# Naknadno promišljanje -refleksija u nastavi matematike

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# Refleksija- naknadno promišljanje

- Naknadno promišljanje je vrsta kritičkog razmišljanja koja se odnosi na proces analiziranja i donošenja odluka o onome što se „dogodilo”
- U nastavi – refleksija osobito potrebno kada se u svrhu zaključivanja koriste eksperimenti

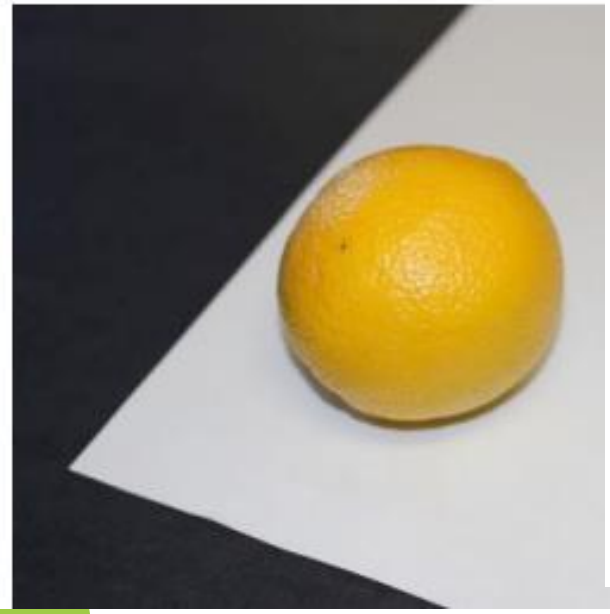
**Primjeri:**

- Oplošje kugle
- Oplošje stošca

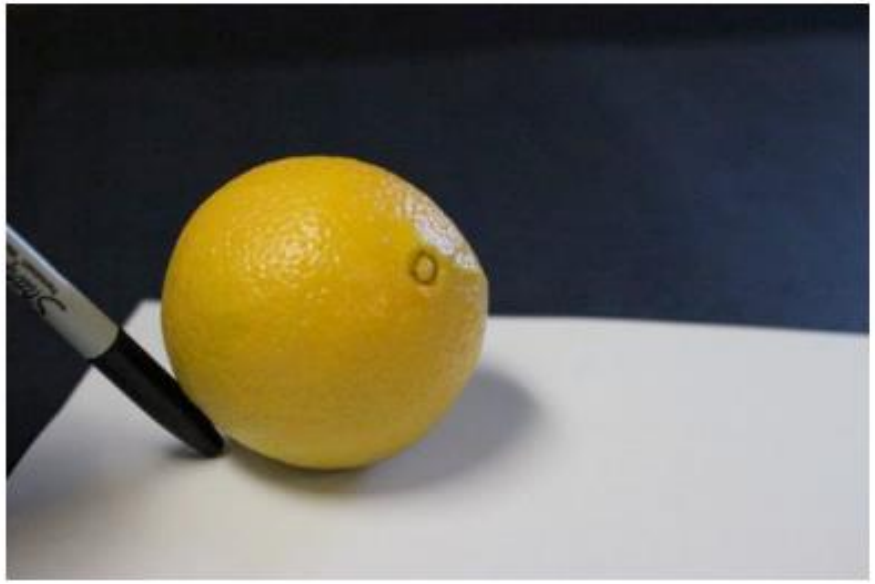
# Oplošje kugle

https://mathwithmrh.wikispaces.com/file/view/orange+ASSIGNMENT+%233++REDUCED+SIZE---+PIX+%26+TEXT+PDF+version.pdf

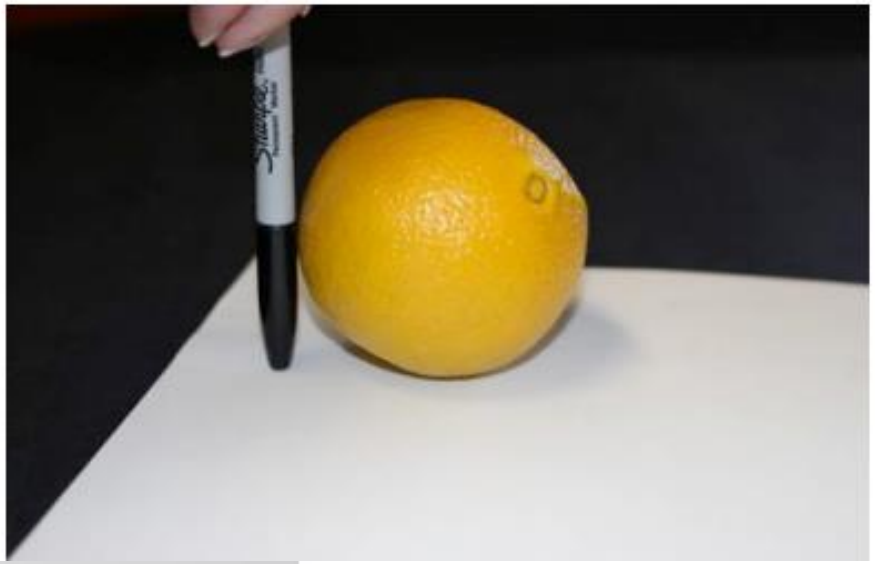
Take the orange and place it in a corner of the p
the orange is on the paper



