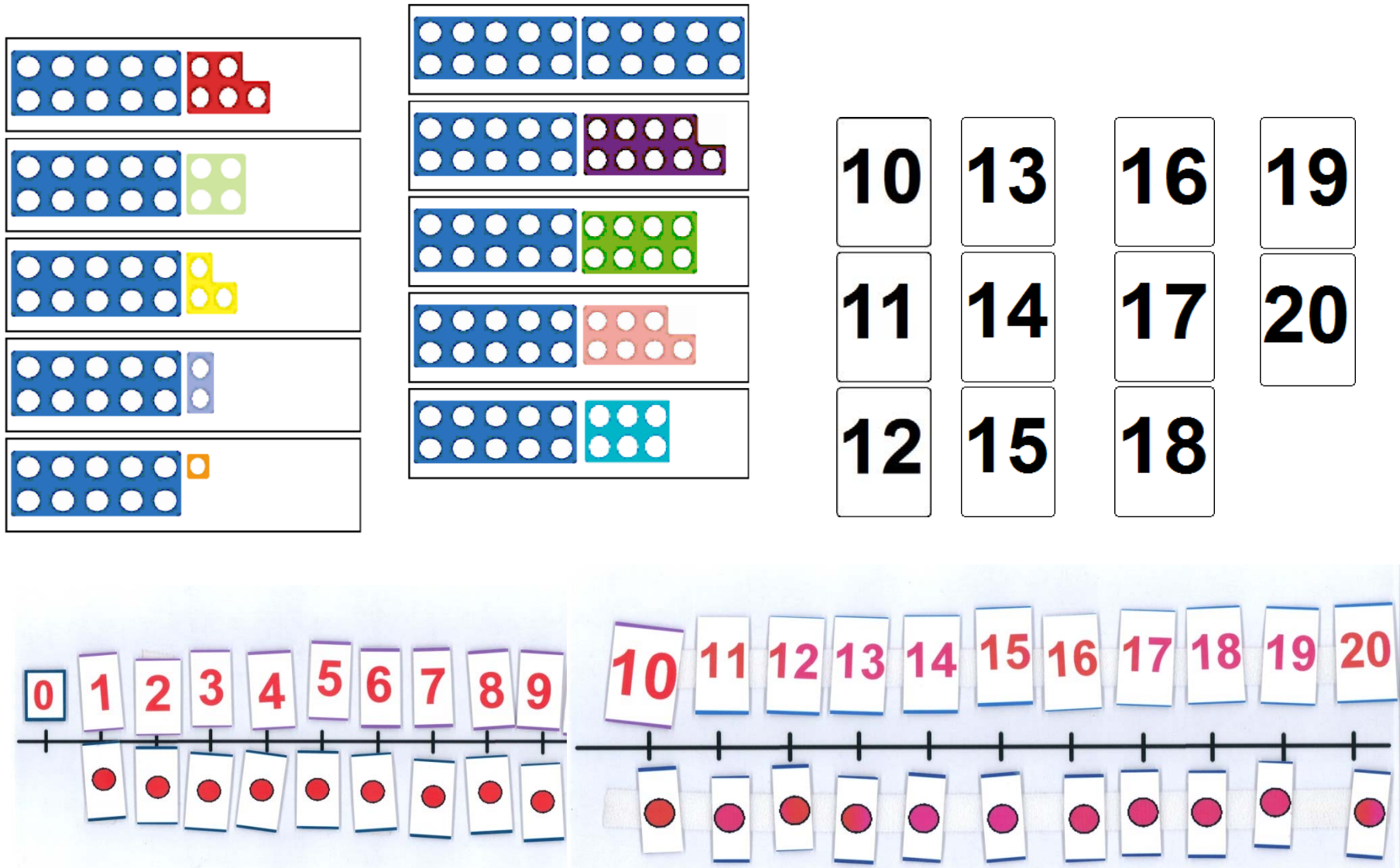
- količina do 20
- koristiti Numicon - mjesne vrijednosti i “kao zbrajanje”
- imenovati brojeve (11-20)
- razvrstavanje ili kao flashcards

The image displays various Numicon blocks used for teaching numbers 1 to 20. The blocks are arranged in a grid to show numbers 1 through 10. The ten-frame is divided into 'DESETICE' (tens) and 'JEDINICE' (ones) sections. Below the ten-frame is a 4x5 grid of numbers from 1 to 20.

| | | | | |
|----|----|----|----|----|
| 1 | 2 | | 4 | 5 |
| | 7 | 8 | 9 | 10 |
| 11 | | 13 | 14 | 15 |
| 16 | 17 | | 19 | 20 |

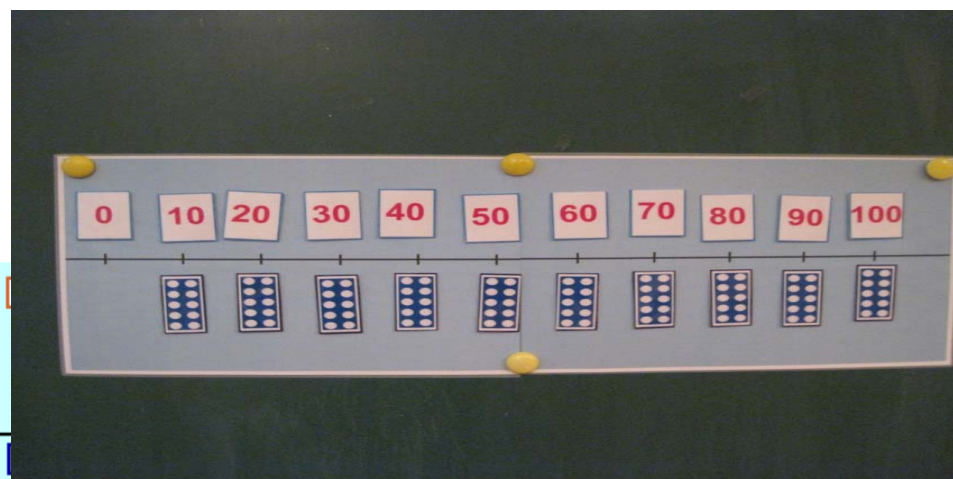
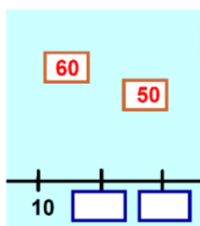
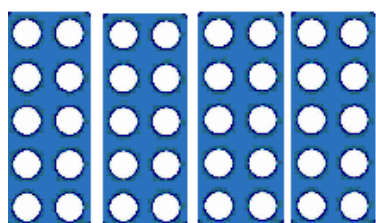
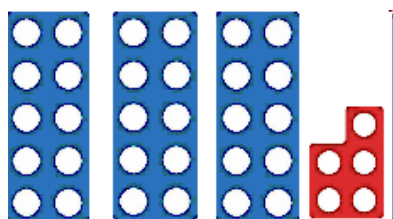
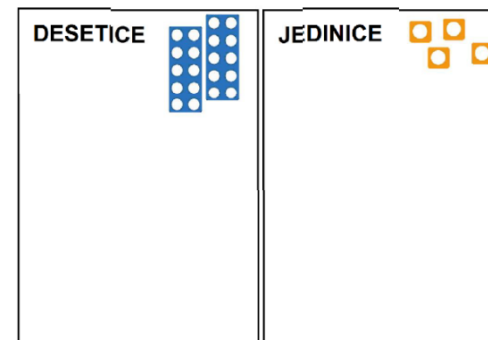
Koraci u učenju matematike

