

# **MATEMATIKA**

## **osnovna razina**

# **Rezultati državne mature 2010.**



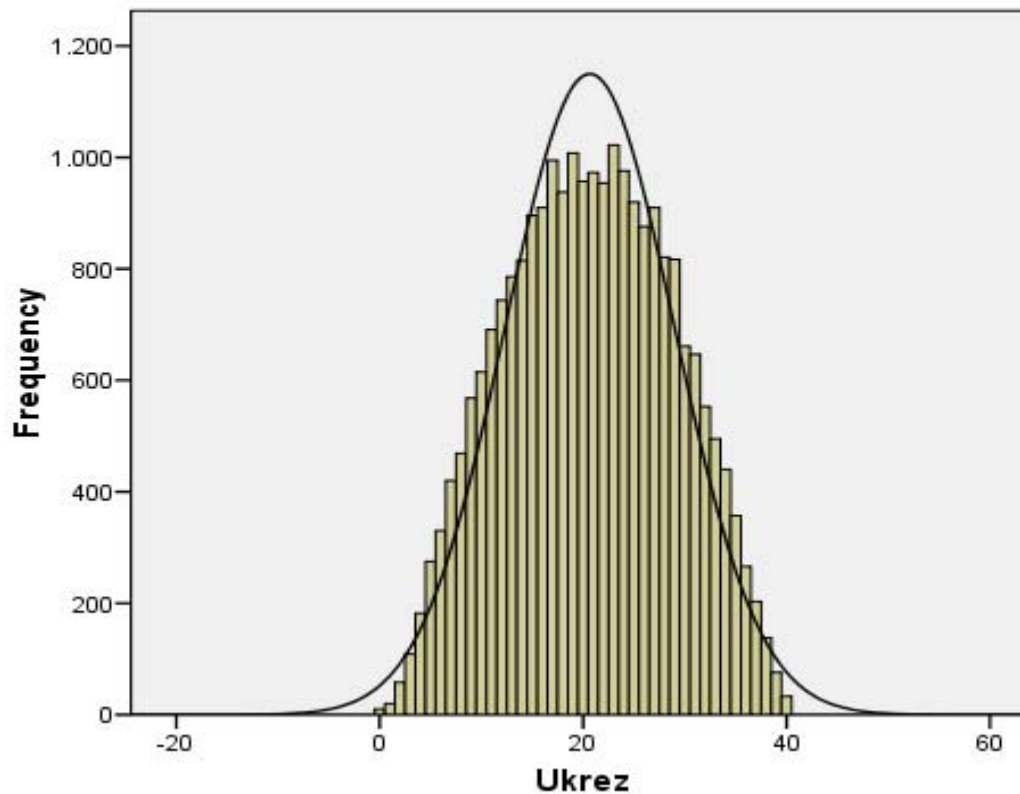
NACIONALNI CENTAR ZA VANJSKO  
VREDNOVANJE OBRAZOVANJA

# Deskriptivna statistika ukupnog rezultata

PARAMETAR		VRIJEDNOST
N		23934
k		33
M		20,6
St. pogreška mjerenja		2,99
Medijan		21
Mod		23
St. devijacija		8,30
Raspon		40
Minimum		0
Maksimum		40
Percentili	25	14
	50	21
	75	27
Cronbachov $\alpha$		0,87

# Deskriptivna statistika ukupnog rezultata

Histogram

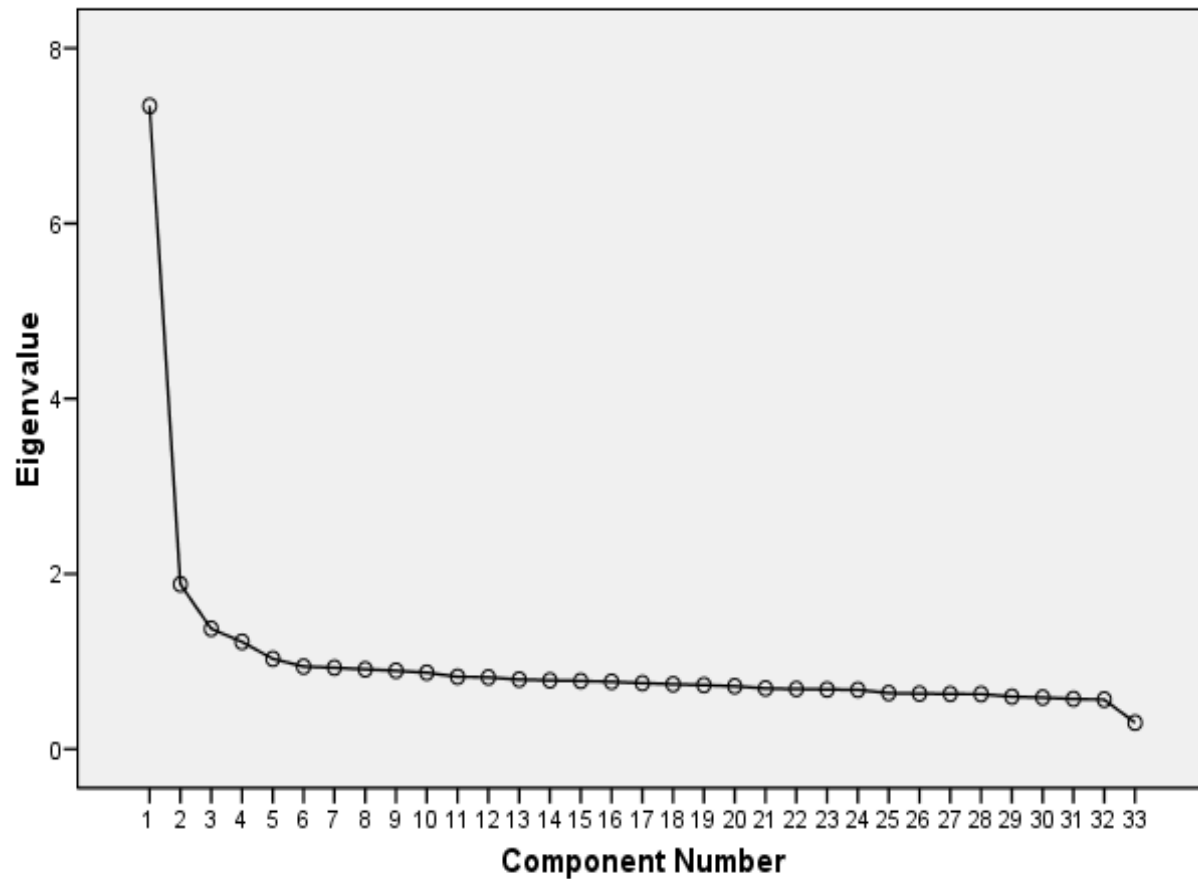


Mean =20,64  
Std. Dev. =8,302  
N =23.934

## Pragovi ocjena i postotak učenika koji su dobili pojedinu ocjenu

	1	2	3	4	5
Prag	-	9	17	26	34
%	7,85	25,19	36,51	24,16	6,29

## Scree Plot



1. faktor: 22 % varijance



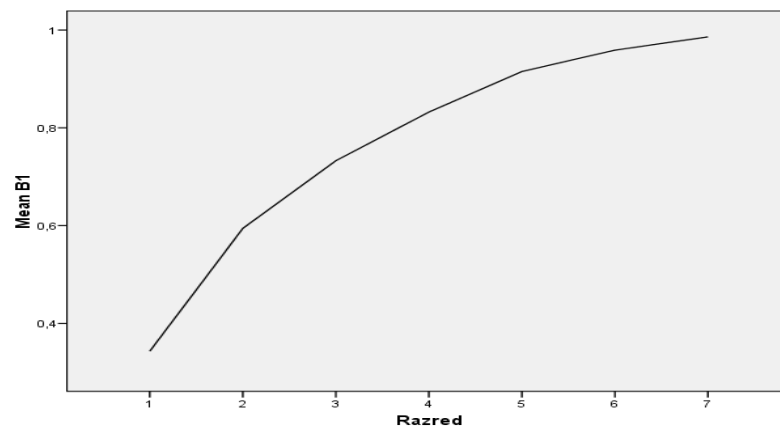
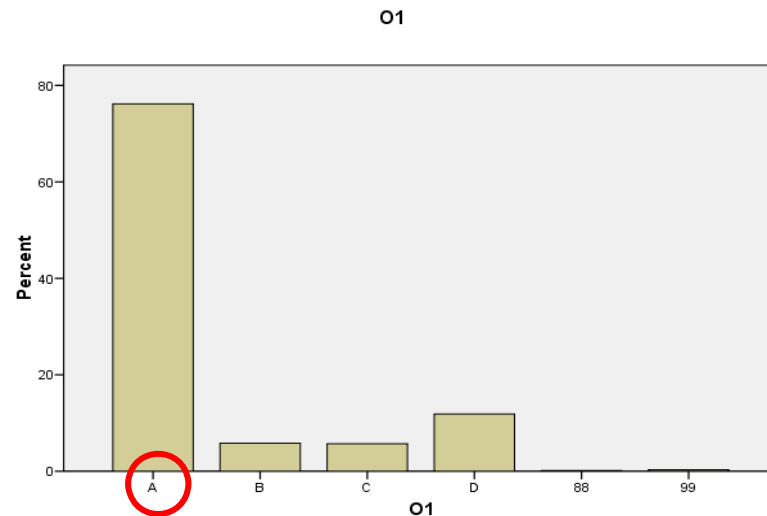
NACIONALNI CENTAR ZA VANJSKO  
VREDNOVANJE OBRAZOVANJA

<b>Težina zadatka</b>	<b>Redni broj zadatka</b>
<b>Vrlo težak (0 – 0,2)</b>	<b>26.1, 26.2, 27.3, 28.1, 28.2</b>
<b>Težak (0,21 – 0,4)</b>	<b>14, 21, 22, 24, 25.2</b>
<b>Srednje težak (0,41 – 0,6)</b>	<b>4, 6, 8, 10, 11, 13, 15, 16, 17, 18</b>
<b>Lagan (0,61 – 0,80)</b>	<b>1, 7, 9, 12, 19, 20, 25.1, 27.1, 27.2</b>
<b>Vrlo lagan (0,81 – 1)</b>	<b>2, 3, 5, 23</b>

# I. Zadatci višestrukoga izbora

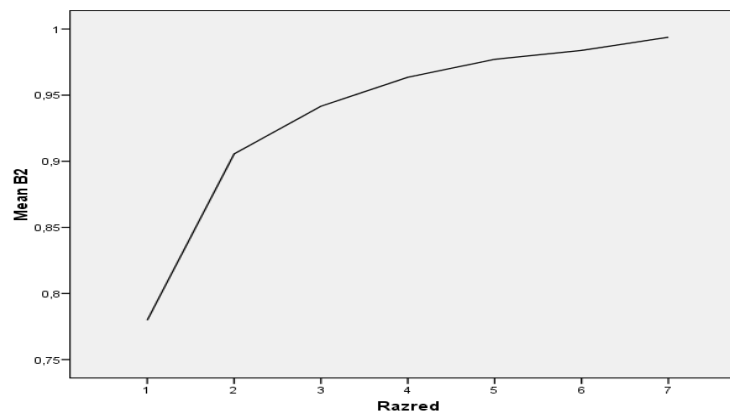
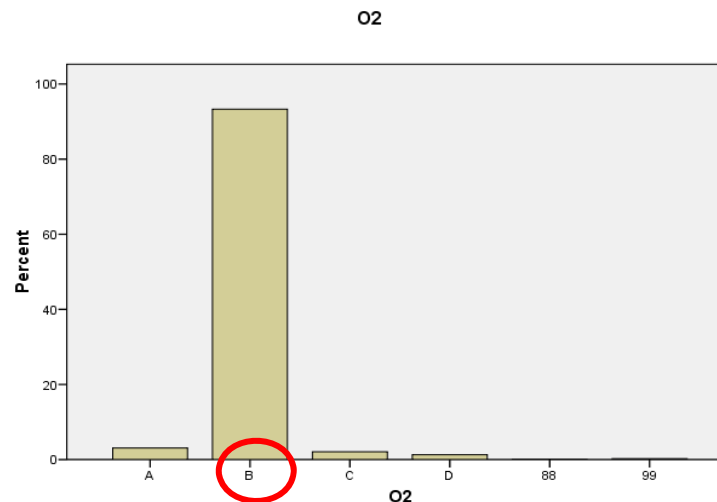
1. Koji je od navedenih brojeva manji  
od  $-\frac{5}{2}$  ?