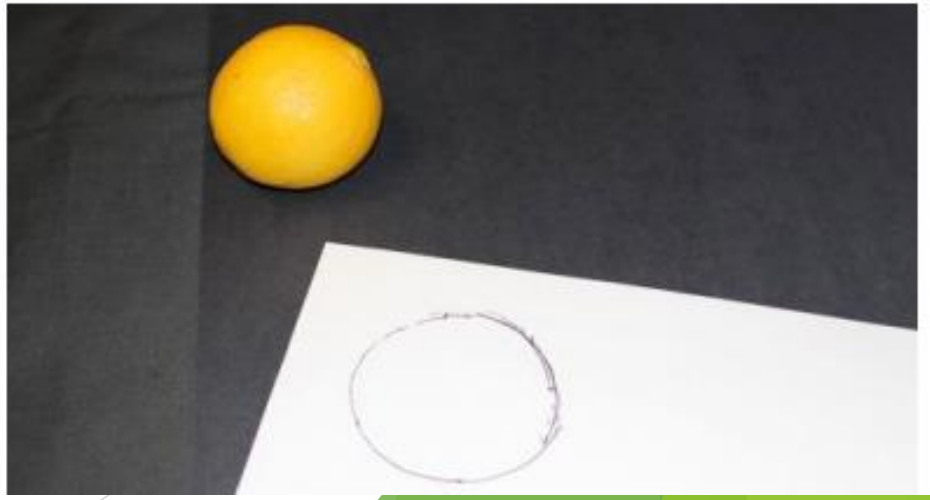
IMPROPER TECHNIQUE:

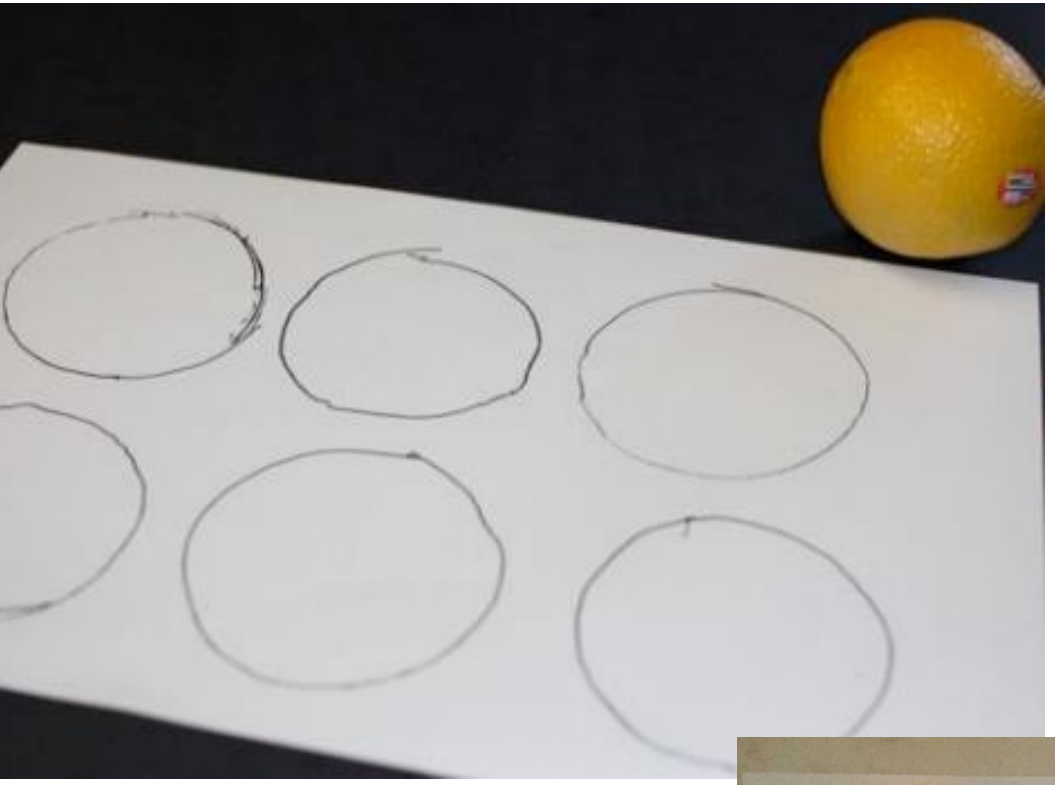


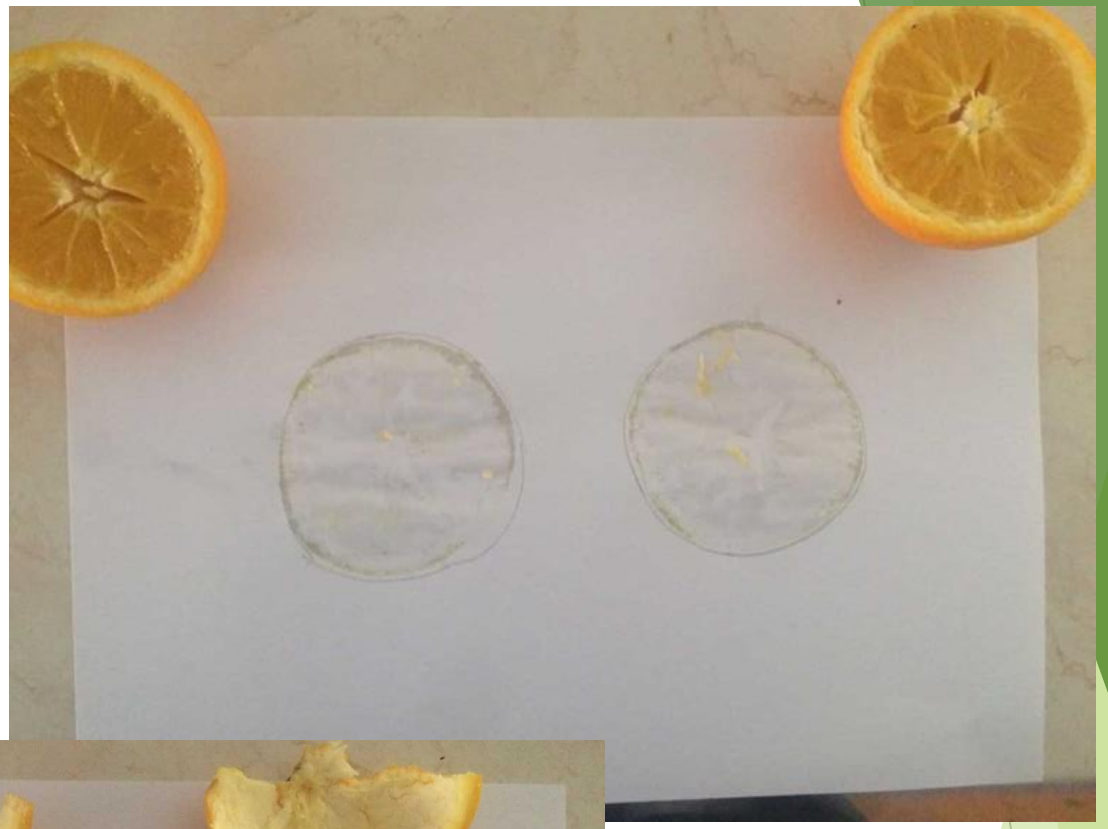
PROPER TECHNIQUE:

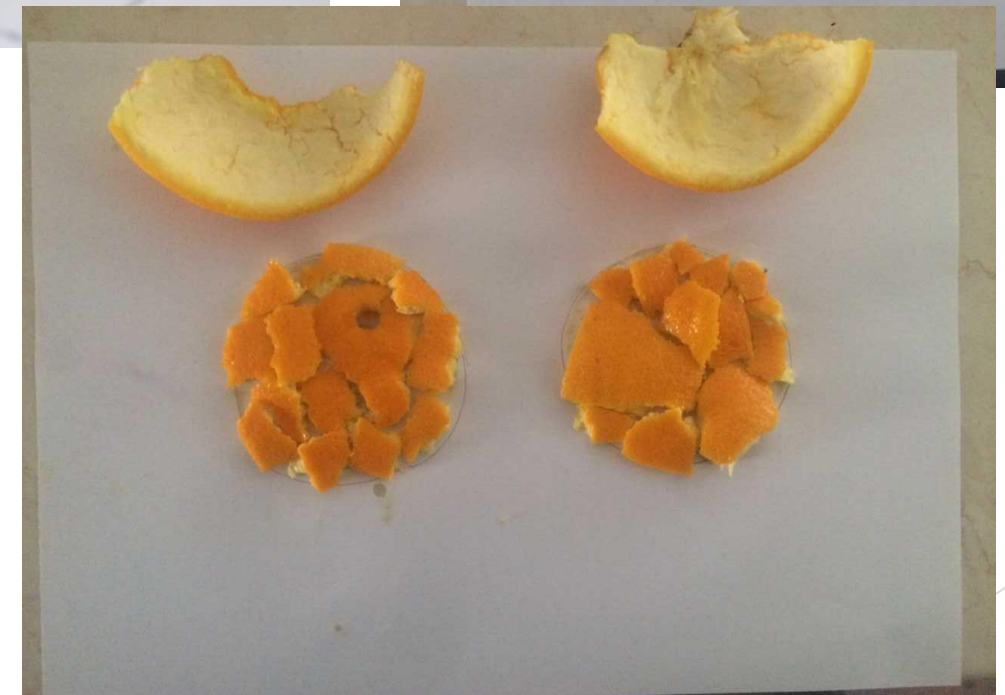


Your circles will not be perfect – it is difficult to control the tip of your writing utensil!









# Materijali sa stranice koje nisam pokazala učenicima!


Once you have the orange peels broken into pieces, fill in the circles with the small pieces of orange peels. Fill as many circles on the page.


Fran J, Klara, Patrick, Karla 2.A

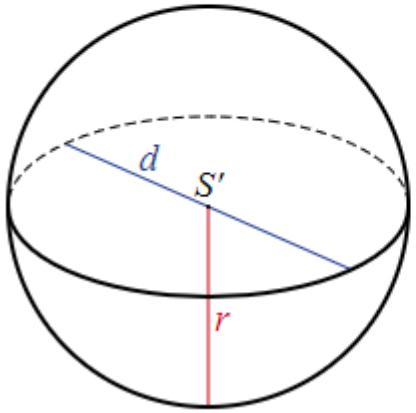

Dora Skrmečki
Hana Čavlina
Ilonia Stuca
2.A


MARTINA RADOVANIĆ
RIJSVAN KUČUK
FRAN STILINOVIĆ
IVAN NENADIĆ


# Obujam i oplošje kugle

- Kugla je data središtem i polumjerom ili promjerom.

## Formule




$$V = \frac{4}{3}\pi r^3$$

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

$$d = 2 \cdot r$$

Što smo dobili?

https://www.calculat.org/hr/volumen-oplosje/kugla.html

Koliko je oplošje kugle?

# Refleksija

- Komadići kore su bili krupni
- Trebali smo ispunjavati praznine
- Naranača nije „perfektna” kugla
- Procjena:
  - Vrlo mala greška

Pogreška: $\frac{\left|5r^2\pi - 4r^2\pi\right|}{4r^2\pi} = \frac{r^2\pi}{4r^2\pi} = \frac{1}{4} = 25\%$

- Glavna kružnica nije dobro nacrtana
- Kružnice su bile različitih veličina-> *trebalo je izmjeriti promjere*

Otkud tako velika pogreška?

