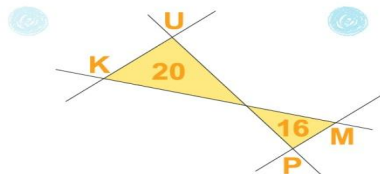


Inter@ktivna matematika

Tatjana Gulič in Amela Sambolić Beganović

OŠ Preska in ZRSŠ



3. mednarodna konferenca
o učenju in poučevanju matematike
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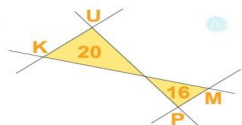


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Povezava do predstavitve

<http://url.sio.si/rW8>



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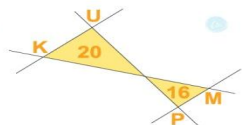


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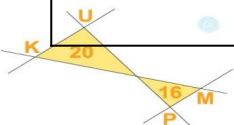
Cilji delavnice:

- seznanitev z izbranimi aplikacijami, ki omogočajo preverjanje (pred)znanj, učinkovito in hitro podajanje povratnih informacij ter ustvarjanje
- predstavitev smernic (didaktičnih napotkov) za uporabo IKT pri matematiki
- načrtovanje dejavnosti za učence z vključevanjem predstavljenih aplikacij in smernic z namenom razvijanja in preverjanja vsebinskih ciljev predmeta in veščin kot so npr. komunikacija, sodelovanje, ustvarjanje.



Časovno vsebinska dinamika delavnice

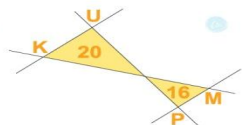
| | |
|-------------|---|
| 5 min | Predstavitev ciljev in poteka delavnice, organizacija in oblike dela. |
| 10 + 20 min | goFormative (kako deluje, zakaj in kako se uporablja, kje jo najdemo, izkušnje, priporočila, izdevala lastnega primera) |
| 10 + 20 min | Toondoo (kako deluje, zakaj in kako se uporablja, kje jo najdemo, izkušnje, priporočila, izdelava lastnega primera) |
| 10 min | Smernice (didaktični napotki) za uporabo IKT za matematiko |
| 10 min | Izmenjava/smiselna umestitev predstavljenih aplikacij v pouk |



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Quick Do Now (typed response)

Kako pogosto uporabljate mobilne naprave v razredu?

- nikoli
- zelo redko
- vsaj enkrat na mesec
- skoraj vsak teden
- Add a new option

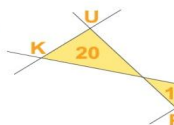
Select a final answer from the choices above.

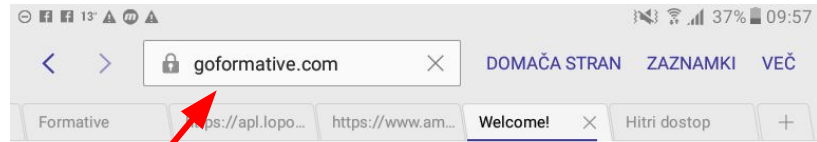
points 10

help text

NKFM236

Enter this code at <http://goformative.com/join>



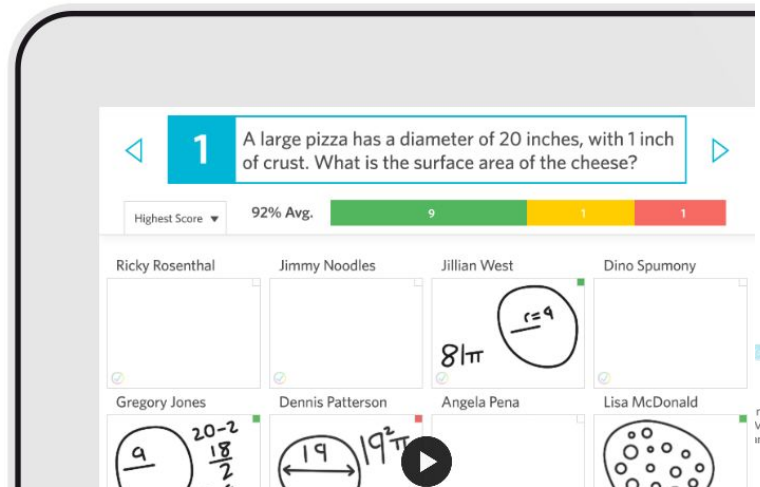


Kako sestaviti vprašalnik, nalogo, test....
<http://goformative.com>

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checks for understanding guarantee student growth.



Real-Time Intervention

Know exactly what each student needs as they learn and take immediate actions.

Formative accounts are **FREE** for teachers and students!