- razvrstavanje ili kao flashcards
- brojeva crta



Koraci u učenju matematike

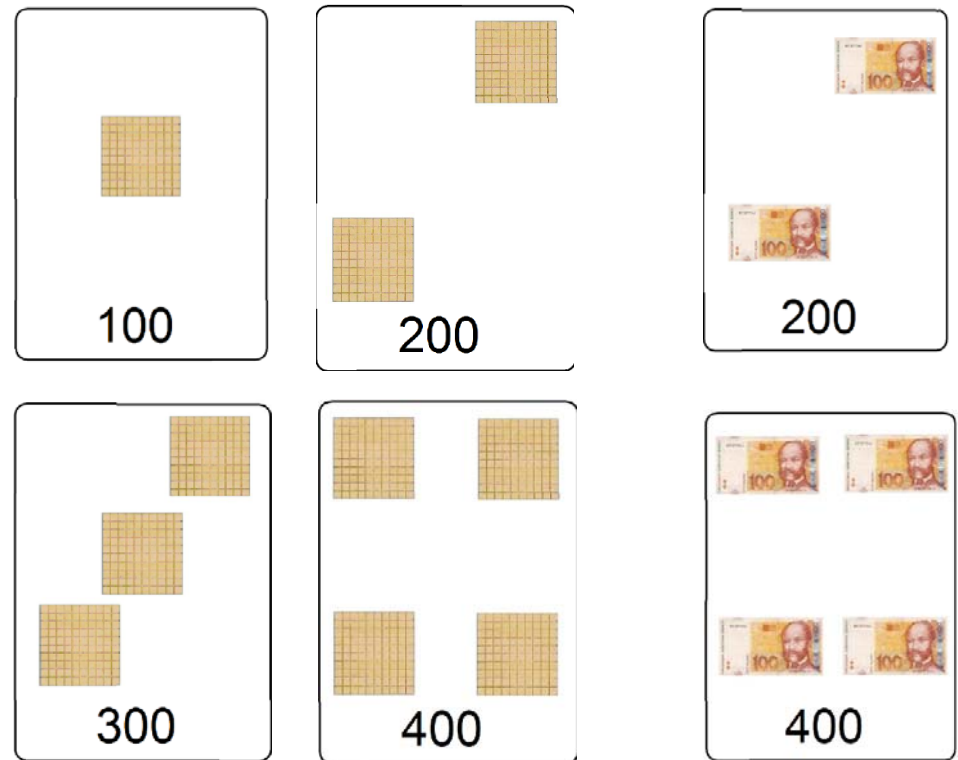
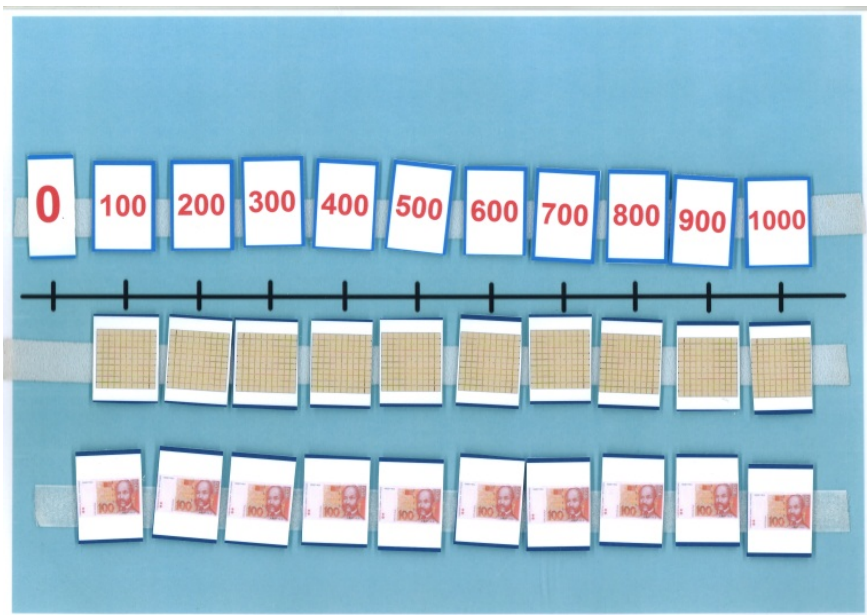
- količina do 100
- koristiti Numicon - mjesne vrijednosti
- imenovati brojeve (21-100)
- razvrstavanje (npr., desetice) ili kao flashcards (pojedinačni brojevi)
- staviti novce (sličice od 10 kuna)



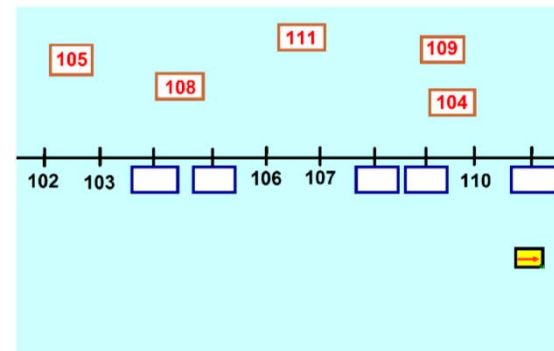
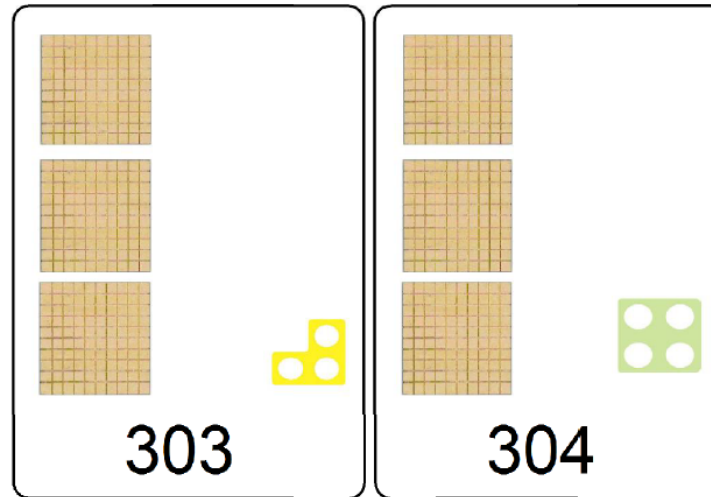
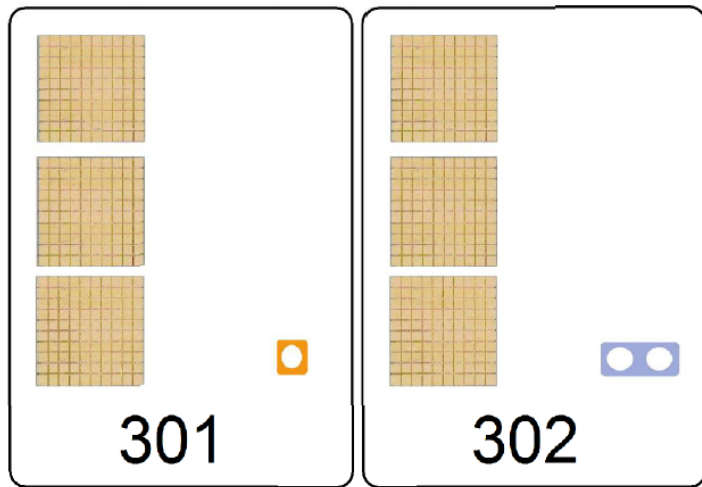
| | | | | |
|----|----|----|----|-----|
| 81 | | 83 | | 85 |
| 86 | 87 | | 89 | 90 |
| | | 93 | 94 | 95 |
| 96 | 97 | | 99 | 100 |




Koraci u učenju matematike

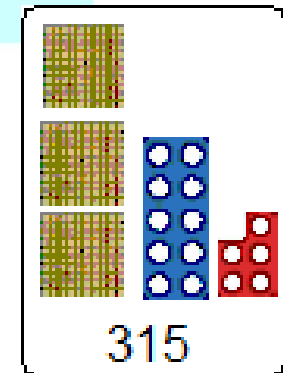
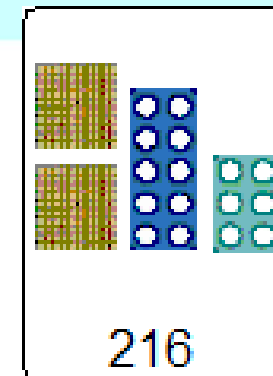
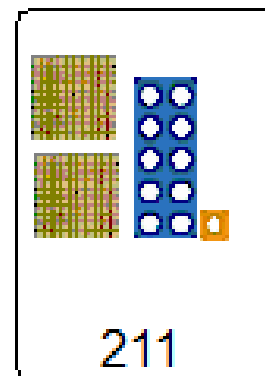
- količina do 1 000
- koristiti Numicon - mjesne vrijednosti
- imenovati brojeve (101-1000)
- razvrstavanje (npr., stotica), kao flashcards, slaganje broja uz pomoć pločica koje predstavljaju 100 (Base 10 – Nathan i Vinco)
- staviti novce (sličice od 100 kuna)