Anzeige

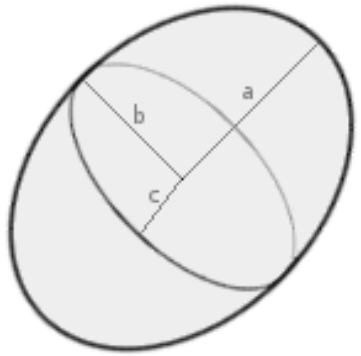
# Ellipsoid Calculator

Enter the three semi axes and choose the number of decimal places. Then click Calculate. The surface area is calculated with an approxi
or is 1.061% at most. The exact calculation is done with elliptic integrals (Jacobi integrals), whose values can be taken from tables.

| | | |
|---|---|---|
| First semi axis (a): | 1 | C |
| Second semi axis (b): | 1 | C |
| Third semi axis (c): | 1 | C |
| Surface area (A): | 12.566 | |
| Volume (V): | 4.189 | |
| Surface-to-volume ratio (A/V): | 3 | |

Round to 3 ▾ decimal places.

Calculate Delete




An ellipsoid
Slice plane: ellipse

## Formulas:

$$A \approx 4\pi * ( ((a*b)^{1.6075}+(a*c)^{1.6075}+(b*c)^{1.6075})/3 )^{1/1.6075}$$

$$V = 4/3 * \pi * a * b * c$$

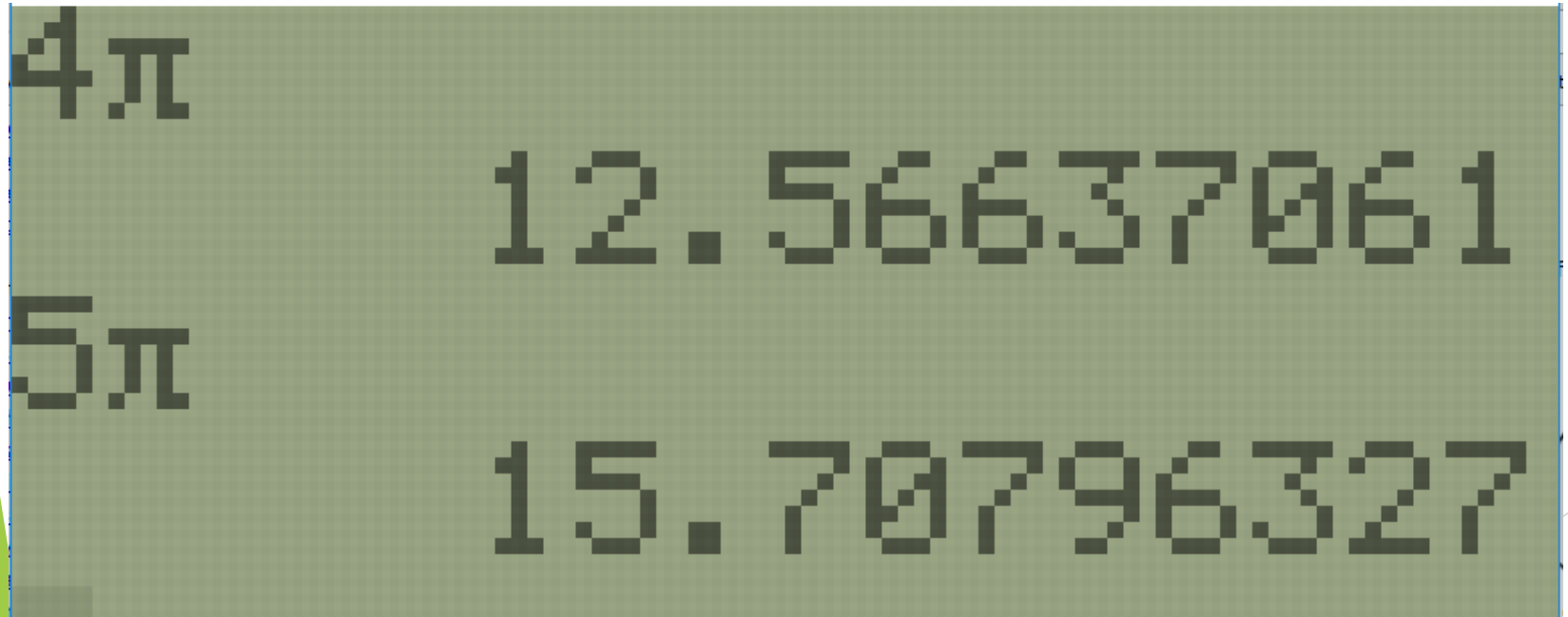
https://rechneronline.de/pi/ellipsoid-e.php

# Kakva je bila naša naranča?

$$O = 4r^2\pi$$

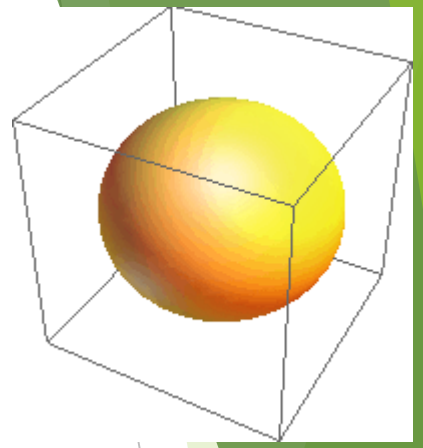
$$r = 1 \Rightarrow O = 4\pi$$

| | |
|---|---|
| First semi axis (a): | 1 |
| Second semi axis (b): | 1 |
| Third semi axis (c): | 1 |
| Surface area (A): | 12.566 |



| | | |
|---|---|---|
| First semi axis (a): | 1.1778 | C |
| Second semi axis (b): | 1.1778 | C |
| Third semi axis (c): | 1 | C |
| Surface area (A): | 15.707 | |
| Volume (V): | 5.811 | |
| Surface-to-volume ratio (A/V): | 2.703 | |

Round to 3 decimal places.