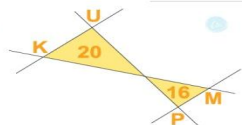
If you are interested in school PD or a district implementation, please [contact us!](#)

Sign up as a: **TEACHER** **STUDENT**



Save Time

Spend time on what matters. Say goodbye to stacks of paper to grade and manage.



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formative Community Quick Code Dashboard

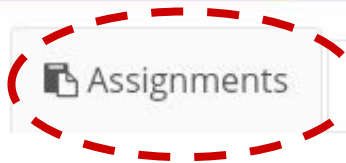
Assignments Profile Classes Sign Out

+ New Assignment! + New Folder

- Fizika Share | Rename | Delete
- Matematika Share | Rename | Delete
- Pred pripravljeni-Preverjanje razumevanja Share | Rename | Delete
- Splošno Share | Rename | Delete

| | | |
|---|-------------|----------|
| A Sample Formative Assessment with Responses | 4 Responses | 7/8/15 |
| Quick Do Now (typed response) | 0 Responses | 7/8/15 |
| Quick Exit Ticket (typed response) | 0 Responses | 7/8/15 |
| Quick Show Your Work (draw response or image upload) | 0 Responses | 7/8/15 |
| Uvodno vprašanje - zapiši tri ugotovitve, zakone ali vprašanja iz snovi prejšnje ure. | 0 Responses | 10/22/16 |

View Tutorial Videos
Found a Bug?



Assignments

Profile

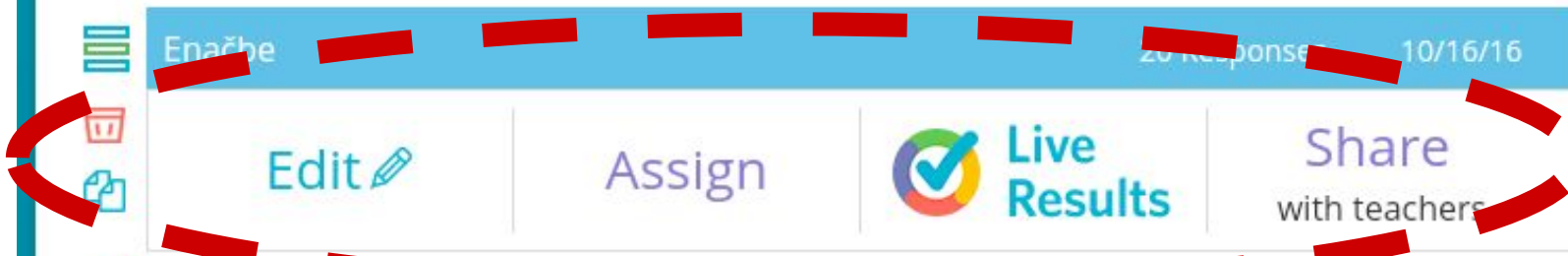
Classes

Sign Out

+ New Assignment!

+ New Folder

Assignments > Matematika



Enačbe

20 Responses 10/16/16

Edit

Assign

Live Results

Share with teachers

Izračunaj v zvezek, slikaj svoj zapis in ga naloži

16 Responses 10/16/16

View Tutorial Videos

Found a Bug?



Build > Preview > Live Results

Assign

Untitled Formative

ADD QUESTION

ADD CONTENT

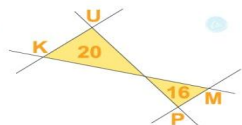
UPLOAD & TRANSFORM

Image

Text Block

View-Only Canvas

YouTube



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formative

Build > Preview > Live Results

Assign

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ADD QUESTION

ADD CONTENT

UPLOAD & TRANSFORM

Image

Text Block

View-Only Canvas

YouTube

formative

Build > Preview > Live Results

Assign

Untitled Formative

ADD QUESTION

ADD CONTENT

UPLOAD & TRANSFORM

Multiple Choice

Show Your Work

Short Answer

True / False


formative

Build > Preview > Live Results

Assign

Untitled Formative

Label this page of your uploaded document.



Drag a file here or click to upload.

ADD QUESTION

ADD CONTENT

UPLOAD & TRANSFORM

Image

Text Block

View-Only Canvas

YouTube

? help text

points 10

3 Show Your Work

Type question text here...

 add a background image / edit the student canvas

Currently, your students have a blank canvas to draw and/or upload images.

? help text

points 10

ADD QUESTION

ADD CONTENT

UPLOAD & TRANSFORM

Build > **Preview** > Live Results

Assign

Pregled možnosti-mat
Tatjana Gulič

1 Kako pogosto uporabljate mobilne naprave v razredu?

- nikoli
- zelo redko
- vsaj enkrat na mesec
- skoraj vsak teden

Podobni trikotniki.



