

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



EDUKACIJA

„Kako naučiti tu tešku matematiku“

Zagreb, 18.03.2017.

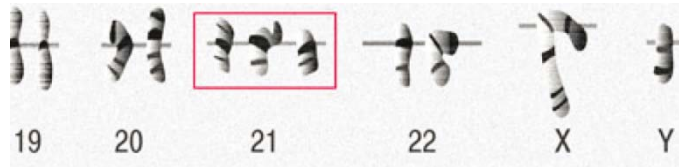
mr.sc. Dinka Vuković, dipl. ing.
Filipova mama
predsjednica HZDS, tajnica EDSA
mob. 091 365 4509
e-mail: ds-hr@vip.hr

Program edukacije 18.03.2017.

- 11.45-12.00 Prijava sudionika
- 12.00-12.30 Uvod
 - zašto je matematika teška
 - kada i kako krenuti u učenju matematike
- 12.30-14.00 Koraci u učenju matematike
- 14.00-14.15 Pauza
- 14.15-15.00 Matematika – obrada gradiva po razredima osnovne škole
- 15.00 -15.45 Učenje matematike uz aplikaciju ICT-AAC Matematika, ICT- AAC Domino brojalica i druge matematičke aplikacije iz ICT-AAC projekta – izv. prof. dr. sc. Željka Car
- 15.45-17.00 Priprema i izrada materijala

Down sindrom

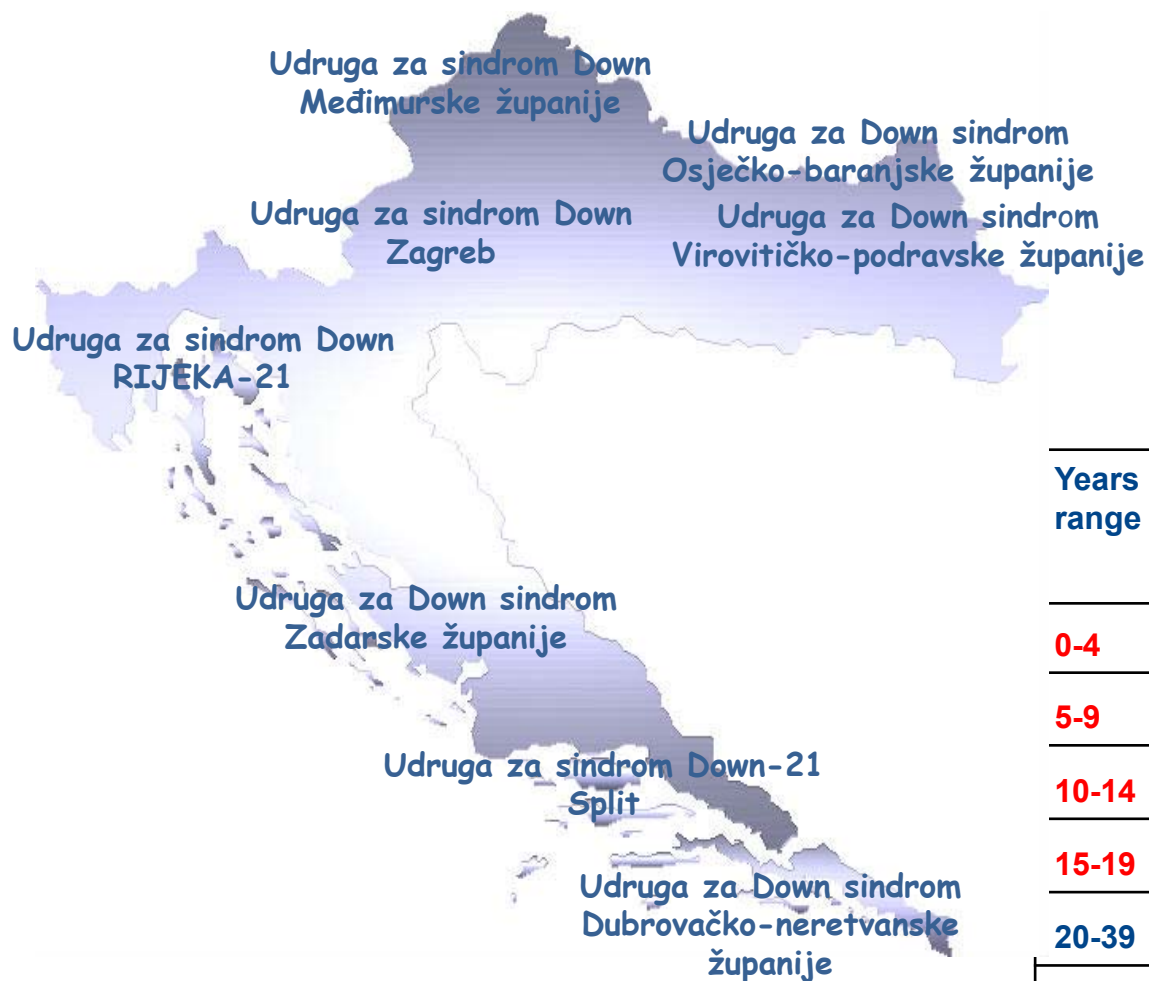
- Sindrom Down (Down sindrom) je kromosomski poremećaj koji nastaje uslijed viška jednog kromosoma ili dijela kromosoma u jezgri svake stanice tijela, 1/650 sve novorođene djece rađa se s Down sindromom



- višak kromosoma i utjecaj
 - dijete će biti sporije u stjecanju vještina i imat će probleme u učenju
 - djeca s DSom hodaju, pričaju, voze bicikl, čitaju, pišu - postižu veliki dio stvari kao i druga djeca samo sporije, uz puno više truda i do neke razine
- njihov razvoj je kontinuirano u kašnjenju
 - **problemi** – slabija snaga mišića (hipotonija), govor, komunikacija, pisanje, čitanje
- integracija u vrtiće i škole
 - u školskoj godini 2016/2017 u redovne škole, čl. 4/6 integrirano preko 70 djece s DSom, oko 10tero djece u srednjoj školi – posebni programi, 2 djece redovna srednja škola prilagođeni program



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 (prije čl. 4 sada čl. 5. i 6)
 - čl. 5-redoviti program uz prilagodbu sadržaja (mogućnost uz pomoćnika u nastavi)
- djelomična integracija (čl. 7 – sada čl.8 stavak 5.) – mat, hr, pid s rehabilitatorom, ostale sate u redovnom razredu
- posebni programi (čl. 10 - čl. 5 stavak 5. i čl. 6. stavak 6.) i čl. 12 – čl.8 i čl. 9) – od 1. do 8. razreda i do 21. godine

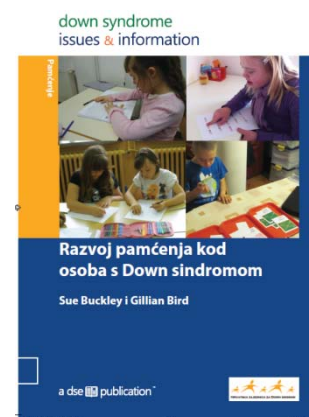
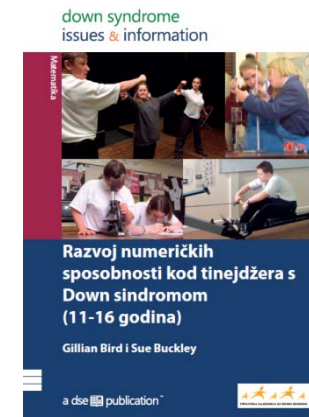
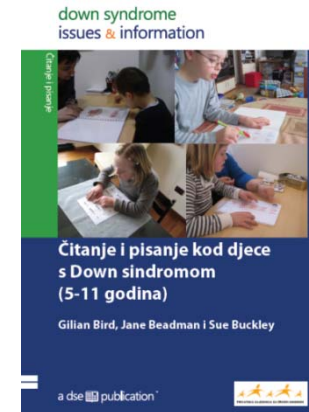
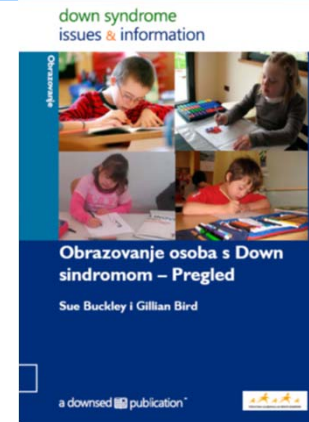
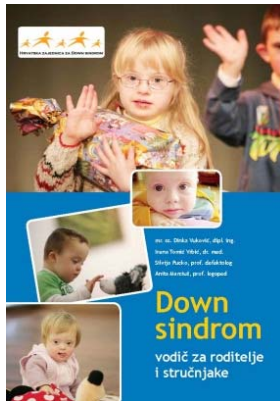


Školska godina	Broj djece uključene po čl. 4.(5 i 6)
2007/2008	7
2008/2009	16
2009/2010	24
2010/2011	30
2011/2012	42
2012/2013	59
2013/2014	68
2014/2015	70
2015/2016	72
2016/2017	72 -74

INTEGRACIJA/INKLUZIJA

Preuvjeti integracije/inkluzije:

- Rana intervencija, kontinuirani rad s djetetom
 - Priprema vrtića i škola
 - Priprema odgajatelja i učitelja
 - Zakonska regulativa
 - Podrška lokalne zajednice
 - Literatura
-
- Roditelji se izmore prolazeći kroz sve administrativne, ljudske i druge barijere



Dijete sa sindromom Down u školi



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!





Kako naučiti tu tešku matematiku“

$$\frac{2}{3} \times \frac{3}{5} = \frac{2}{5}$$
$$\frac{3}{1} \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \frac{6}{1} = 6$$

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**

**PRVI
RAZRED**

**DRUGI
RAZRED**

**TREĆI
RAZRED**

**ČETVRTI
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

SREDNJA REDOVNA ŠKOLA

PRVI RAZRED – ekonomska škola

- skupovi brojeva
- potencije
- algebarski zadaci
- korijeni
- mjere
- koordinatni sustav
u ravnini
- linearne jednadžbe
- omjeri i razmjeri

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

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

Kada i kako krenuti u učenju matematike?

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



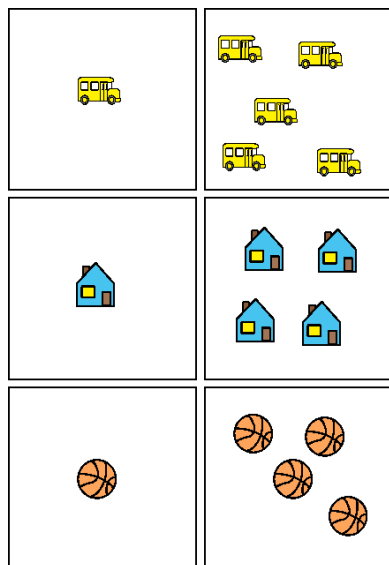
Kada i kako krenuti u učenju matematike?

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



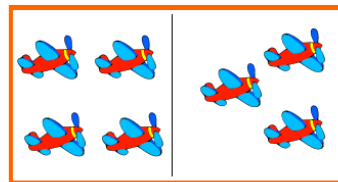
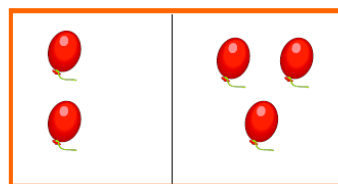
Kada i kako krenuti u učenju matematike?

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

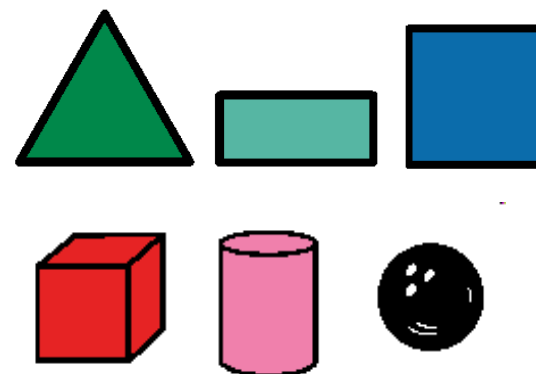
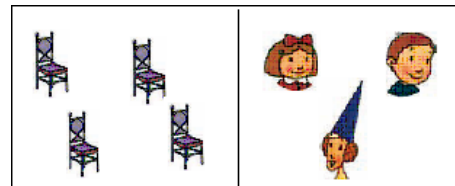


Name _____

Which group has more? Circle it.



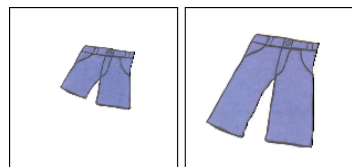
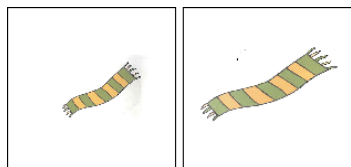
Gdje ima više? Zaokruži.



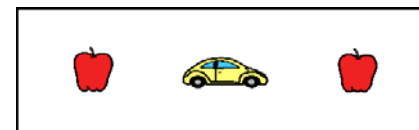
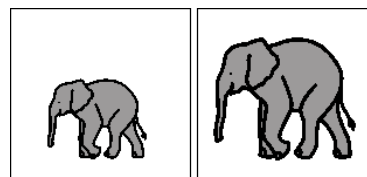
- filmić – više & manje

isto – nije isto -
različito

duže - kraće

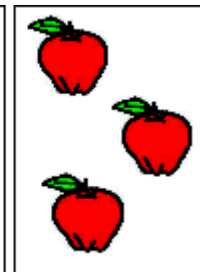
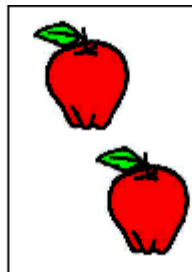
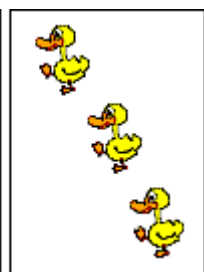
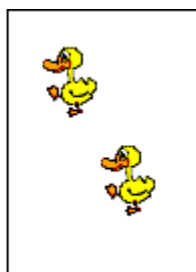
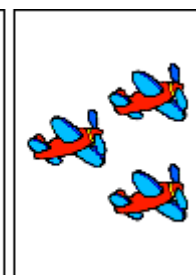
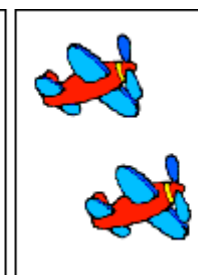
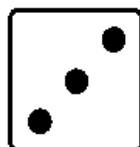
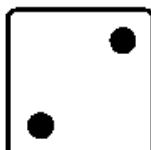
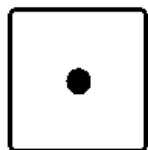
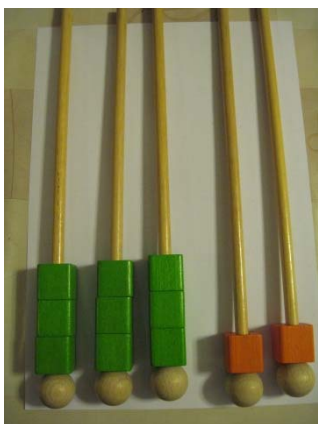


manje – veće



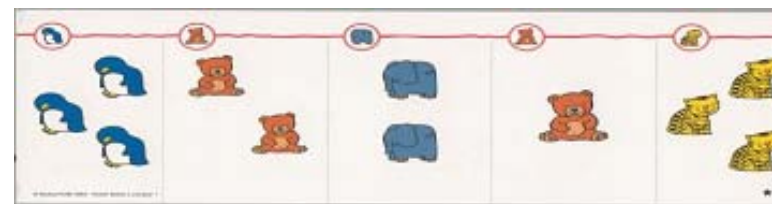
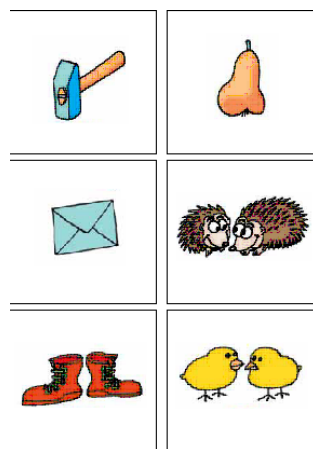
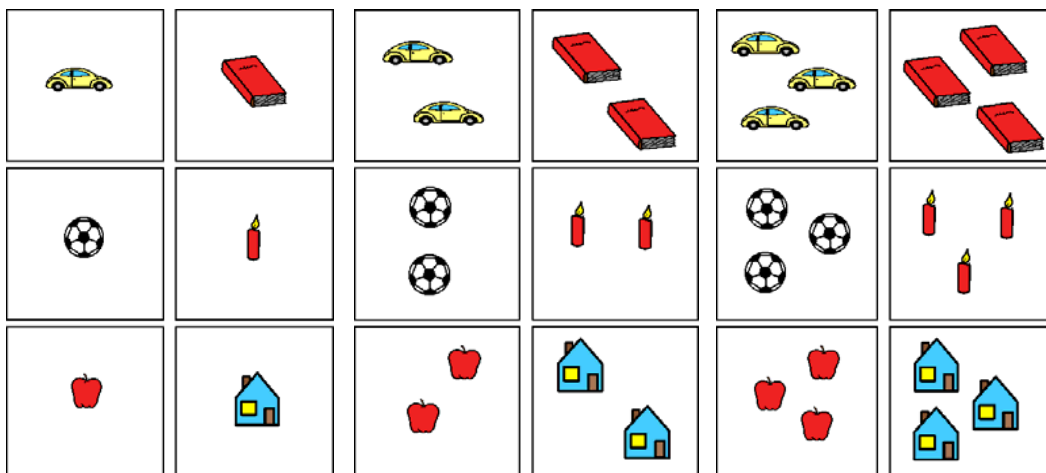
Kada i kako krenuti u učenju matematike?

- spoznaja količine do 3



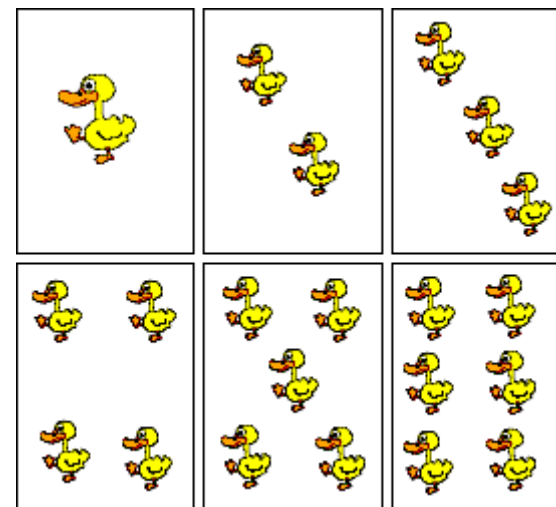
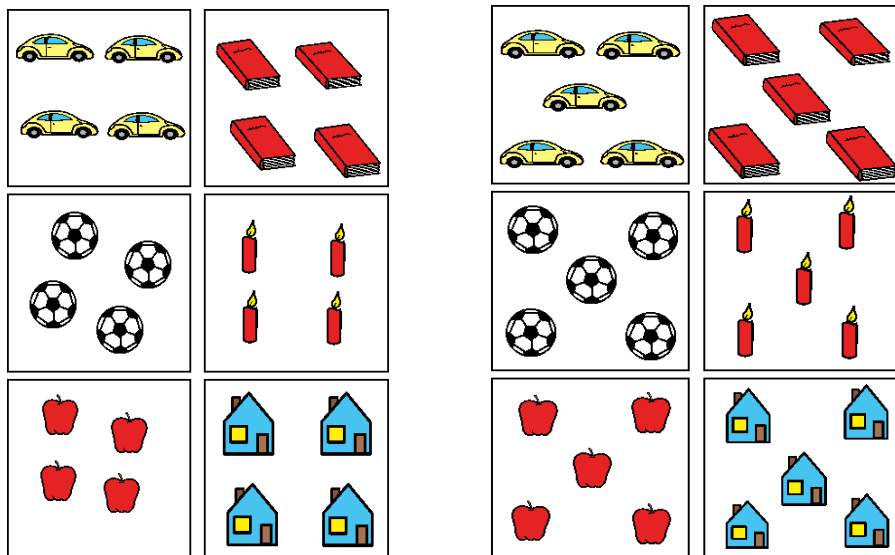
Koraci u učenju matematike