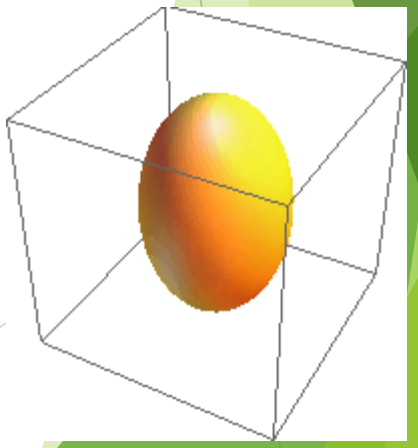


$17.78\% \times 17.78\%$

| | | |
|---|---|---|
| First semi axis (a): | 1 | C |
| Second semi axis (b): | 1 | C |
| Third semi axis (c): | 1.588 | C |
| Surface area (A): | 17.707 | |
| Volume (V): | 6.652 | |
| Surface-to-volume ratio (A/V): | 2.662 | |

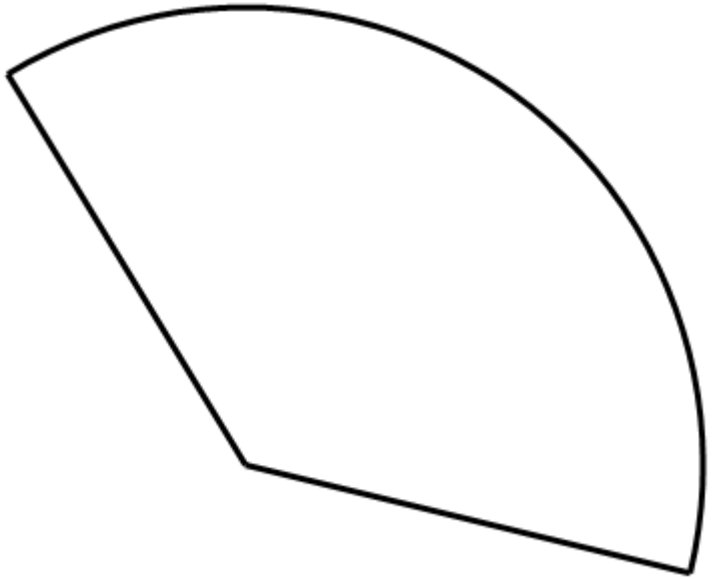
Round to 3 decimal places.

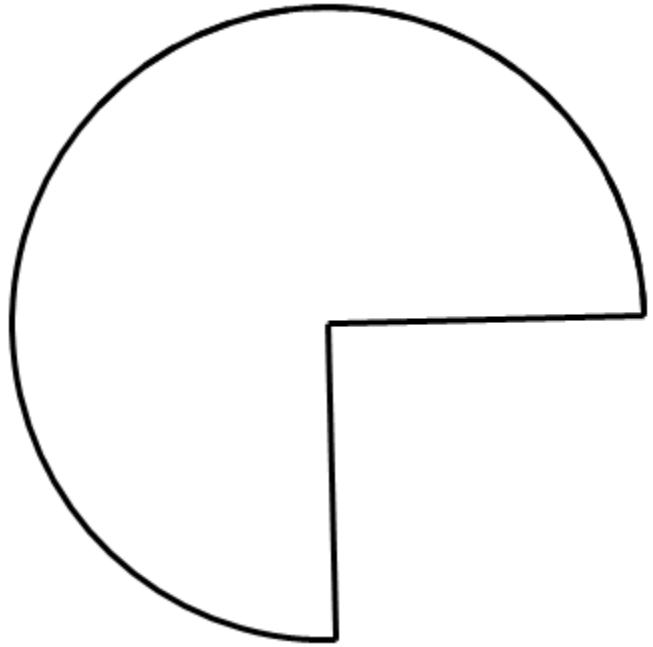
58.8%



http://m.wolframalpha.com/input/?i=ellipsoid+a%3D1%2C+b%3D1%2C+c%3D1.588+surface+area