Pregled možnosti-mat

1 Multiple Choice

Kako pogosto uporabljate mobilne naprave v razredu?

- nikoli
- zelo redko
- vsaj enkrat na mesec
- skoraj vsak teden
- Add a new option

Select a final answer from the choices above.

points 10

help text

Pregled možnosti-mat

Enable for

Everyone

Only Classes

Publicly Available

Access

Anyone can respond (no login required).
Guests can't receive feedback or see their scores.

Quick Code

Link

Classroom

Embed Code

NKFM236

Enter this code at
<http://goformative.com/join>

Assign

Export

Testiranje možnosti-splošno

View Single Question

Filter All

1 2 3

Vriši vsaj dve poti raziskovalcev v času velikih odkritij.
(Vsako s svojo barvo)

Show question details

Sort Last Name

2 %

T G Tatjana Gulič



Rezultati, izvoz rezultatov

Build > Preview > Live Results

Enačbe

View

Filter

1 2 3 4 5 6 7

Potek reševanja enačbe

$\frac{1}{3}x + 1 = \frac{5}{6}x + \frac{2}{3}$

$\frac{1}{3}x + 1 = \frac{5}{6}x + \frac{2}{3} \quad / \cdot 6$

$(\frac{1}{3}x + 1) \cdot 6 = (\frac{5}{6}x + \frac{2}{3}) \cdot 6$

S skupnim imenovalcem 6 pomnožimo vsak člen enačbe in ulomke skrajšamo:

2 3 4 5 6 7

Sevanja enačbe

assignment_export_CFWP967 [Samo za branje] - Microsoft Excel

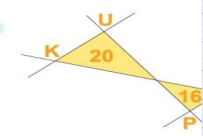
Microsoft Excel ribbon: Datoteka, Osnovno, Vstavljanje, Postavitev strani, Formule, Podatki, Pregled, Ogled, Acrobat.

Podatki tab: Razvrsti, Filter, Počisti, Uporabi znova, Dodatno.

Podatkovna orodja: Besedilo v stolpce, Odstrani dvojnike, Preverjanje veljavnosti podatkov, Usklajevanje, Analiza »kaj če«, Združi, Razdruži, Delna vsota, Oris.

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | |
|----|------------|------------|-----------|-----------|---------|-----------|----------|----------|----------------------|--------|----------|----------|----------------------|--------|----------|----------|----------------------|--------|---|
| 1 | first_name | last_name | total_poi | total_poi | classes | 1_text | 1_points | 1_points | 1_respons | 2_text | 2_points | 2_points | 2_respons | 3_text | 3_points | 3_points | 3_respons | 4_text | 4 |
| 2 | Tg | G | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne, identi | | 10 | 0 | | | 10 | 0 | | | |
| 3 | T | G | 70 | 17 | | Kakl~ne v | 10 | 0 | Ekvivalentne, identi | | 10 | 0 | | | 10 | 10 | http://goformative.c | | |
| 4 | lfiga | guzelj | 70 | 0 | | Kakl~ne v | 10 | 0 | Poznam | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 5 | Jakob | Strml~ek | 70 | 0 | | Kakl~ne v | 10 | 0 | EnaÅtbe z oklepajer | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 6 | Zala | Pavlic | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne enaÅti | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 7 | Kaja | Gros | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne enacbe | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 8 | Ana | Kosem Lir | 70 | 0 | | Kakl~ne v | 10 | 0 | Linearne enaÅtbe | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 9 | Nina | Jarc | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentna enacba | | 10 | 0 | | | 10 | 0 | | | |
| 10 | luka | sarec | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne enaÅtbe | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 11 | Dasa | Potocnik | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne | | 10 | 0 | | | 10 | 0 | | | |
| 12 | Geja | Lul~terL | 70 | 0 | | Kakl~ne v | 10 | 0 | Kovalentne enacbe, | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 13 | gaja | bizjan | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne enaÅti | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 14 | Laura | Calligaris | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentno enaÅti | | 10 | 0 | | | 10 | 0 | | | |
| 15 | Maja | Simc | 70 | 0 | | Kakl~ne v | 10 | 0 | Kovalentne encbe te | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 16 | Fzan | Dobnikar | 70 | 0 | | Kakl~ne v | 10 | 0 | | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 17 | Laura | Calligaris | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentno enaÅti | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 18 | Dasa | Potocnik | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentne | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 19 | Nina | jarc | 70 | 0 | | Kakl~ne v | 10 | 0 | Ekvivalentna enacba | | 10 | 0 | http://goformative.c | | 10 | 0 | http://goformative.c | | |
| 20 | Tt | Gg | 70 | 0 | | Kakl~ne v | 10 | 0 | | | 10 | 0 | | | 10 | 0 | http://goformative.c | | |