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



Nathan

Koraci u učenju matematike



Koraci u učenju matematike



C:\Dinka\Privatno\KOPIJA\Edukacija

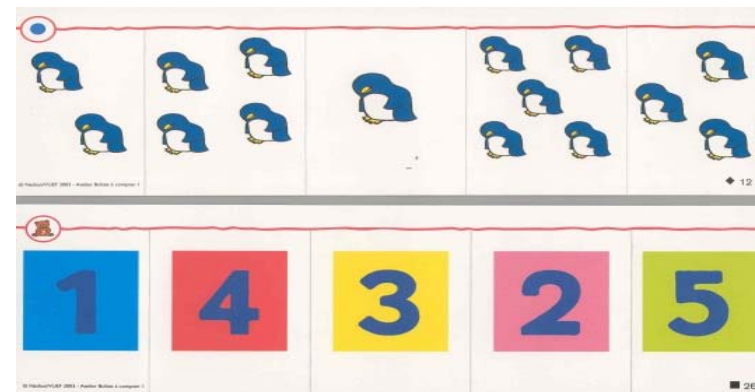
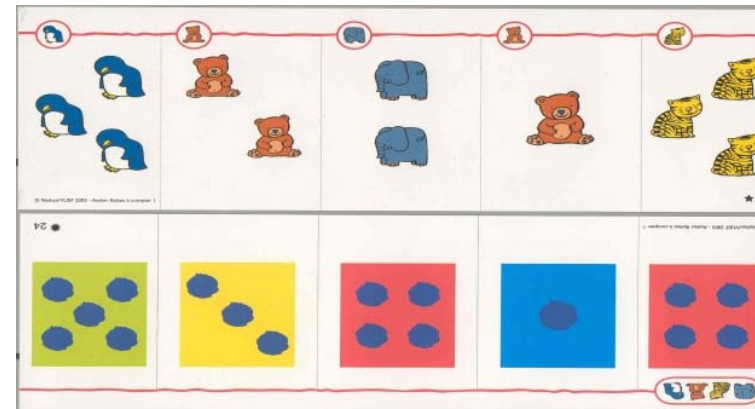
- količina do 5
- koristiti domino princip do 5



Counting Box Worksshop 1
(Nathan-www.prometal.hr)

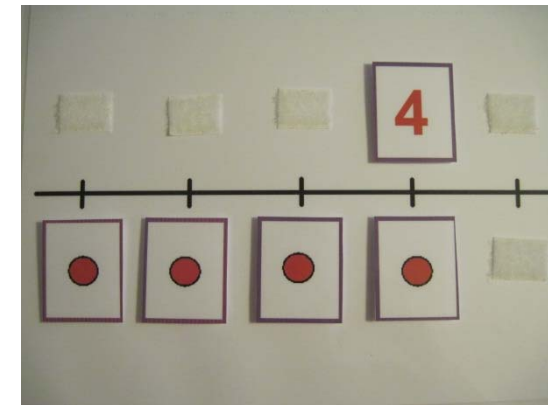
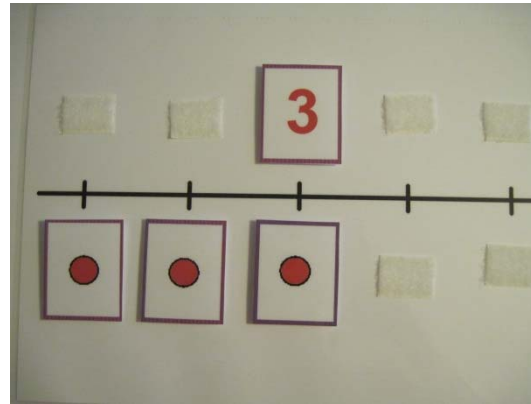
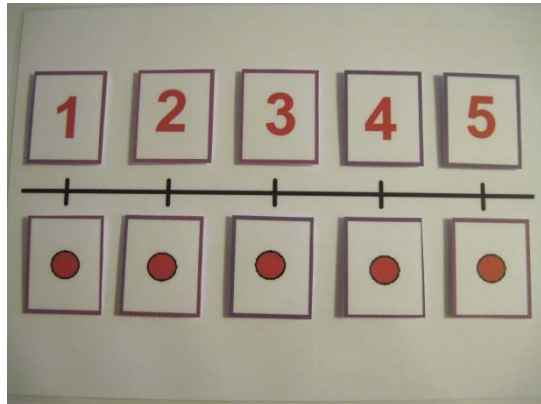


HRVATSKA ZAJEDNICA ZA DOWN SINDROM

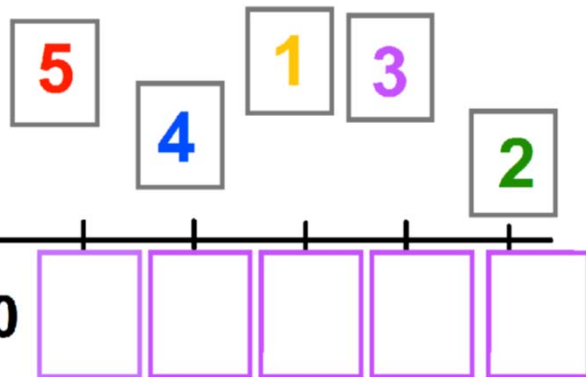
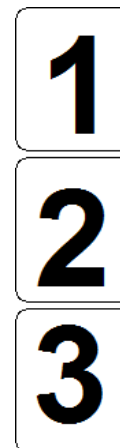
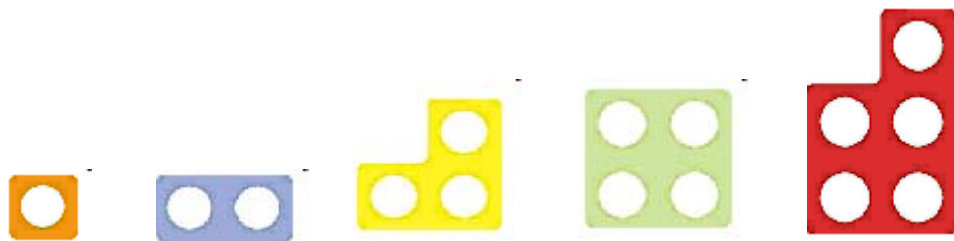


Koraci u učenju matematike

- količina do 5 (materijali s čičkom i interaktivni)

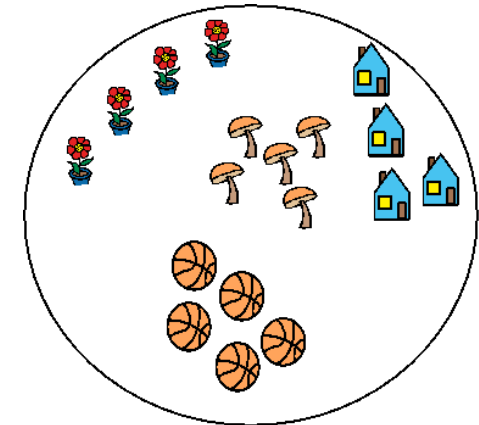
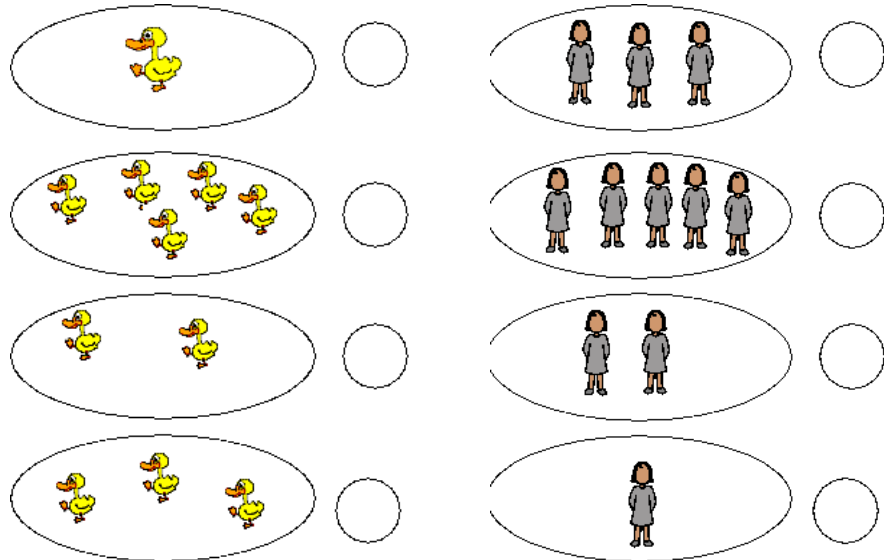
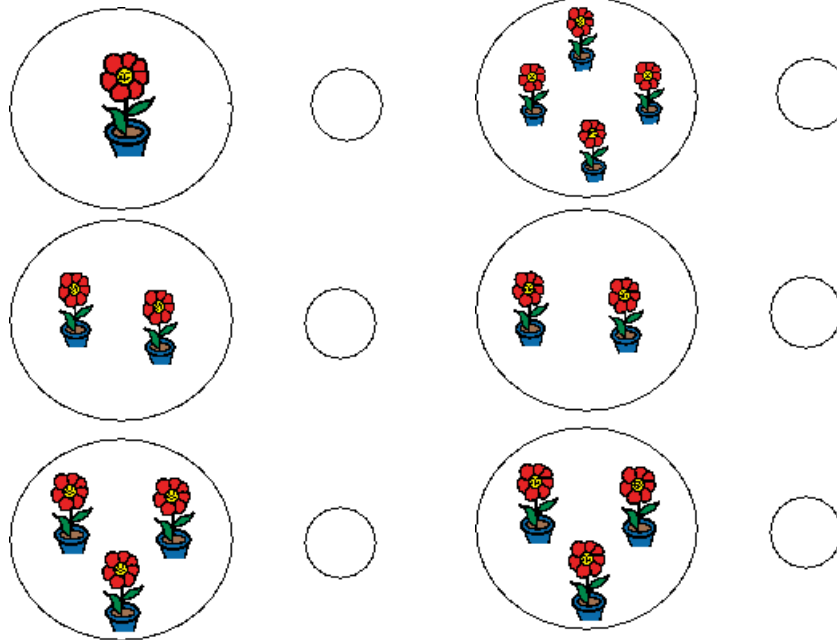


- Numicon materijali (www.numicon.com)



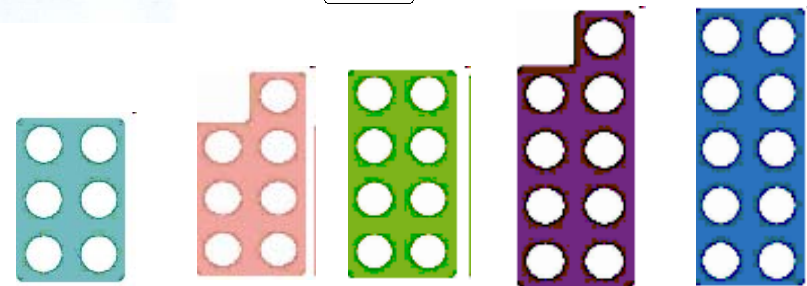
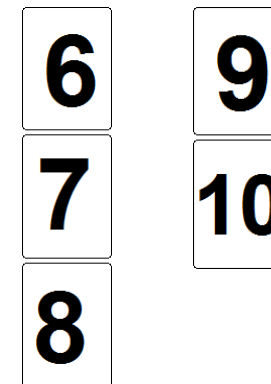
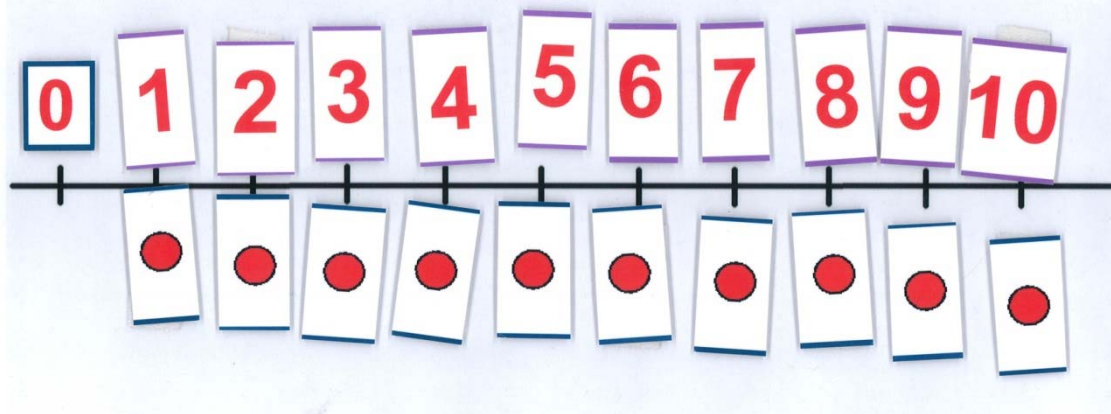
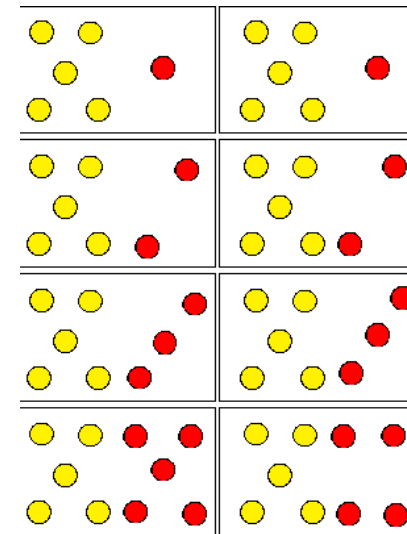
Koraci u učenju matematike

- 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

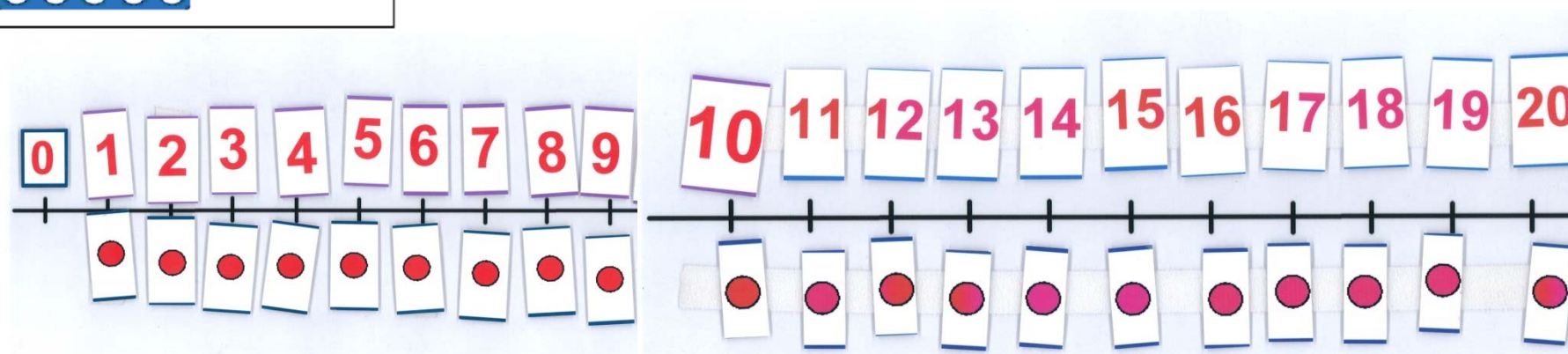
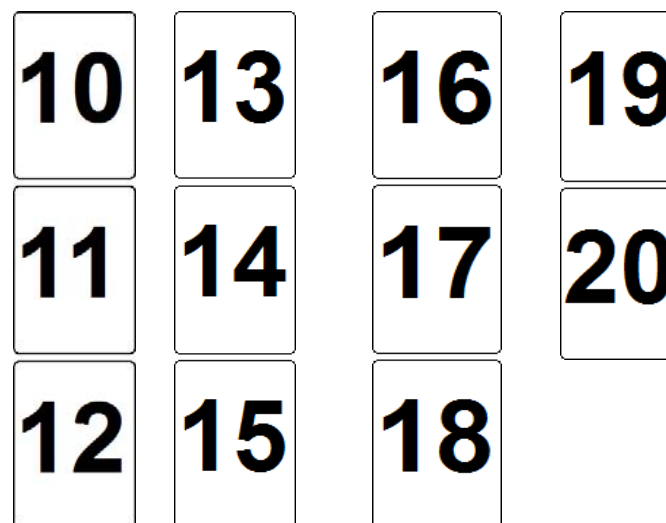
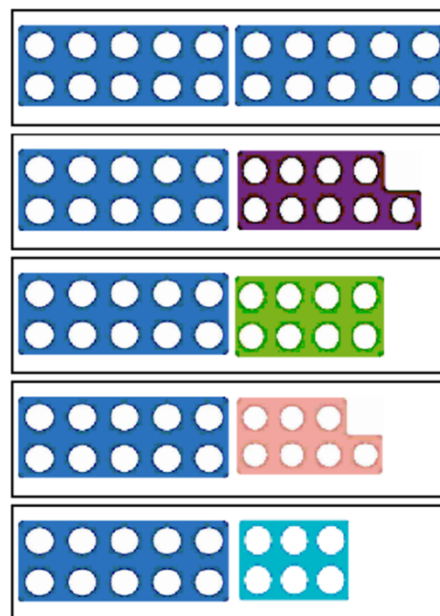
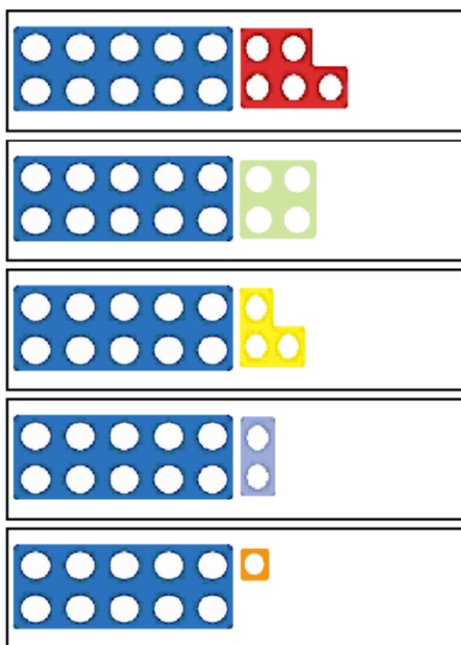
- količina do 20
- koristiti Numicon - mjesne vrijednosti i “kao zbrajanje”
- imenovati brojeve (11-20)
- razvrstavanje ili kao flashcards

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

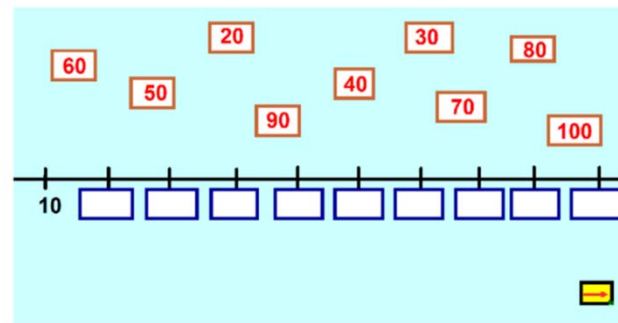
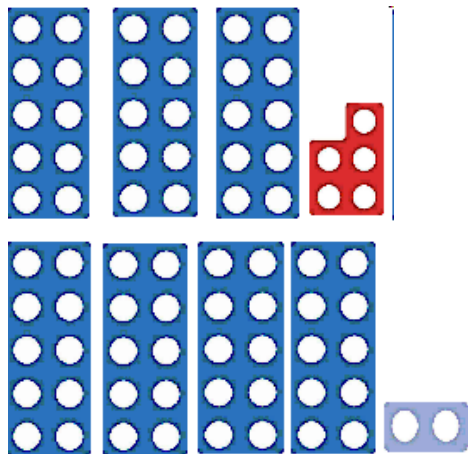
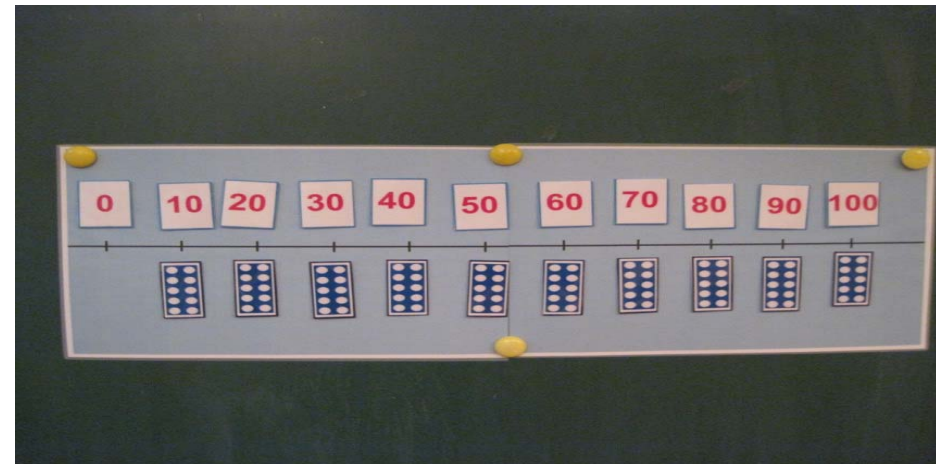
Koraci u učenju matematike

- 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)