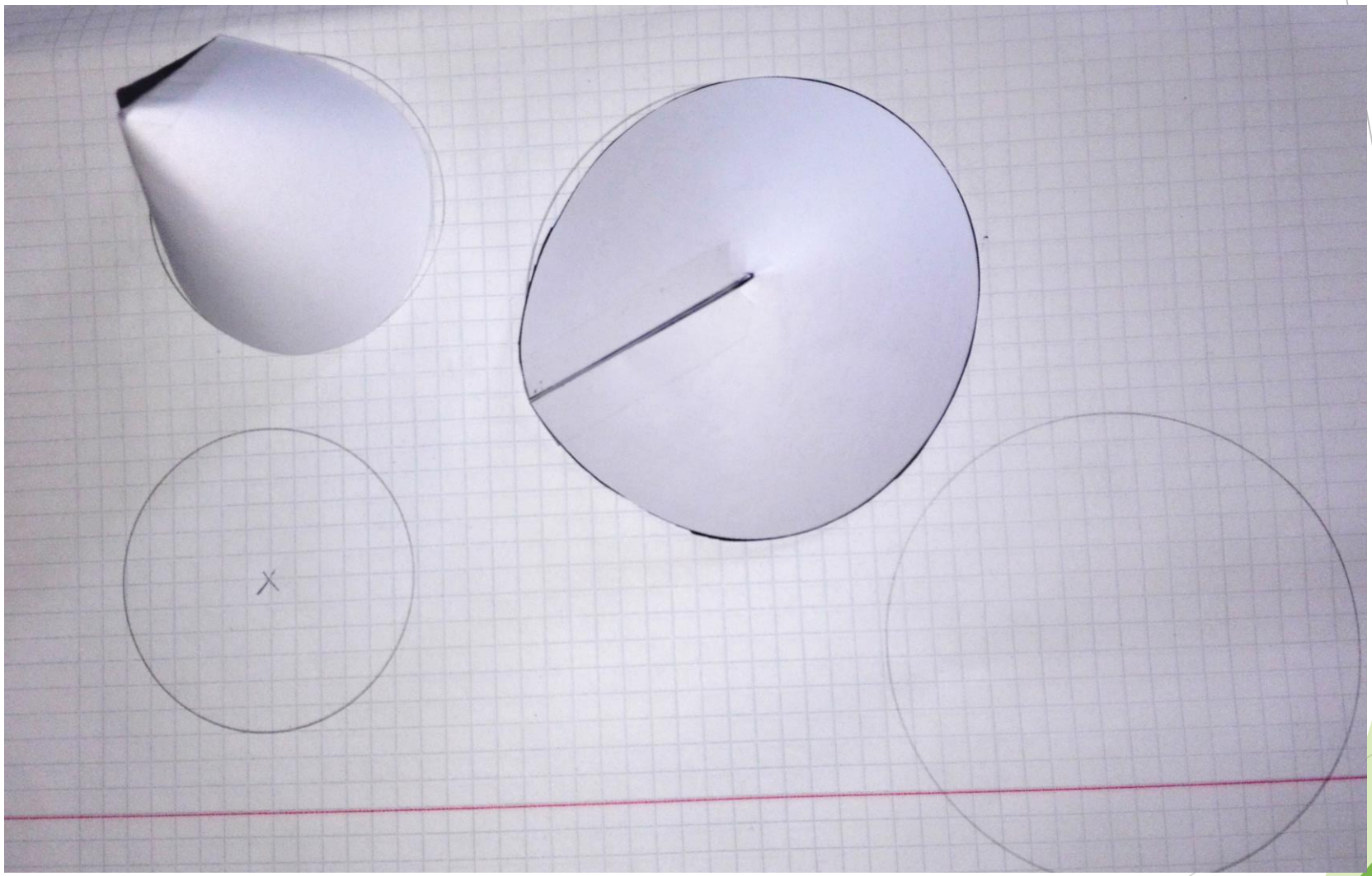
# Oplošje stošca



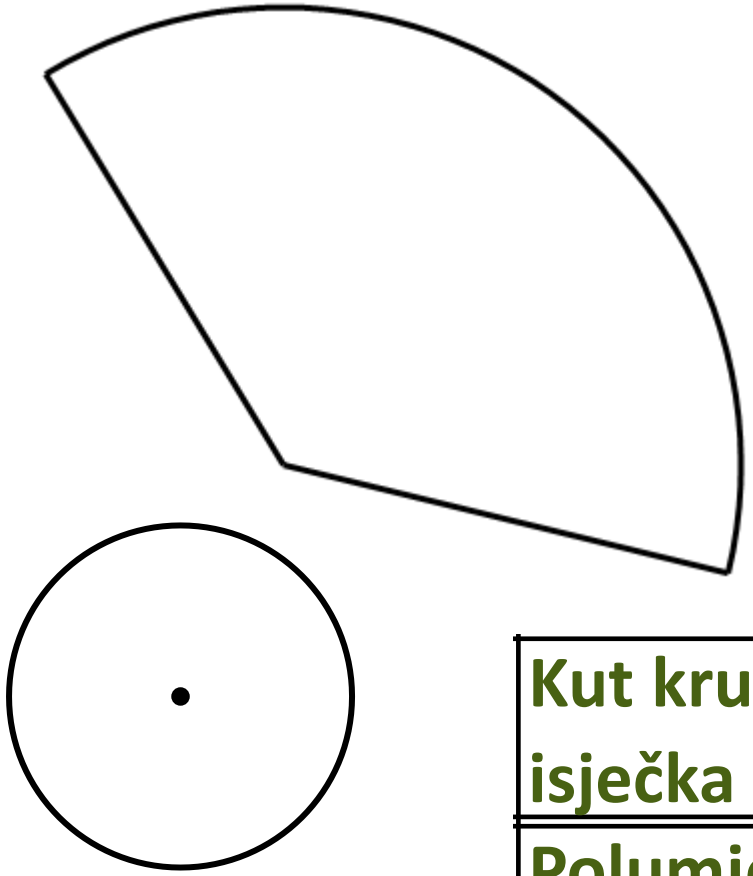


- Izrežite kružne isječke.
- Zalijepite po radijusu
- Izračunajte oplošje dobivenog stošca!