Koraci u učenju matematike



| | | |
|--|--|---|
|  100 |  10 |  1 |
| S | D | J |



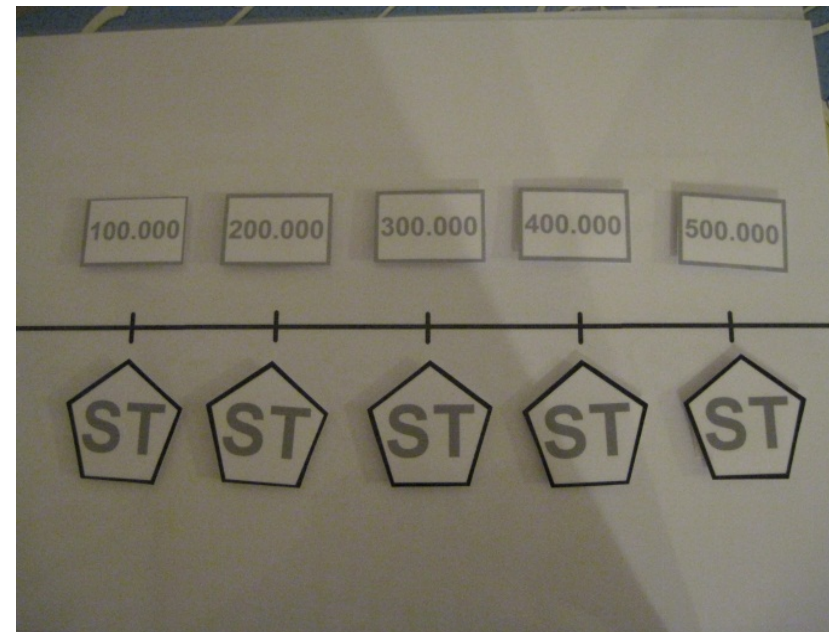
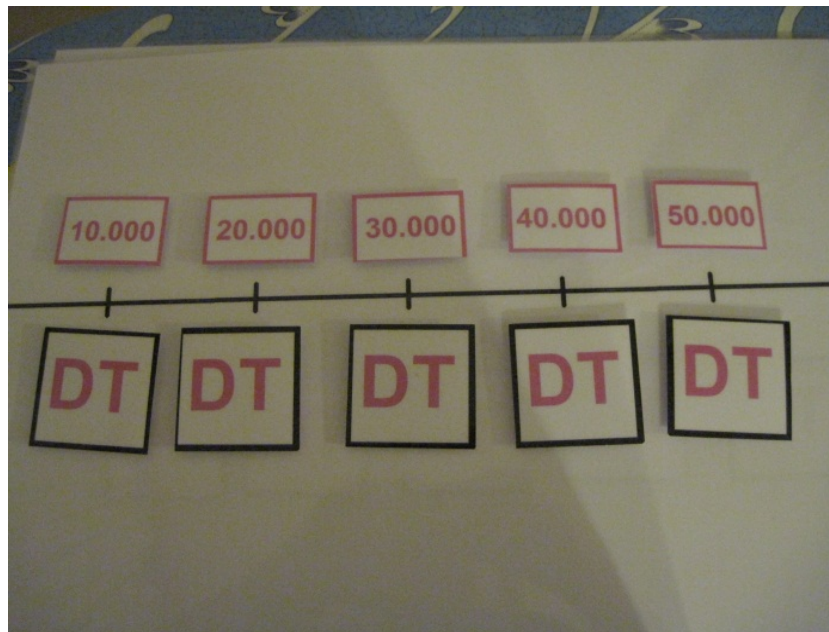
Koraci u učenju matematike

- količina do 1 000 000
- prepoznavati i imenovati brojeve
- flip mjesnih vrijednosti, slaganje broja uz pomoć materijala i simbola



Koraci u učenju matematike

- prepoznavati i imenovati brojeve
- flip mjesnih vrijednosti, slaganje broja uz pomoć materijala i simbola

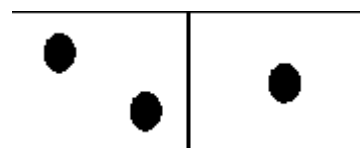


Koraci u učenju matematike

- Matematičke operacije

- zbrajanje, dodavanje - **+**
- pojam, značenje, imenovanje
- do 5
- do 10

$$\begin{array}{r} 3 + 2 = \\ \underline{+ 2} \end{array}$$



$$2 + 1 =$$



$$5 + 2 =$$

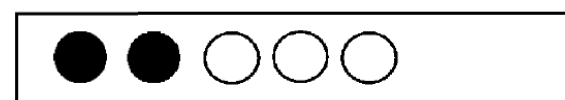
4. IZRACUNAJ.



$$2 + 1 =$$



$$1 + 3 =$$



$$2 + \square = 5$$



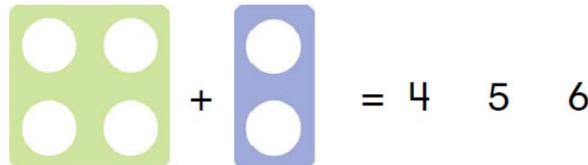
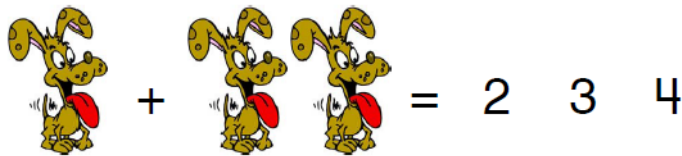
$$3 + \square = 5$$

Koraci u učenju matematike

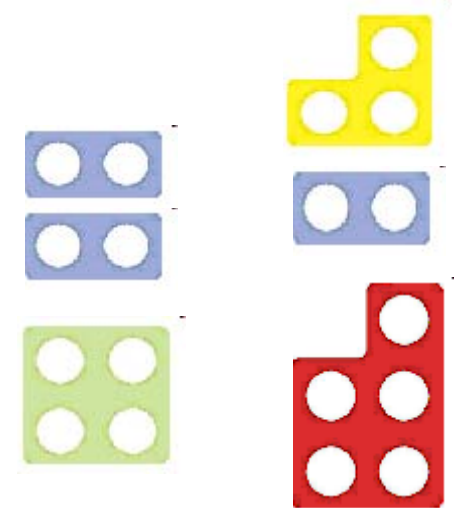
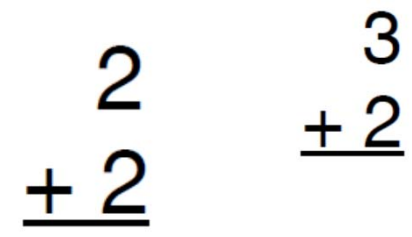
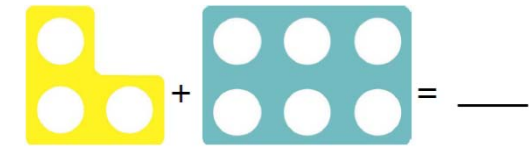
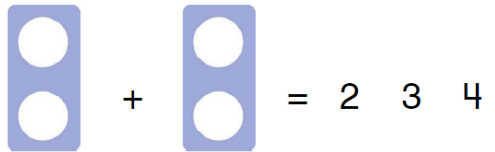
- Matematičke operacije

- zbrajanje, dodavanje - **+**

- Numicon



How many all together? Circle answer.

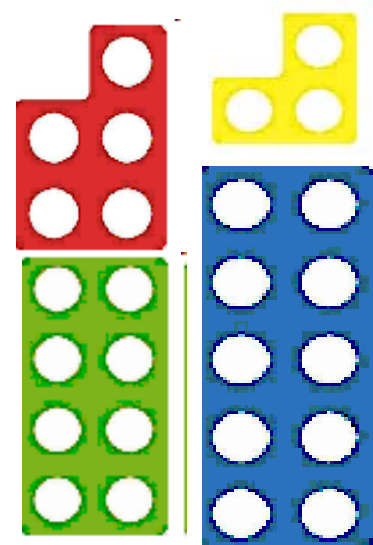


Koraci u učenju matematike

- zbrajanje, dodavanje - **+**
 - do 20
 - do 100
 - do 1 000
 - do 1 000 000

$$8 + 5 = \square$$

$$61 + 1 = \square$$



| | D | J |
|---|---|---|
| | 1 | 9 |
| + | 2 | 0 |
| | | |

| | D | J |
|---|---|---|
| | 1 | 8 |
| + | 1 | 1 |
| | | |

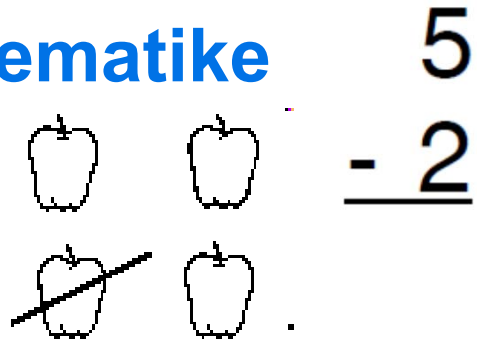
| | S | D | J |
|---|---|---|---|
| | 5 | 1 | 7 |
| + | | 5 | 1 |
| | | | |

| | S | D | J |
|---|---|---|---|
| | 2 | 3 | 2 |
| + | | | 4 |
| | | | |

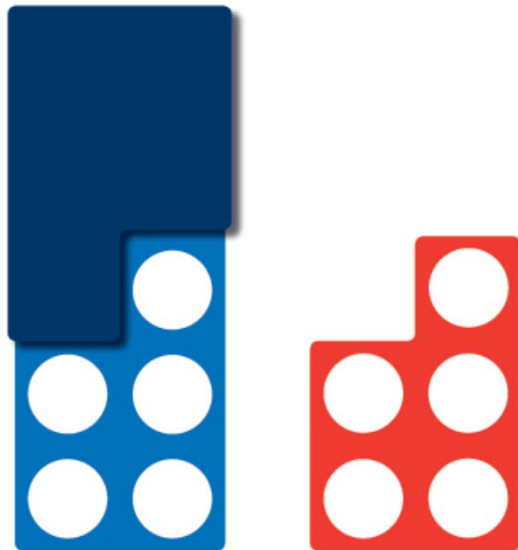
| | S | D | J |
|---|---|---|---|
| | 5 | 2 | 1 |
| + | | 4 | 2 |
| | | | |