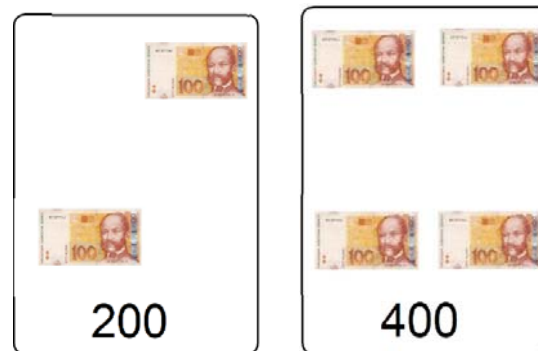
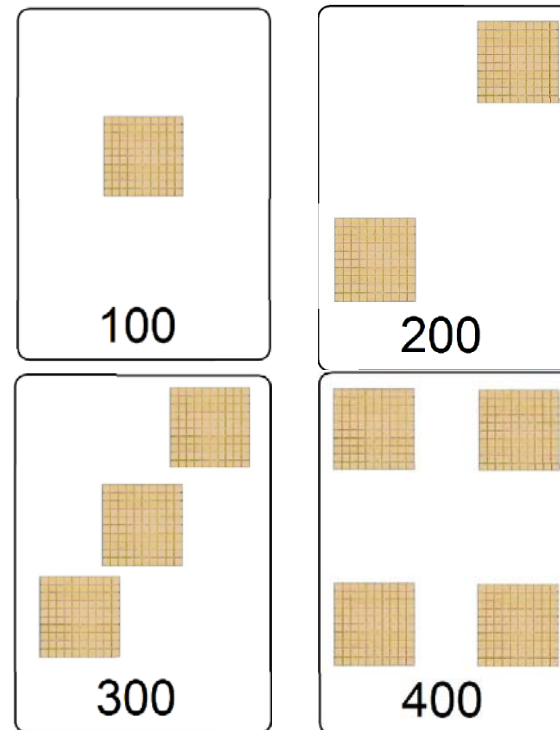
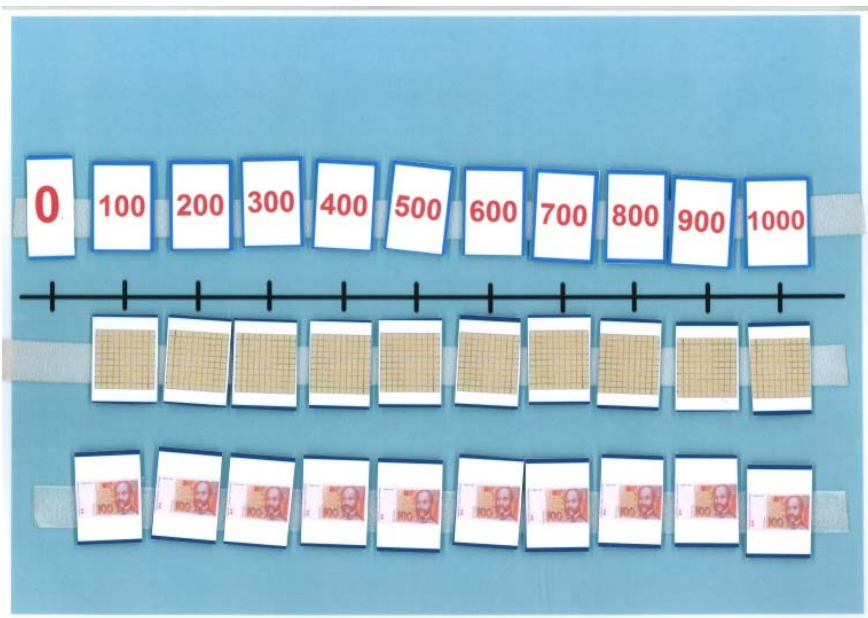


DESETICE		JEDINICE	
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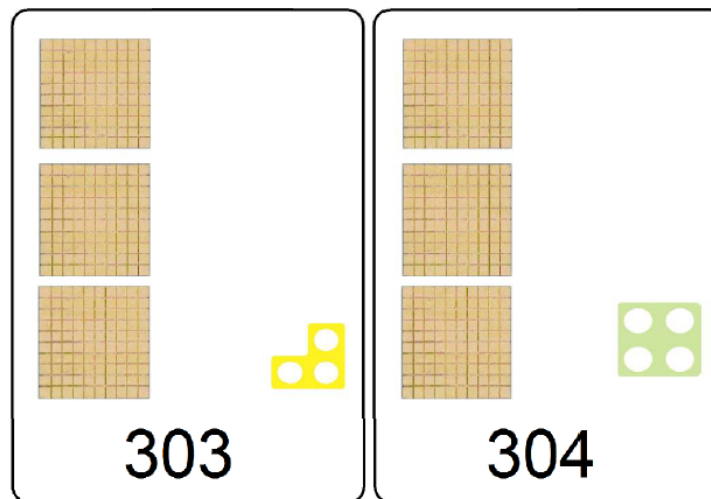
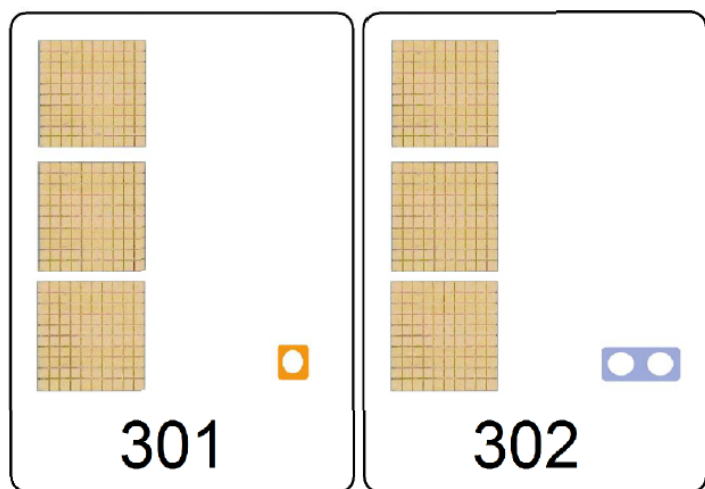
81		83		85
86	87		89	90
		93	94	95
96	97		99	100

Koraci u učenju matematike

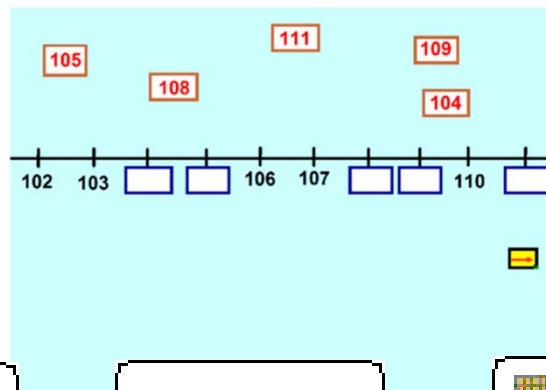
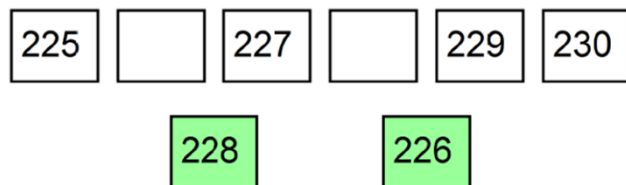
- količina do 1 000
- koristiti Numicon - mjesne vrijednosti
- imenovati brojeve (101-1000)
- razvrstavanje (npr., stotica), kao flashcards,
- slaganje broja uz pomoć pločica koje predstavljaju 100 (Base 10 – Nathan i Vinco)
- staviti novce (sličice od 100 kuna)



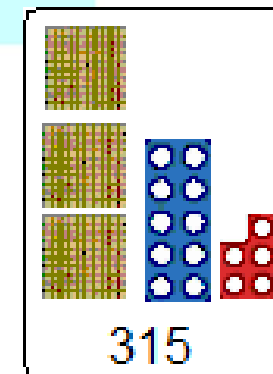
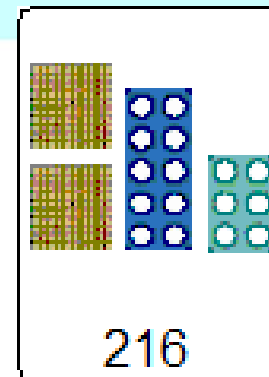
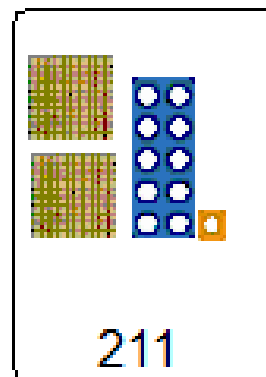
Koraci u učenju matematike



Popuni!

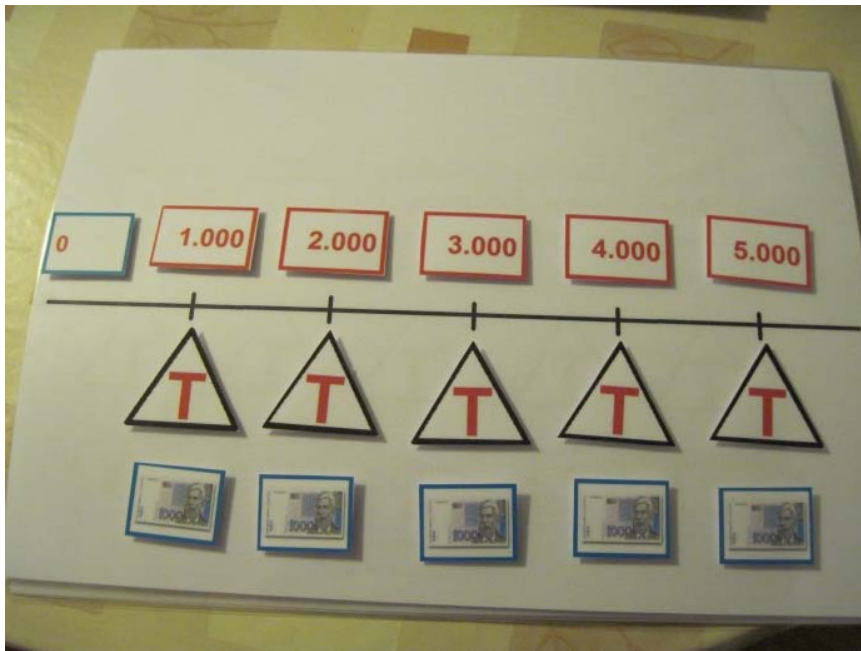


100	10	1
S	D	J



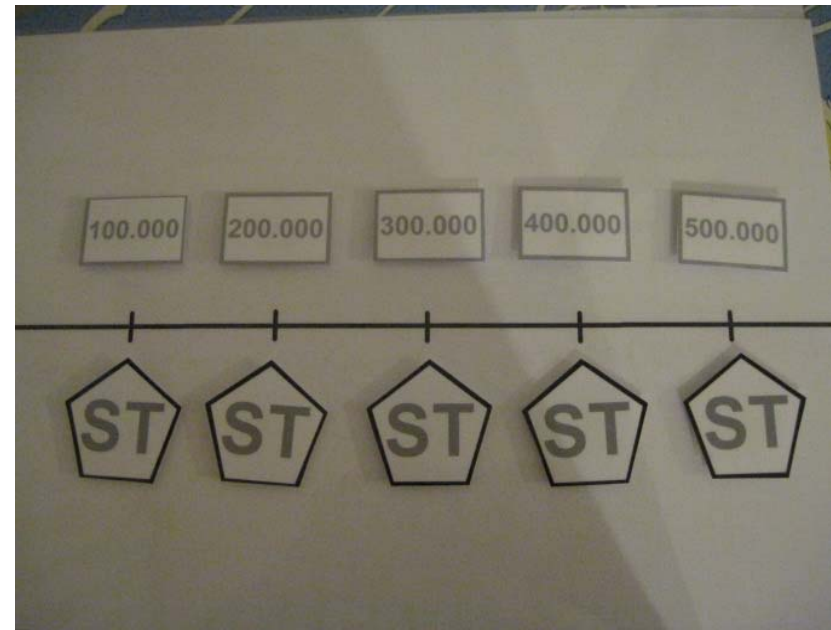
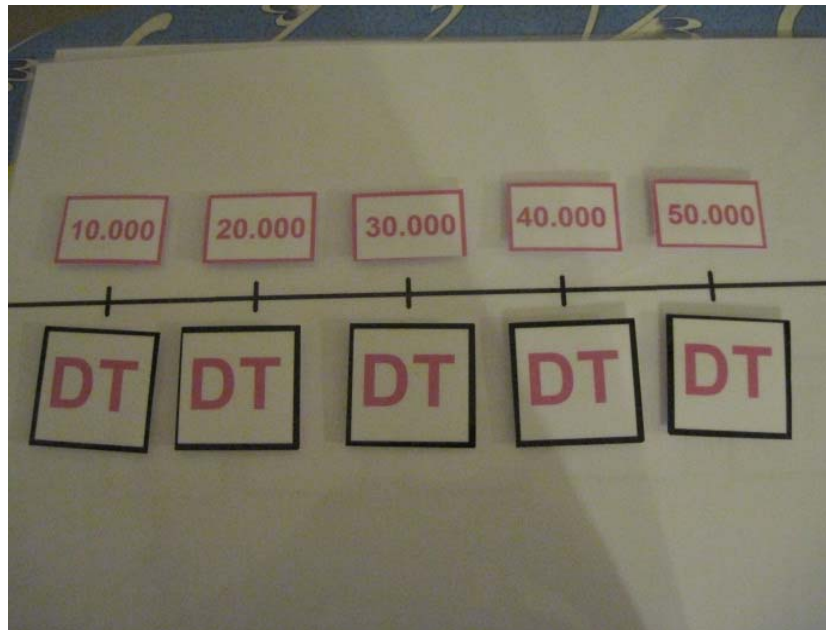
Koraci u učenju matematike

- 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



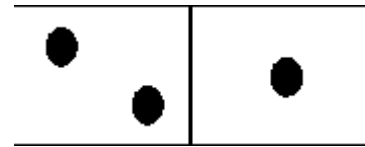
Koraci u učenju matematike

- Matematičke operacije

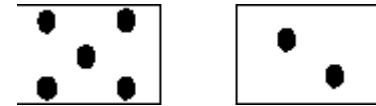
- zbrajanje, dodavanje - +
- pojam, značenje, imenovanje
- do 5
- do 10

$$3 + 2 =$$

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

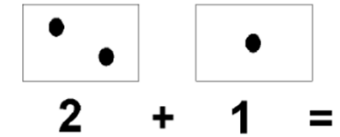


$$2 + 1 =$$



$$5 + 2 =$$

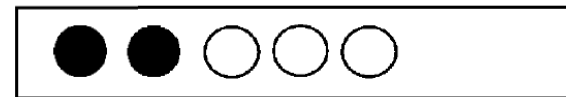
4. IZRACUNAJ.



$$2 + 1 =$$



$$1 + 3 =$$



$$2 + \square = 5$$



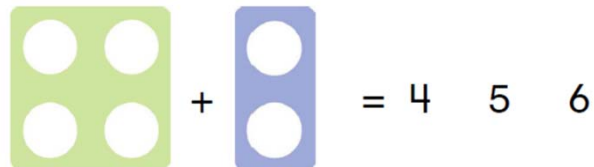
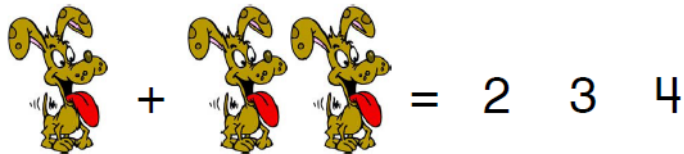
$$3 + \square = 5$$

Koraci u učenju matematike

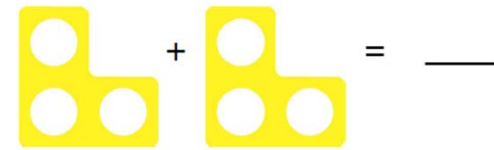
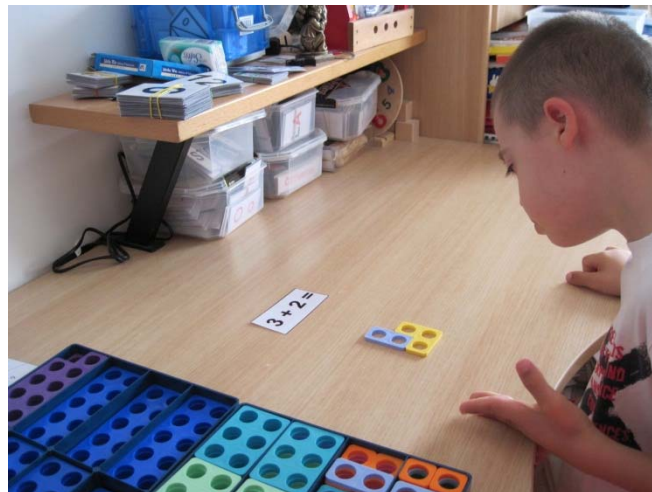
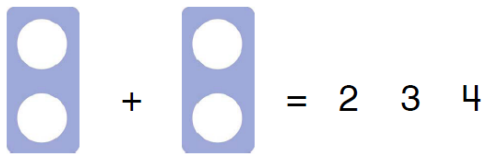
- Matematičke operacije

- zbrajanje, dodavanje - **+**

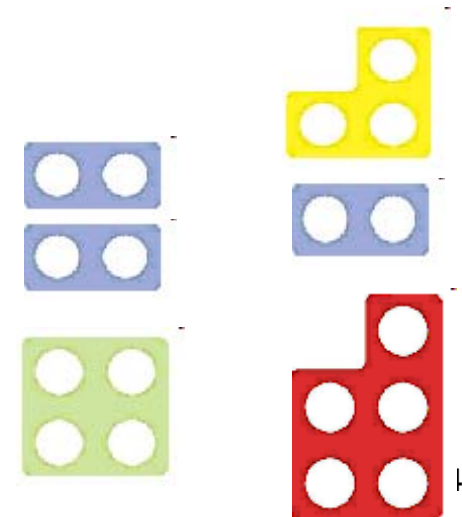
- Numicon



How many all together? Circle answer.



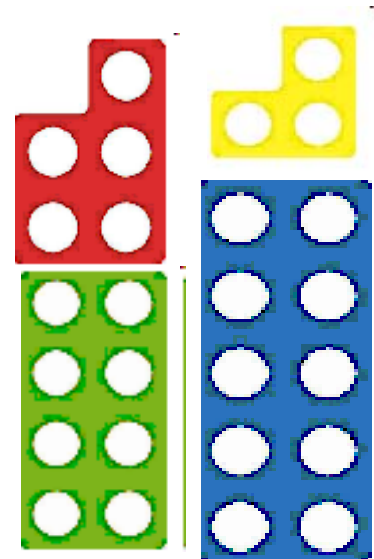
$$\begin{array}{r} 2 \\ + 2 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ + 2 \\ \hline \end{array}$$



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

$$\begin{array}{r} 34 \\ + 25 \\ \hline \end{array}$$

	S	D	J
	5	1	7
+		5	1

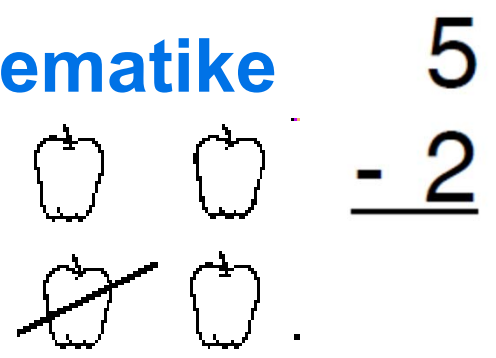
	S	D	J
	2	3	2
+			4

	S	D	J
	5	2	1
+		4	2

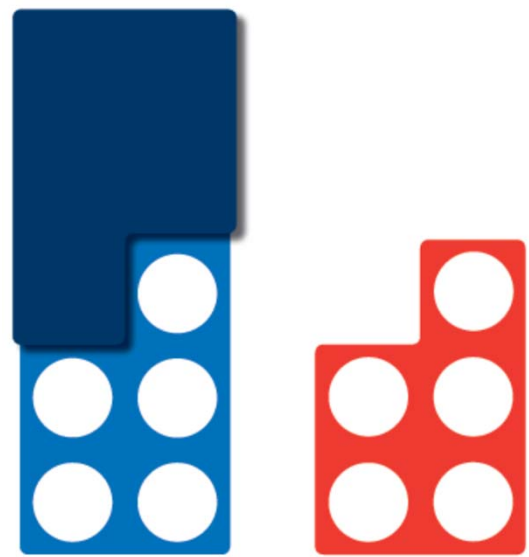
$$\begin{array}{r} 324 \\ + 265 \\ \hline \end{array}$$

Koraci u učenju matematike

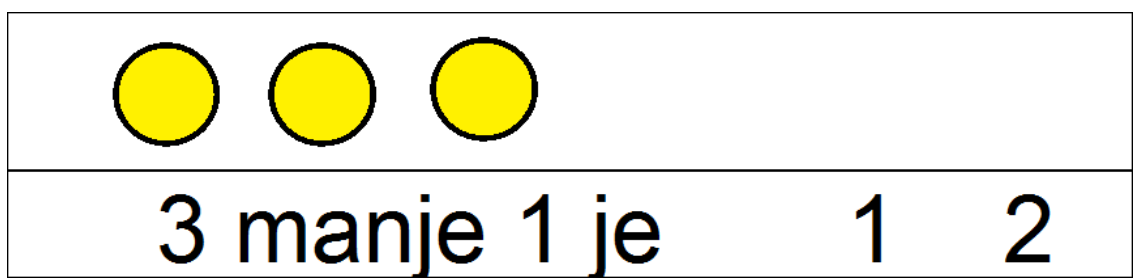
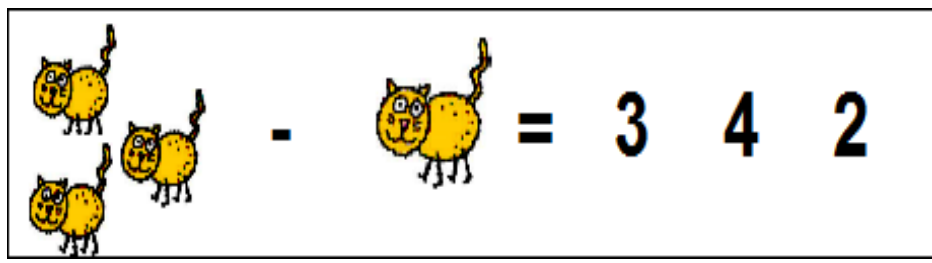
- Matematičke operacije
 - oduzimanje, manje, "uzeti" - -
 - pojam, značenje, imenovanje
 - do 5
 - do 10