# Oplošje stošca



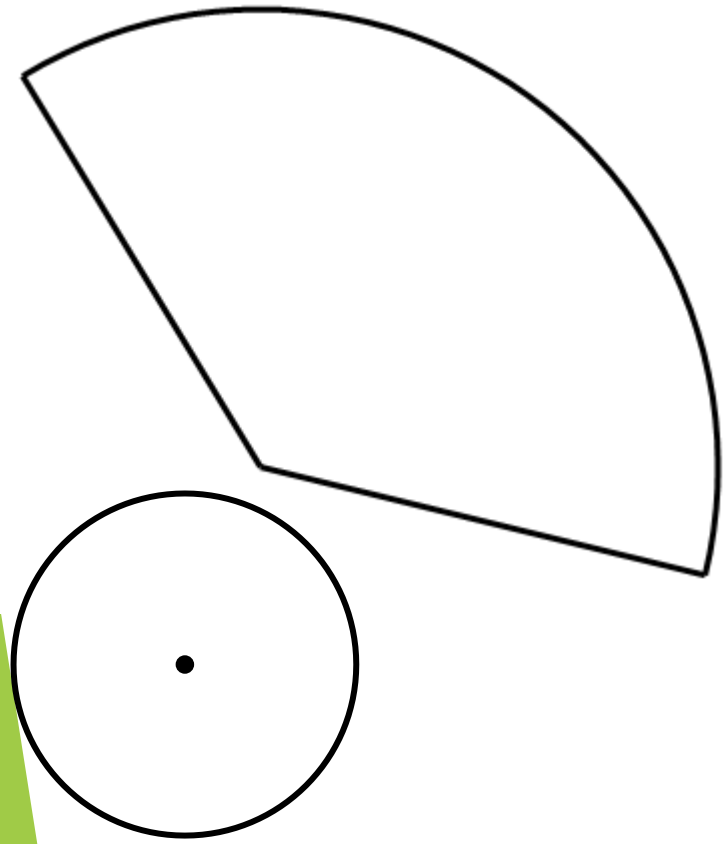
# Oplošje stošca

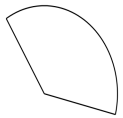


| | | |
|---|---|---|
| Kut kružnog isječka | $135^o$ | $270^o$ |
| Polumjer kružnog isječka | 6 cm | 4 cm |

# Oplošje stošca

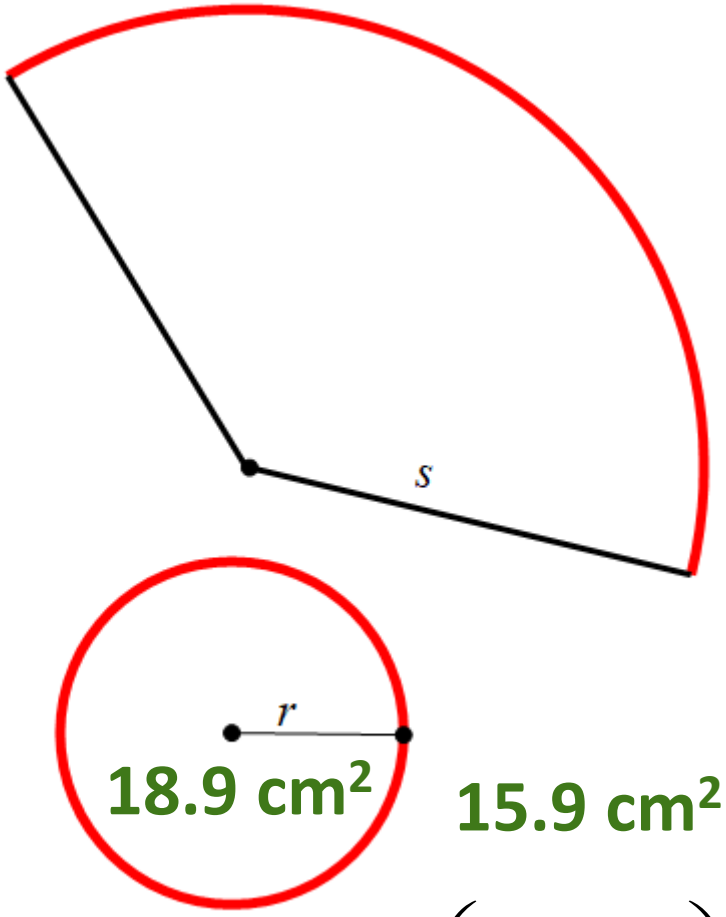
| Kružni isječak | $135^o$ | 6 cm |
|---|---|---|



|  | Površina kružnog isječka | Površina baze |
|---|---|---|
| 1. grupa | 42.0 $cm^2$ | 12.6 $cm^2$ |
| 2. grupa | 42.4 $cm^2$ | 19.6 $cm^2$ |
| 3. grupa | 40.9 $cm^2$ | 24.5 $cm^2$ |
| Prosjek: | 41.8 $cm^2$ | 18.9 $cm^2$ |
| Formula | **42.4 $cm^2$** | |

$$\frac{135}{360} 6^2 \pi$$

# Oplošje stošca




Oznake:

$s$ = polumjer kružnog isječka

$\alpha$ = kut kružnog isječka

Površina kružnog isječka: $\frac{\alpha}{360} s^2 \pi$

Polumjer baze $r$: $2r\pi = \frac{\alpha}{360} 2s\pi$

$$r = \frac{\alpha}{360} s$$

**18.9 cm²** **15.9 cm²**

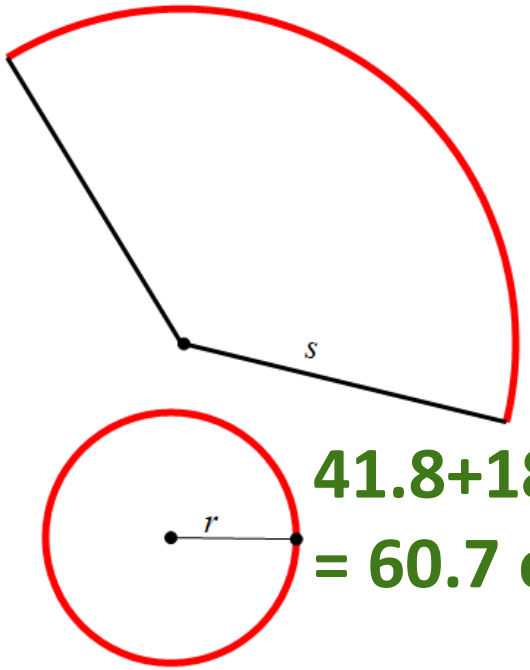
$$B = r^2\pi = \left(\frac{\alpha}{360} s\right)^2 \pi$$