M	0,76
M (O)	
ID	0,45



2. Prvi set odbojkaške utakmice trajao je 18 minuta. U koliko je sati utakmica započela ako je prvi set završio u 18 sati i 5 minuta?

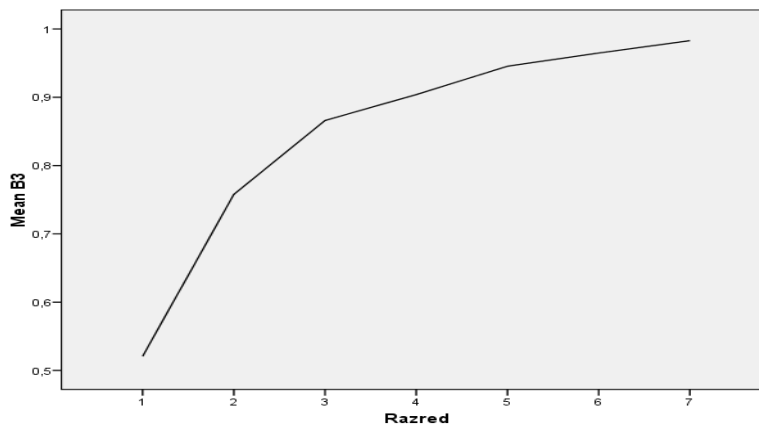
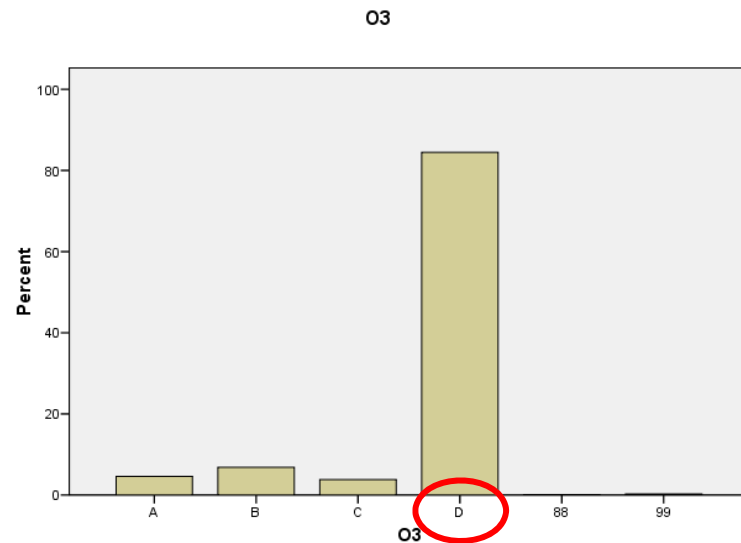
M	0,93
M (O)	
ID	0,24





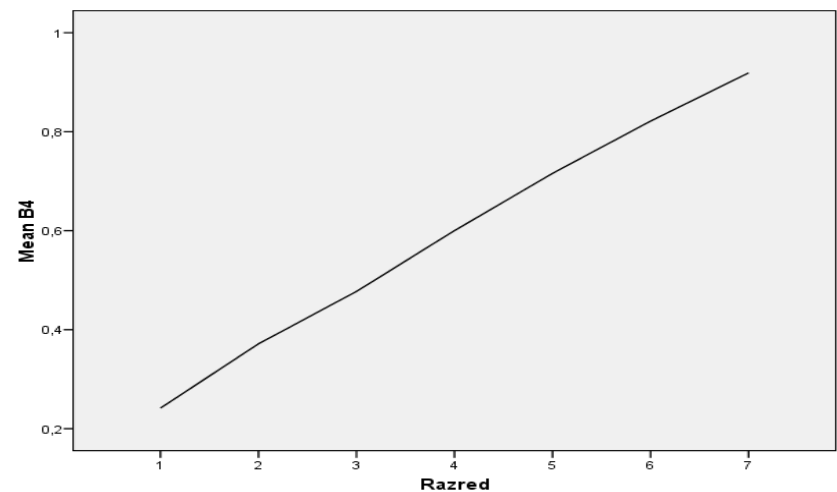
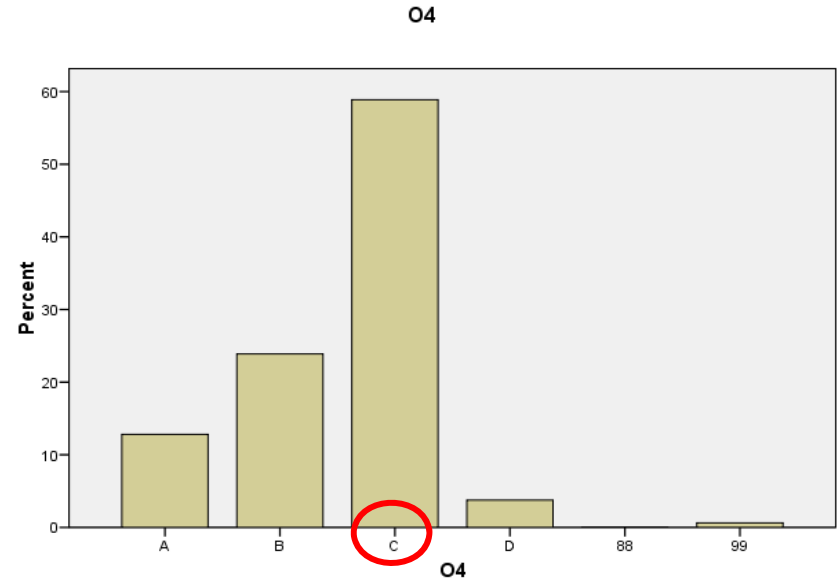
3. Kolika je vrijednost izraza  $\frac{5}{6} - \frac{1}{6} \cdot \frac{2}{3}$  ?

M	0,84
M (O)	
ID	0,36



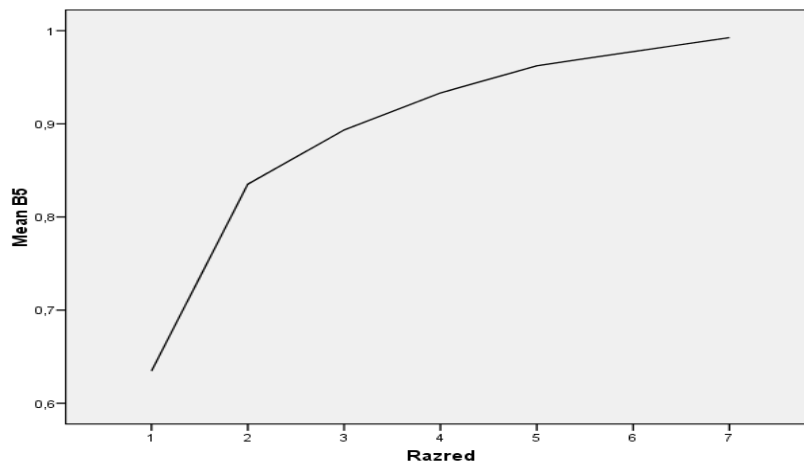
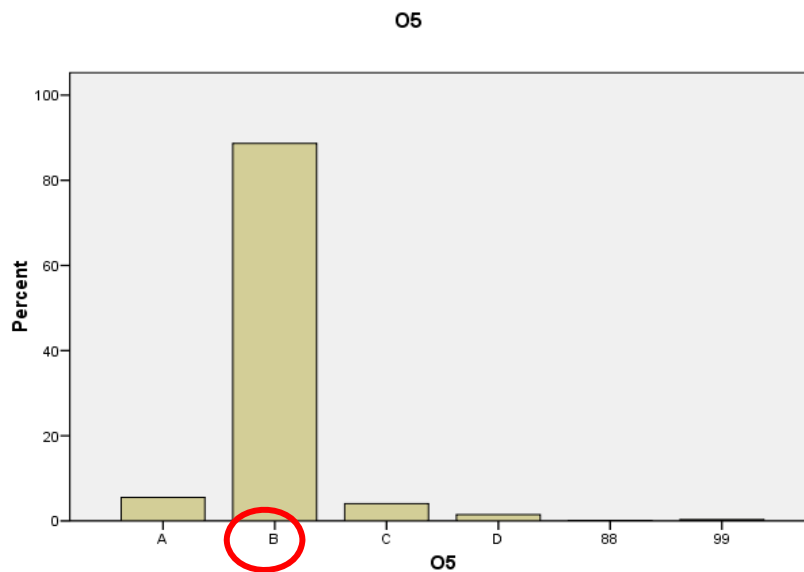
4. Masa 256 jednakih olovaka iznosi 4.24 kg.  
Kolika je masa 20 takvih olovaka?

M	0,59
M (O)	
ID	0,42



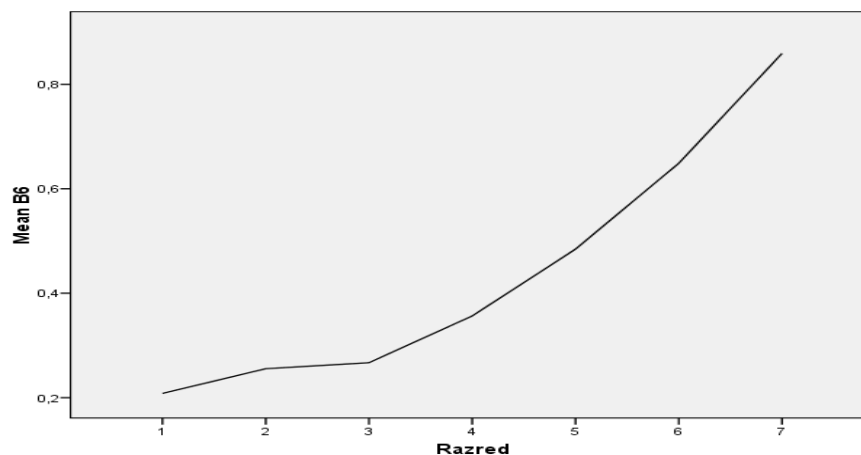
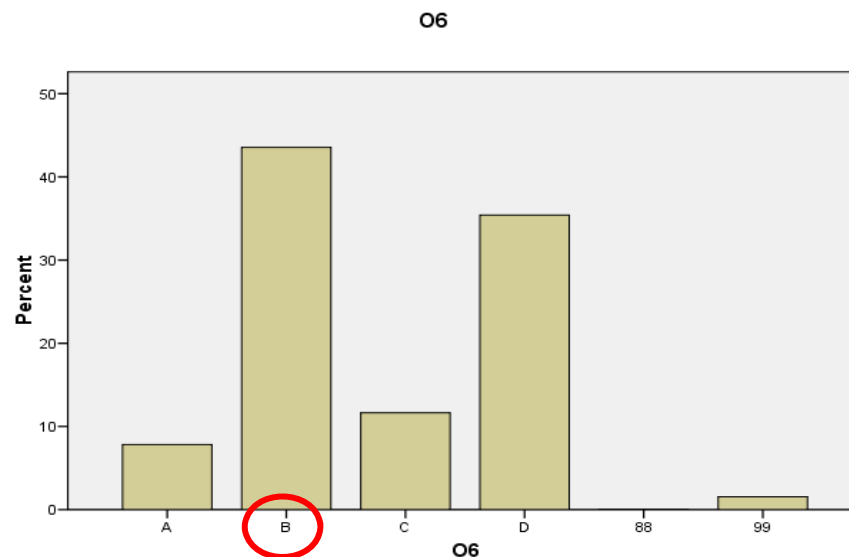
5. Čemu je jednak izraz  $\left(\frac{3a+1}{3}\right)^2$  ?