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



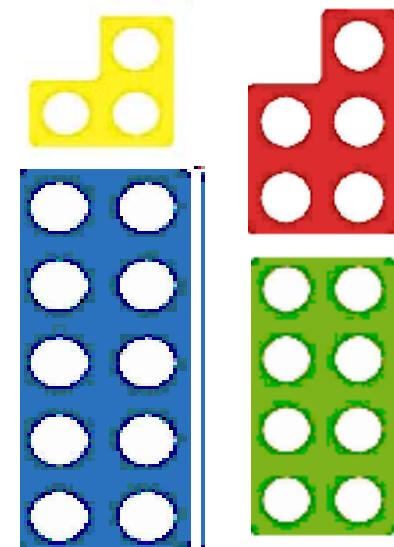
$10 - 5 = 5$



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

98	
- 25	
<hr/>	
467	
- 232	
<hr/>	

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	
4	3	• 2

D	J	
2	3	* 3

52. 203. 2041

D	J	
1	2	• 3
3	6	

D	J	
3	2	• 1
3	2	

D	J	
1	1	• 6
4	6	

D	J	
1	1	• 7
7	7	

D	J	
1	3	• 3
3	9	

D	J	
2	3	• 2
4	6	

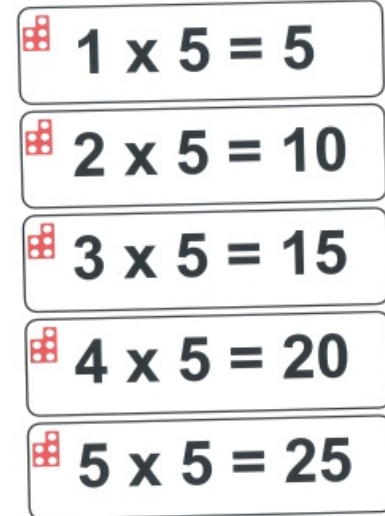
S	D	J	
	3	2	• 4
	12	8	
1			
1	2	8	

S	D	J	
	4	3	• 5
	20	15	
2	1		
2	1	5	

Koraci u učenju matematike

- Matematičke operacije

- Množenje, **X**

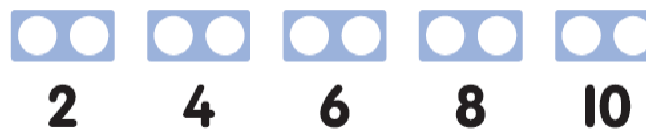


	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40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

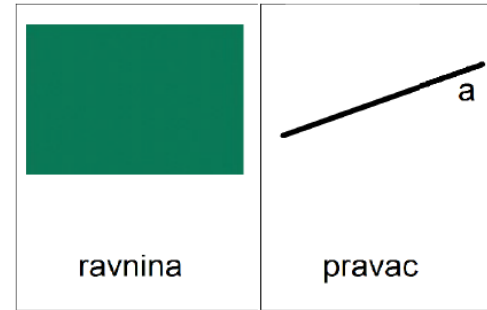
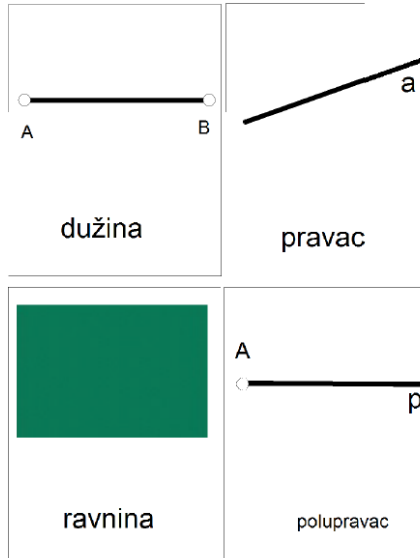
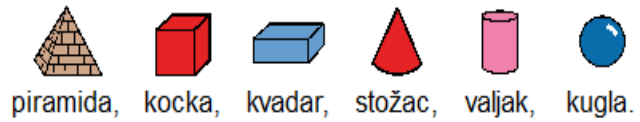


D	J			D	J
8	2	*	2	=	

D	J			D	J
4	8	*	4	=	

S	D	J			S	D	J
3	9	6	*	3	=		

Geometrija

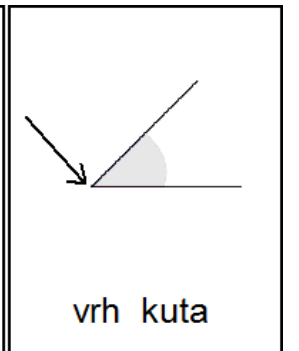
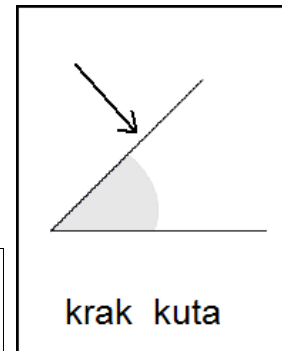
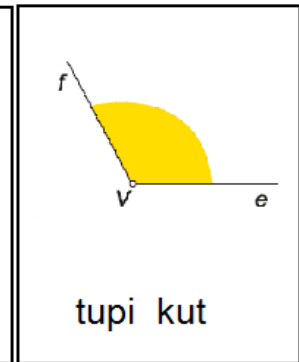
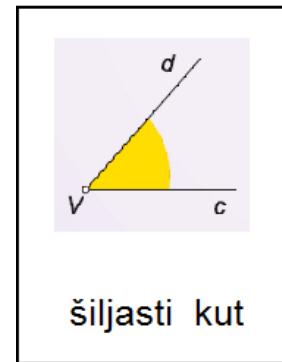
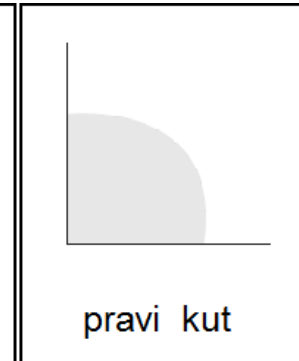
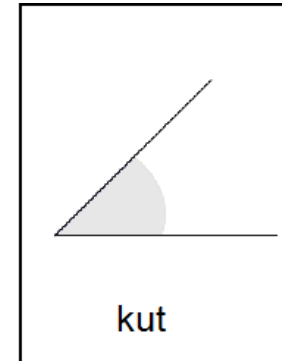
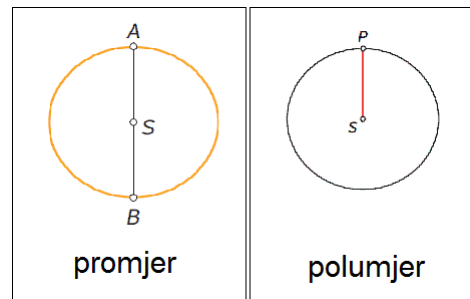
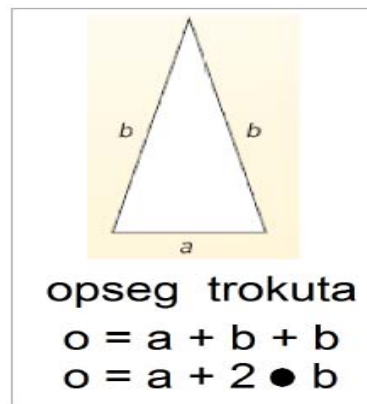
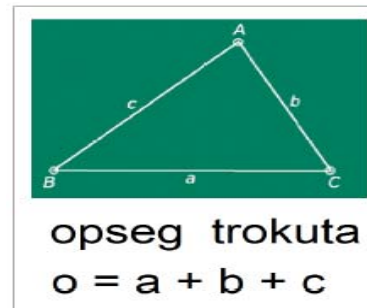
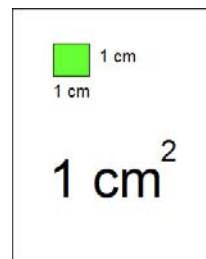
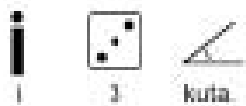
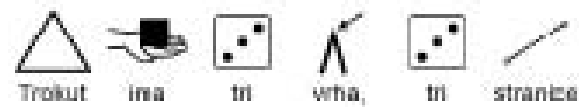
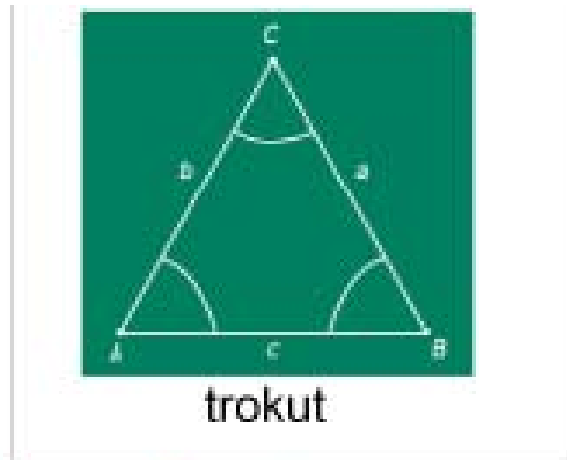


Ravnina je ravna neomeđena ploha.

Pravac je ravna neomeđena crta.



Geometrija

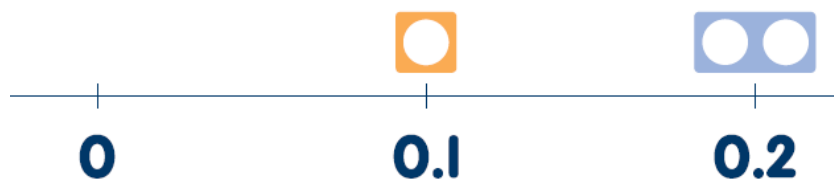


Razlomci i decimalni brojevi

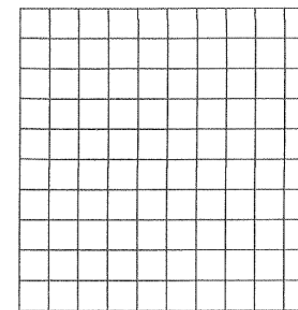
$\frac{1}{2}$ jedna polovina	$\frac{1}{3}$ jedna trećina	$\frac{1}{2}$	jedna polovina
$\frac{1}{4}$ jedna četvrtina	$\frac{1}{5}$ jedna petina		

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

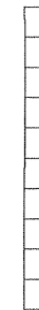
↓ 0.4 cijeli dio	↓ 0.4 decimalna točka	↓ 0.4 decimalni dio
------------------------	-----------------------------	---------------------------



Model kvadrata 1.



jedno cijelo

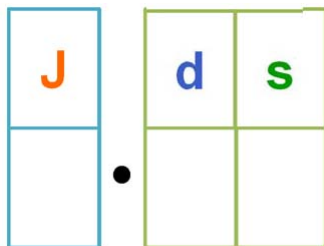
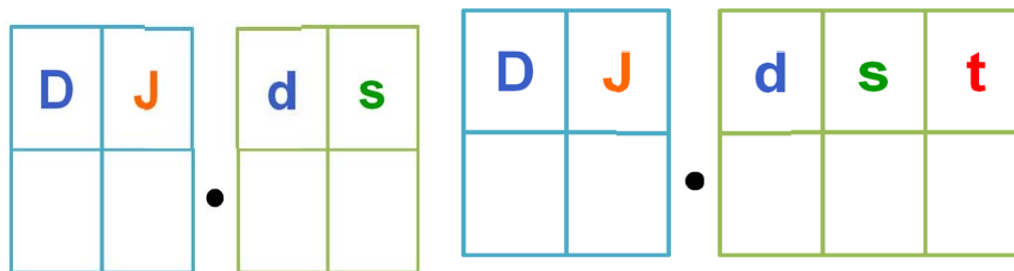
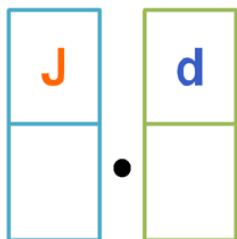


jedna desetina



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)

$$\begin{array}{r} 38.23 \\ - 22.38 \\ \hline 15.85 \end{array}$$

$$30.1 = 0.07$$

$$155.1 = 0.3$$

Razlomci - nastavak

$$c) \quad \frac{1}{4} + \frac{1}{5} = \frac{5+4}{20}$$
$$= \frac{9}{20}$$

$$4 \cdot 5 = 20$$
$$1 \cdot 5 = 5$$
$$4 \cdot 1 = 4$$

$$b) \quad \frac{7}{12} \cdot \frac{3}{8} = \frac{7 \cdot 1}{4 \cdot 8} = \frac{7}{32}$$

~~12 \cdot 8~~

$$b) \quad \frac{44}{25} \cdot \frac{15}{49} = \frac{4}{7}$$

$$e) \frac{5}{8} - \frac{3}{5} = \frac{25 - 24}{40}$$

$$\begin{array}{r} 25 \\ - 24 \\ \hline 01 \end{array} = \frac{1}{40}$$

$$\begin{array}{l} 8 \cdot 5 = 40 \\ 5 \cdot 3 = 25 \\ 3 \cdot 8 = 24 \end{array}$$

$$e) \frac{23}{34} \cdot \frac{14}{68} = \frac{1}{10}$$

$$f) \frac{111}{156} \cdot \frac{52}{333} = \frac{1}{9}$$

$$84. a) \frac{3}{4}x = \frac{3}{2} \quad | \cdot 4$$

$$3x = 6$$

$$x = 2$$

$$2. a) \underline{2x} - 6 + \underline{3x} = \underline{x} - 4$$

$$5x - x = -4 + 6$$

$$4x = 2$$

$$x = \frac{2}{4} = \frac{1}{2} = 0.5$$

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

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

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

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

$$x = 1$$

Numicon

... materijal za učenje, oblici predstavljaju brojeve

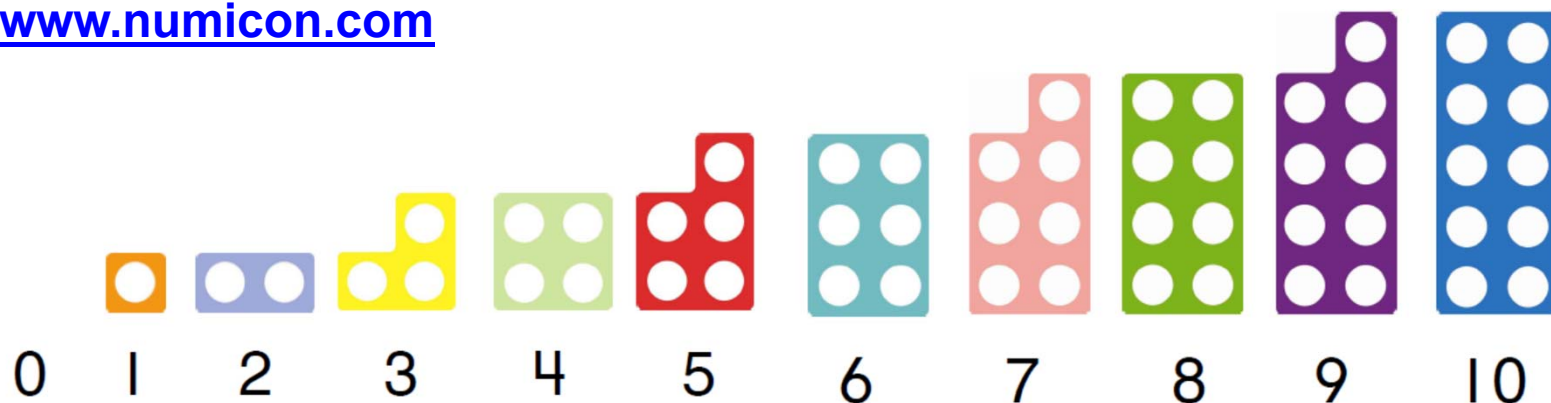
... napravljen za djecu normalnog razvoja jer su imali problema s količinom, spoznajom o brojevima,..

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

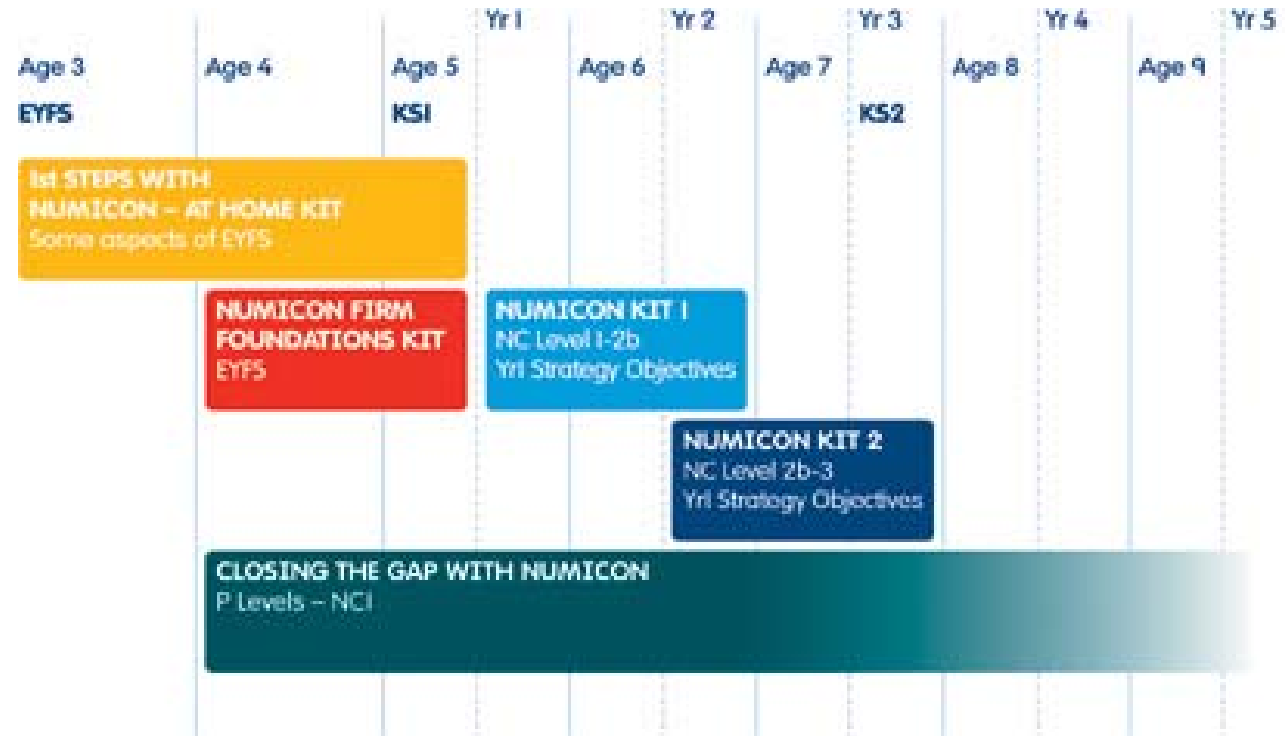
Matematički oblici daju mogućnost spoznaje brojčanih vrijednosti i odnosa na način koji ne omogućava napisani broj.