Koraci u učenju matematike

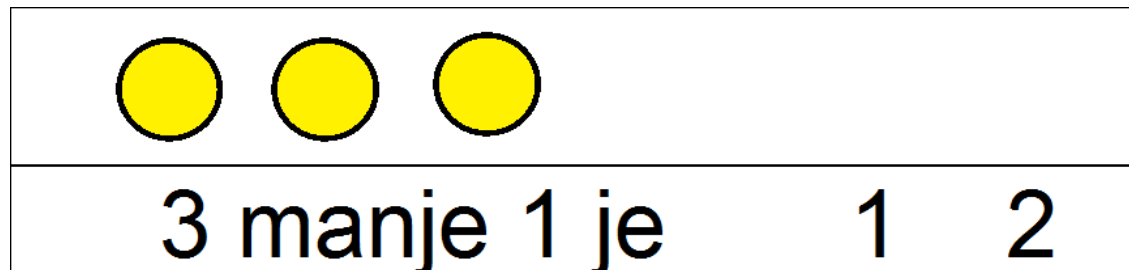
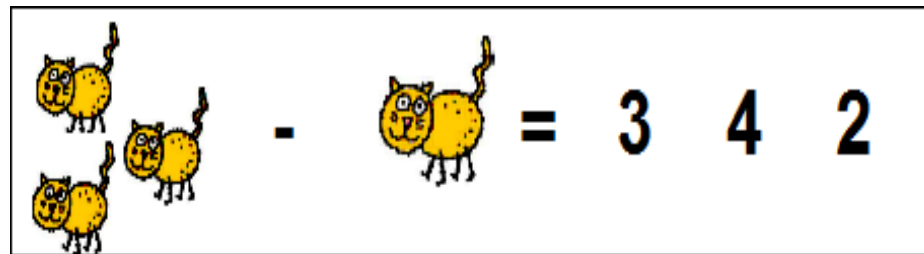
- Matematičke operacije
 - oduzimanje, manje, "uzeti" - -
 - pojam, značenje, imenovanje
 - do 5
 - do 10



$4 - 1 =$ $5 - 3 =$



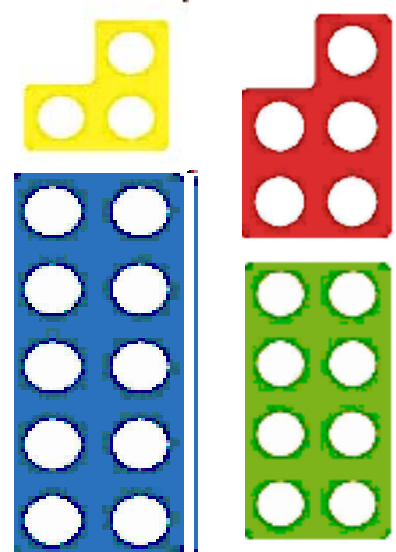
$10 - 5 = 5$



Koraci u učenju matematike

- oduzimanje, manje, "uzeti" - -
- do 20
- do 100
- do 1 000
- do 1 000 000

$$13 - 5 =$$



$$100 - 10 =$$

| | S | D | J |
|---|---|---|---|
| | 1 | 4 | 7 |
| - | | | 2 |
| | | | |

| | S | D | J |
|---|---|---|---|
| | 5 | 5 | 5 |
| - | | | 2 |
| | | | |

| | S | D | J |
|---|---|---|---|
| | 7 | 7 | 7 |
| - | 2 | 2 | 2 |
| | | | |

Koraci u učenju matematike

- Matematičke operacije

- Množenje, **X**
- pojam, značenje, imenovanje
- do 100
- do 1 000
- do 1 000 000



2

4

6

8

10



5



10



15

| | | |
|---|---|-----|
| D | J | • 2 |
| 4 | 3 | |
| | | |

| | | |
|---|---|-----|
| D | J | • 3 |
| 2 | 3 | |
| | | |

5.2. 2013. 2011

| | | |
|---|---|-----|
| D | J | • 3 |
| 1 | 2 | |
| 3 | 6 | |

| | | |
|---|---|-----|
| D | J | • 1 |
| 3 | 2 | |
| 3 | 2 | |

| | | |
|---|---|-----|
| D | J | • 6 |
| 1 | 1 | |
| 4 | 6 | |

| | | |
|---|---|-----|
| D | J | • 7 |
| 1 | 1 | |
| 7 | 7 | |

| | | |
|---|---|-----|
| D | J | • 3 |
| 1 | 3 | |
| 4 | 9 | |

| | | |
|---|---|-----|
| D | J | • 2 |
| 2 | 3 | |
| 4 | 6 | |

| | | | |
|---|----|---|-----|
| S | D | J | • 4 |
| | 3 | 2 | |
| | 12 | 8 | |
| 1 | | | |
| 1 | 2 | 8 | |






| | | | |
|---|----|----|-----|
| S | D | J | • 5 |
| | 4 | 3 | |
| | 20 | 15 | |
| 2 | 1 | | |
| 2 | 1 | 5 | |

Koraci u učenju matematike

- Matematičke operacije

- Množenje, **X**

| | | | | | | | | | |
|---|---|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |

| |
|---|
|  $1 \times 5 = 5$ |
|  $2 \times 5 = 10$ |
|  $3 \times 5 = 15$ |
|  $4 \times 5 = 20$ |
|  $5 \times 5 = 25$ |



| | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

Koraci u učenju matematike

- Matematičke operacije

- Dijeljenje, :
- pojam, značenje, imenovanje
- do 100
- do 1 000
- do 1 000 000

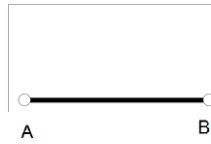
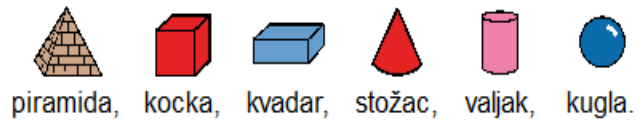


| D | J | | D | J |
|---|---|-------|---|---|
| 8 | 2 | • 2 = | | |
| | | | | |

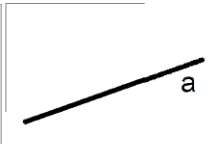
| D | J | | D | J |
|---|---|-------|---|---|
| 4 | 8 | • 4 = | | |
| | | | | |

| S | D | J | | S | D | J |
|---|---|---|-------|---|---|---|
| 3 | 9 | 6 | • 3 = | | | |
| | | | | | | |

Geometrija



dužina



pravac



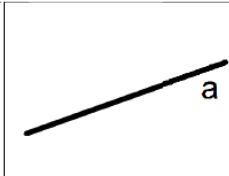
ravnina



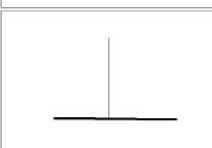
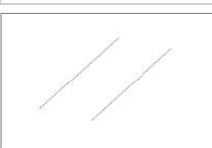
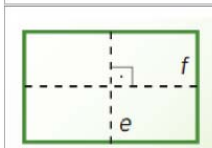
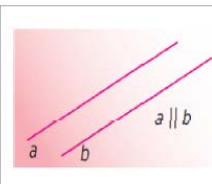
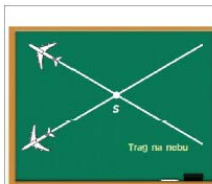
polupravac