M	0,89
M (O)	
ID	0,32



6. Brod je isplovio iz luke. Najprije je 2 sata plovio prema istoku brzinom 12 km/h,...

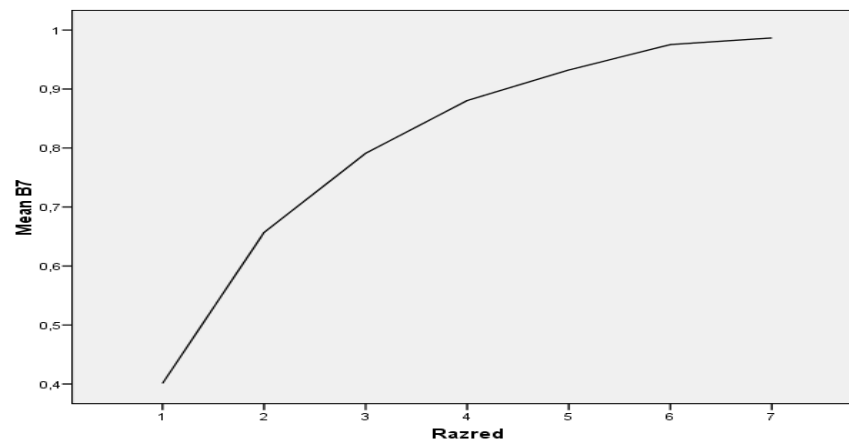
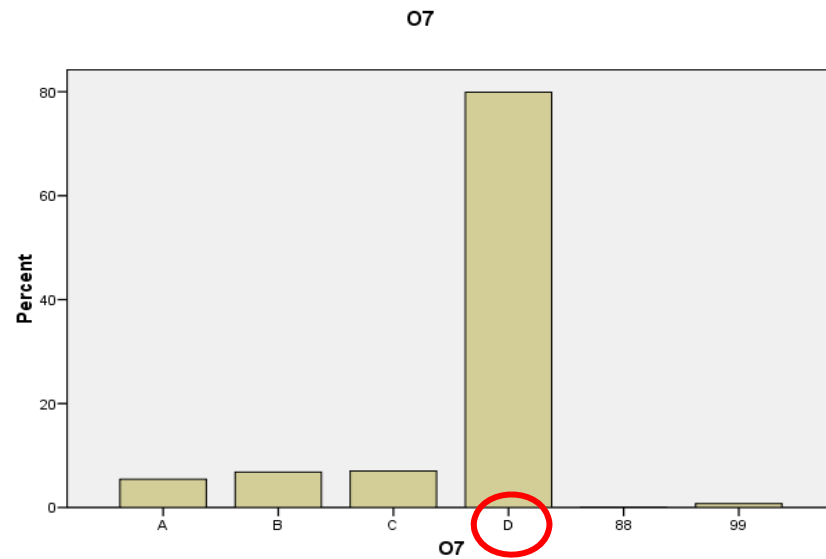
M	0,44
M (O)	
ID	0,37





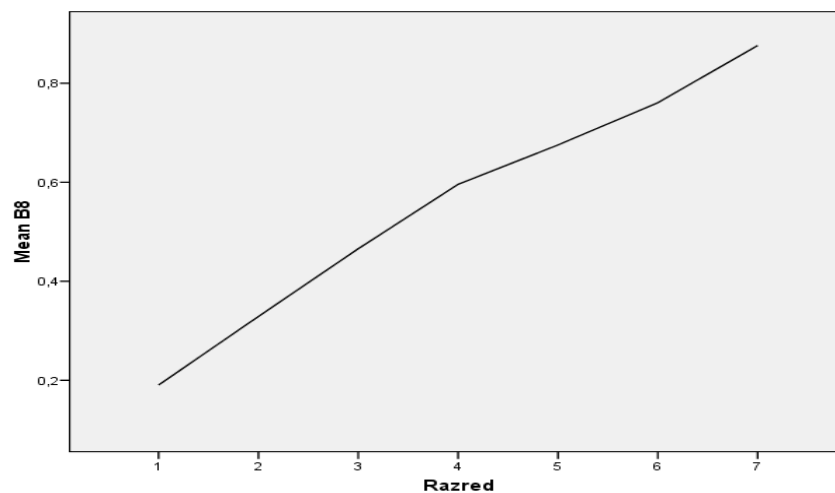
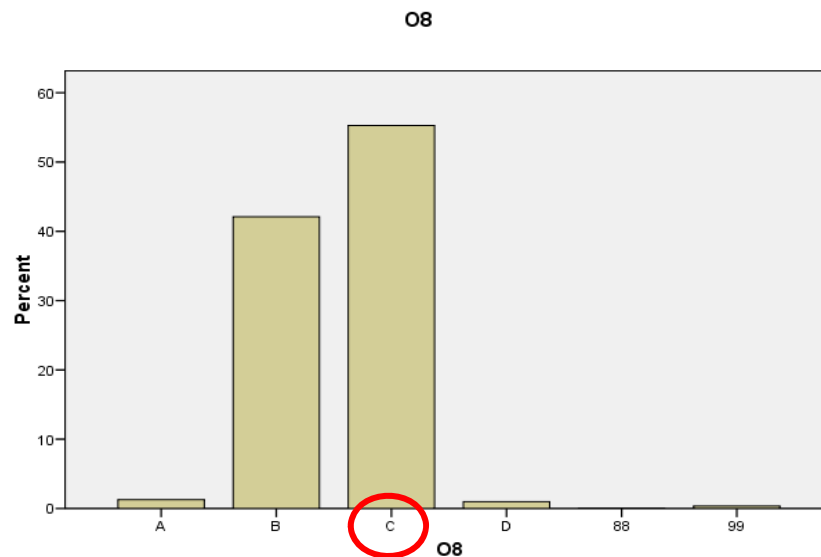
## 7. Koja tablica pripada funkciji $f(x) = 4x - x^2$ ?

M	0,80
M (O)	
ID	0,44



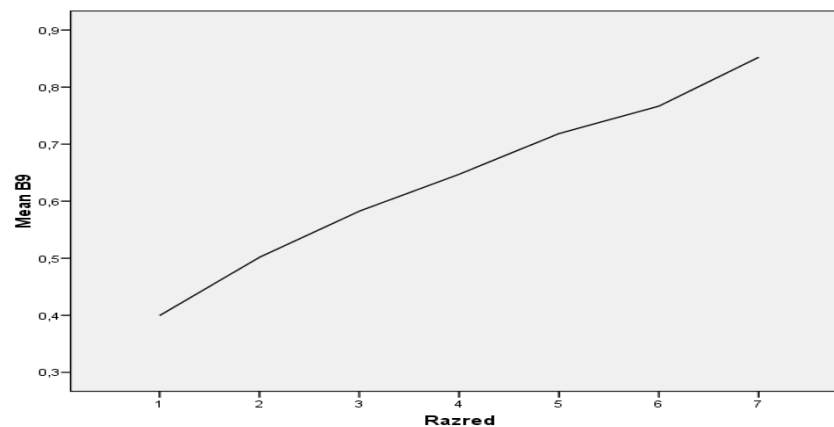
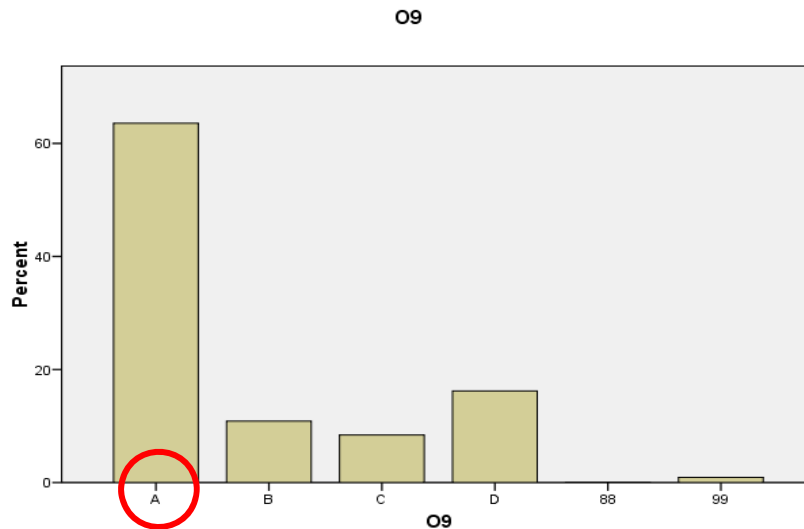
8. Kolika je vrijednost broja  
zaokružena na tri decimale  $\frac{\sqrt{28}}{3}$  ?

M	0,55
M (O)	
ID	0,41



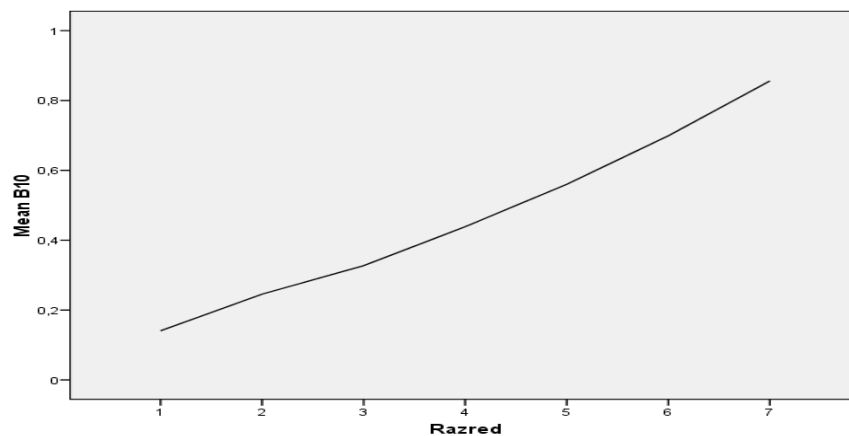
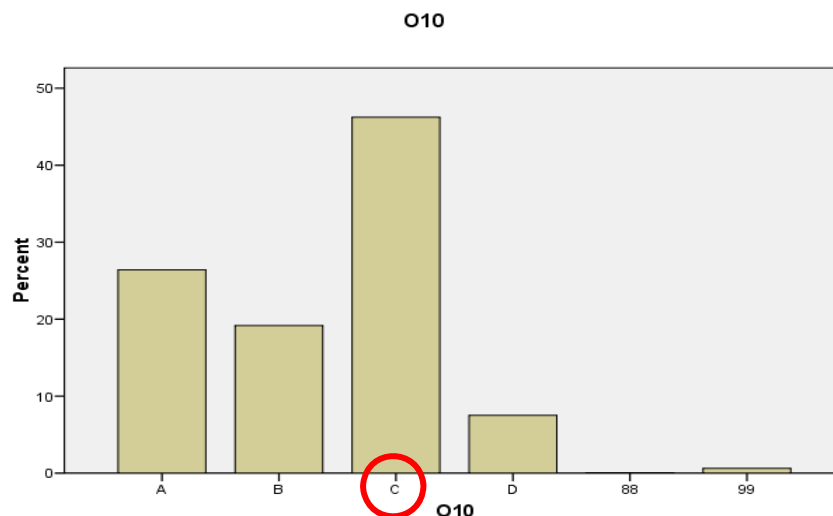
9. Graf funkcije  $f(x) = 2x - 4$  siječe os apscisa u točki  $A$ , a os ordinata u točki  $B$ .  
Koliko su koordinate točaka  $A$  i  $B$ ?

M	0,64
M (O)	
ID	0,25



**10.** Ljudsko srce tijekom jednoga dana otkucava oko 100 tisuća puta. Koliko puta otkucava srce čovjeka tijekom 70 godina života?