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

www.numicon.com

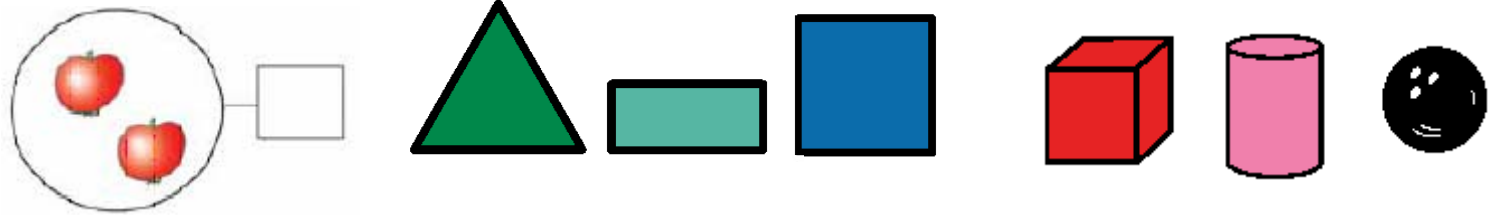


Numicon



... 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

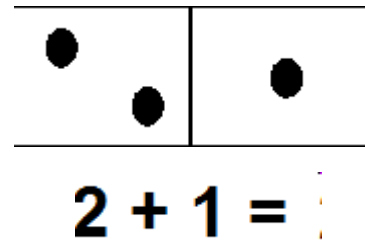
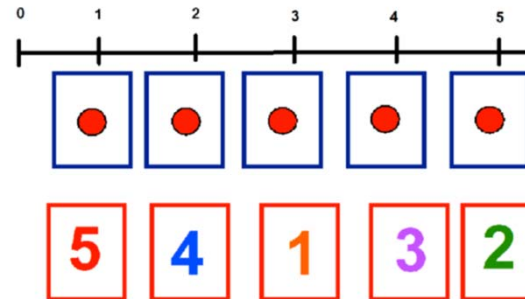




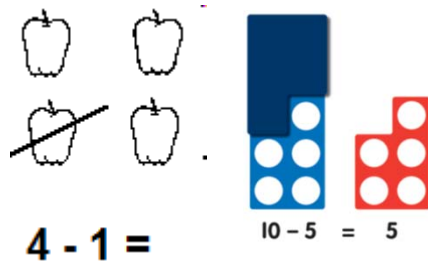
**PRVI
RAZRED**

- geometrijski
oblici i likovi, nizovi

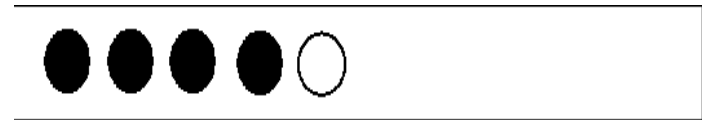
- brojevi do 5
- zbrajanje i
oduzimanje do 5



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



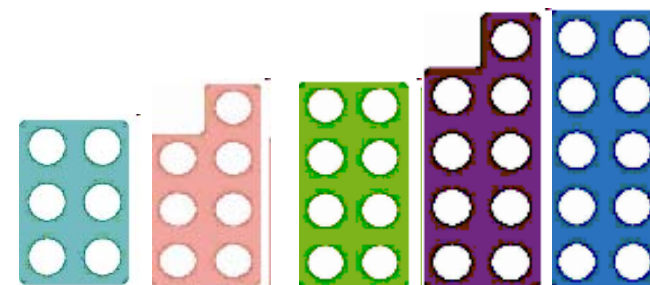
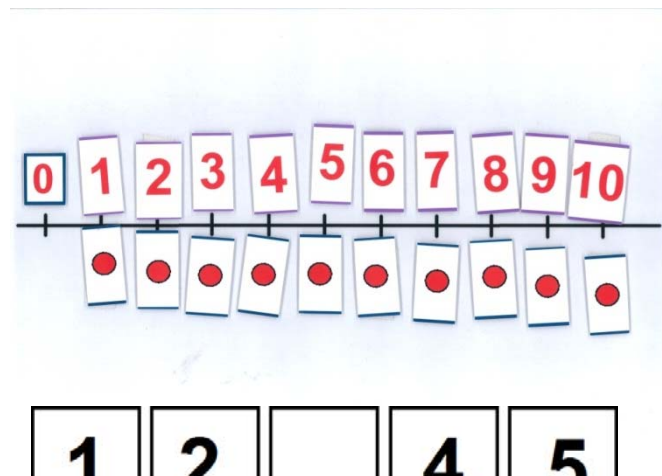
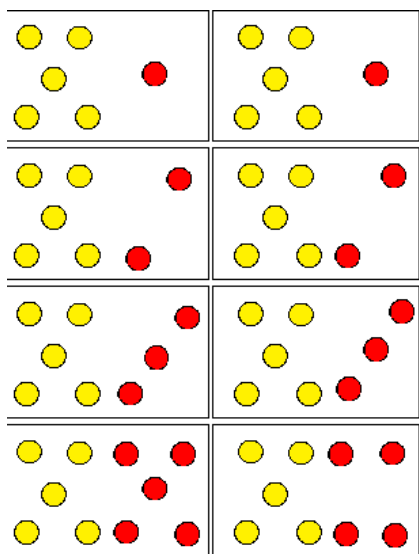
$$\begin{array}{r} 5 \\ - 2 \\ \hline \end{array}$$



$$4 + \boxed{} = 5$$

PRVI RAZRED

- brojevi do 10
- zbrajanje i oduzimanje do 10



1	2		4	5
6	7	8		10



$$4 + 6 =$$



$$10 - 4 =$$

 Izračunaj

$5 + 5 = \square$

$2 + 2 = \square$

$3 + 3 = \square$

$4 + 4 = \square$

 Izračunaj

$9 - 3 = \square$

$7 - 4 = \square$

$10 - 2 = \square$

$8 - 3 = \square$

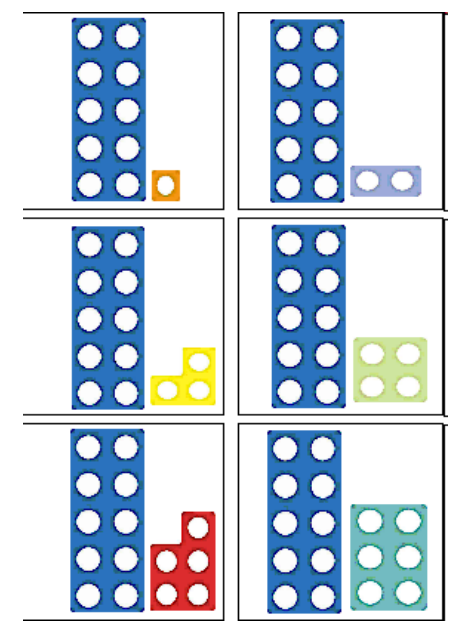
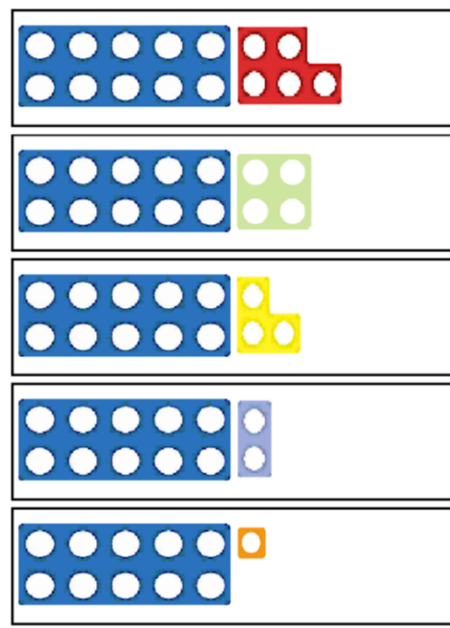
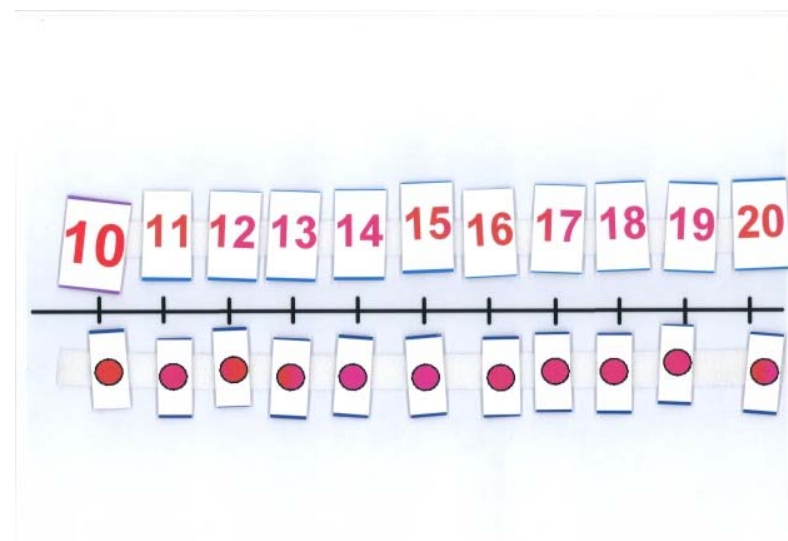
$$\begin{array}{r} 4 \\ + 5 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ - 2 \\ \hline \end{array}$$

**PRVI
RAZRED**

- brojevi do 20
- zbrajanje i oduzimanje do 20

9	11	14
+ 2	+ 1	+ 8
-----	-----	-----

11	15	13
- 2	- 2	- 5
-----	-----	-----

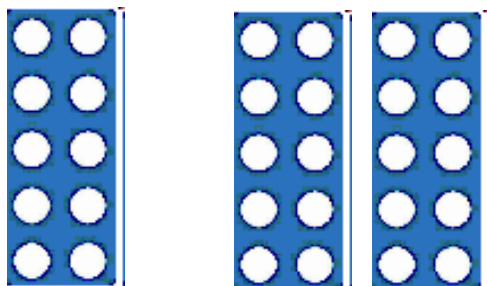
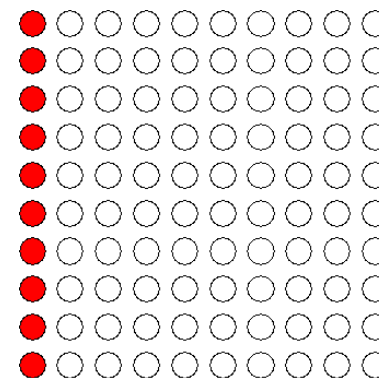
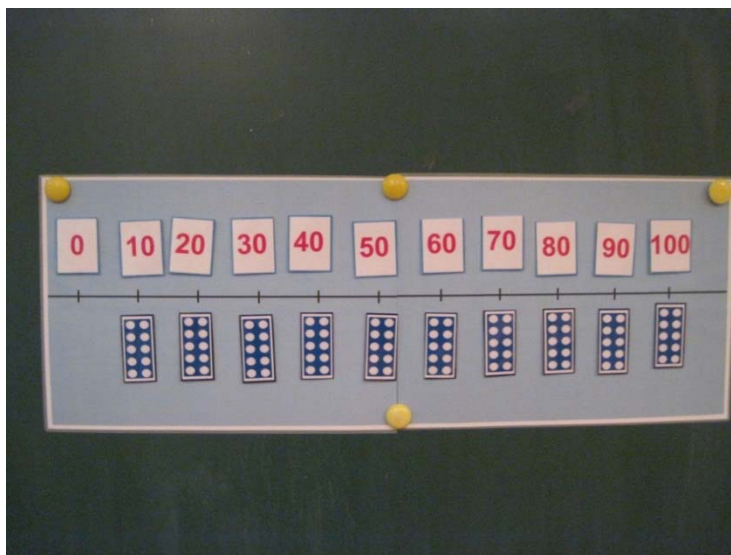


1	2		4	5
6		8	9	10
11		13	14	15
16	17		19	20

DRUGI RAZRED

- brojevi do 100

- zbrajanje i oduzimanje do 100



$$\begin{array}{r} 10 \\ + 30 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ - 20 \\ \hline \end{array}$$



Izračunaj $21 + 1 =$

$41 + 1 =$

$14 + 1 =$

$31 + 1 =$

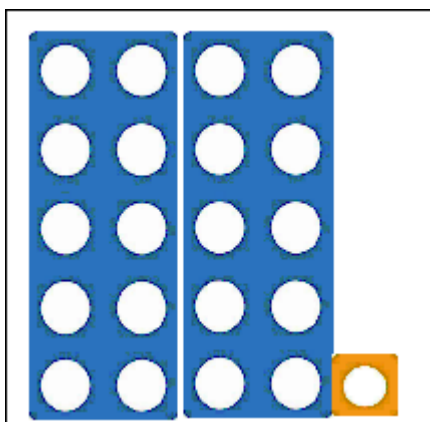


Izračunaj $21 + 14 =$

$23 + 12 =$

$23 + 20 =$

$30 + 15 =$



	D	J
	1	9
+	2	0

	D	J
	1	8
+	1	1


DRUGI RAZRED


- množenje


- dijeljenje

- tablica množenja

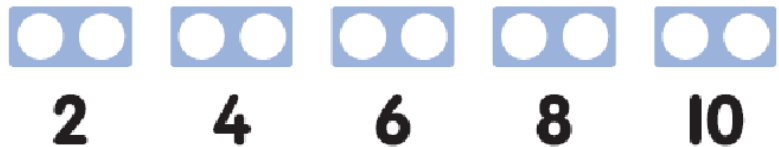
 $1 \times 5 = 5$

 $2 \times 5 = 10$

 $3 \times 5 = 15$

 $4 \times 5 = 20$

 $5 \times 5 = 25$



 Izračunaj

- $1 \cdot 3 =$
- $2 \cdot 3 =$
- $3 \cdot 3 =$
- $4 \cdot 3 =$
- $5 \cdot 3 =$

	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

D	J
2	1

$\bullet 4$

D	J
2	1

$\bullet 3$

D	J
4	3

$\bullet 2$

D	J
1	1

$\bullet 7$

D	J
4	8

$\bullet 4 =$

D	J

D	J
8	2

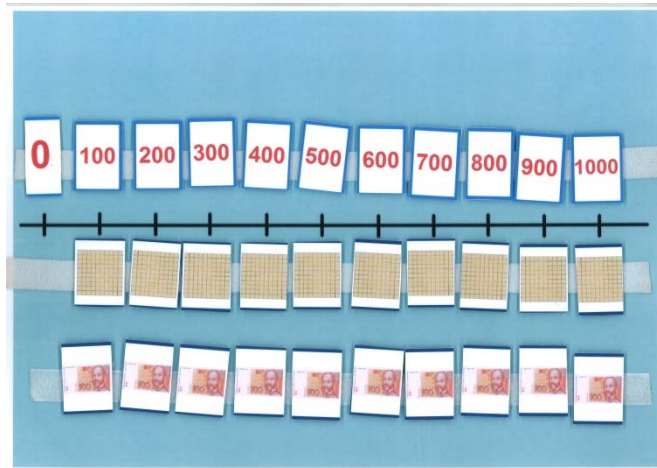
$\bullet 2 =$

D	J

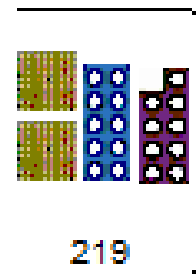
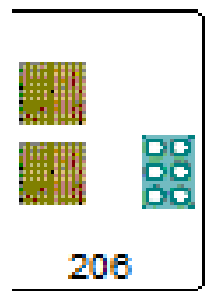
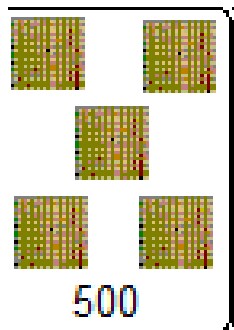
TREĆI RAZRED

- brojevi do 1 000

- zbrajanje i oduzimanje do 1 000



100	10	1
S	D	J



	S	D	J
	2	3	2
+			4

	S	D	J
	5	1	7
+		5	1

	S	D	J
	1	4	7
-			2

	S	D	J
	7	7	7
-	2	2	2

TREĆI RAZRED

- množenje
do 1 000

- dijeljenje
do 1 000

S	D	J	
	3	2	• 4
	12	8	
1			
1	2	8	

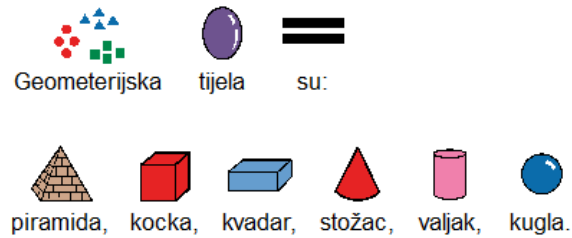
S	D	J	
	4	3	• 5
	20	15	
2	1		
2	1	5	

- Numicon
- Cousiner
- tablet

S	D	J		S	D	J
3	9	6	• 3	=		

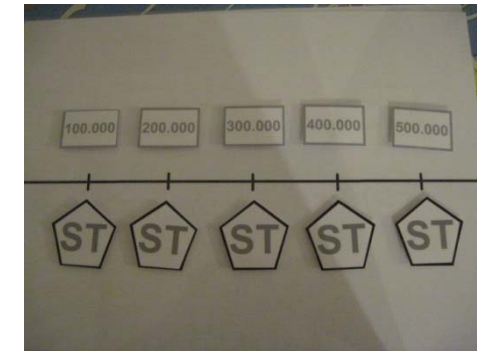
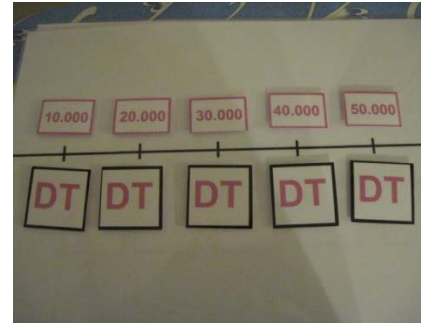
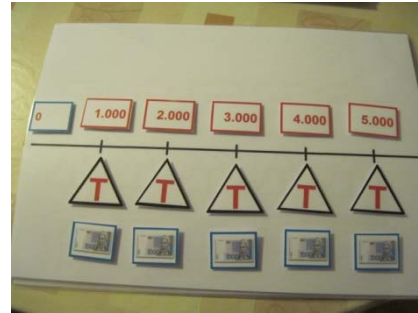
TREĆI RAZRED

- geometrija
(ravnina,
pravac,
krug,
kružnica)

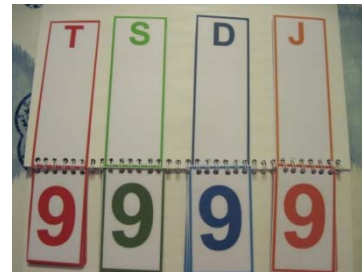


ČETVRTI RAZRED

- brojevi do 1 000 000



- zbrajanje i oduzimanje do 1 000 000



- množenje do 1 000 000

- dijeljenje do 1 000 000

$$\begin{array}{r} 324 \\ + 265 \\ \hline \end{array}$$

$$\begin{array}{r} 467 \\ - 232 \\ \hline \end{array}$$

$$232 \times 2 =$$

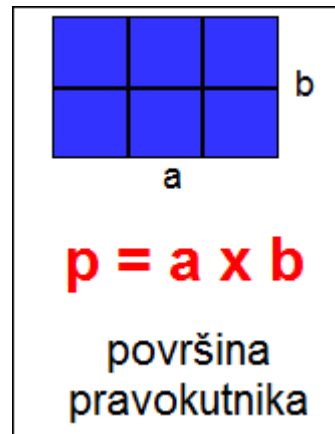
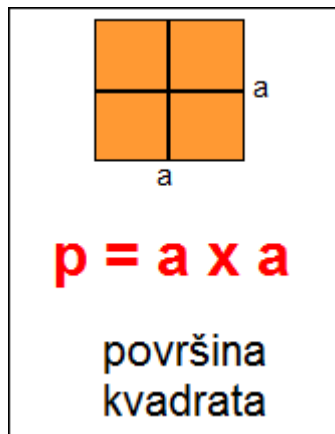
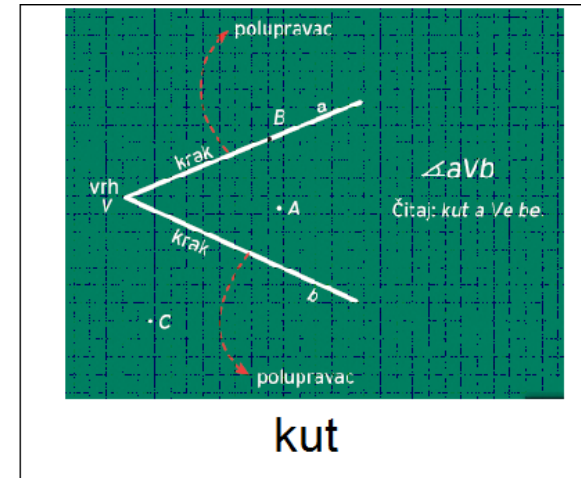
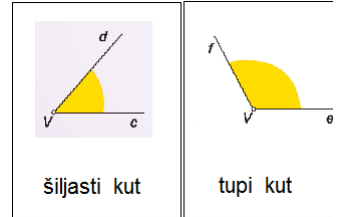
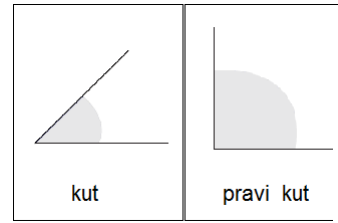
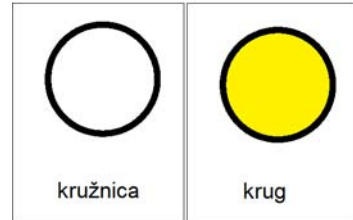
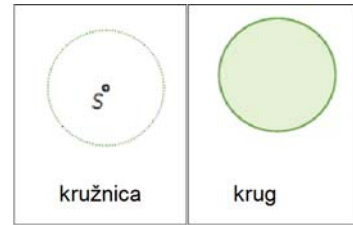
$$246 : 2 =$$

$$413 \times 2 =$$

$$844 : 4 =$$

ČETVRTI RAZRED

- geometrija
(kutovi,
opseg,
površina,
volumena)



Kut je dio ravnine omeđen dvama

polupravcima s istom početnom točkom.

Točke A i B pripadaju kutu,

a točka C ne pripada kutu.