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Kje najti primere?



forum **library** how-to resources sharing formative? thoughts students grow when... goformative.co

Library

Grab A Formative

Library of Formative Assignments

Math

ELA

Social Studies

Science

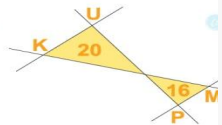
Health

Music

Spanish

German

French



Navodila za delo: Vpišite se kot **učitelj** v goFormative in

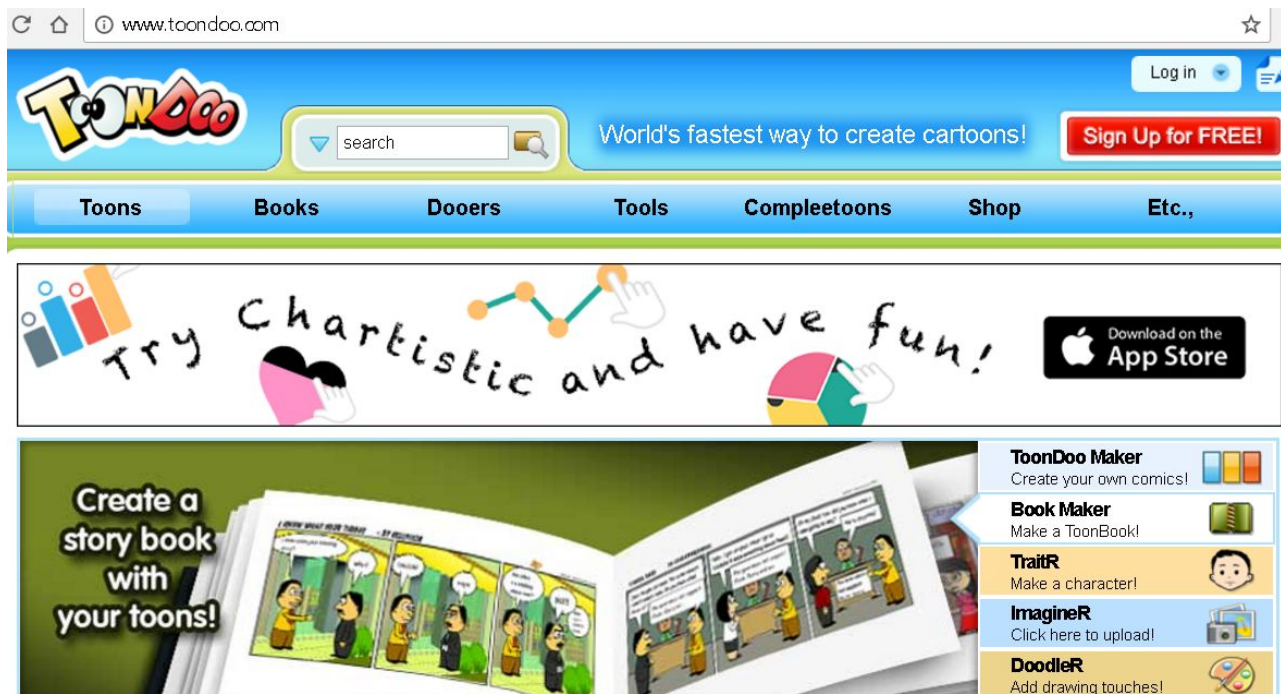
Sestavite kratek kviz s tremi vprašanji

1. **vprašanje:** Odgovor kot tekst ali izbira z več možnostmi.
2. **vprašanje:** Vstavite tekst, video ali sliko kot prikaz vsebine.
3. **vprašanje:** Vstavite sliko ali besedilo in odgovor naj bo “pisanje po sliki”.