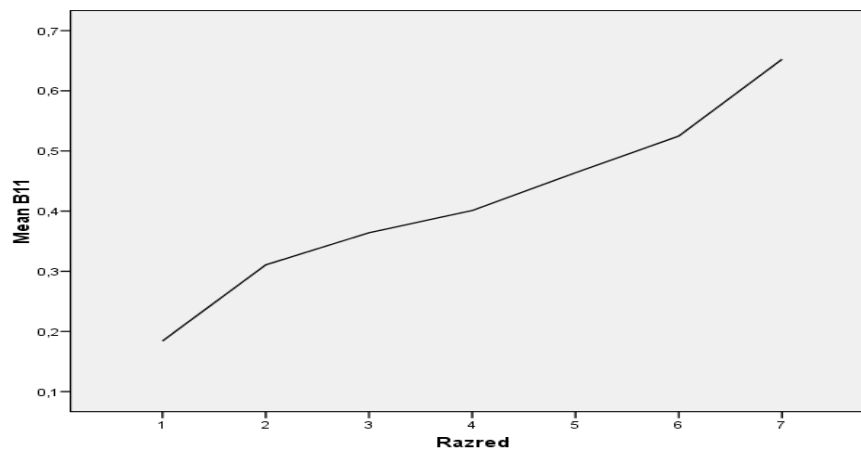
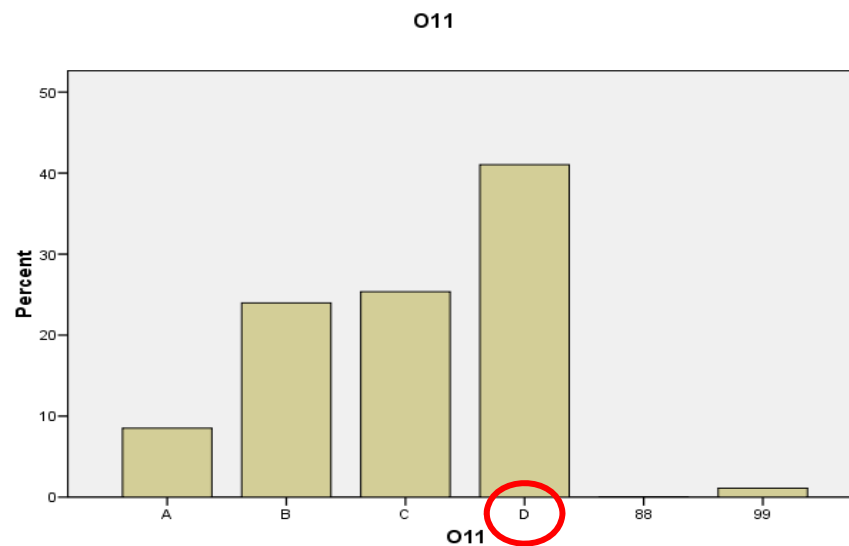
M	0,46
M (O)	
ID	0,42





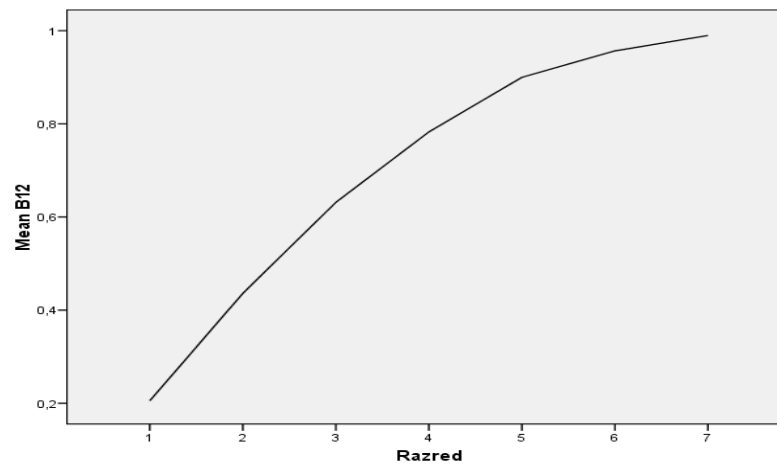
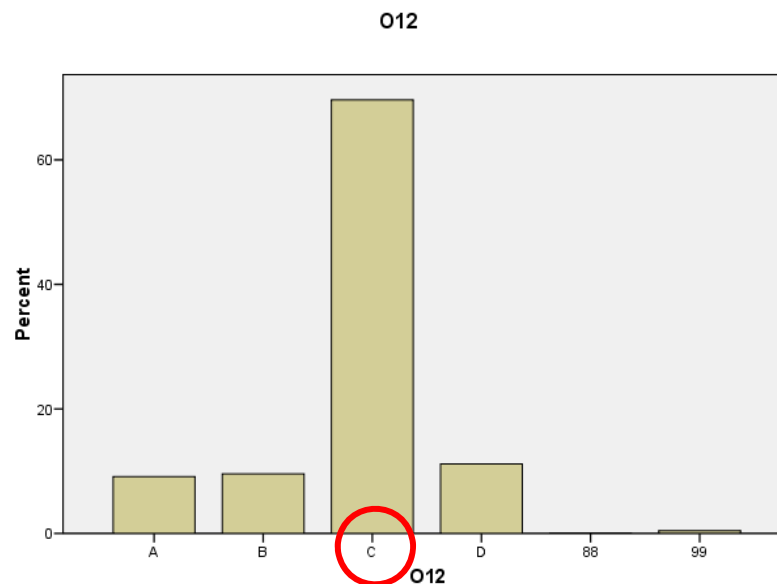
**11.** Na slici je graf funkcije  $f(x)=ax^2+bx+c$ .  
Što od navedenoga vrijedi za vodeći  
koeficijent  $a$  i za diskriminantu  $D$ ?

M	0,41
M (O)	
ID	0,23



12. Ako je  $s = \frac{a+b+c}{2}$ , čemu je jednako  $a$  ?

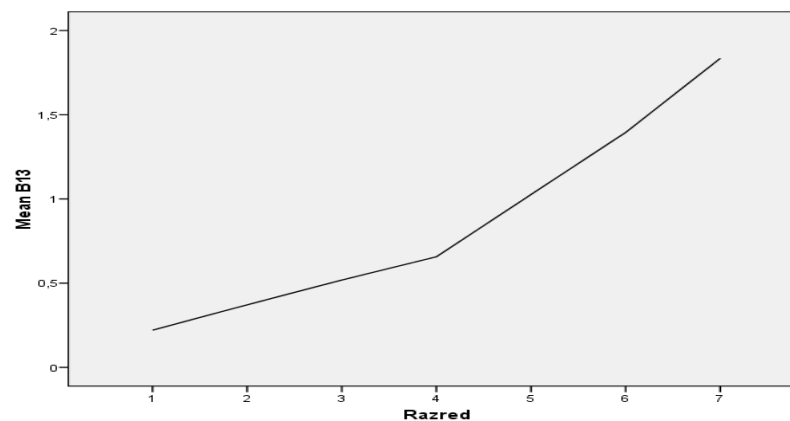
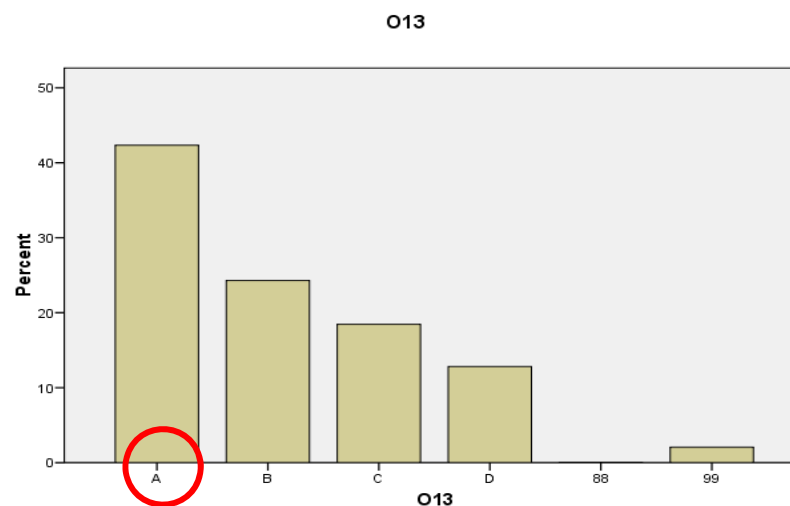
M	0,70
M (O)	
ID	0,54



**13.** Cijena  $c$  iznajmljivanja bungalova na  $n$  tjedana dana je formulom  $c = t \cdot n + d$  ( $t$  je iznos tjednog najma,  $d$  sigurnosni depozit)

Martina je za 3 tjedna platila 2092 kn, a Maja za 5 tjedana 3412 kn. Koliki je sigurnosni depozit?

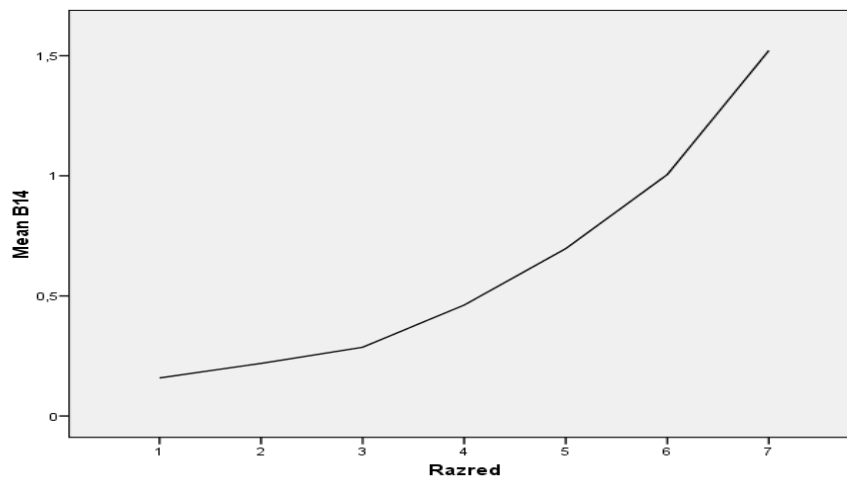
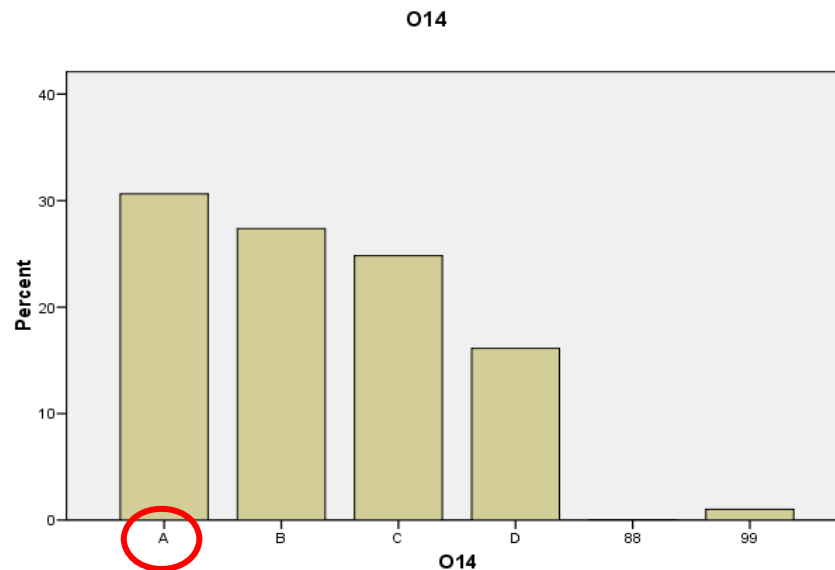
M	0,85 (0,43)
M (O)	
ID	0,44



14. Koji je rezultat oduzimanja  
za  $x \neq \pm 2$  ?

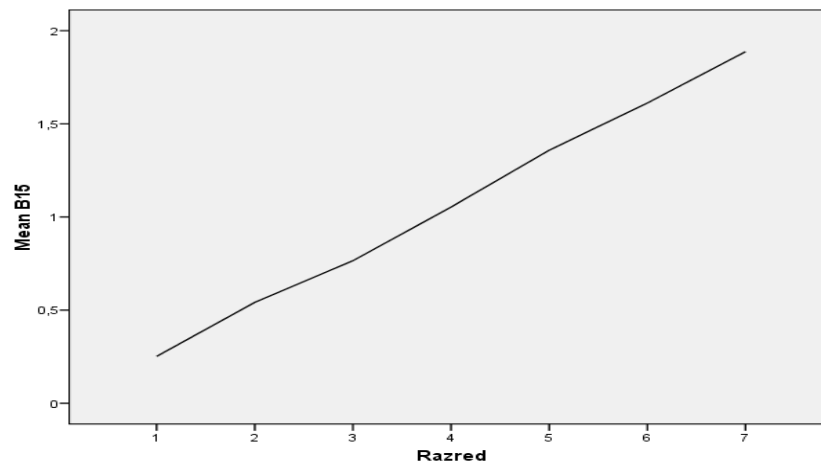
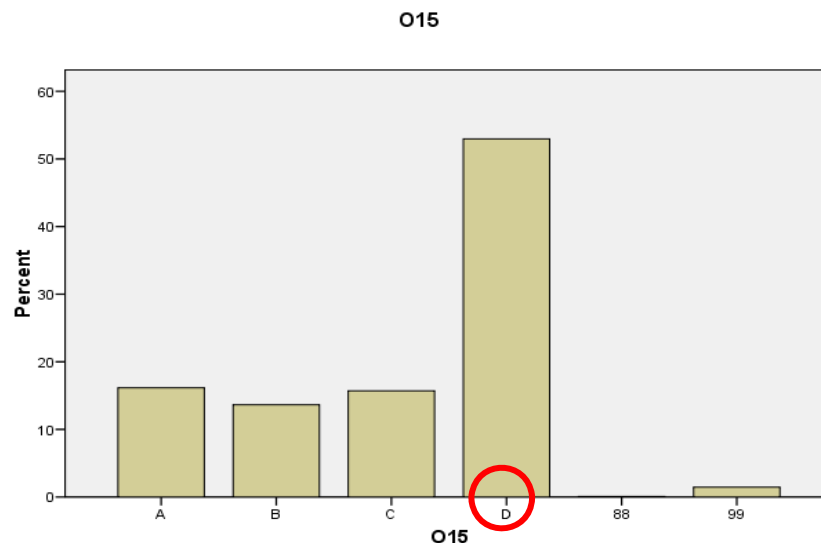
$$\frac{2x}{x^2 - 4} - \frac{1}{x - 2}$$