PETI RAZRED

- višekratnik
- djelitelj

- tekstualni zadatci

broj	višekratnik	zašto
1	1,2,3,4,5....	$1 \times 1 = 1$ $1 \times 3 = 3$ $1 \times 2 = 2$ $1 \times 4 = 4$
2	2,4,6,8,10 ..	$2 \times 1 = 2$ $2 \times 3 = 6$ $2 \times 2 = 4$ $2 \times 4 = 8$

broj	djelitelj	zašto
7	1, 7	$7 : 1 = 7$ $7 : 7 = 1$
8	1, 2, 4, 8	$8 : 1 = 8$ $8 : 1 = 8$ $8 : 2 = 4$ $8 : 2 = 4$

Djeljivost s 2

Broj je djeljiv s 2,

ako je posljednja znamenka tog broja

0, 2, 4, 6 ili 8.

2,4,6,8,10,12,14,16,18,20,22,24....

100, 102, 104, 106, 108, 110, 112 ..

200, 202, 204,....

1000, 1002, 1004, 1006, 1008, 1010...

Najmanji zajednički višekratnik

6	x 1	6	9	x 1	9
6	x 2	12	9	x 2	18
6	x 3	18	9	x 3	27
6	x 4	24	9	x 4	36
6	x 5	30	9	x 5	45

$$V(6,9) = 18$$

90.

19
 Koji je broj za 54 veći od 19?

$$x = 19 + 54$$

109.

149 **528** **=** **123**
 Zbroj dvaju brojeva jest 620. Koliko je drugi pribrojnik ako je jedan od njih:

b) 45

$$45 + x = 620$$

$$45 + \square = 620$$

$$x = 620 - 45$$

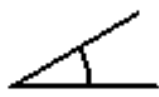
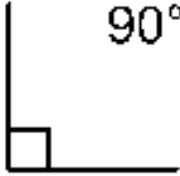
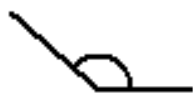

Najveći zajednički djelitelj

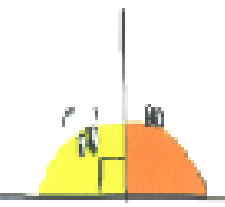

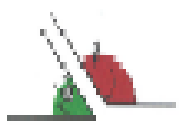
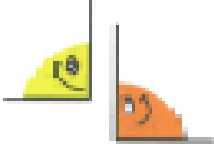
8	: 2	4	12	: 2	6
4	: 2	2	6	: 2	3
2	: 2	1	3	: 3	1
1			1		




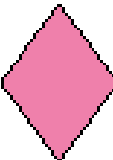
$$D(8,12) = 2 \times 2 = 4$$

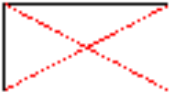
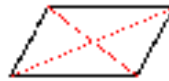

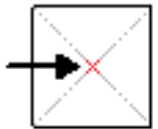
PETI RAZRED

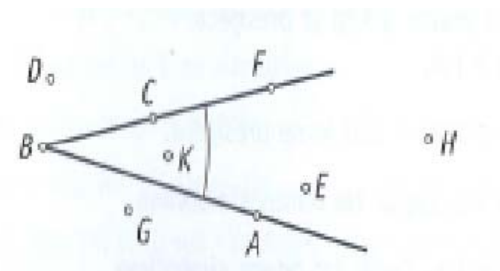
- geometrija

$< 90^\circ$  šiljasti kut	90°  pravi kut
$> 90^\circ$  tupi kut	$> 180^\circ$  izbočeni kut

 sukuti	 sukuti
 180° suplementarni kutovi	 180° suplementarni kutovi

 paralelogram	 pravokutnik
 kvadrat	 romb

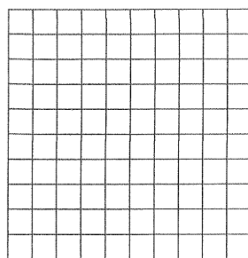
 dijagonale	 dijagonale
 dijagonale	 sjecište dijagonala



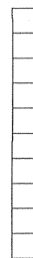
PETI RAZRED

- razlomci

Model kvadrata 1.



jedno cijelo



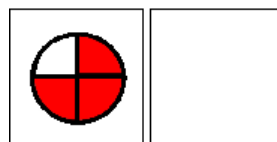
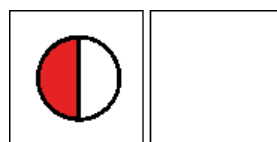
jedna desetina



jedna stotina

$\frac{1}{2}$	$\frac{\text{jedna}}{\text{po lo vi na}}$
---------------	-------------------------------------------

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



$\frac{1}{2}$ <p style="text-align: center;">jedna polovina</p>	$\frac{1}{3}$ <p style="text-align: center;">jedna trećina</p>
---------------------------------------------------------------------	--------------------------------------------------------------------

jedna četvrtina $\frac{1}{4}$	pola $\frac{1}{2}$	tri četvrtine $\frac{3}{4}$	1 cijelo 1

$\frac{1}{4}$ <p style="text-align: center;">jedna četvrtina</p>	$\frac{1}{5}$ <p style="text-align: center;">jedna petina</p>
----------------------------------------------------------------------	-------------------------------------------------------------------

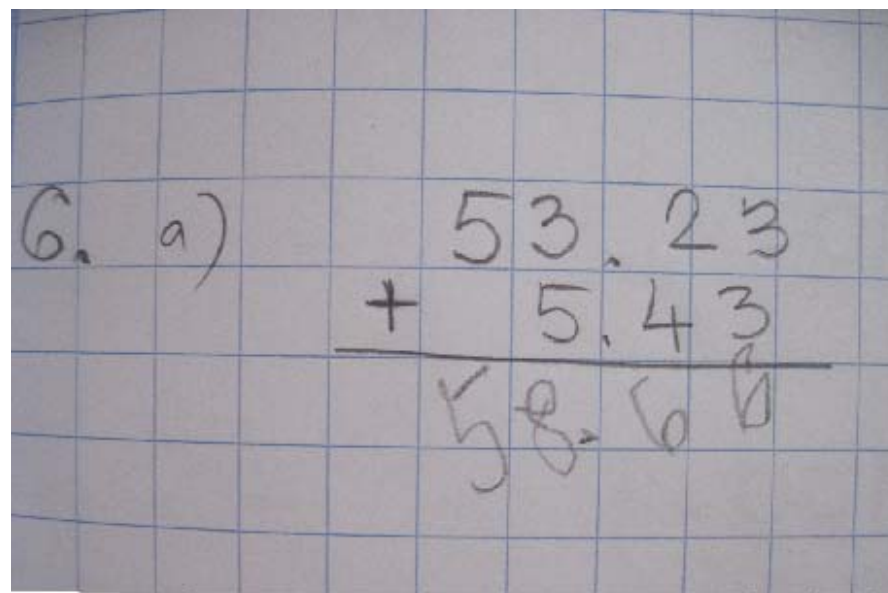
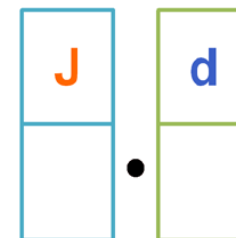
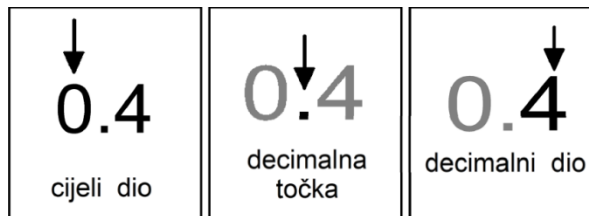
RAZLOMCI

razlomci, pravi i nepravi, veći/manji,
zbrajanje, oduzimanje razlomaka
istih nazivnika

$$\frac{2}{6} = \frac{1}{3}$$

PETI RAZRED

- decimalni brojevi



**ŠESTI
RAZRED**

- razlomci
različitih
nazivnika

- cijeli i
racionalni
brojevi

$$c) \frac{1}{4} + \frac{1}{5} = \frac{5+4}{20}$$

$$= \frac{9}{20}$$

$4 \cdot 5 = 20$
 $1 \cdot 5 = 5$
 $4 \cdot 1 = 4$

$$c) \frac{1}{4} + \frac{1}{5} = \frac{5+4}{20}$$

$$= \frac{9}{20}$$

$4 \cdot 5 = 20$
 $1 \cdot 5 = 5$
 $4 \cdot 1 = 4$

$$e) \frac{5}{8} - \frac{3}{5} = \frac{25-24}{40}$$

$$= \frac{1}{40}$$

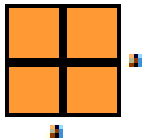
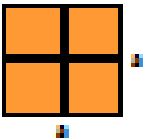
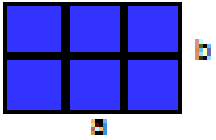
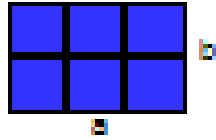
$8 \cdot 5 = 40$
 $5 \cdot 5 = 25$
 $3 \cdot 8 = 24$

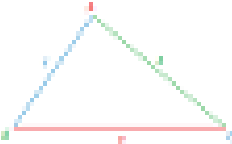
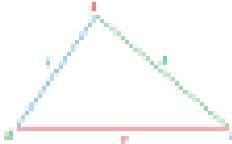
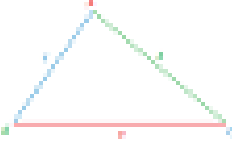
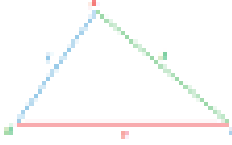
$$e) \frac{23}{34} \cdot \frac{14}{68} = \frac{1}{10}$$

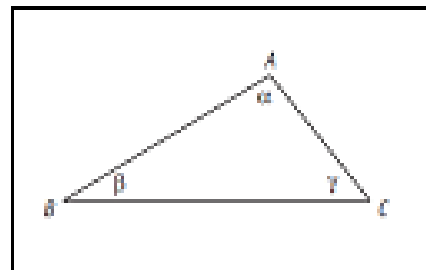
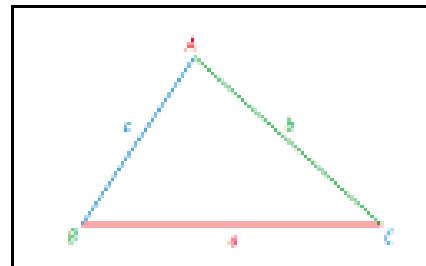
$$f) \frac{111}{156} \cdot \frac{52}{333} = \frac{1}{9}$$

ŠESTI RAZRED

- geometrija

 <p>$P = a \cdot a$</p> <p>površina kvadrata</p>	 <p>$P = a \cdot a$</p> <p>površina kvadrata</p>
 <p>$P = a \cdot b$</p> <p>površina pravokutnika</p>	 <p>$P = a \cdot b$</p> <p>površina pravokutnika</p>

 <p>opseg trokuta</p> <p>$O = a + b + c$</p>	 <p>opseg trokuta</p> <p>$O = a + b + c$</p>
 <p>površina trokuta</p> <p>$P = \frac{a \cdot b}{2}$</p>	 <p>površina trokuta</p> <p>$P = \frac{a \cdot V \cdot a}{2}$</p>



REDOVNA ŠKOLA

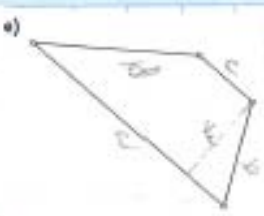
SEDMI RAZRED

- geometrija (mnogokuti,..)

- koordinatni sustavi

- postotak

- linearne jednadžbe

a) 

$$O = 47 + 20 + 13 + 30$$
$$O = 110 \text{ mm}$$
$$S = 47 \cdot 19$$
$$S = 893 \text{ mm}^2$$

$a = 47 \text{ mm}$
 $b = 20 \text{ mm}$
 $c = 13 \text{ mm}$
 $d = 30 \text{ mm}$
 $e = 19 \text{ mm}$

61. Koji pravilni mnogokut ima srednjegji kut veličine:

b) 45°

$$\beta_n = 45^\circ$$
$$\beta_n = \frac{360}{n}$$
$$n = ?$$
$$45 = \frac{360}{n} / \cdot n$$
$$45n = 360$$
$$n = \frac{360}{45} = 8$$

c) 24°

$$\beta_n = 24^\circ$$
$$\beta_n = \frac{360}{n}$$
$$n = ?$$
$$24 = \frac{360}{n} / \cdot n$$
$$24 \cdot n = 360$$
$$n = \frac{360}{24} = 15$$
$$n = 15$$

SEDMI RAZRED

- geometrija (mnogokuti,..)

- koordinatni sustavi

- postotak

- linearne jednađbe

190. Pravokutnik ima površinu 75m^2 . Ako mu je jedna stranica dugačke $5\frac{1}{2}\text{m}$, kolika je duljina njegove susjedne stranice?



$$P = 75\text{m}^2$$

$$a = 5\frac{1}{2}\text{m}$$

$$b = ?$$

$$\frac{75 \cdot 2}{150}$$

$$P = a \cdot b$$

$$75 = 5\frac{1}{2} \cdot b$$

$$b = 75 : 5\frac{1}{2} = 75 \cdot \frac{2}{11} =$$

$$b = \frac{750}{2} : \frac{11}{2} = \frac{150}{1} \cdot \frac{2}{11} = \frac{150}{11}$$

b)

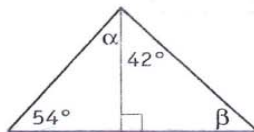
$$5\alpha = 180$$

$$\alpha = 180 : 5$$

$$\alpha = 36^\circ$$

$$\frac{180 : 5 = 36}{\begin{array}{r} 180 \\ -15 \\ \hline 30 \\ -30 \\ \hline 0 \end{array}}$$

55. Koliko stupnjeva imaju α i β ?



$$\alpha + 42 + 90 = 180$$

$$\alpha = 180 - 132 = 48^\circ$$

$$\alpha + 54 + 90 = 180$$

$$\alpha = 180 - 144$$

$$\alpha = 36^\circ$$

$$\begin{array}{r} 180 \\ -144 \\ \hline 48 \end{array}$$

$$\begin{array}{r} 42 \\ +90 \\ \hline 132 \end{array}$$

$$\begin{array}{r} 54 \\ +90 \\ \hline 144 \end{array}$$

$$\begin{array}{r} 180 \\ -144 \\ \hline 36 \end{array}$$

SEDMI RAZRED

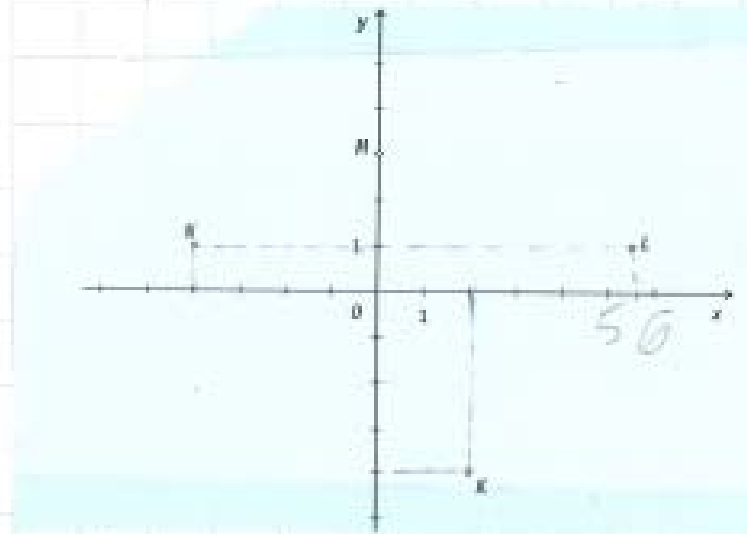
- geometrija
(mnogokuti,..)

- koordinatni
sustavi

- postotak

- linearne
jednadžbe

7. Odredi: koordinate točaka C, L, M, N.



$K(2, -4)$

$M(0, 4)$

$L(5\frac{1}{2}, 0)$

$N(-4, 1)$

SEDMI RAZRED

- geometrija (mnogokuti,..)

- koordinatni sustavi

- postotak

- linearne jednadžbe

DZ, 24.11.2014

101. Na banku je uloženo 16 800 kuna. Nakon pola godine taj ulog donio 504 kune kamata. Koliki je kamatni stopa uloženi taj novac?

$g = 16\ 800\ \text{kn}$
 $v = 0.5g$
 $k = 504\ \text{kn}$
 $s = ?$

Kamatna stopa je 6%.

$k = s \cdot g \cdot v$
 $s = \frac{k}{g \cdot v} = \frac{504}{16\ 800 \cdot 0.5}$
 $s = \frac{504}{8400} = 0.06$
 $s = 6\%$

8. U školskoj knjižnici 7650 knjige proze i 2550 knjige poezije. Koliko knjige proze dolazi na jedno mjesto na jednu knjigu poezije.

\downarrow 7650 proze
 x
 \downarrow 2550 poezije
 1 poezije

$7650 : x = 2550 : 1$

$2550x = 7650$
 $x = \frac{7650}{2550} = 3$

SEDMI RAZRED

- geometrija
(mnogokuti,..)

- koordinatni
sustavi

- postotak

- linearne
jednadžbe

c)

$\alpha = 180 - 51 - 26$
 $\alpha = 180 - 77 = 103^\circ$

$\frac{2.2}{x} = \frac{5}{2.5}$ ~~$\frac{y}{2} = \frac{5}{2.5}$~~

$5x = 2.2 \cdot 2.5$ $2.5y = 10$

$x = \frac{5.5}{2.5}$ $y = \frac{10}{2.5}$

$x = 2.2$ $y = 4$

SEDMI RAZRED

- geometrija
(mnogokuti,..)

- koordinatni
sustavi

- postotak

- linearne
jednadžbe

Razlomci, jednadžbe, racionalni brojevi- nastavak

$$g) \quad 53 + (-4 + 9) = 53 - 4 + 9 = 53 + 5 = 58$$

$$e) \quad -4 - 5 \cdot (-2) + 7 = -4 + 10 + 7 = 6 + 7 = 13$$

$$144. \quad a) \quad 8k + 3k - k = (8 + 3 - 1) \cdot k = 10k$$

$$c) \quad -2x + 7x - 4x = (-2 + 7 - 4)x = 1x$$

$$\begin{aligned} 76. \quad a) \quad & 2 + \left(-3 \frac{3}{5}\right) + 0.2 = \frac{10}{5} - \frac{18}{5} + \frac{1}{5} = \frac{10 - 18 + 1}{5} = \frac{-8 + 1}{5} = \frac{-7}{5} = -1 \frac{2}{5} \end{aligned}$$

SEDMI RAZRED

- geometrija
(mnogokuti,..)

- koordinatni
sustavi

- postotak

- linearne
jednadžbe

Razlomci, jednadžbe, racionalni brojevi- nastavak

$$116. a) 2 \frac{1}{4} \cdot (-3) = \frac{8^3}{4} \cdot \left(-\frac{1}{2}\right) = -\frac{3}{4}$$

$$e) x + 3 \frac{1}{2} = 7 \frac{3}{4}$$

$$x = 7 \frac{3}{4} - 3 \frac{1}{2} = \frac{31}{4} - \frac{7}{2} =$$

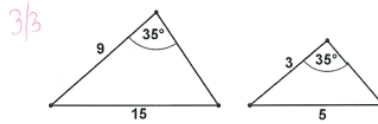
$$x = \frac{31 - 14}{4} = \frac{17}{4} = 4 \frac{1}{4}$$

$$95. a) \left(\frac{3}{4} + \frac{1}{8}\right) \cdot \frac{8}{21} = \dots =$$

$$\frac{6+1}{8} \cdot \frac{8^1}{21} = \frac{7^1}{21} = \frac{1}{3}$$

Matematika – VII razred – test

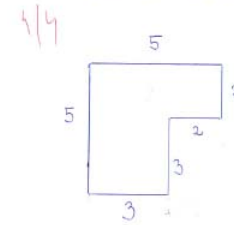
3. Jesu li nacrtani trokuti slični? Objasni.



$$\frac{9}{3} = 3 \quad \frac{15}{5} = 3$$

Trokuti su slični po 5-K-5 poučku o sličnosti trokuta.