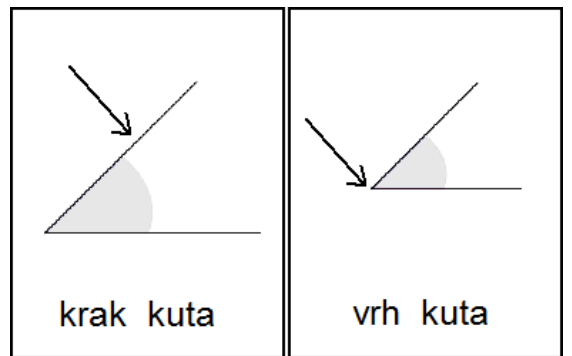
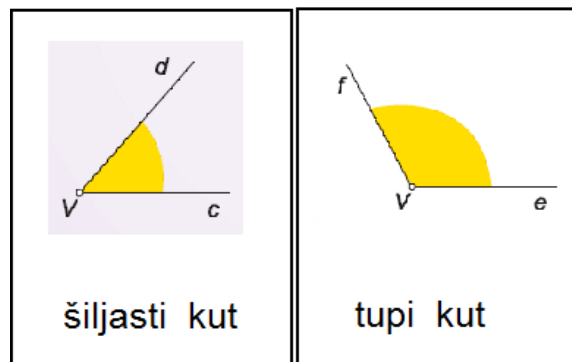
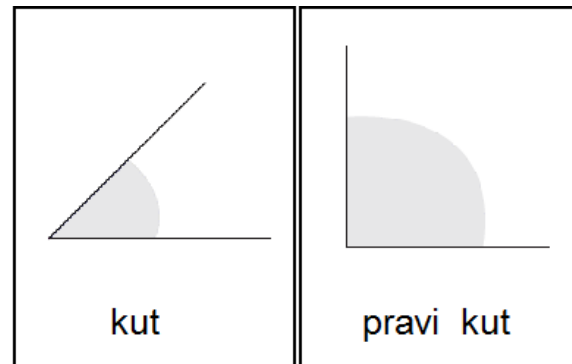
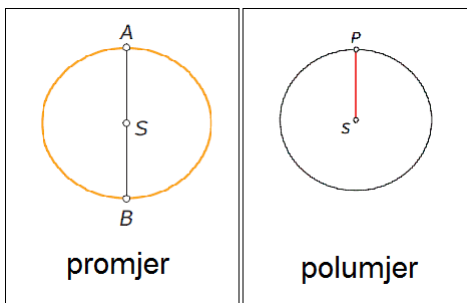
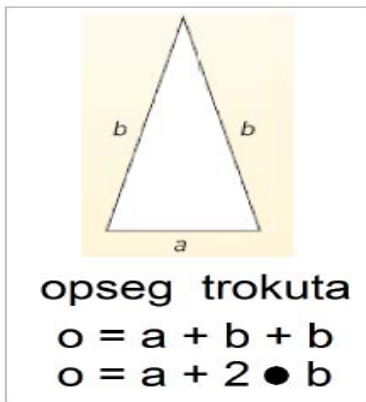
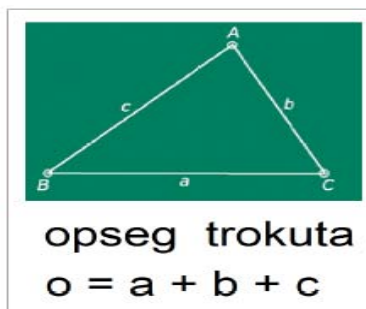
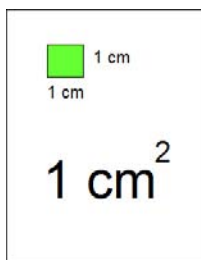
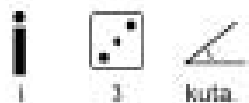
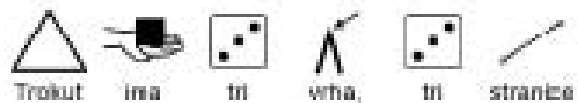
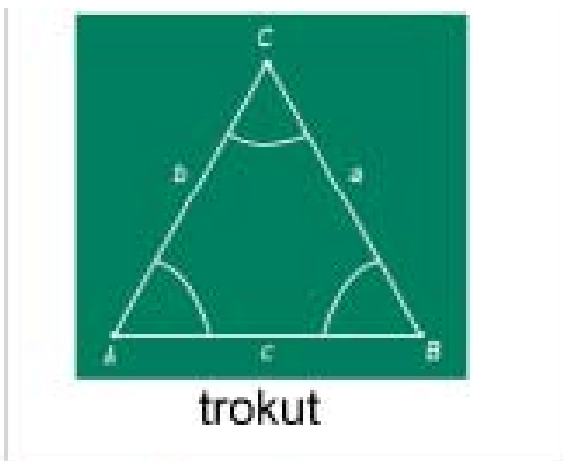
ravnina



pravac



Geometrija



Razlomci i decimalni brojevi

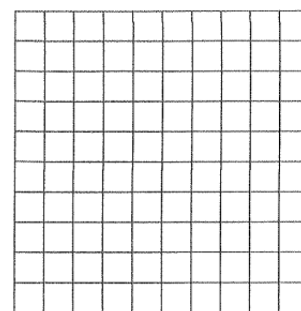
| | | | |
|----------------------------------|--------------------------------|---------------------------------|---------------------------------|
| $\frac{1}{2}$ jedna polovina | $\frac{1}{3}$ jedna trećina | $\frac{1}{2}$ jedna polovina | $\frac{1}{2}$ jedna polovina |
| $\frac{1}{4}$ jedna četvrtina | $\frac{1}{5}$ jedna petina | | |

| | | |
|--------------------------|----------------------------------|---------------------------|
| $\frac{a}{b}$ brojnik | $\frac{a}{b}$ razlomačka crta | $\frac{a}{b}$ nazivnik |
|--------------------------|----------------------------------|---------------------------|

| | | |
|------------------------|-------------------------|-----------------------|
| ↓ 0.4 cijeli dio | 0.↓4 decimalna točka | 0.4↓ decimalni dio |
|------------------------|-------------------------|-----------------------|



Model kvadrata 1.



jedno cijelo

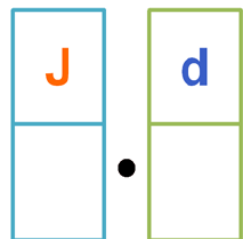


jedna desetina

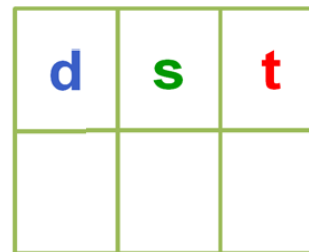
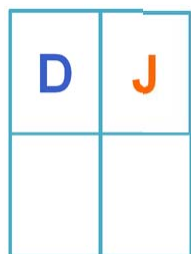


jedna stotina

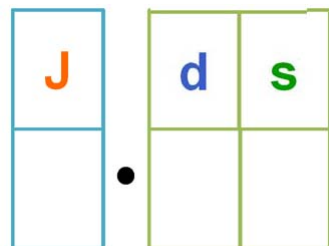
Decimalni brojevi



•



•



•

6. a)

$$\begin{array}{r} 53,23 \\ + 5,43 \\ \hline 58,66 \end{array}$$

e)

$$\begin{array}{r} 25,35 \\ - 12,13 \\ \hline 13,22 \end{array}$$



f)

$$\begin{array}{r} 38,23 \\ - 22,32 \\ \hline 15,91 \end{array}$$

g)

$$\begin{array}{r} 35,1 = 0,07 \\ - 19,1 = 4 = 0,3 \\ \hline 16,0 \end{array}$$

2.2 Matematika

$$83. e) \quad \frac{3x-1}{6} + \frac{2x+1}{3} = x + \frac{1}{3} \quad | \cdot 6$$

$$3x-1 + 2 \cdot (2x+1) = 6x+2$$

$$3x-1 + 4x+2 = 6x+2$$

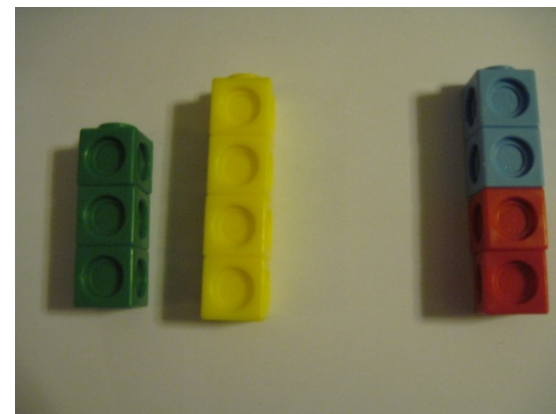
$$7x-6x = 2+1-2$$

$$x = 1$$

Edukativni materijali – kada ih koristiti i kako – pregled



- Nathan – količina do 5
- Numicon – količina do 100 (u kombinaciji s drugim materijalima i do 1 000 000), računske operacije
- Vinco - količina do 1 000 (u kombinaciji s drugim materijalima i do 1 000 000), računske operacije; masa, volumen, sat
- Multicubes – količina i matematičke operacije
- Brojevine crte



Numicon

... materijal za učenje, oblici predstavljaju brojeve

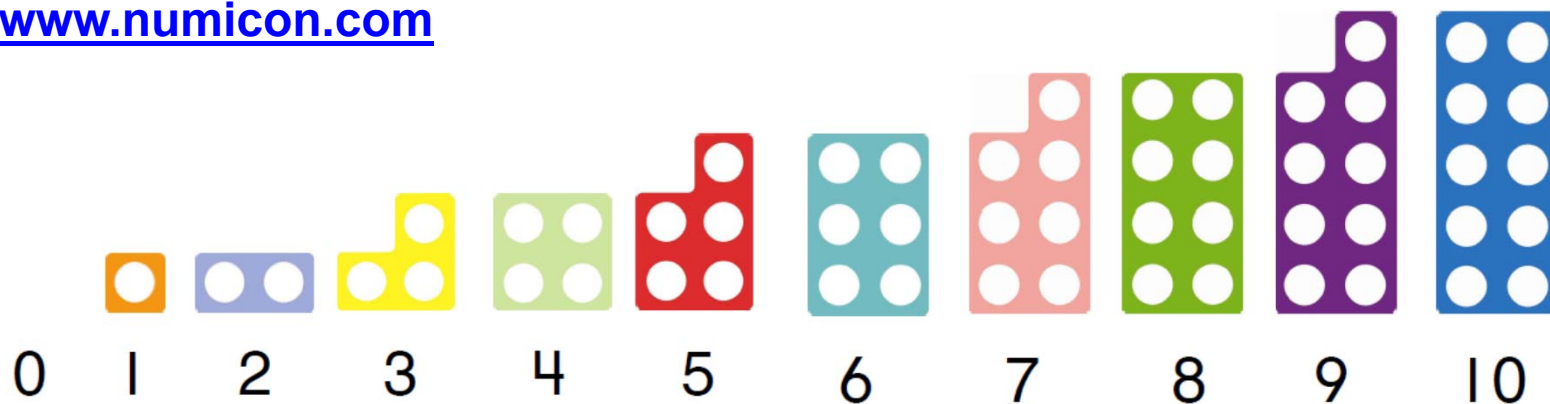
... napravljen za djecu normalnog razvoja jer su imali problema s količinom, spoznajom o brojevima,..