M	0,61 (0,31)
M (O)	
ID	0,38



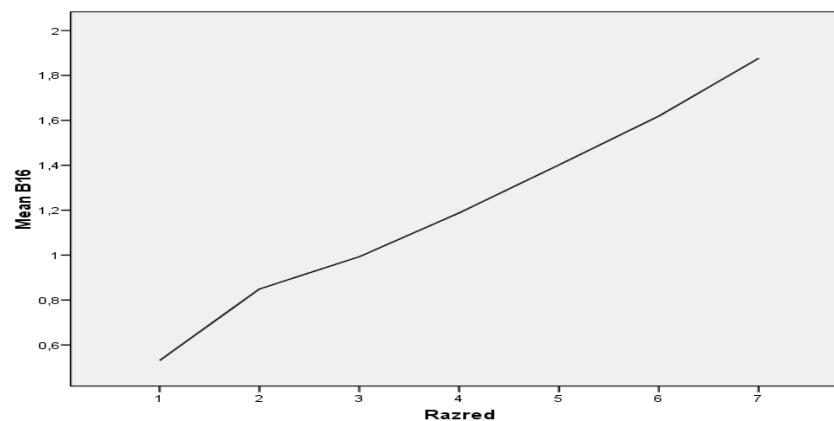
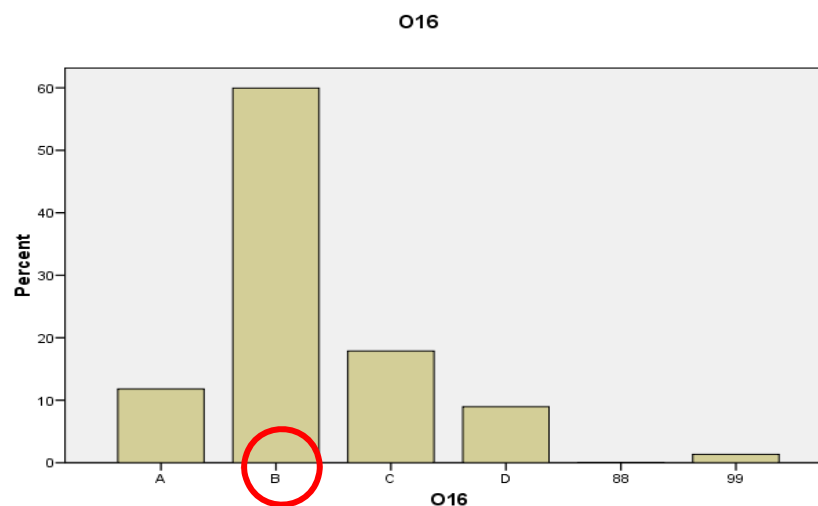
**15.** Mliječni proizvod dolazi u pakiranju od 330 g ili od 500 g. Trgovac je dobio količinu od 55 550 g toga mliječnoga proizvoda u ukupno 140 pakiranja. Koliko je dobio manjih pakiranja?

M	1,06 (0,53)
M (O)	
ID	0,46



**16.** Marin je išao kupiti školski pribor. Trećinu novca potrošio je za bilježnice, onda je četvrtinu ostatka potrošio za olovke i na kraju je polovicu onoga što je ostalo potrošio za pernicu. Preostalo mu je 18 kuna. Koliko je novaca Marin ponio sa sobom?

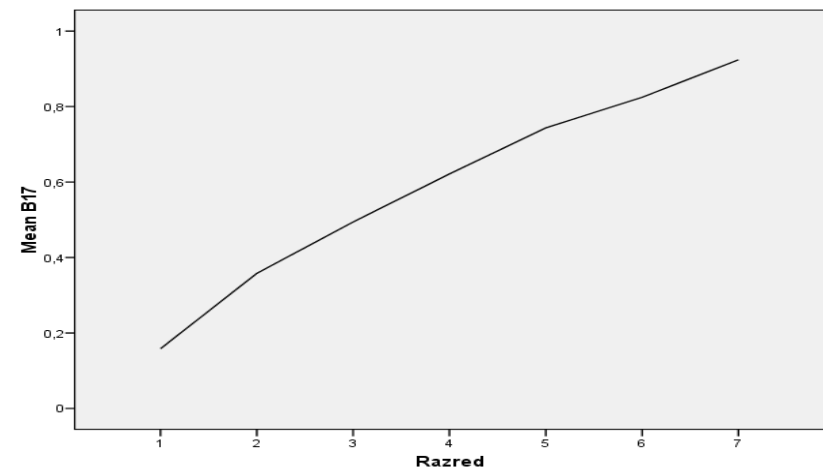
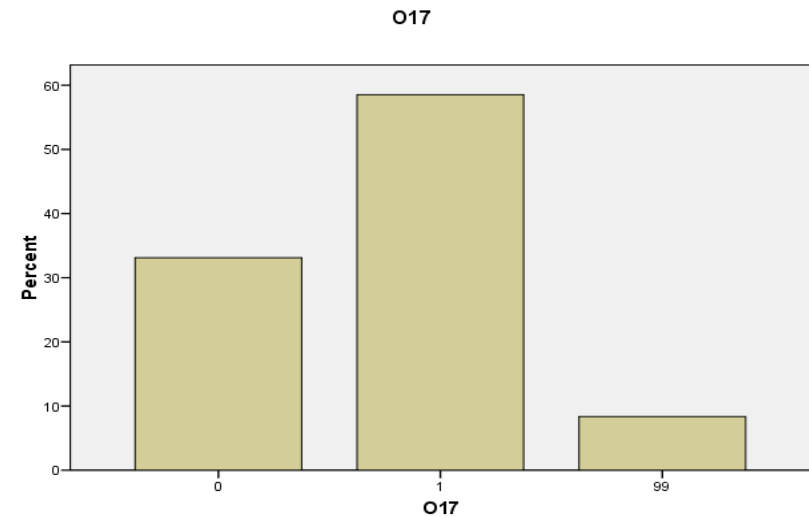
M	1,20 (0,60)
M (O)	
ID	0,34



## Zadatci kratkih odgovora

17. Izračunajte broj od kojega 8% iznosi 6.4.

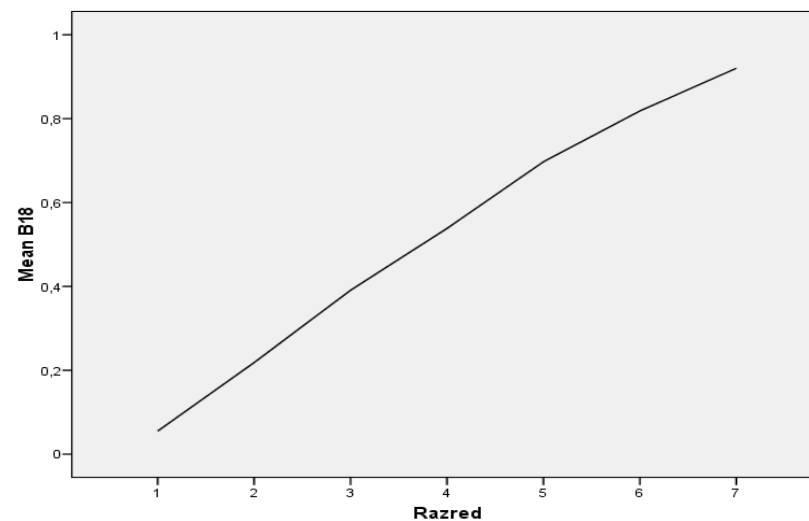
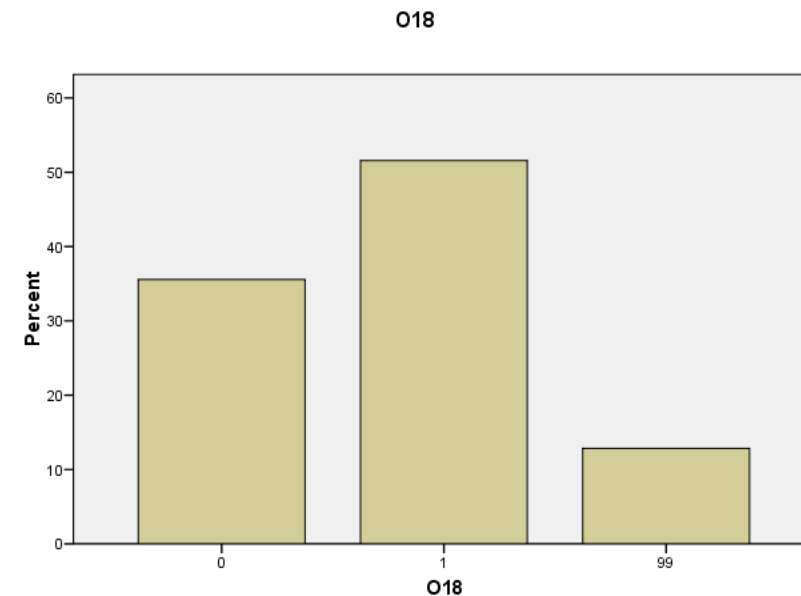
M	0,59
M (O)	
ID	0,47



18. U sustavu jednađbi  
izračunajte nepoznanicu  $x$  .

$$\begin{cases} x=2x+4 \\ y=2x+7 \end{cases}$$

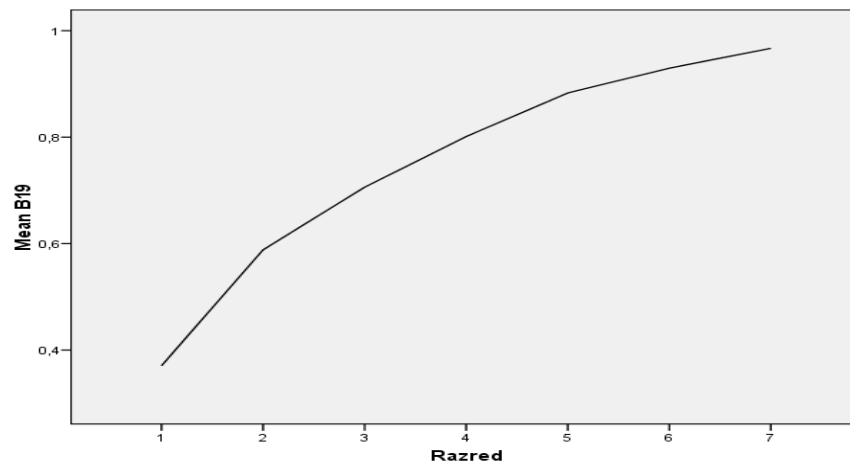
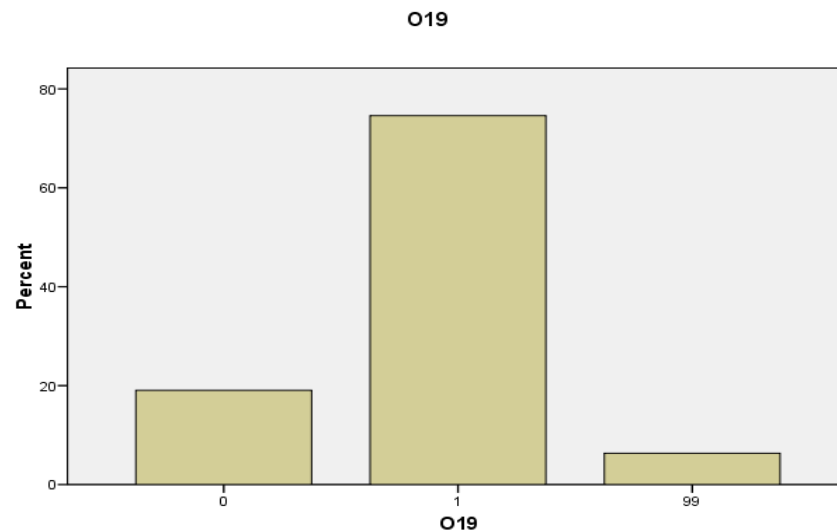
M	0,52
M (O)	
ID	0,54





