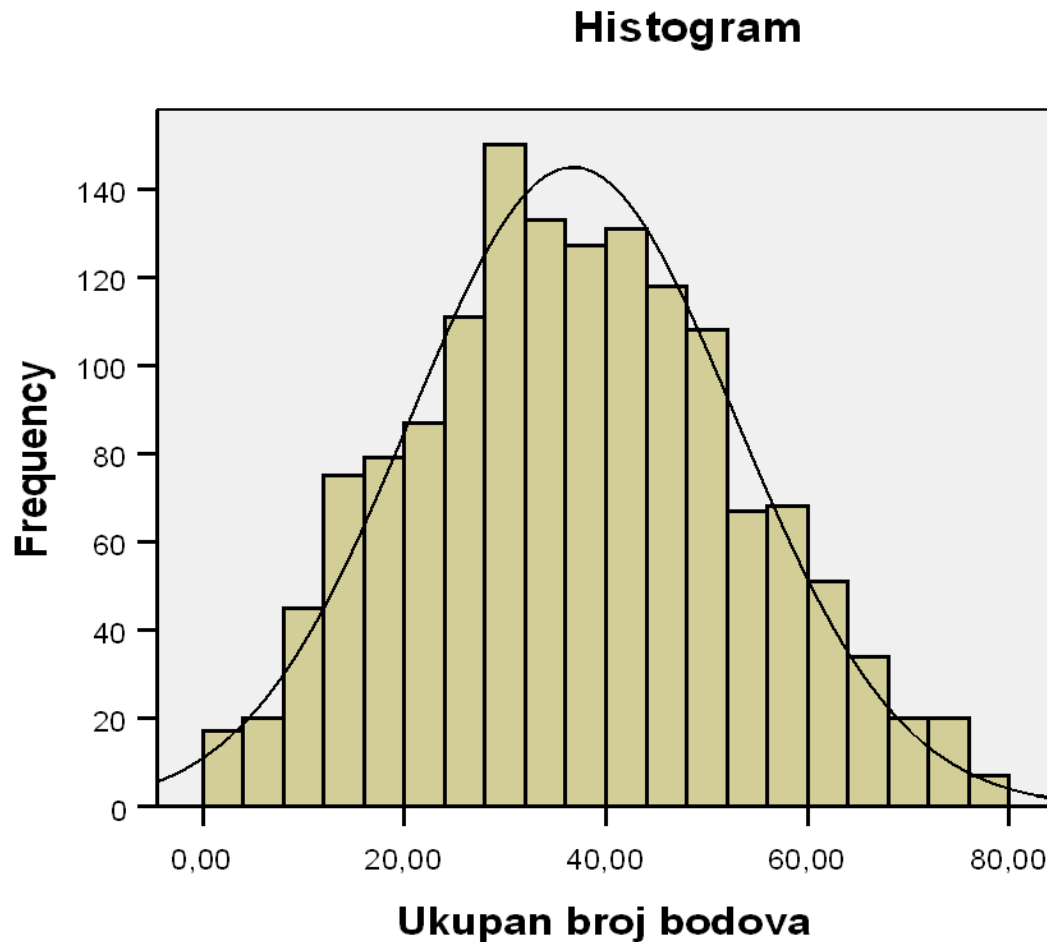


METRIJSKA ANALIZA  
NACIONALNOGA ISPITA IZ  
FIZIKE PROVEDENOGA U  
SVIBNJU 2008.

Istraživačko-razvojni odjel  
NCVVO

# Raspodjela ukupnih rezultata

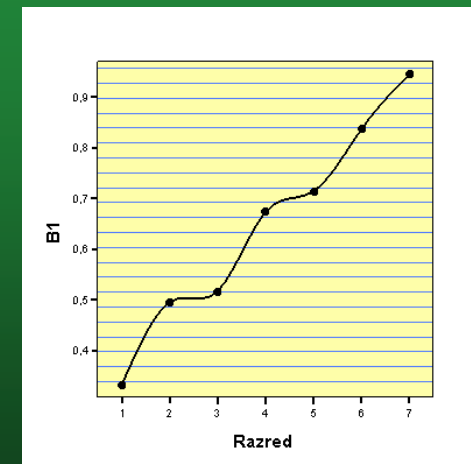
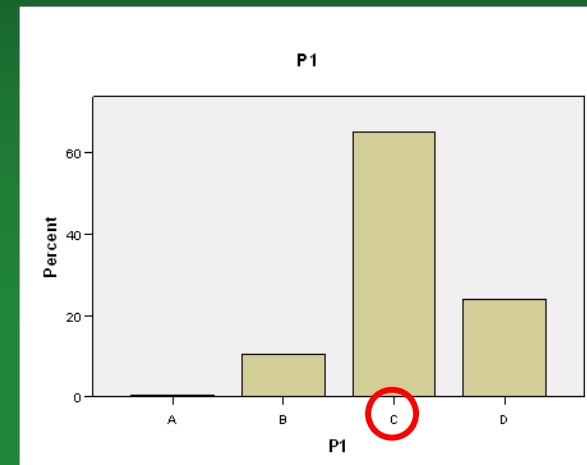