Numicon je multi senzorni matematički program koji koristi Numicon matematičke oblike za niz praktičnih aktivnosti.

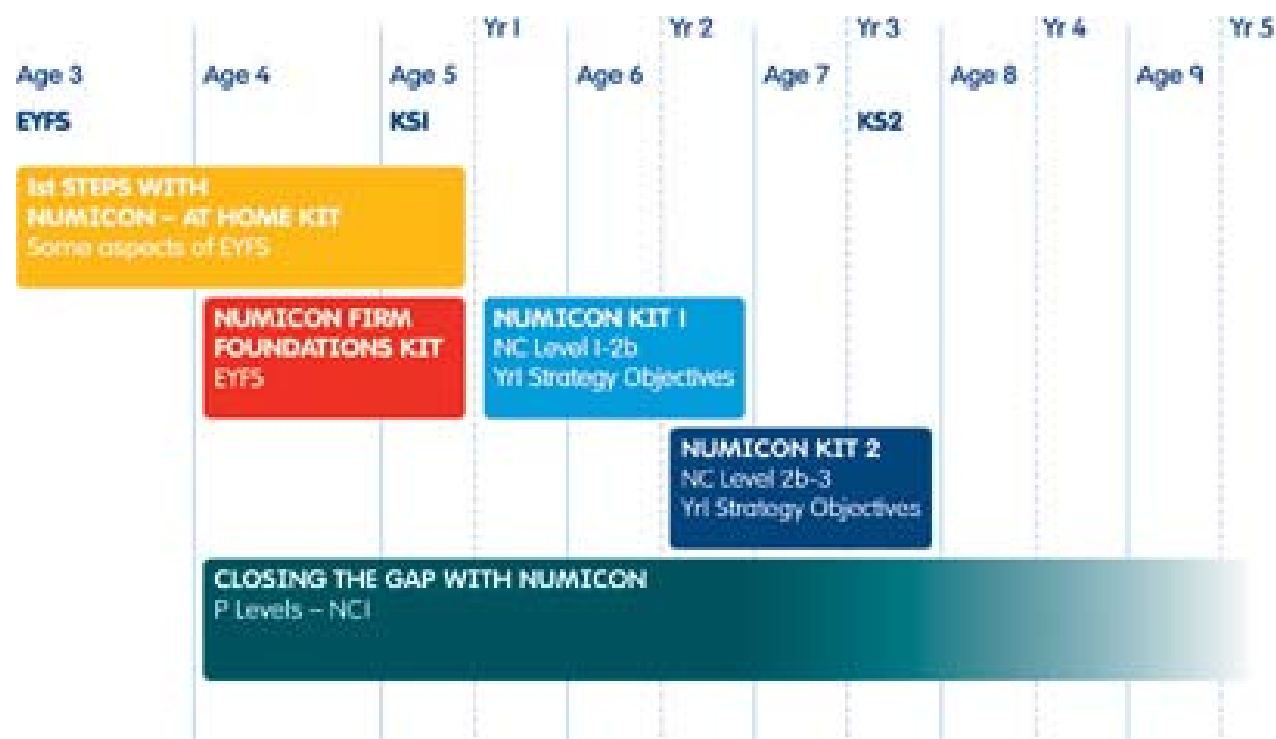
Matematički oblici daju mogućnost spoznaje brojčanih vrijednosti i odnosa na način koji ne omogućava napisani broj.

Učenici odnosno djeca razvijaju vlastitu mentalnu viziju kombiniranjem i uspoređivanjem do usvajanja aritmetičkih operacija kroz niz aktivnosti.

www.numicon.com



Numicon



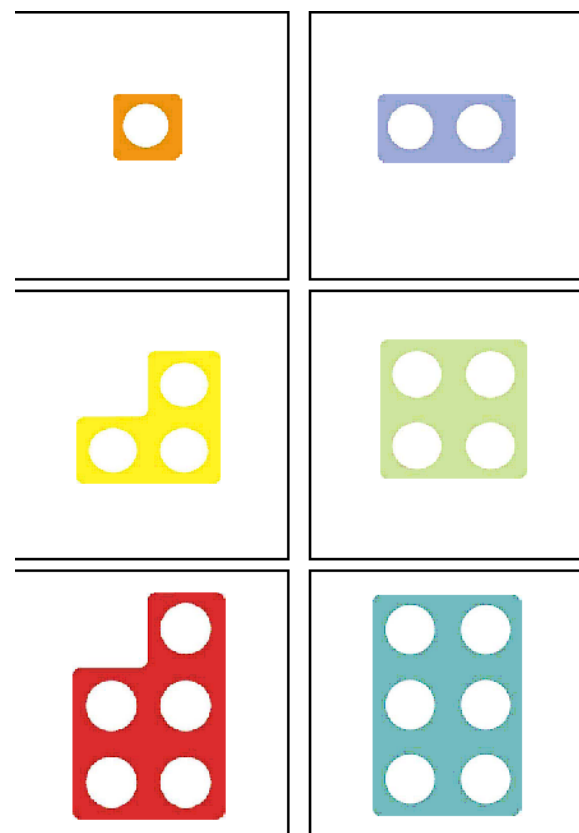
... u ranoj dobi djeca se igraju s Numicon oblicima kroz razne aktivnosti te povezuju broj sa svakim oblikom i onda koriste oblike u praktičnim aritmetičkim aktivnostima



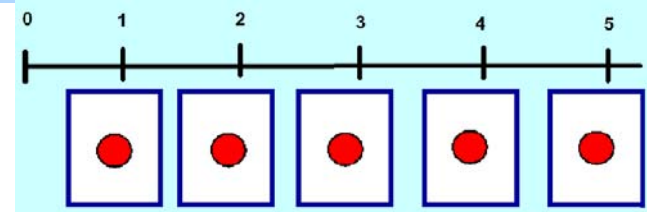
Numicon & drugi oblici za spoznaju količine

... razvrstavanje

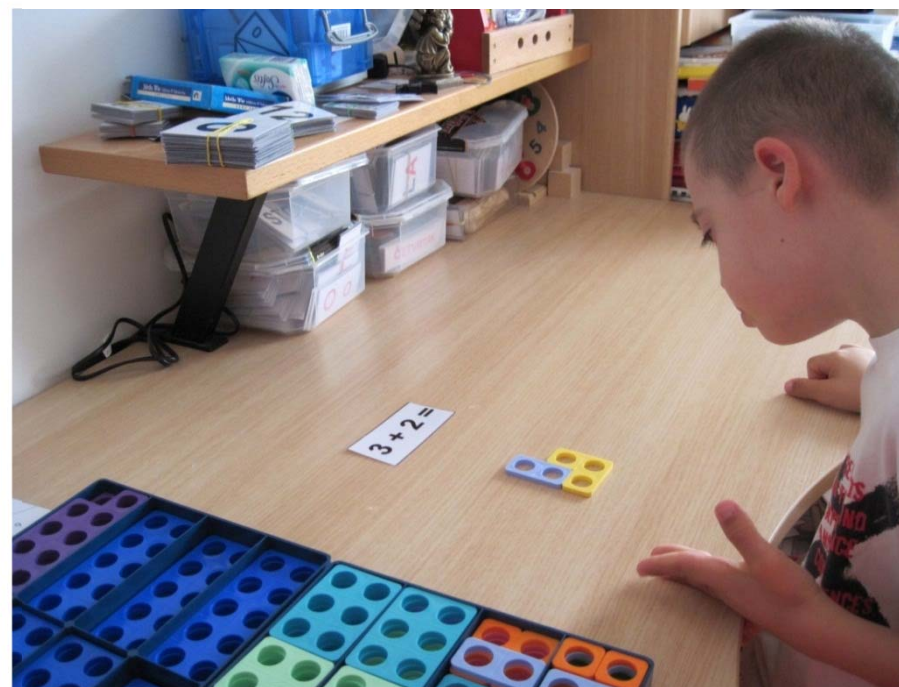
... spoznaja količine (do 3, do 5, do 10,....)