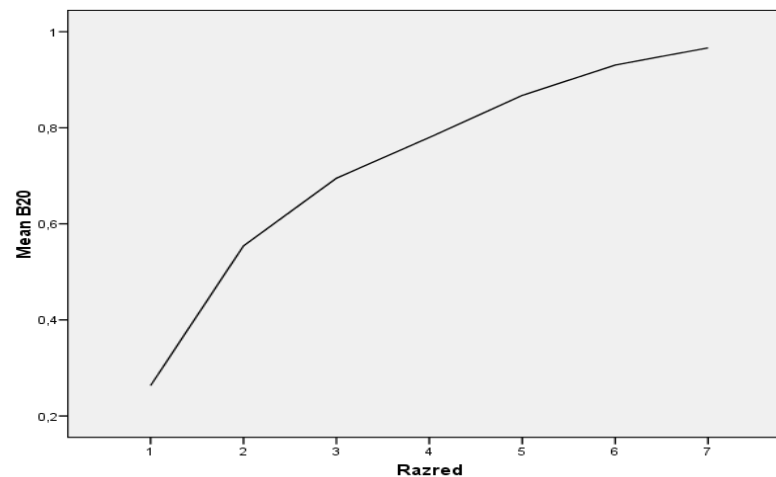
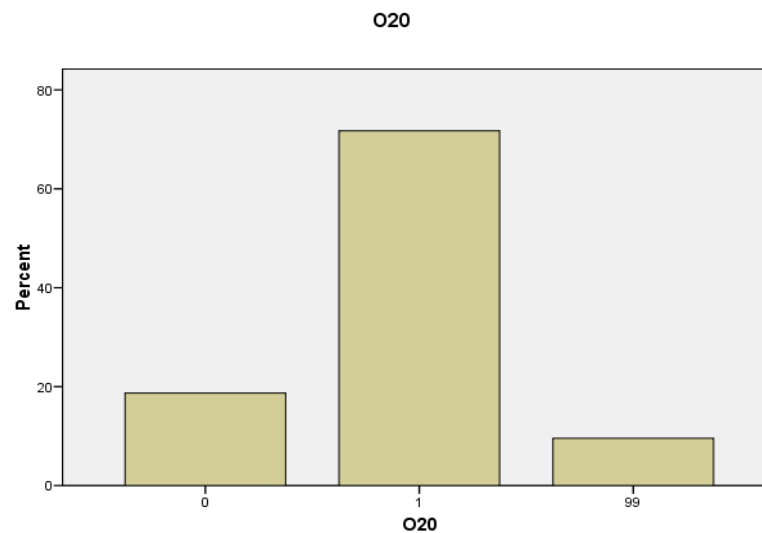
**19.** Omjer šećera i maslaca u kolaču je 4:3.  
U kolač smo stavili 15 dag maslaca. Koliko  
ćemo staviti dekagrama šećera?

M	0,75
M (O)	
ID	0,41



20. Zadani su brojevi  $a = \frac{18}{25}$  i  $v = 6.3$   
 Odredite broj  $V = \frac{1}{3}a^2v$  .

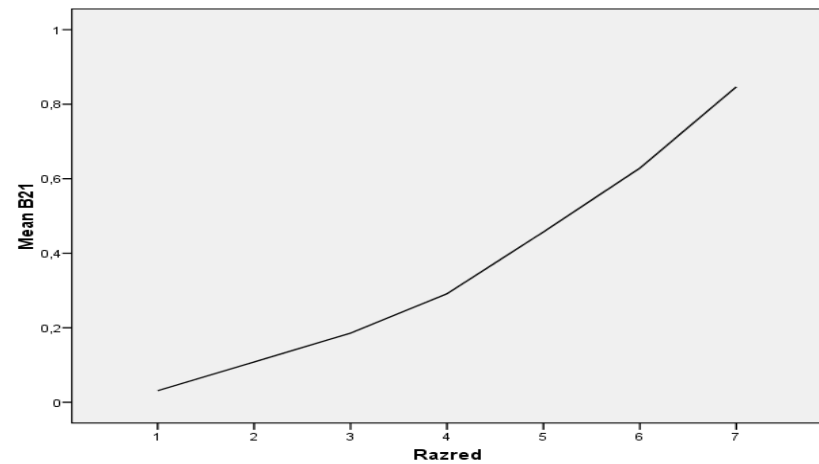
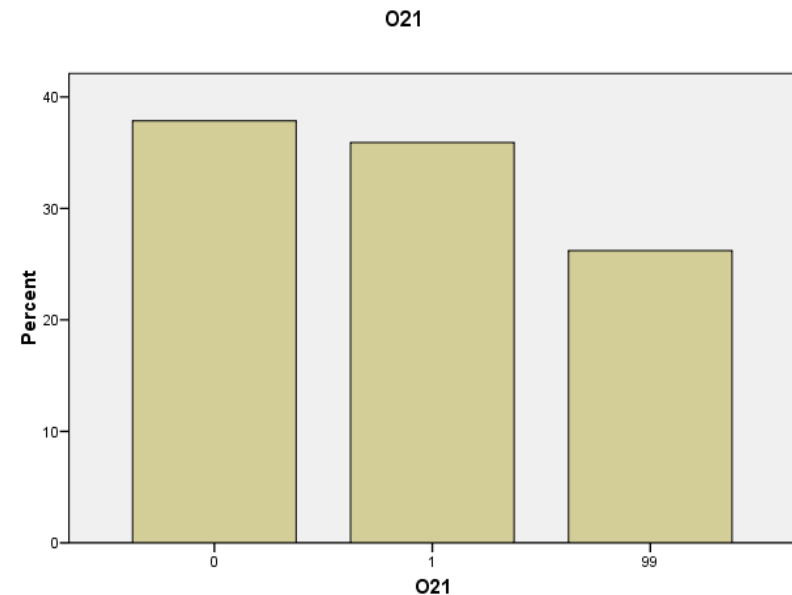
M	0,72
M (O)	
ID	0,46



## 21. Nacrtajte pravac zadan jednadžbom

$$2x+3y=6 \quad .$$

M	0,36
M (O)	
ID	0,51

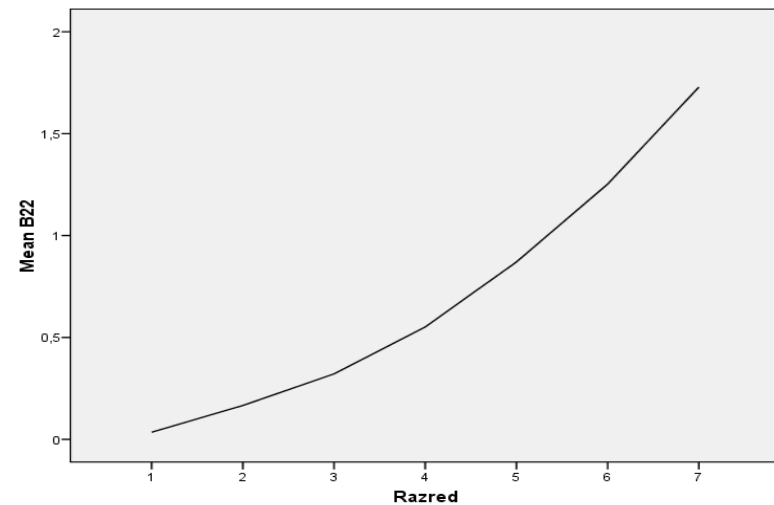
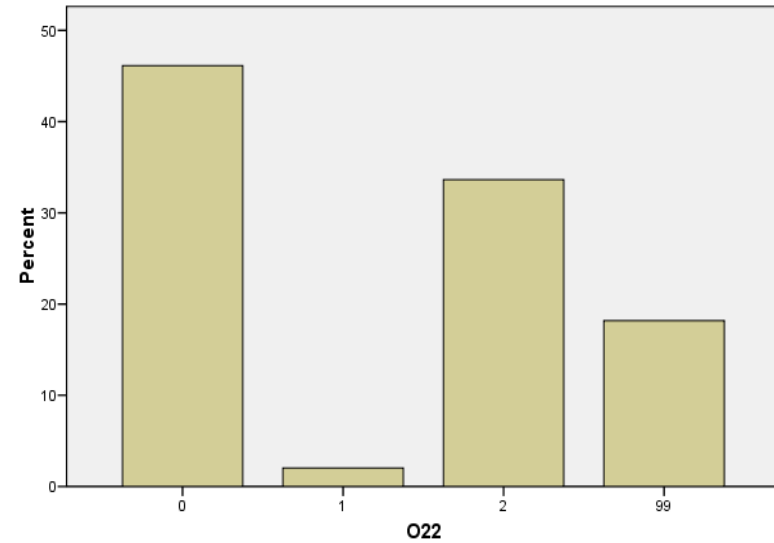




## 22. Riješite kvadratnu jednadžbu $x^2 - 2\sqrt{3}x + 2 = 0$

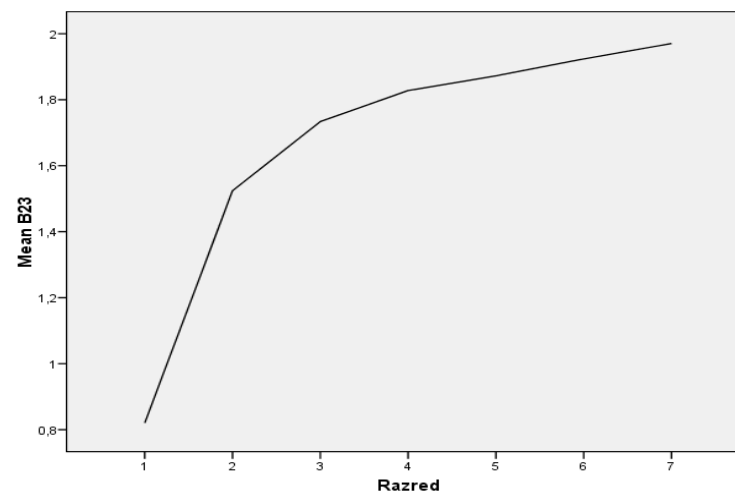
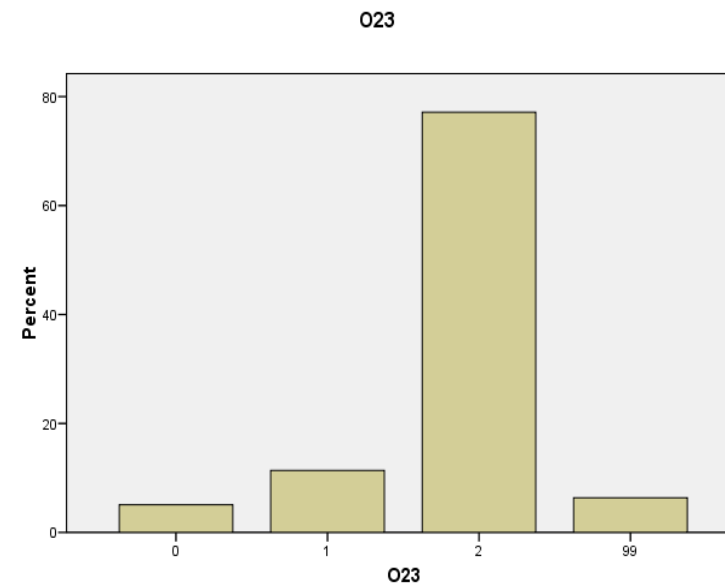
<b>M</b>	<b>0,69</b> <b>(0,35)</b>
<b>M (O)</b>	
<b>ID</b>	<b>0,51</b>

O22



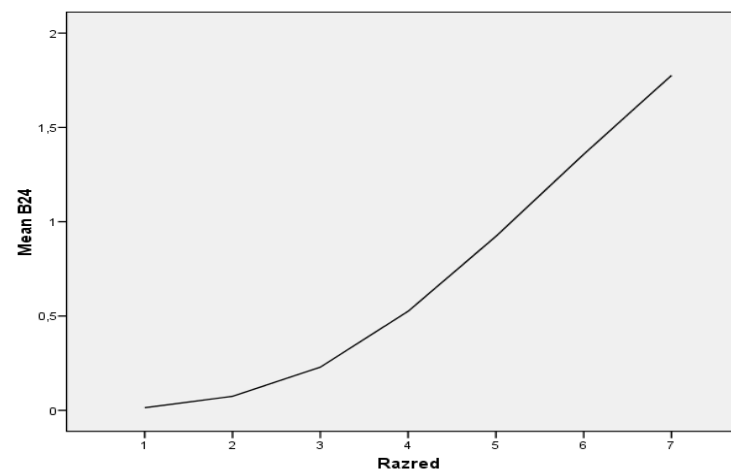
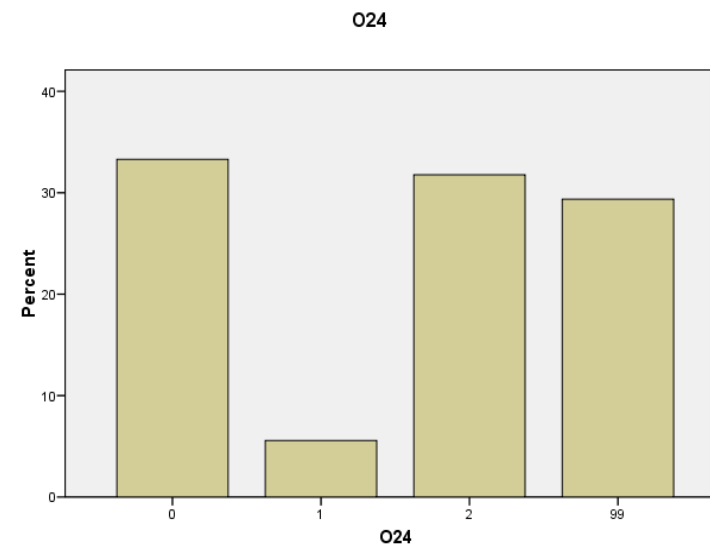
**23.** Sljedeća tablica povezuje duljine izražene u stopama i metrima. Popunite vrijednosti koje nedostaju.