7. Izračunaj opseg i površinu lika na slici.



$$O = 5 + 3 + 3 + 2 + 2 + 5$$

$$O = 20 \text{ cm}$$

$$P = (5 \cdot 5) - (2 \cdot 3)$$

$$P = 25 - 6$$

$$P = 19 \text{ cm}^2$$

1. Odredi veličinu središnjeg kuta ako je veličina obodnog kuta 112° .

$$\beta = 112^\circ$$

$$\alpha = ?$$

$$\alpha = 112 \cdot 2 = 224^\circ$$

3. Izračunaj opseg i površinu kruga čiji je polumjer duljine 4 cm.

$$r = 4 \text{ cm}$$

$$O_1 = ?$$

$$O = 2r \cdot \pi$$

$$O = 2 \cdot 4 \cdot \pi$$

$$O = 8 \cdot 3.14$$

$$O \approx 25.12 \text{ cm}$$

$$P = r^2 \cdot \pi$$

$$P = 4^2 \cdot \pi$$

$$P = 16 \cdot \pi \text{ cm}^2$$

$$P \approx 16 \cdot 3.14$$

$$P \approx 50.24 \text{ cm}^2$$

8. Koefficient sličnosti dvaju trokuta iznosi $\frac{4}{3}$, a opseg manjeg trokuta iznosi 15 cm. Koliki je opseg većega trokuta?

$$k = \frac{4}{3}$$

$$O = 15 \text{ cm}$$

$$O' = ?$$

$$\frac{O'}{O} = k$$

$$\frac{O'}{15} = \frac{4}{3}$$

$$O' \cdot 3 = 15 \cdot 4$$

$$O' \cdot 3 = 60 : 3$$

$$O' = 20 \text{ cm}$$

4. Koliki je zbroj veličina kutova u mno. zvezdu koji ima 17 vrhova?

3/3

$$K_n = (n-2) \cdot 180^\circ$$

$$K_n = (17-2) \cdot 180^\circ$$

$$K_n = 15 \cdot 180^\circ$$

$$K_n = 2700^\circ$$

1. POPUNI TABLICU.

POSTOTAK	14%	59%	37%	8%
DECIMALNI BROJ	0.14	0.59	0.37	0.08
RAZLOHAK	$\frac{14}{100}$	$\frac{59}{100}$	$\frac{37}{100}$	$\frac{8}{100}$

$$\frac{14}{100} = 0.14$$

$$\frac{59}{100} = 0.59$$

$$\frac{37}{100} = 0.37$$

$$\frac{8}{100} = 0.08$$

OSMI RAZRED

- geometrija

- kvadriranje

- Pitagorin
poučak

- realni brojevi

- kvadratni
korijen

- vektori

d) $\frac{3x^2}{(2a)^2} = \frac{3x^2}{4a^2}$

e) $\frac{1}{2^2} (xy)^2 = \frac{1}{4} x^2 y^2$

223. Računaj!

a) $\left(\sqrt{\frac{5}{17}}\right)^2 = \frac{5}{17}$

b) $\left(\sqrt{\frac{712}{397}}\right)^2 = \frac{712}{397}$

S D J
 $10^2 = 100$

S D J
 $11^2 = 121$

S D J
 $12^2 = 144$

S D J
 $13^2 = 169$

335. Razlomčeno korenenje.

a) $\sqrt{180} = \sqrt{2 \cdot 90} = \sqrt{2 \cdot 9 \cdot 10} = \sqrt{9 \cdot 2 \cdot 2 \cdot 5} = 3 \cdot 2\sqrt{5} = 6\sqrt{5}$

b) $\sqrt{300} = \sqrt{2 \cdot 150} = \sqrt{2 \cdot 2 \cdot 75} = \sqrt{4 \cdot 5 \cdot 15} = \sqrt{4 \cdot 5 \cdot 5 \cdot 3} = 2 \cdot 5\sqrt{3} = 10\sqrt{3}$

c) $\sqrt{294} = \sqrt{2 \cdot 147} = \sqrt{2 \cdot 3 \cdot 49} = 7\sqrt{6}$

REDOVNA ŠKOLA

OSMI RAZRED

- geometrija

- kvadriranje

- Pitagorin poučak

- realni brojevi

- kvadratni korijen

- vektori



HRVATSKA ZAJEDNICA ZA DOWN SINDROM

100. a) Izračunaj površinu jednakokraničnog trokuta ako mu je dužina stranice:

a) $a = 6 \text{ cm}$

$P = ?$

$P = \frac{a \cdot v}{2}$

$v = ?$

$b^2 = a^2 - \left(\frac{a}{2}\right)^2 = 6^2 - 3^2 = 36 - 9 = 27$

$v^2 = 3 \cdot 9$

$v = 3\sqrt{3} \text{ cm}$

$P = \frac{6 \cdot 3\sqrt{3}}{2} = \frac{18\sqrt{3}}{2} = 9\sqrt{3} \text{ cm}^2$

POHVALA!

JEDNAKOSTRANIČAN TROKUT

99. a) Izračunaj dužinu visine jednakokraničnog trokuta ako mu je dužina stranice:

a) $a = 4 \text{ m}$

$v = ?$

$v = \frac{a\sqrt{3}}{2}$

[100. a), 101. 1. stupac, 102. a) - riješiti sad.]

$v^2 = a^2 - \left(\frac{a}{2}\right)^2$

$v^2 = 4^2 - 2^2 = 16 - 4 = 12 = 3 \cdot 4$

$v = 2\sqrt{3} \text{ m}$

POHVALA!

$P = \frac{a \cdot v}{2} \cdot 2$

$2P = a \cdot v$

$a = \frac{2P}{v}$

$a = \frac{2 \cdot 108}{12} = \frac{216}{12} = 18 \text{ cm}$

$b^2 = \left(\frac{a}{2}\right)^2 + v^2$

$b^2 = 9^2 + 12^2$

$b^2 = 81 + 144$

$b^2 = 225$

$b = 15 \text{ cm}$

POHVALA!

između najudaljenijih točaka lončista? 10 m

$a = 10 \text{ m}$

$b = ?$

$a^2 + a^2 = b^2$

$2a^2 = b^2$

$2 \cdot 10^2 = b^2$

$2 \cdot 100 = b^2$

$200 = b^2$

$10\sqrt{2} \text{ m} = b$

$\approx 14.14 \text{ m}$

Itražena udaljenost je približno 14.4 m

POHVALA!

SMILEY

REDOVNA ŠKOLA

OSMI RAZRED

- geometrija

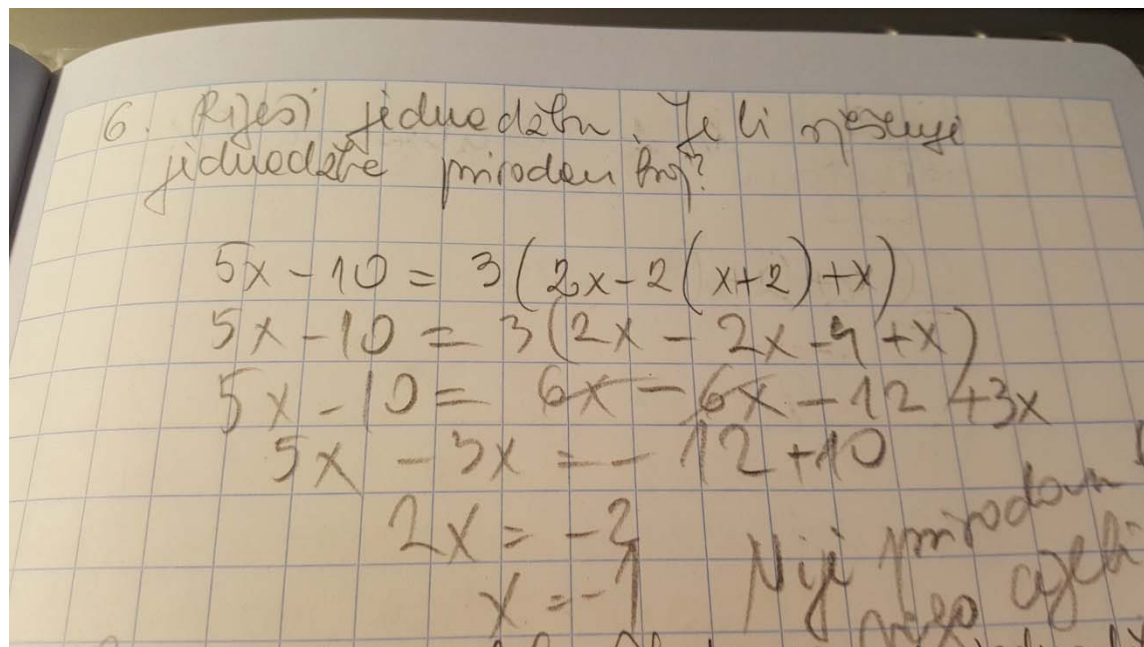
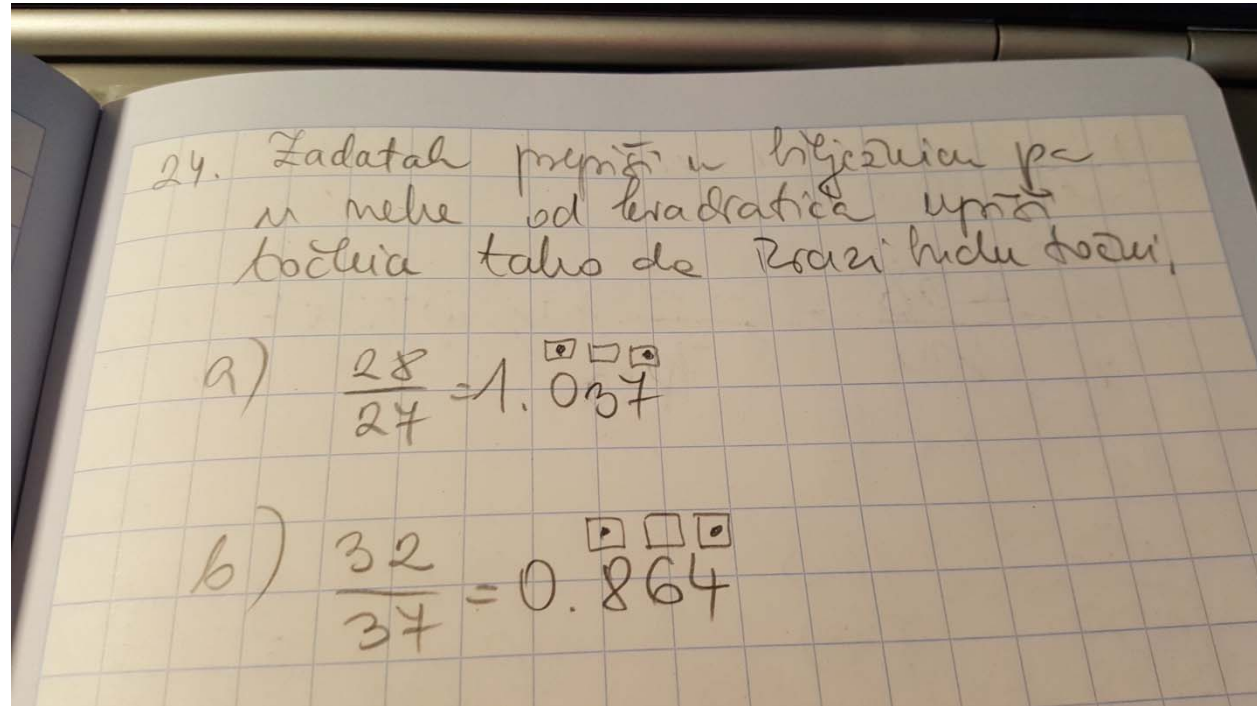
- kvadriranje

- Pitagorin
poučak

- realni brojevi

- kvadratni
korijen

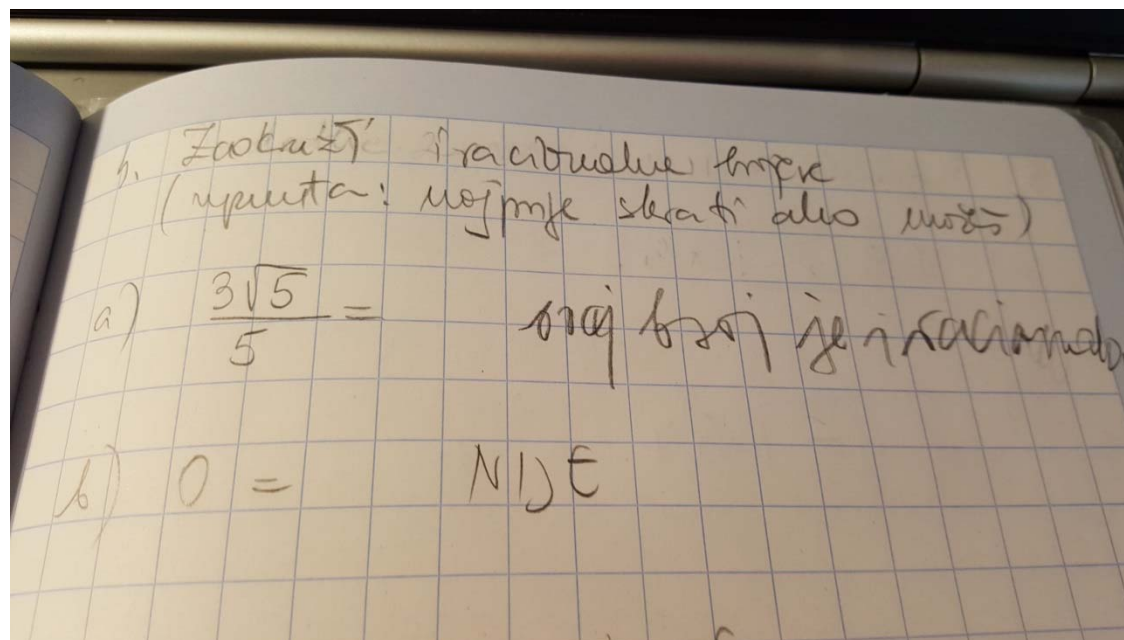
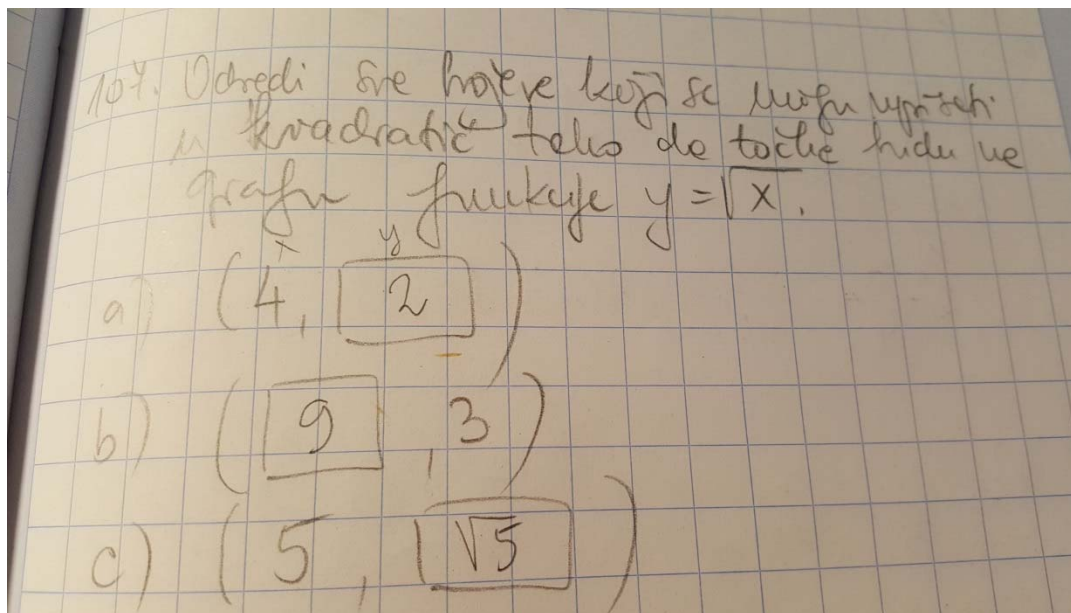
- vektori



REDOVNA ŠKOLA

OSMI RAZRED

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



REDOVNA ŠKOLA

Prvi razred srednje škole

g) $(3a-4b)^2 = 9a^2 - 2 \cdot 3a \cdot 4b + 16b^2$
 $= 9a^2 - 24ab + 16b^2$

h) $(2x^3-5y^2)^2 = 4x^6 - 2 \cdot 2x^3 \cdot 5y^2 + 25y^4$
 $= 4x^6 - 20x^3y^2 + 25y^4$

i) $(a^2+3b^3)^2 = a^4 + 2a^2 \cdot 3b^3 + 9b^6$
 $= a^4 + 6a^2b^3 + 9b^6$

j) $(\frac{3}{4}x^2-2)^2 = \frac{9}{16}x^4 - 2 \cdot \frac{3}{4}x^2 \cdot 2 + 4$
 $= \frac{9}{16}x^4 - 3x^2 + 4$

k) $(4x^3y-y^2x)^2 = 16x^6y^2 - 2 \cdot 4x^3y \cdot y^2x + y^4x^2$
 $= 16x^6y^2 - 8x^4y^3 + y^4x^2$

e) $(3x^2y^5-2y^3)^2 = 9x^4y^{10} - 12x^2y^8 + 4y^6$

f) $(\frac{2}{5}a^2b-\frac{2}{3}a^3b^4)^2 = \frac{4}{25}a^4b^2 - 2 \cdot \frac{2}{5}a^2b \cdot \frac{2}{3}a^3b^4 + \frac{4}{9}a^6b^8$
 $= \frac{4}{25}a^4b^2 - \frac{8}{15}a^5b^5 + \frac{4}{9}a^6b^8$

g) $(\frac{1}{4}xy^4+\frac{2}{7}x^2y^2)^2 = \frac{1}{16}x^2y^8 + 2 \cdot \frac{1}{4}xy^4 \cdot \frac{2}{7}x^2y^2 + \frac{4}{49}x^4y^4$
 $= \frac{1}{16}x^2y^8 + \frac{1}{7}x^3y^6 + \frac{4}{49}x^4y^4$

d) $\frac{2x-4}{6x+4} \cdot \frac{x-4}{5}$
 $= \frac{2(x-2)}{2(3x+2)} \cdot \frac{x-4}{5}$
 $= \frac{x-2}{3x+2} \cdot \frac{x-4}{5}$

e) $\frac{3a}{3a^2-1} \cdot \frac{6a^2-2a}{3a}$
 $= \frac{1}{(3a-1)(3a+1)} \cdot \frac{2a(3a-1)}{3a}$
 $= \frac{2a}{(3a+1)3a} = \frac{2}{3(3a+1)}$

Aplikacije na tablet računalima

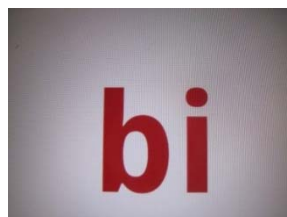
EU projekt – www.ict-aac.hr

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
7. ICT-AAC Domino brojalica
(Android)
8. ICT-AAC Matematika (Android)

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”

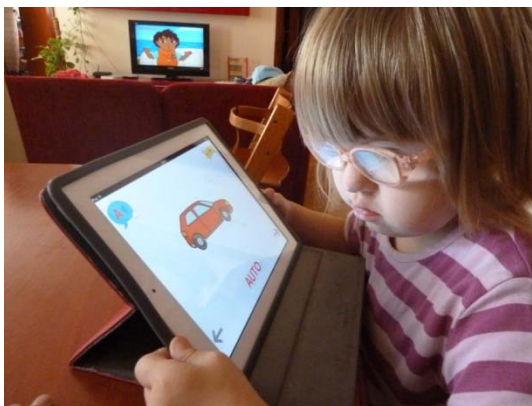
Aplikacija „Touch-emotions”

Aplikacija „Touch-shapes”

Aplikacija „Touch-colours”

Aplikacija „Touch-animals”

Aplikacija „Match & Find”



Druge aplikacije - MATEMATIKA

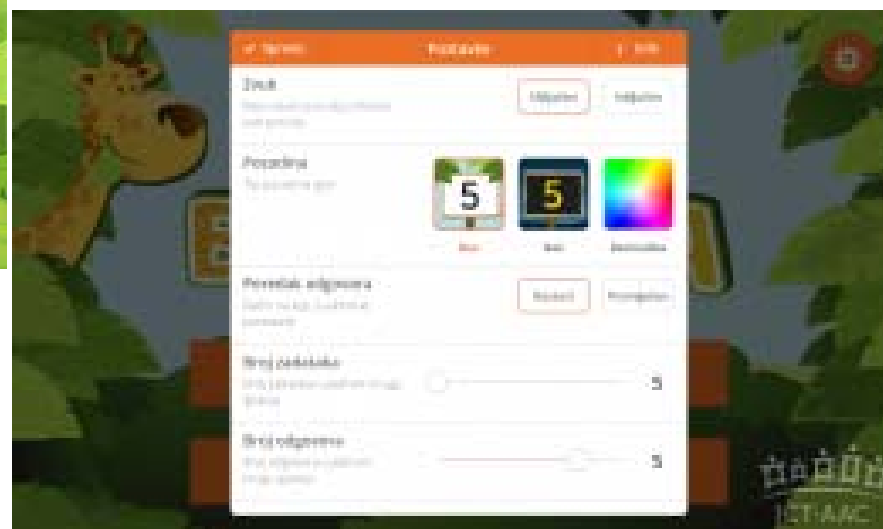
- Aplikacije za zbrajanje, oduzimanje, množenje, dijeljenje (C Addition, Column S, Divison, C-Addition, Long Mult)

- Zgodno za razlomke Pizza 1

Aplikacije na tablet računalima

[ICT-AAC Domino brojlica \(Android\)](http://www.ict-aac.hr/index.php/hr/ict-aac-razvijene-aplikacije/android-aplikacije/domino-brojlica)