Numicon - škola

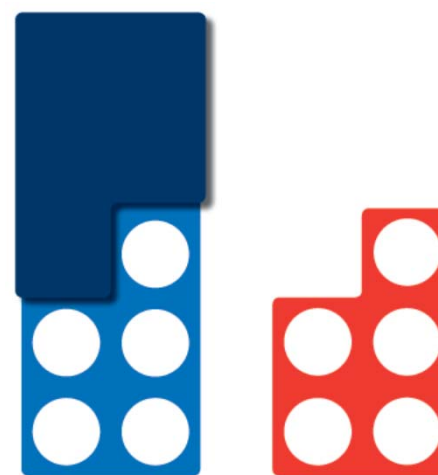
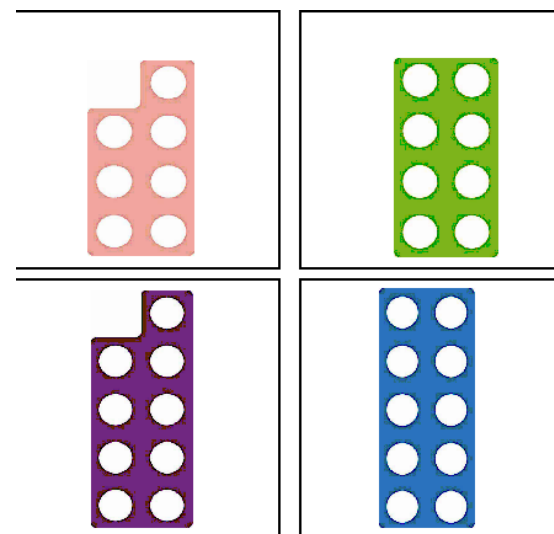


... brojevi do 5, zbrajanje, oduzimanje, više, manje



Numicon - škola

... brojevi do 10, zbrajanje,
oduzimanje, više, manje



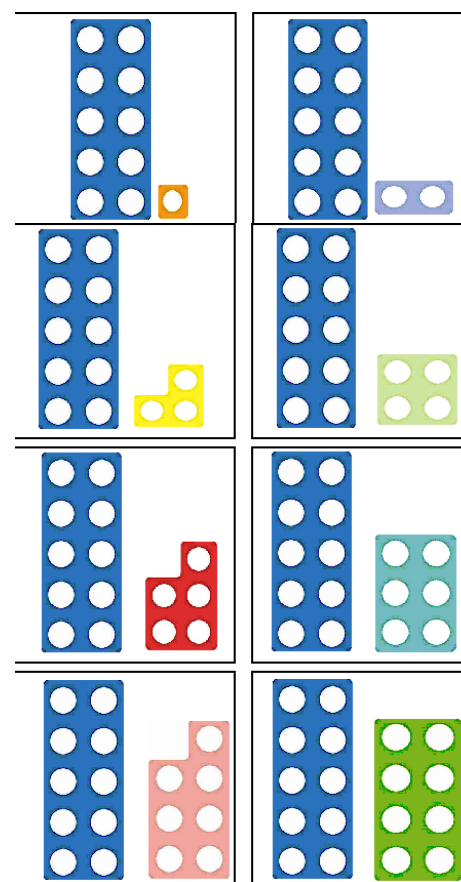
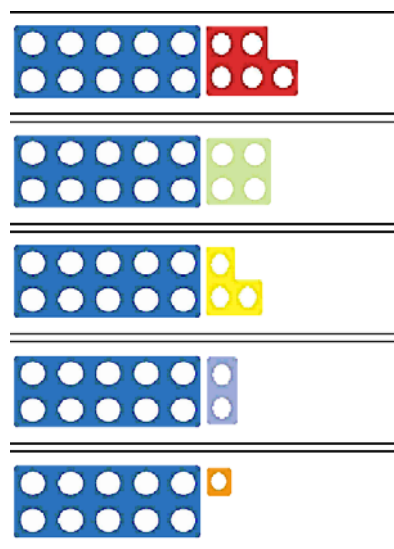
$$10 - 5 = 5$$

Numicon - škola

... brojevi do 20, zbrajanje, oduzimanje, više, manje

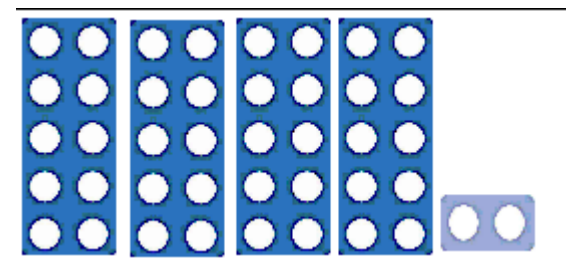
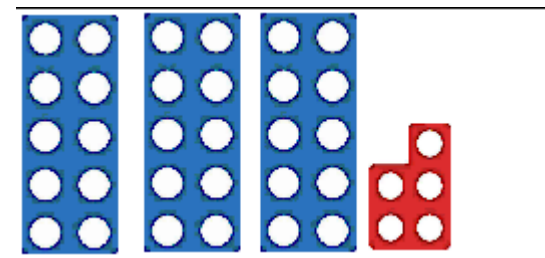
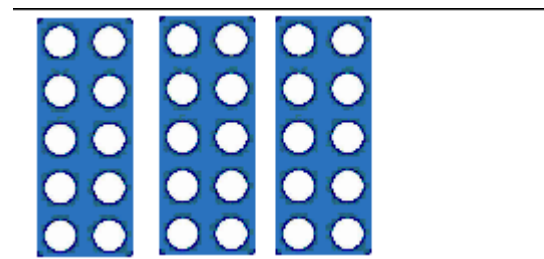
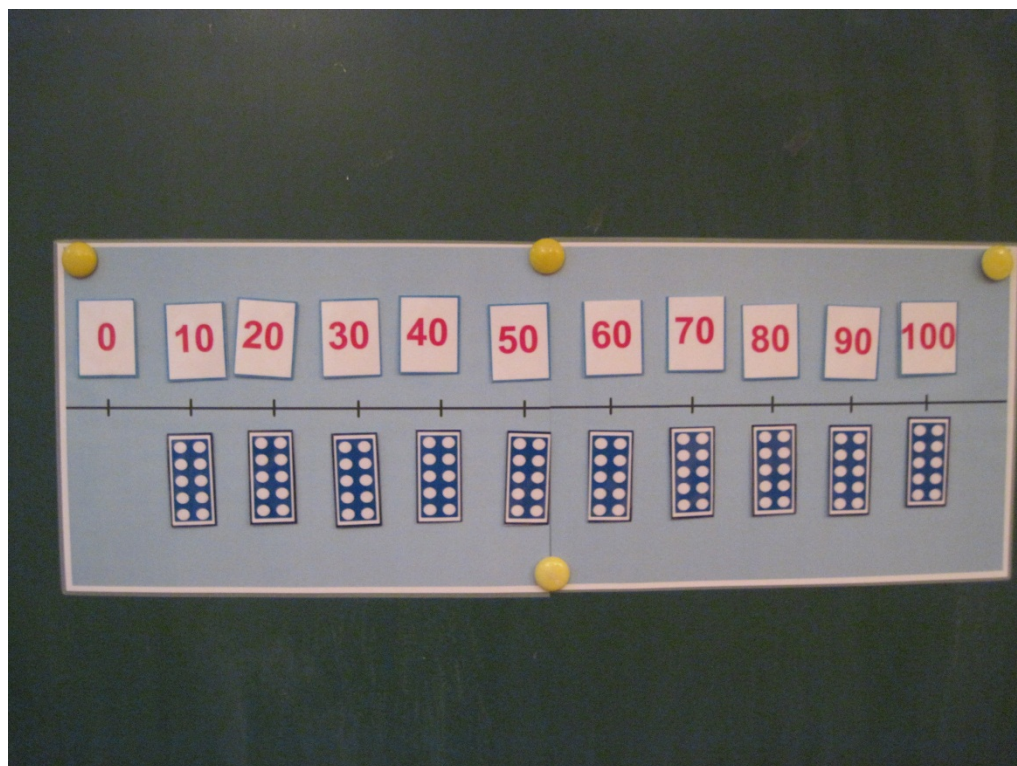
0 1 2 3 4 5 6 7 8 9

10 11 12 13 14 15 16 17 18 19



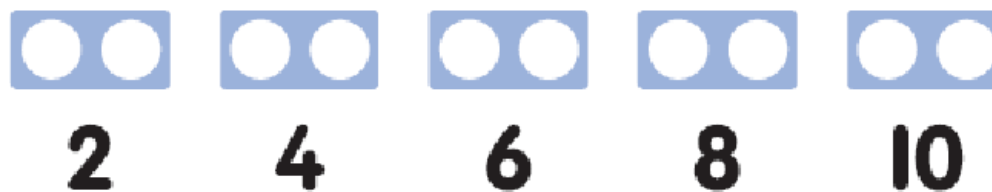
Numicon - škola

... brojevi do 100 zbrajanje, oduzimanje



Numicon - škola

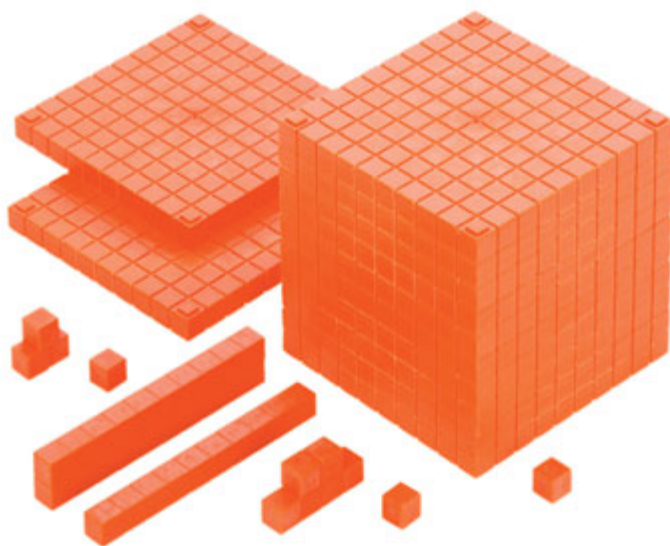
... Množenje, dijeljenje, ...film "Working with Numicon"



Numicon & ostale opcije - škola

... brojevi do 1000

...jedinice, desetice, stotice, tisućice,...