<b>M</b>	<b>1,66 (0,83)</b>
<b>M (O)</b>	
<b>ID</b>	<b>0,45</b>



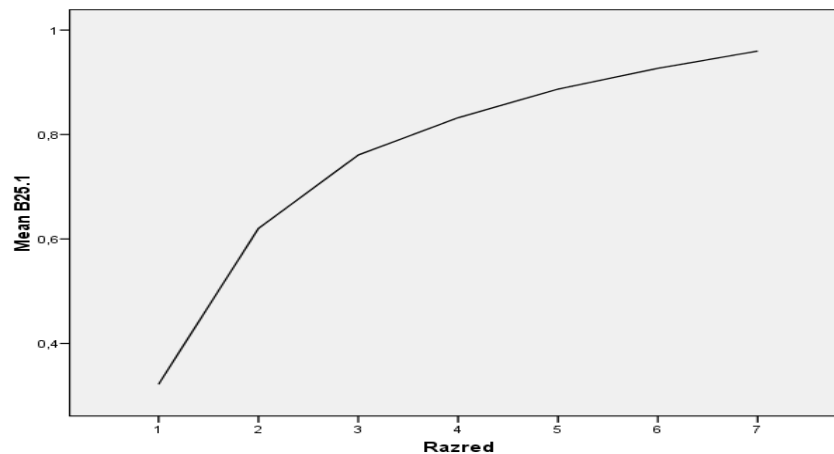
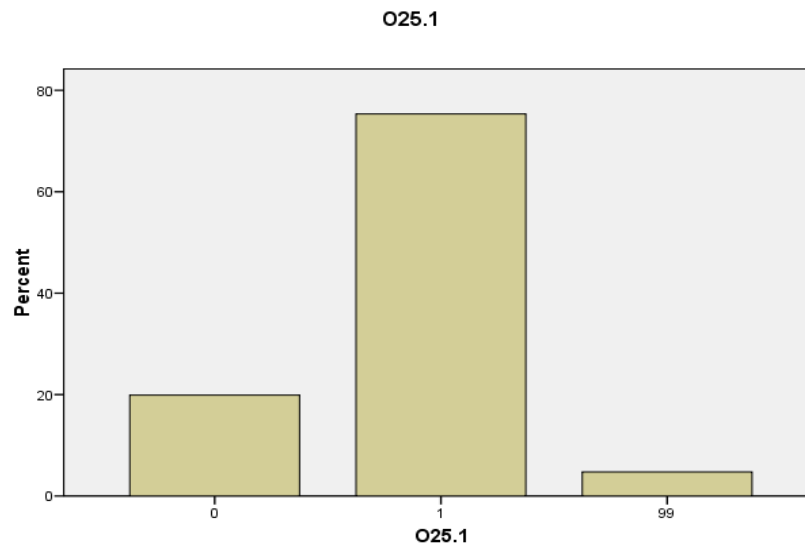
24. Kolika je duljina stranice  $\overline{AB}$ , a kolika površina paralelograma  $ABCD$ ?

M	0,69 (0,35)
M (O)	
ID	0,58



## 25.1. Riješite jednadžbu $2(x+1)+4=2-x$ .

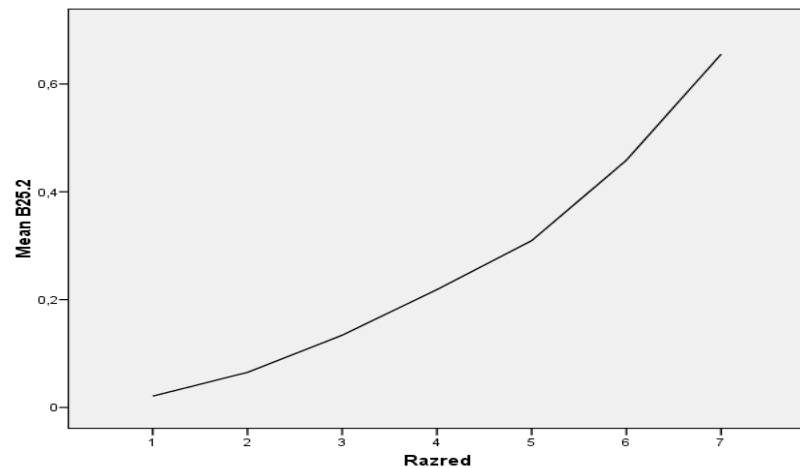
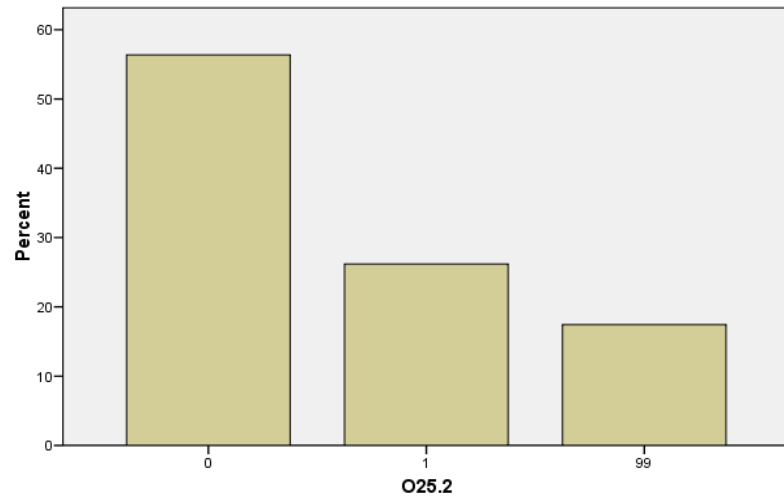
M	0,75
M (O)	
ID	0,42



## 25.2. Riješite nejednadžbu $\frac{5x - 3}{6} - \frac{3x}{2} > 1$ .

M	0,26
M (O)	
ID	0,42

O25.2

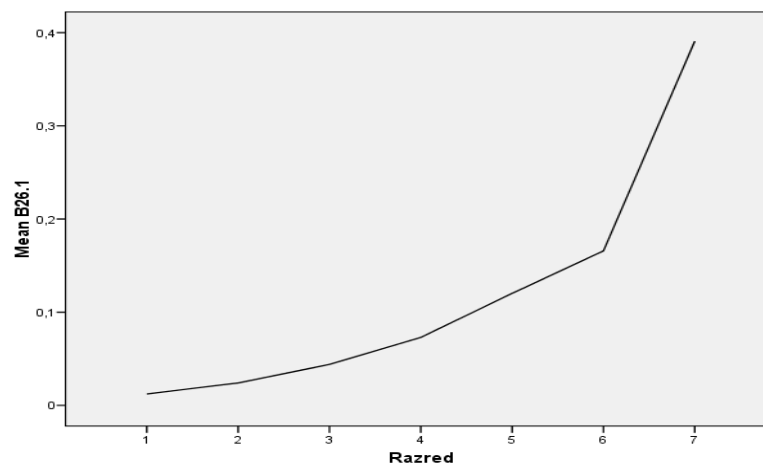
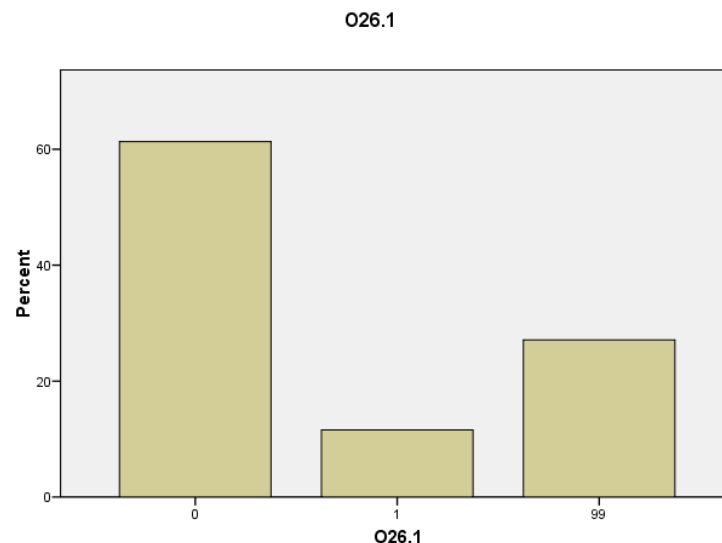




**26.** Za 120 kn mogle su se kupiti dvije čokolade više nego nakon njihova poskupljenja od 25%.

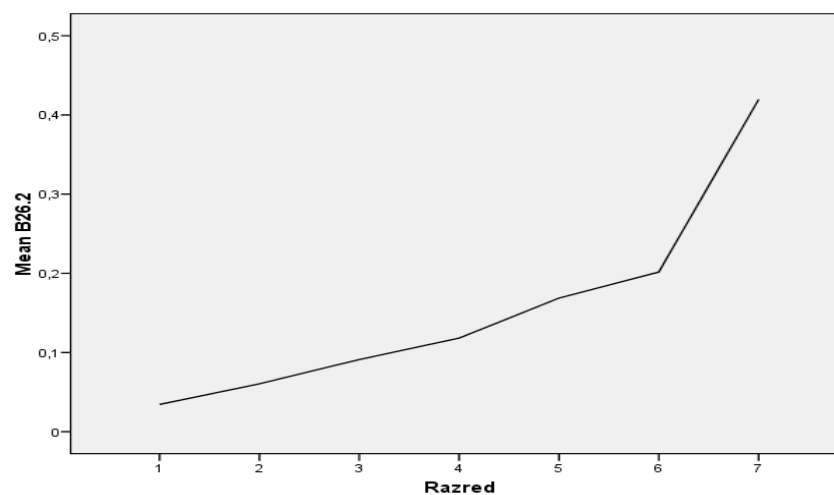
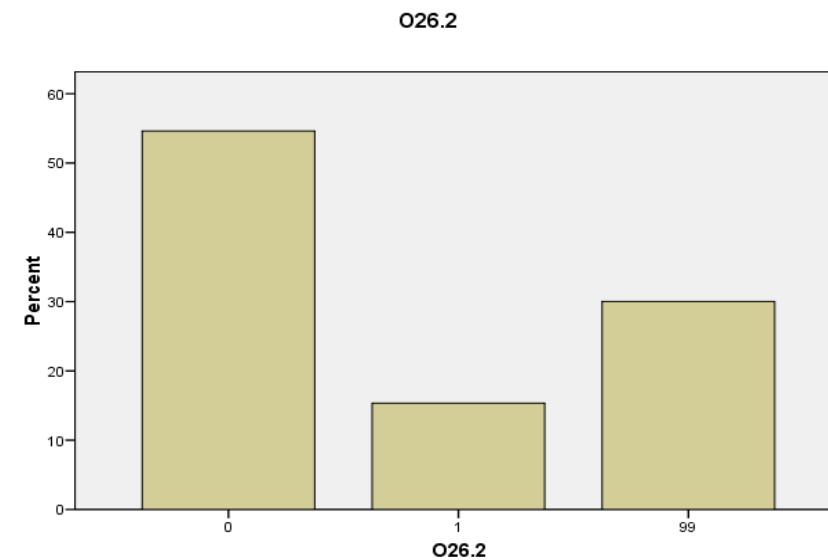
**26.1.** Koliko se čokolada moglo kupiti prije poskupljenja?