- $N = 1468$
- $M = 36.74$
- $SD = 16.170$
- $MIN = 0; MAX = 79$
- Max. mogući rezultat = 79
- Cronbach  $\alpha = 0.891$

<b>Težina zadatka</b>	<b>Redni broj zadatka</b>
<b>Vrlo težak (0 – 0,2)</b>	<b>17, 38, 39</b>
<b>Težak (0,21 – 0,4)</b>	<b>4, 6, 8, 15, 25, 29, 30, 31, 33, 36, 40</b>
<b>Srednje težak (0,41 – 0,6)</b>	<b>3, 11, 12, 13, 16, 18, 19, 20, 26, 27, 34, 35, 37,</b>
<b>Lagan (0,61 – 0,80)</b>	<b>1, 7, 9, 10, 14, 21.4, 22, 23, 24, 28, 32,</b>
<b>Vrlo lagan (0,81 – 1)</b>	<b>2, 5, 21.1, 21.2, 21.3,</b>

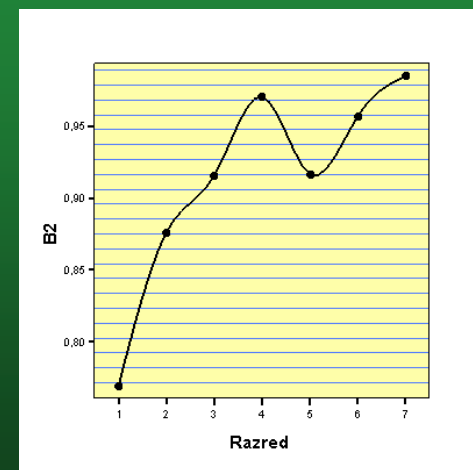
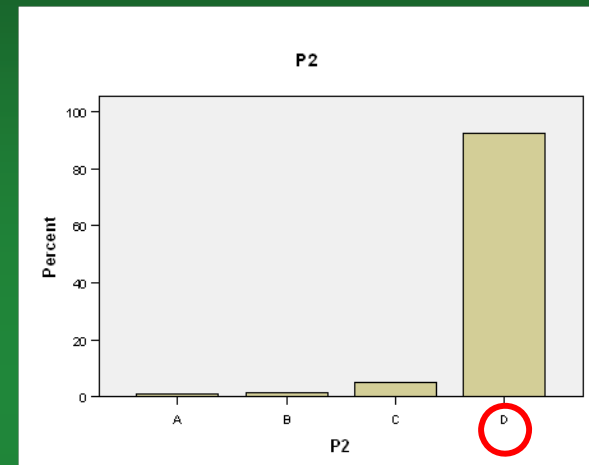
1. Na tijelo koje se giba stalnom brzinom udesno počnu djelovati dvije sile, kako je prikazano na slici...

<b>M</b>	<b>0.64</b>
<b>SD</b>	<b>0.479</b>
<b>ID</b>	<b>0.386</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



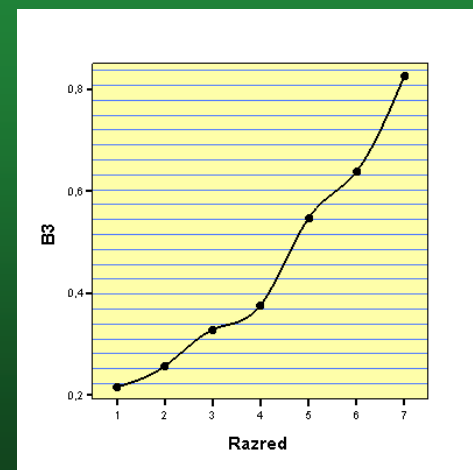
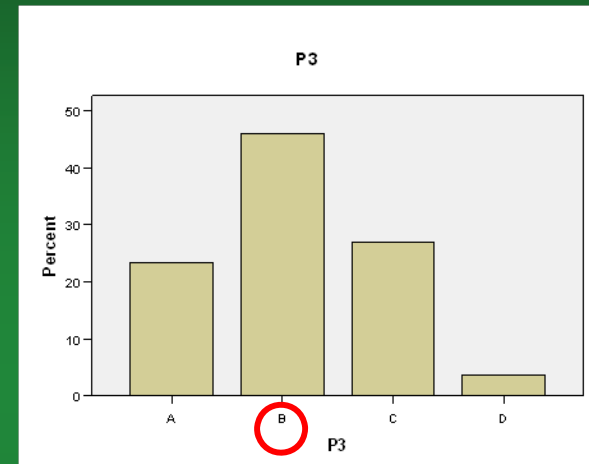
2. Neki se plin nalazi u zatvorenoj posudi. Zašto plin tlači stijenke posude u kojoj se nalazi?