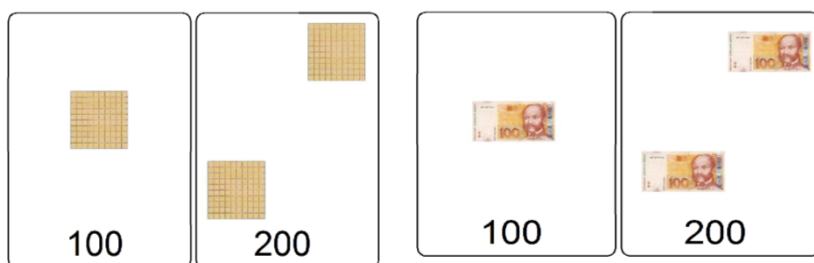
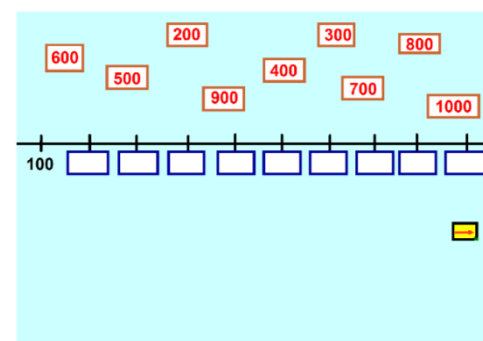
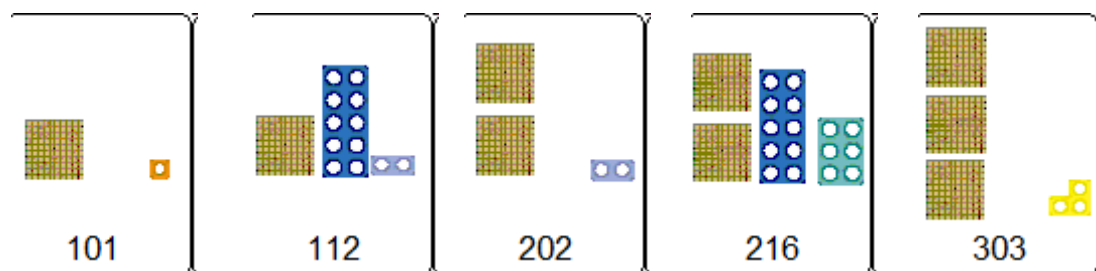
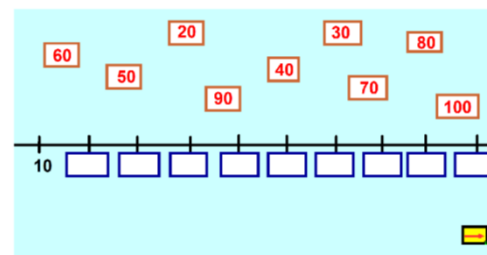






Numicon & ostale opcije - škola

... brojevi do 1000, 1 000 000

...jedinice, desetice, stotice, tisućice,...

.... sati

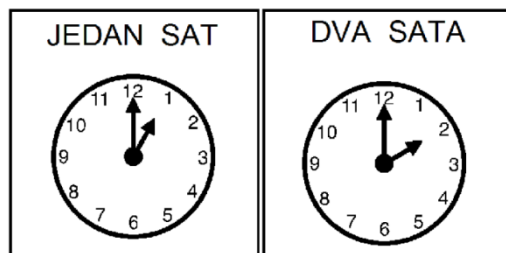
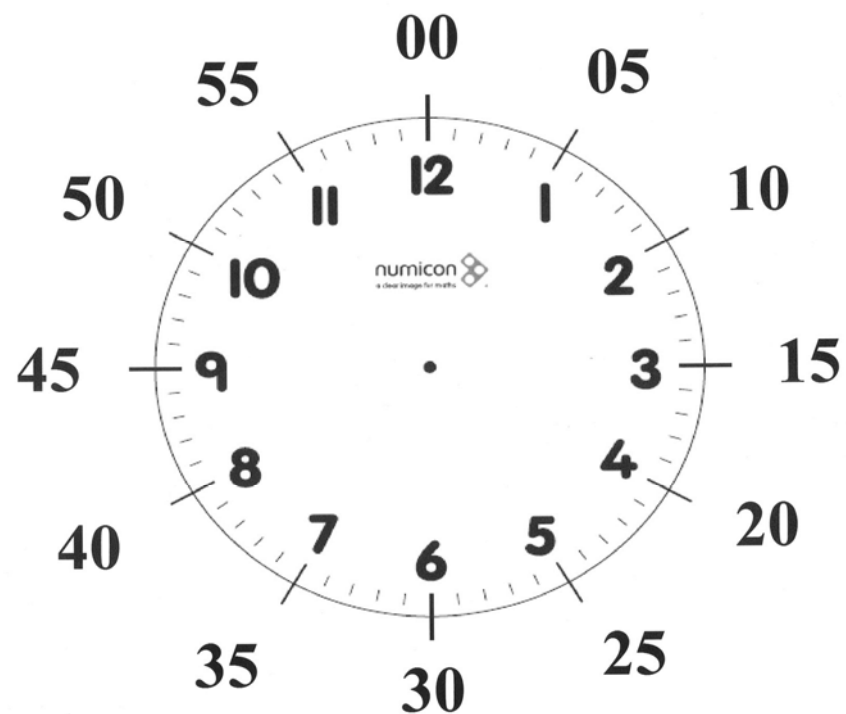
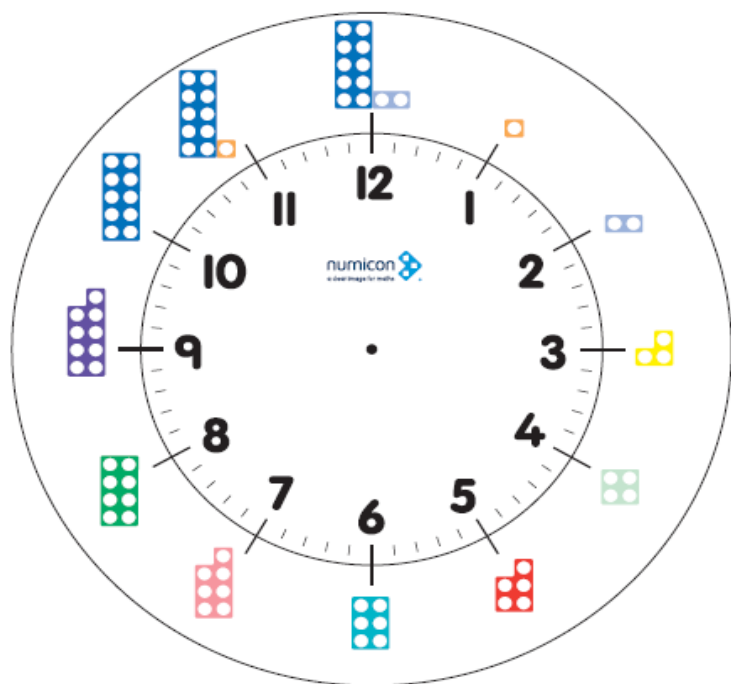


|  1000 |  100 |  10 |  1 |
|--|---|--|---|
| | | | |
| | | | |



Numicon - škola

... vrijeme - sat i mjeseci



Aplikacije na tablet računalima

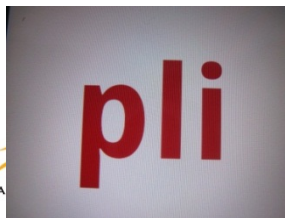
EU projekt – www.ict-aac.hr

Aplikacije:

1. ICT-AAC Slovarica
2. ICT-AAC Komunikator
3. ICT-AAC eGalerija
4. ICT-AAC Matematički vrtuljak
5. ICT-AAC Matematička igraonica
6. ICT-AAC Glaskalica

Aplikacije za HZDS:

1. Učimo riječi
2. Učimo nove riječi
3. Učimo slogove



Suradnja s UK

<http://www.specialiapps.co.uk/?page=blog>

Aplikacija "Special Words" ("Posebne riječi,,)

Aplikacija „Special story” ("Posebne priče,,)

Aplikacija „Special numbers”

Aplikacija „Touch-words”

Aplikacija „Touch-emotions”

Aplikacija „Touch-shapes”

Aplikacija „Touch-colours”

Aplikacija „Touch-animals”

Aplikacija „Match & Find”



Druge aplikacije - MATEMATIKA
- Aplikacije za zbrajanje, oduzimanje, množenje, dijeljenje (C Addition, Column S, Divison, C-Addition, Long Mult)

- Zgodno za razlomke Pizza 1

dileme, ...

- definirati korake, pripremiti materijal, pokušati, analizirati rezultat, važan osjećaj djeteta (teško mu je, lako mu je, uspješan, zadovoljan, sretan, tužan,...) – dijete može raditi s roditeljem, s pomoćnikom u nastavi, s učiteljem
- korištenje edukativnih materijala prilikom ispitivanja

Važno je što dijete sve može,
a bitno je znati što mu teže
ide i na tome ustrajno i
planski raditi.

Važno je znati kako dijete uči,
koji sistem najbolje uspijeva.