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kar vidim, si zapomnim;
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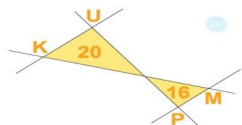
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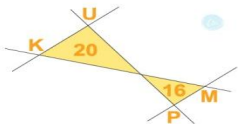
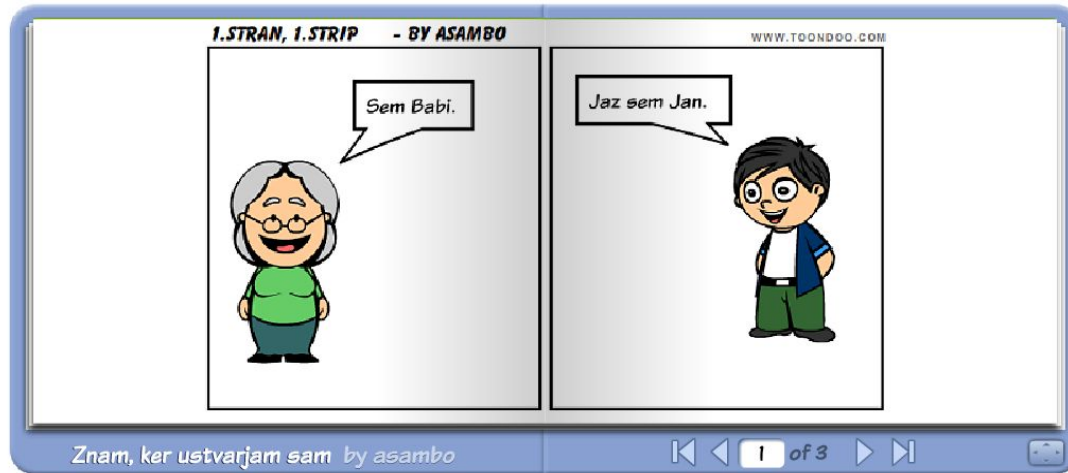
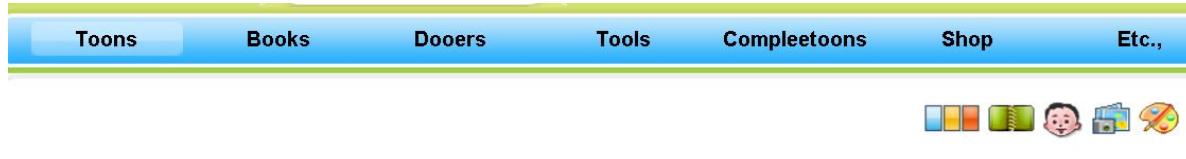


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1. kako deluje (udeleženci v vlogi učenca)

<http://url.sio.si/rCW>



KL



2. zakaj uporabljati

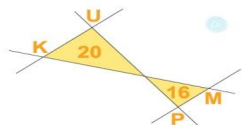
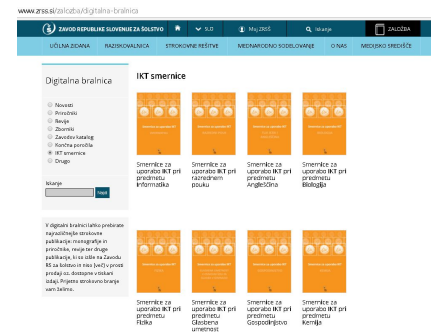
Učitelj



Učenci

IKT smernice:

<http://www.zrss.si/zalozba/digitalna-bralnica>



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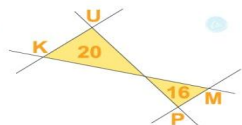
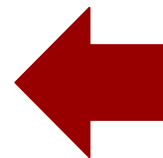
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4. kako se uporablja - kreiranje posameznih strani

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new book
Finding autumn

bayramcan11's
first Toon
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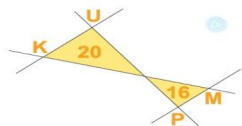
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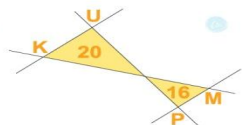
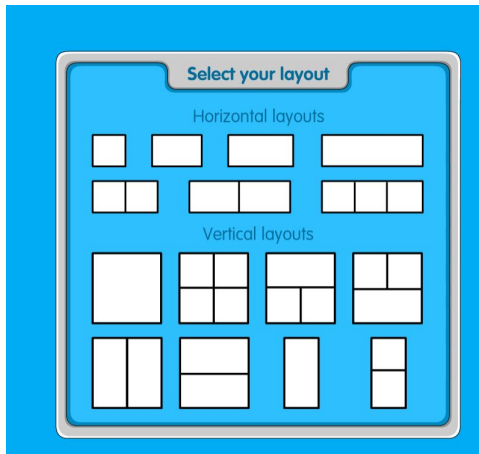
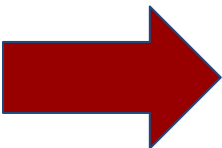
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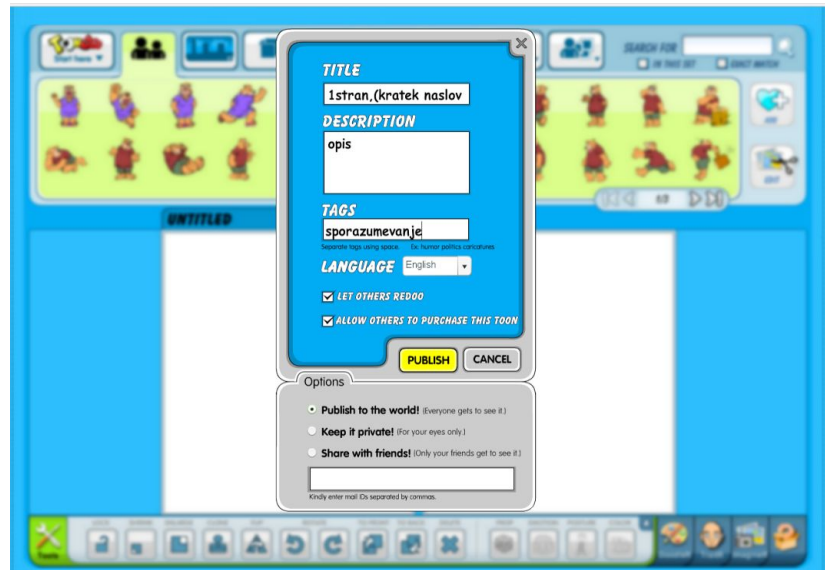
4. kako se uporablja - kreiranje posameznih strani