$$r = \frac{135}{360} \cdot 6 = 2.25\,\text{cm}$$

# Oplošje stošca

Oplošje stošca:

$$O = B + Pl = \left(\frac{\alpha}{360} s\right)^2 \pi + \frac{\alpha}{360} s^2 \pi$$




41.8+18.9
= 60.7 cm²

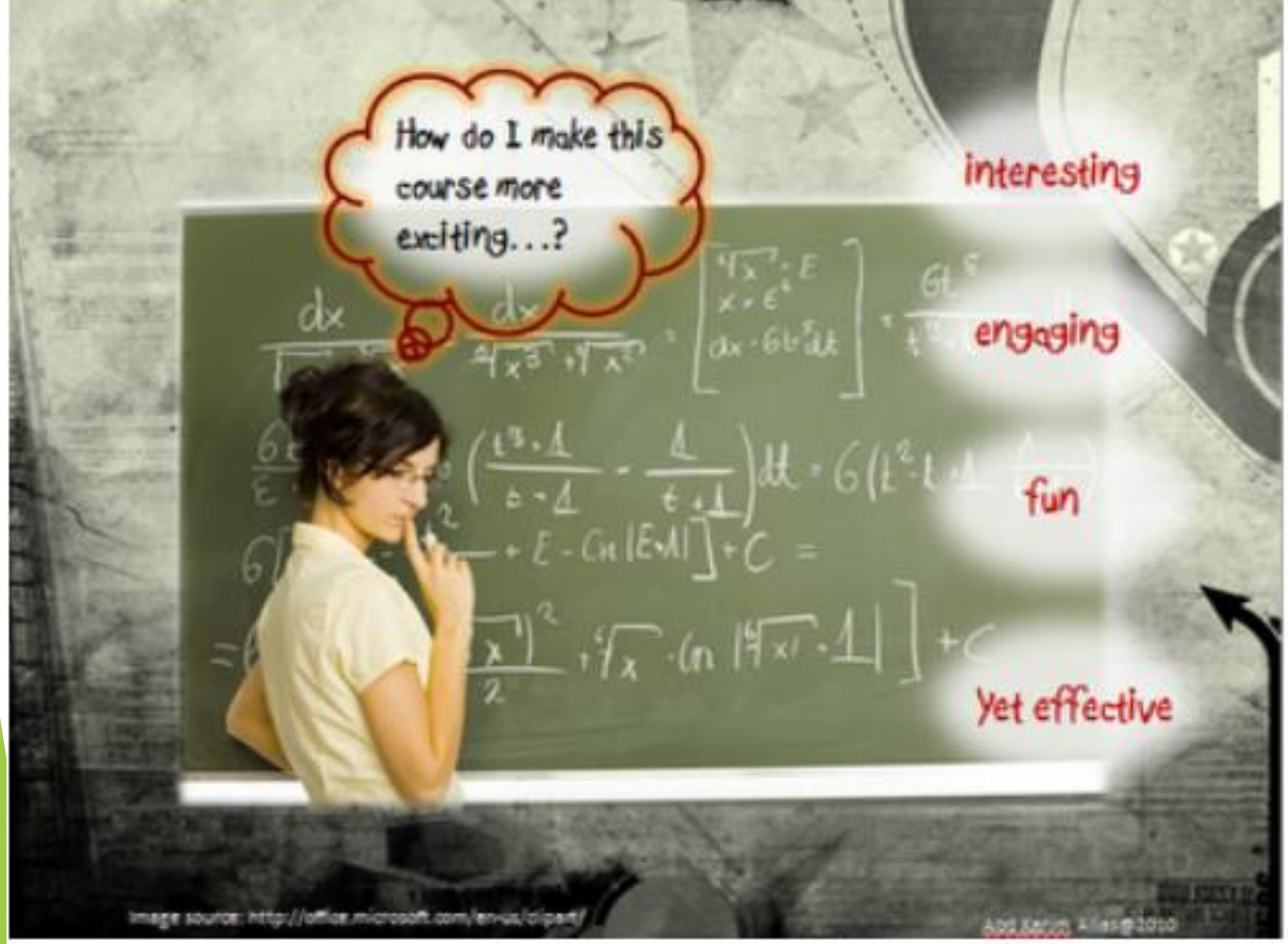
$$r = \frac{\alpha}{360} s \quad \Rightarrow \quad \alpha = \frac{360}{s} r$$

$$\frac{\alpha}{360} = \frac{r}{s}$$

$$O = \left(\frac{r}{s} s\right)^2 \pi + \frac{r}{s} s^2 \pi = \boxed{r^2 \pi + rs\pi}$$

$$O = \frac{\alpha}{360} s^2 \pi \left(\frac{\alpha}{360} + 1\right)$$

$$O = 2.25^2 \pi + 2.25 \cdot 6 \cdot \pi \approx 58.32\,\text{cm}^2$$





http://preetisingh65.blogspot.com/2011/02/final-reflection-on-bridging-learning.html