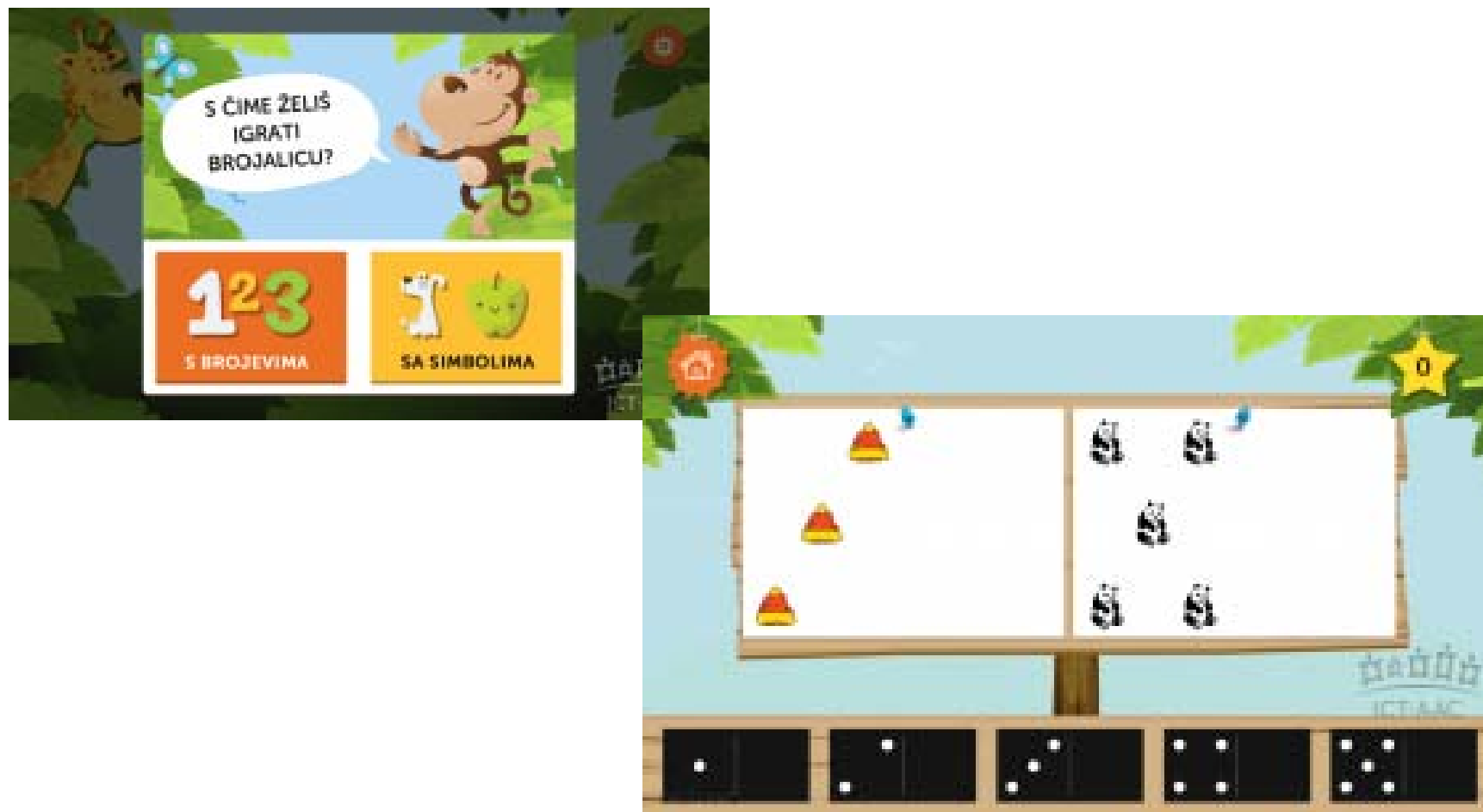
<http://www.ict-aac.hr/index.php/hr/ict-aac-razvijene-aplikacije/android-aplikacije/domino-brojlica>



Aplikacije na tablet računalima

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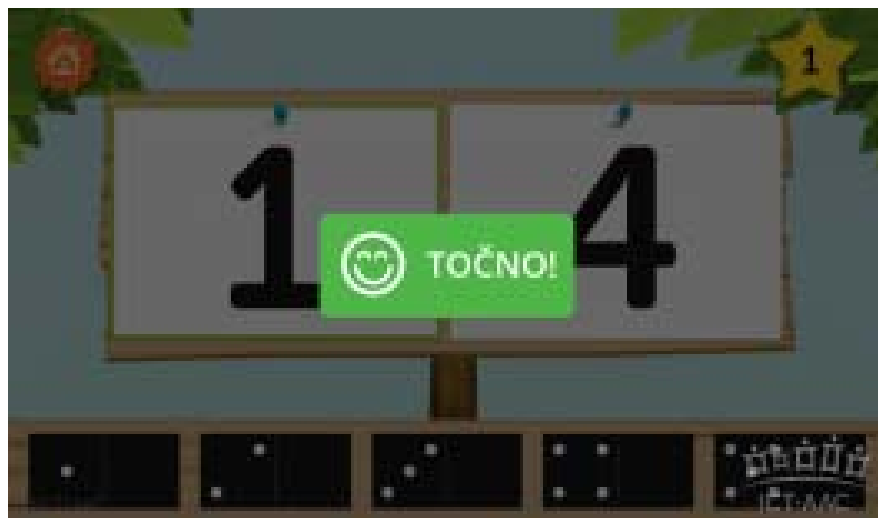
<http://www.ict-aac.hr/index.php/hr/ict-aac-razvijene-aplikacije/android-aplikacije/domino-brojlica>



Aplikacije na tablet računalima

[ICT-AAC Domino brojilica \(Android\)](http://www.ict-aac.hr/index.php/hr/ict-aac-razvijene-aplikacije/android-aplikacije/domino-brojalica)

<http://www.ict-aac.hr/index.php/hr/ict-aac-razvijene-aplikacije/android-aplikacije/domino-brojalica>



Aplikacije na tablet računalima

ICT-AAC Domino brojlica (Android)

Kompetencijska mreža zasnovana na informacijsko-komunikacijskim tehnologijama za inovativne usluge namijenjene osobama sa složenim komunikacijskim potrebama (ICT-AAC)

Domino brojlica

iOS

DOMINO BROJALICA

brojka 0-9 brojka 0-9
brojka 0-9 brojka 0-9

Opis aplikacije

Domino brojlica je aplikacija koja omogućuje osobama sa složenim komunikacijskim potrebama da komuniciraju i izlaze na ulicu. Aplikacija je zasnovana na simboličkoj komunikaciji i omogućuje korisnicima da izaberu željenu brojevu i izlaze na ulicu. Aplikacija je dostupna na Android i iOS platformama.

Upotreba aplikacije

Upotreba aplikacije je vrlo jednostavna. Korisnik izabire željenu brojevu i izlaze na ulicu. Aplikacija je dostupna na Android i iOS platformama.

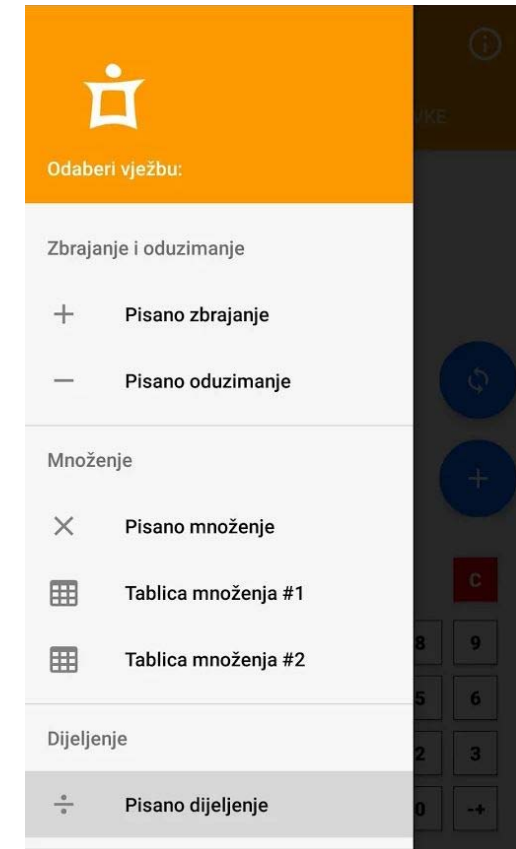
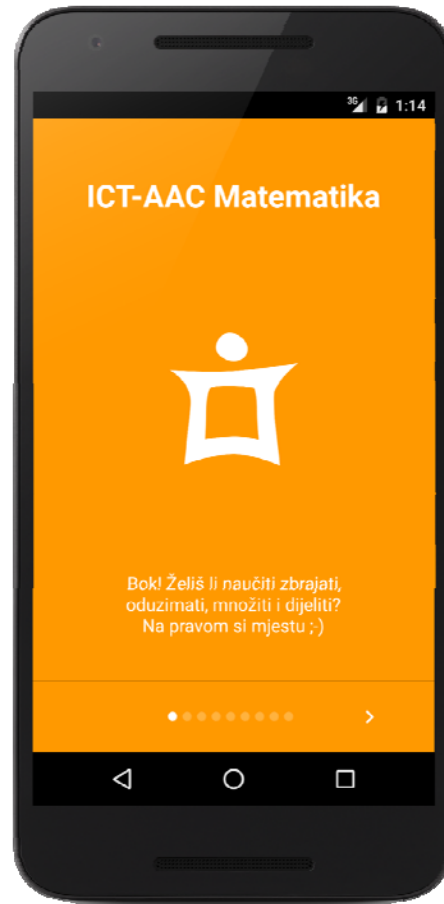
Administrativna i/ili financijska informacija

Administrativna i/ili financijska informacija je dostupna na aplikaciji. Korisnik može izabrati željenu brojevu i izlaze na ulicu. Aplikacija je dostupna na Android i iOS platformama.

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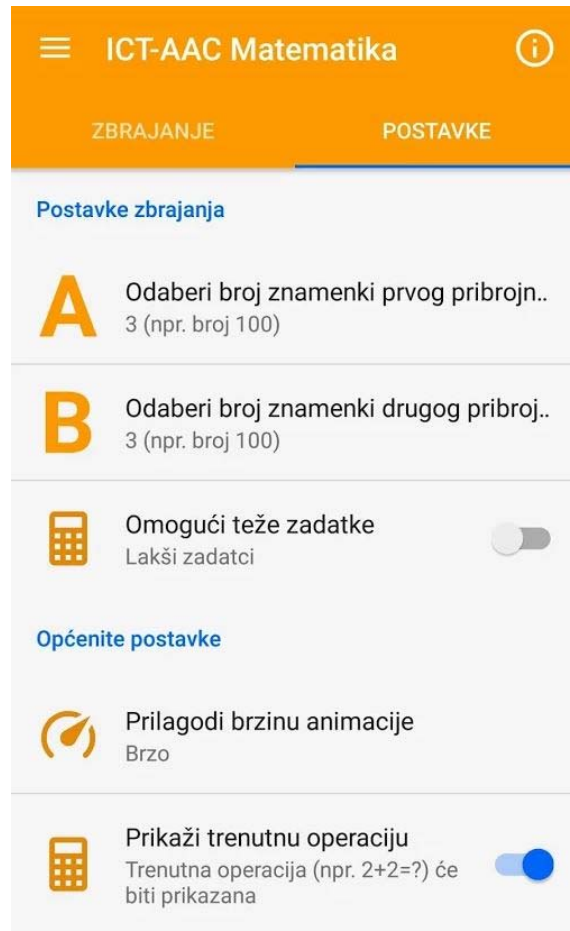
Aplikacije na tablet računalima

ICT-AAC Matematika (Android)



Aplikacije na tablet računalima

ICT-AAC Matematika (Android)



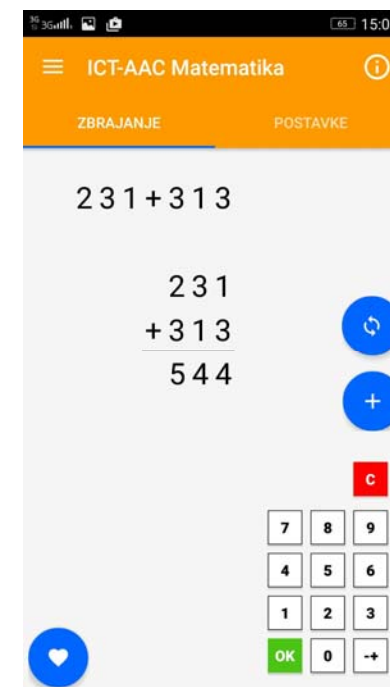
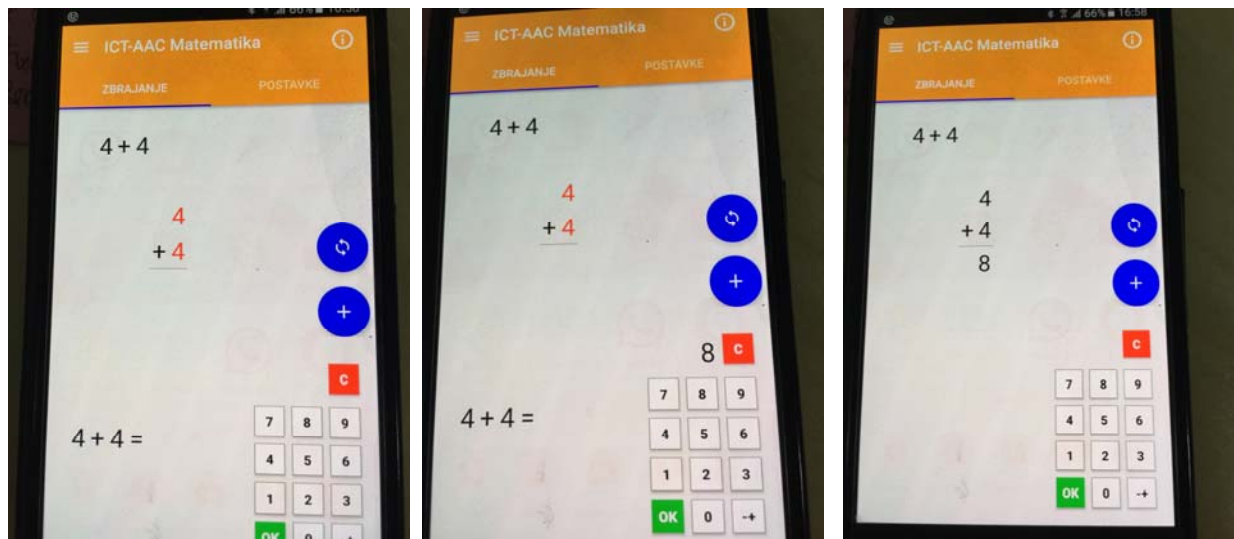
Postavke:

- Broj znamenki prvog pribrojnika
- Broj znamenki drugog pribrojnika
- Omogući lakše ili teže zadatke

Aplikacije na tablet računalima

Zbrajanje

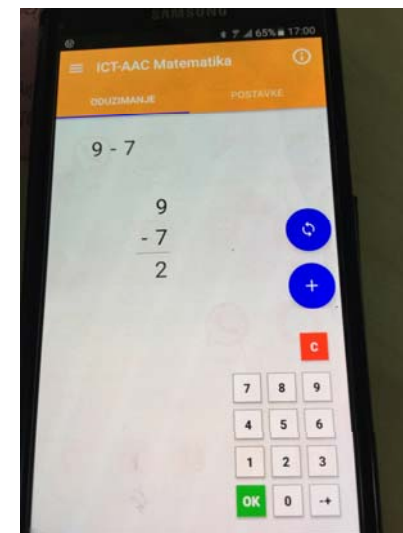
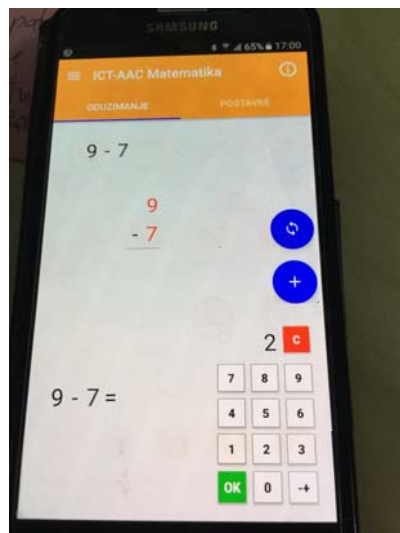
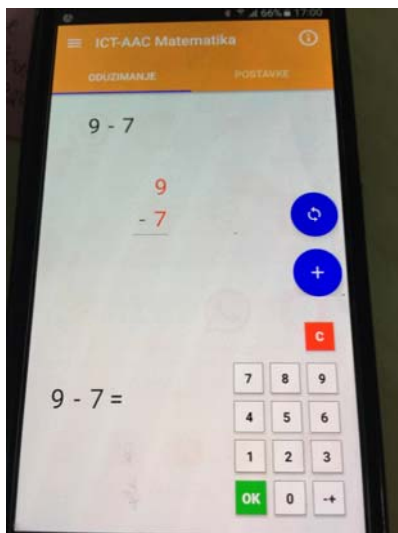
ICT-AAC Matematika (Android)



Aplikacije na tablet računalima

ICT-AAC Matematika (Android)

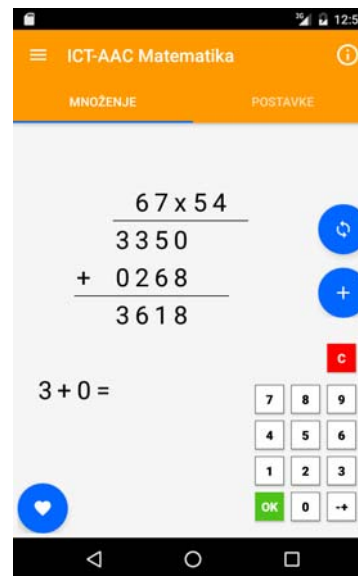
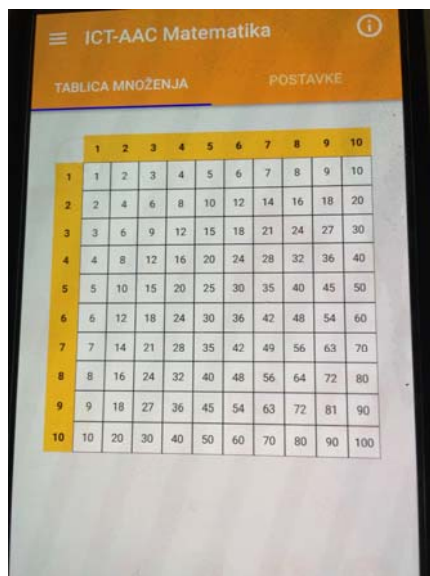
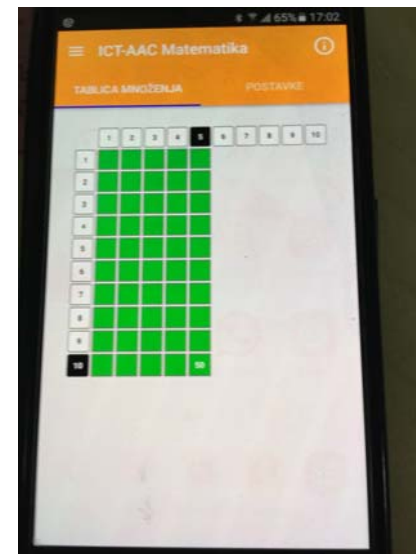
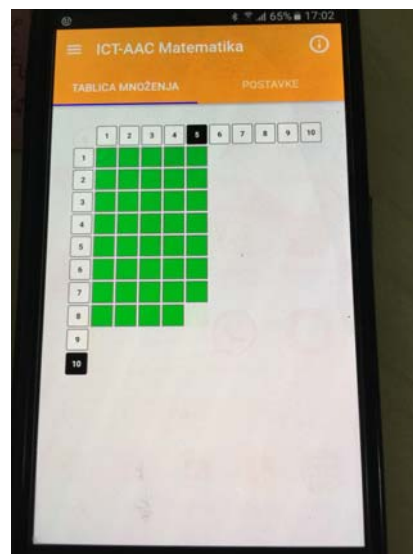
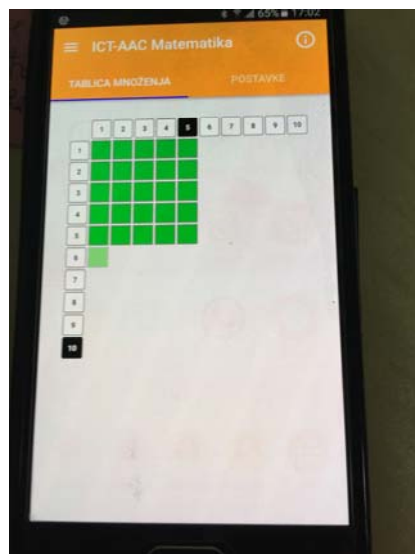
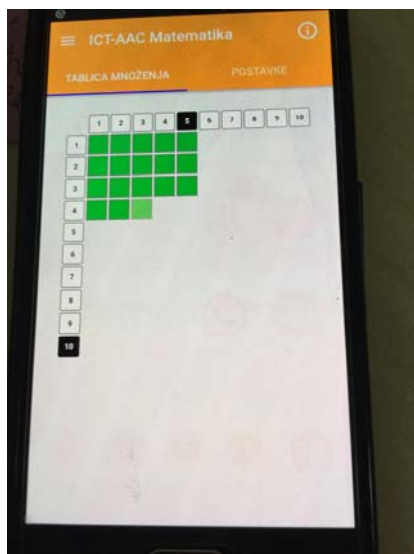
Oduzimanje



Aplikacije na tablet računalima

Množenje

ICT-AAC Matematika (Android)



Aplikacije na tablet računalima

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Dijeljenje