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4. kako se uporablja - shranjevanje posameznih strani



4. kako se uporablja - kreiranje knjige



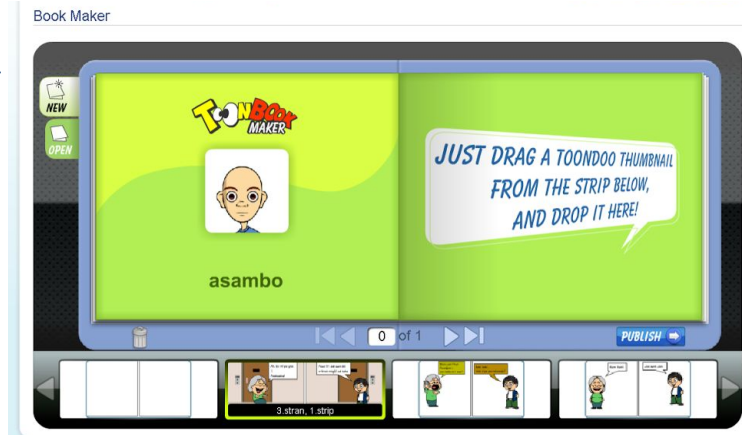
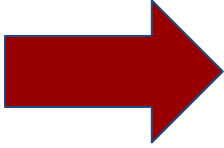
The screenshot shows the ToonDoo website interface. At the top, there is a navigation bar with the ToonDoo logo, a search bar, and a 'CREATE' button. Below the navigation bar, there are tabs for 'Toons', 'Books', 'Doors', 'Tools', 'Compleetoons', 'Shop', and 'Etc.,'. The 'Books' tab is selected, and a dropdown menu is open, showing options: 'Create Book', 'My ToonBooks', 'Most Recent', 'Most Popular', 'Most Viewed', 'Editor's Pick', and 'Most Fav'ed'. The main content area features a banner for 'CHARTISTIC' with the text 'ic and have fun creating charts!' and a 'Download on the App Store' button. Below the banner, there are several tool cards: 'ToonDoo Maker' (Create your own comics!), 'Book Maker' (Make a ToonBook!), 'TraiR' (Make a character!), 'ImagineR' (Click here to upload!), and 'DoodleR' (Add drawing touches!). A large graphic in the center shows a hand using a mouse to create a comic strip. Below the tools, there is a 'Buzz @ ToonDoo' section with user avatars and names like 'gabrisant's', 'CBID's', and 'phuongdung123's'. On the right, there is a 'BUY' banner for 'ToonDoo Shop' with the text 'is now open!' and 'BUY printable images of your favorite Toons at ToonDoo!'. At the bottom right, there is a section 'Also from ToonDoo!' with logos for 'ToonDoo' and 'SPACES'.