M	0,12
M (O)	
ID	0,31



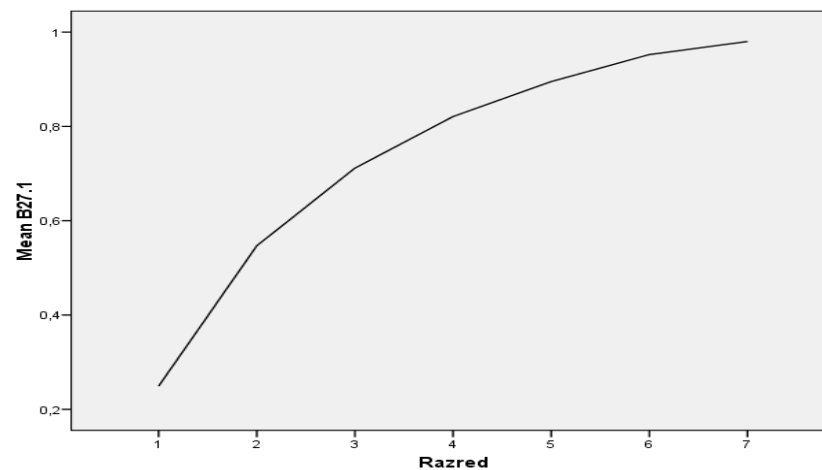
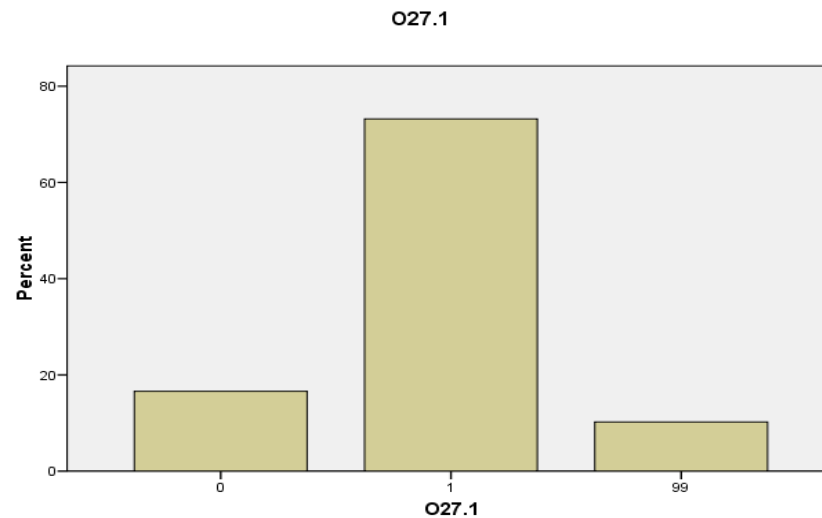
## 26.2. Kolika je cijena jedne čokolade nakon poskupljenja?

M	0,15
M (O)	
ID	0,27



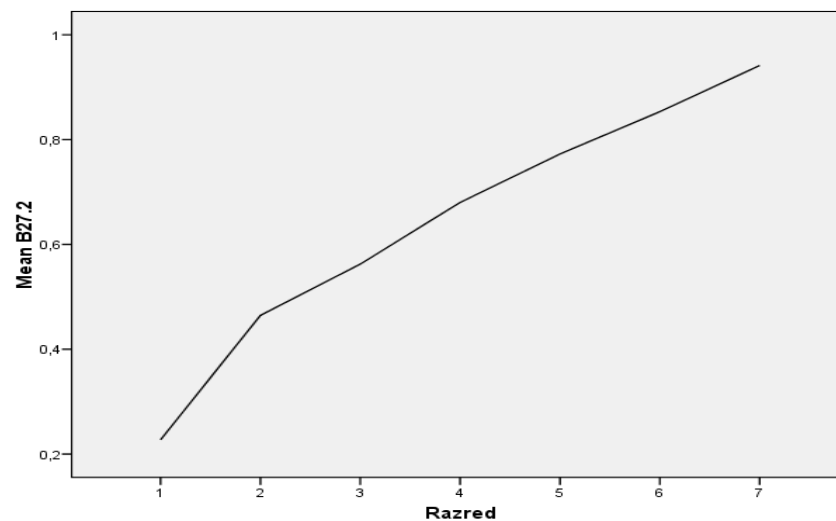
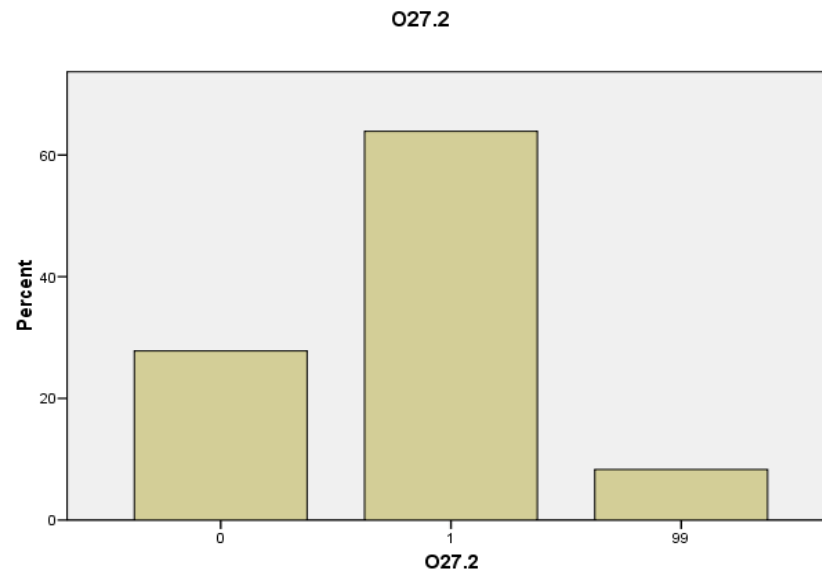
## 27.1. Odredite koordinate točke K.

M	0,73
M (O)	
ID	0,50



## 27.2. Odredite koliki je ukupni put prešao Karlo od kuće do škole?

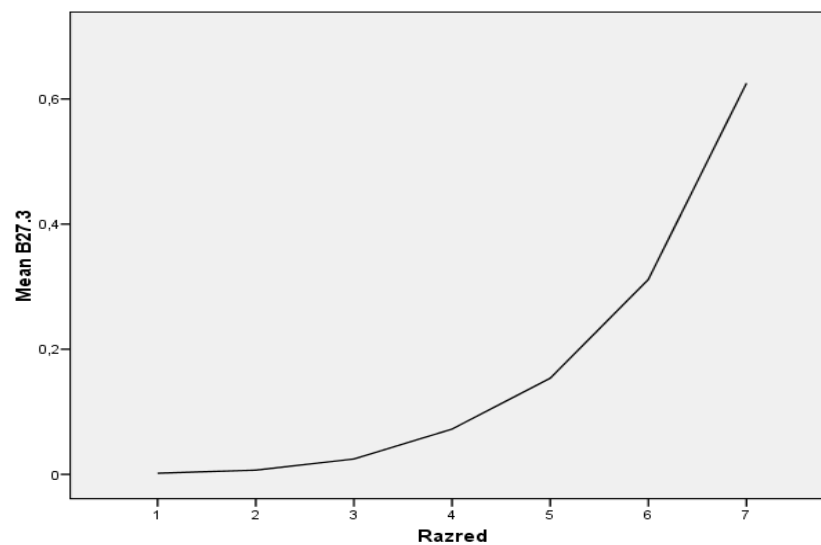
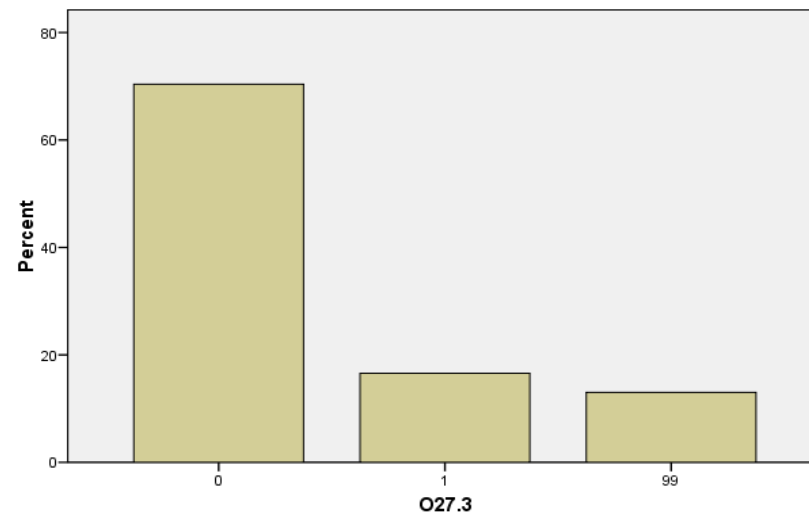
<b>M</b>	<b>0,64</b>
<b>M (O)</b>	
<b>ID</b>	<b>0,43</b>



## 27.3. Za koliko je Karmela prešla kraći put od Karla, hodajući od kuće do škole?

M	0,17
M (O)	
ID	0,47

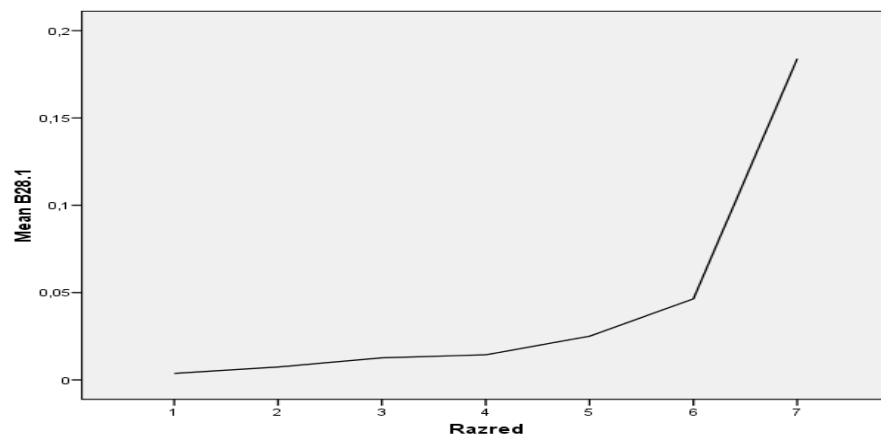
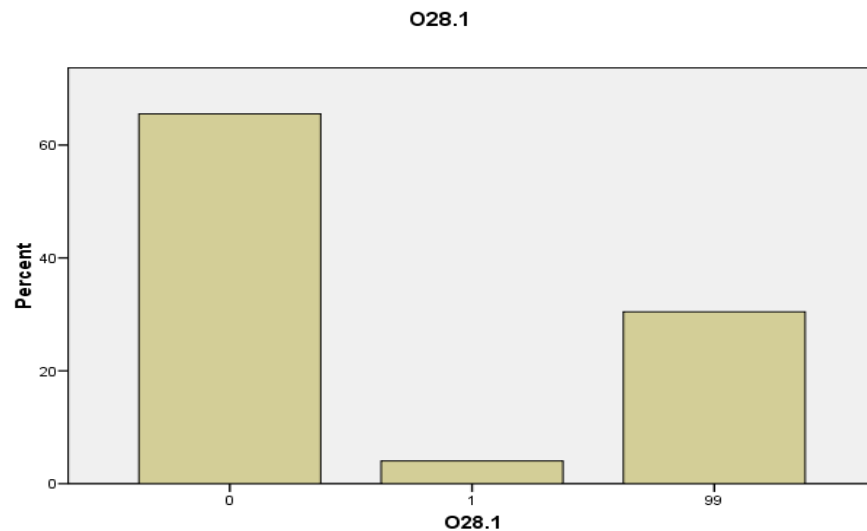
O27.3



**28. U posudici u kojoj se smrzava voda nastaje led oblika kvadra dimenzija  $3.5 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm}$ . Pri smrzavanju obujam vode poveća se za 5%.**

**28.1. Koliko je vode potrebno za jedan takav oblik leda?**

M	0,04
M (O)	
ID	0,23



## 28.2. Koliko se takvih oblika leda može napraviti od 1 litre vode?

<b>M</b>	<b>0,08</b>
<b>M (O)</b>	
<b>ID</b>	<b>0,36</b>