4. kako se uporablja - kreiranje knjige



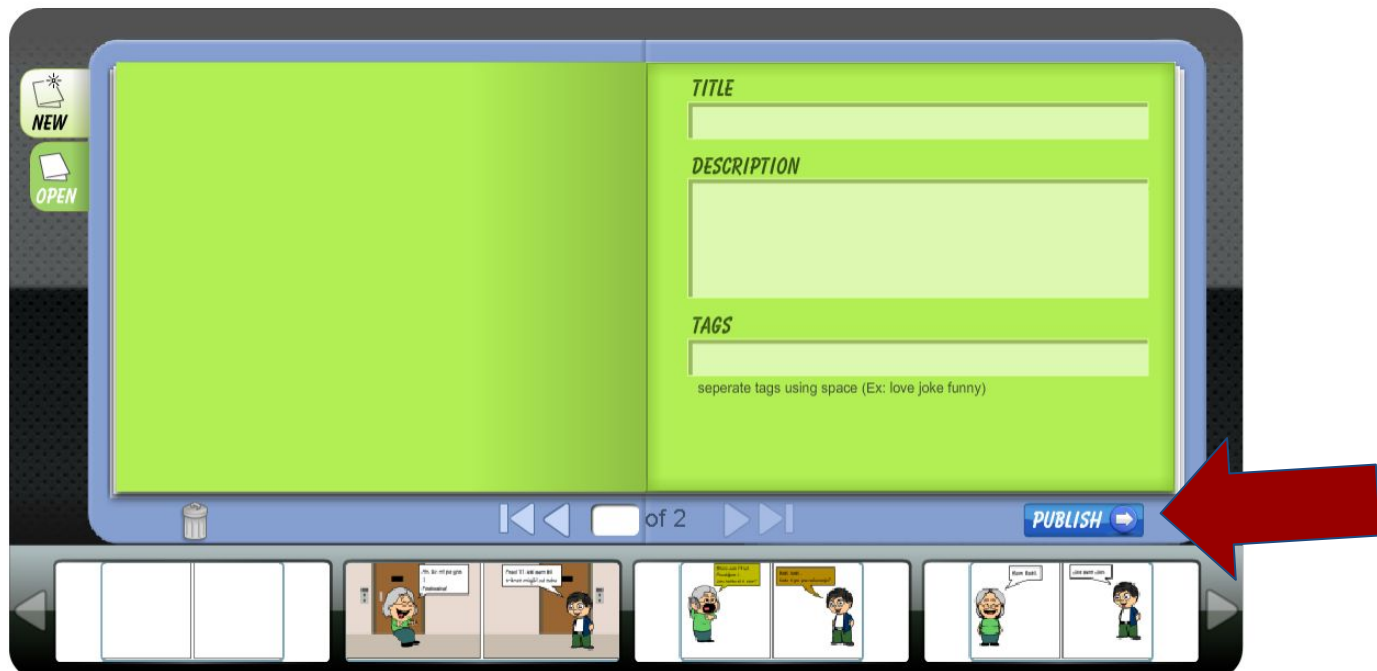
The screenshot shows the ToonDoo website interface. At the top, there is a navigation bar with the ToonDoo logo, a search bar, and a 'CREATE' button. Below the navigation bar, there are tabs for 'Toons', 'Books', 'Doors', 'Tools', 'Compleetoons', 'Shop', and 'Etc.,'. The 'Books' tab is selected, and a dropdown menu is open, showing options: 'Create Book', 'My ToonBooks', 'Most Recent', 'Most Popular', 'Most Viewed', 'Editor's Pick', and 'Most Fav'ed'. The main content area features a banner for 'CHARTISTIC' with the text 'ic and have fun creating charts!' and a 'Download on the App Store' button. Below the banner, there are several tool icons and descriptions: 'ToonDoo Maker' (Create your own comics!), 'Book Maker' (Make a ToonBook!), 'TraiR' (Make a character!), 'ImagineR' (Click here to upload!), and 'Dooder' (Add drawing touches!). A large graphic shows a hand using a mouse to create a comic strip. Below the tools, there is a 'Buzz @ ToonDool' section with user avatars and names like 'gabrisant's', 'CBID's', and 'phuongdung123's'. A wooden sign graphic says 'ToonDoo Shop is now open! BUY printable images of your favorite Toons at ToonDool!'. At the bottom, there is a section 'Also from ToonDool!' with logos for 'ToonDoo' and 'SPACES'.

4. kako se uporablja - kreiranje knjige



4. kako se uporablja - objavljanje knjige

Book Maker



4. kako se uporablja - deljenje knjige

Hi, asambo

World's fastest way to create cartoons!

CREATE

Toons Books Doers Tools Completoons Shop Etc

Create Book
My ToonBooks
Most Recent
Most Popular
Most Viewed
Editor's Pick
Most Fav'ed

CREATE YOUR OWN COMIC STRIPS WITH JUST A FEW CLICKS, DRAG & DROPS

Buzz @ ToonDoo!

thuyuyenclass's sport

new book

gabrisant's prova fumetto

first Toon

CBID's PPAP



My ToonBooks

Preview

Delete

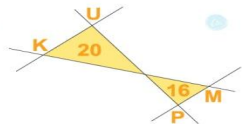
Edit

Goto Page

Znam, ker ustvarjam sam



2nd attempt



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4. kako se uporablja - deljenje knjige



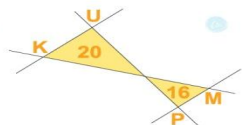
My ToonBooks



Znam, ker ustvarjam sam



2nd attempt



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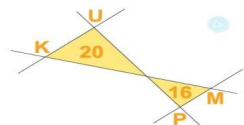


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4. kako se uporablja - deljenje knjige

The screenshot shows a digital book viewer with two pages. The left page features a cartoon character with a large head and a blue shirt, with the text "asambo" below it. Above the character is the "TOONBOOK" logo. The right page has a green background with the title "ZNAM, KER USTVARJAM SAM" and subtitle "DELAVNICA ZA UCITELJE V PROJEKTU ATS2020". Below the title is the text "TAGS: ATS2020". At the bottom of the viewer, there is a navigation bar with a play button, a progress indicator "0 of 3", and a close button. Below the navigation bar is a social sharing toolbar with icons for eye (5), speech bubble (0), thumbs up (0), heart (0), thumbs down, share, email, Twitter, and Facebook. Red arrows point to the share, email, Twitter, and Facebook icons. Below the toolbar is the text "Delavnica za ucitelje v projektu ats2020" and "By asambo on 2016-10-25 16:08 | 5 Views".



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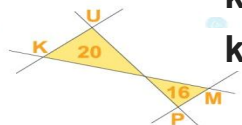
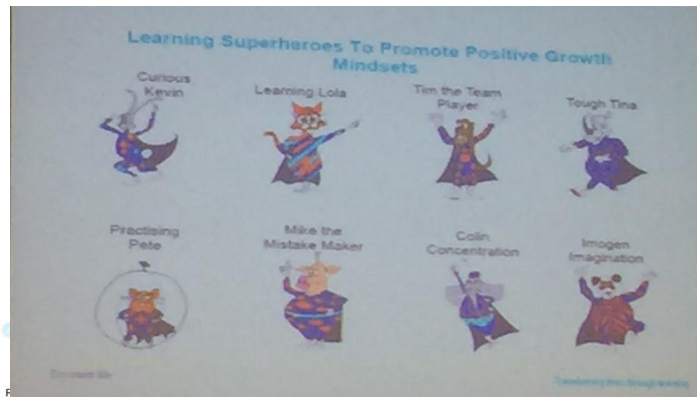
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Navodila za delo: Predstavi s stripom / v stripu

1. Besedilno nalogo predstavite v stripu
2. Izberite eno anekdoto o znanih matematikih/fizikih.
3. Spomnite se ene šale - zabavne situacije iz razreda.
4. Naredite "Learning SuperHeroes"

»Kar slišim, pozabim;
kar vidim, si zapomnim;
kar naredim sam, razumem in znam!«



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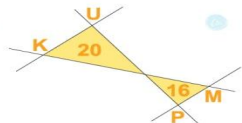
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Predstavitev “izdelkov” in izmenjava idej in izkušenj



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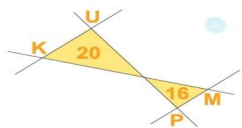


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O Scientix-u:

- **KAJ JE SCIENTIX?** Skupnost za naravoslovno-matematično (NAMA) izobraževanje v Evropi - „Science“ v Scientix = STEM (*science, technology, engineering and mathematics*)
- **ZA KOGA JE SCIENTIX?** Za učitelje (učencev od 4 – 21 let), raziskovalce, načrtovalce politike, starše in vse, ki jih zanima NAMA izobraževanje
- **ZAKAJ JE NASTAL SCIENTIX?** Z namenom vzpodbujati, razširjati in izmenjevati izkušnje, gradiva, najboljše prakse, raziskave, obvestila ... NAMA izobraževanja v EU
- **KDO UPRAVLJA SCIENTIX?** [European Schoolnet](#) (EUN) – mreža 30-ih Ministrstev za izobraževanje v Evropi v imenu [European Commission](#) (DG Research)
- **KAJ PONUJA SCIENTIX?** ...v nadaljevanju... s poudarkom na matematiki
- **KJE JE SCIENTIX?** <http://www.scientix.eu/>



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Projekti – formative assessment



**Formative Assessment in
Science and Mathematics
Education (FaSMEd)**

<https://research.ncl.ac.uk/fasmed/>

ASSIST-ME is an abbreviation
for *Assess Inquiry in Science,
Technology and Mathematics
Education*.

<http://assistme.ku.dk/>



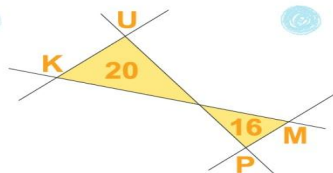
ASSISTME



Hvala, da ste prišli na najino delavnico

Tatjana Gulič in Amela Sambolić Beganović

OŠ Preska in ZRSŠ



3. mednarodna konferenca
o učenju in poučevanju matematike
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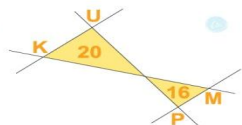


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