<b>M</b>	<b>0.91</b>
<b>SD</b>	<b>0.282</b>
<b>ID</b>	<b>0.224</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



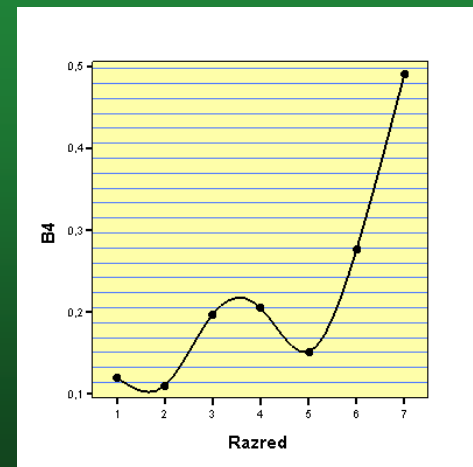
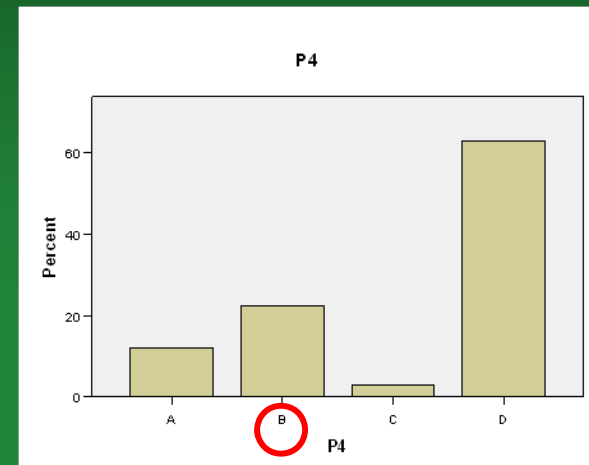
3. Led temperature  $-25\text{ }^{\circ}\text{C}$  stavi se u zatvorenu posudu koja se potom zagrijava...

<b>M</b>	<b>0.45</b>
<b>SD</b>	<b>0.498</b>
<b>ID</b>	<b>0.384</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



# 4. Kamen je izbačen horizontalno. Sile otpora zraka i uzgona su zanemarive...

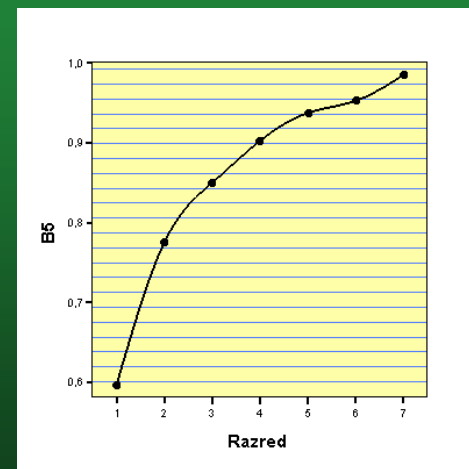
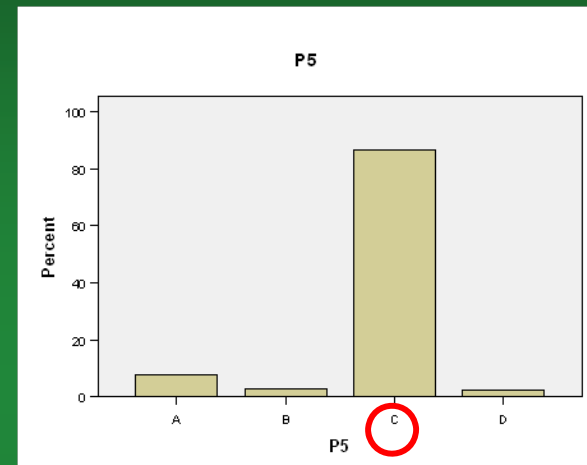
<b>M</b>	<b>0.22</b>
<b>SD</b>	<b>0.415</b>
<b>ID</b>	<b>0.249</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>





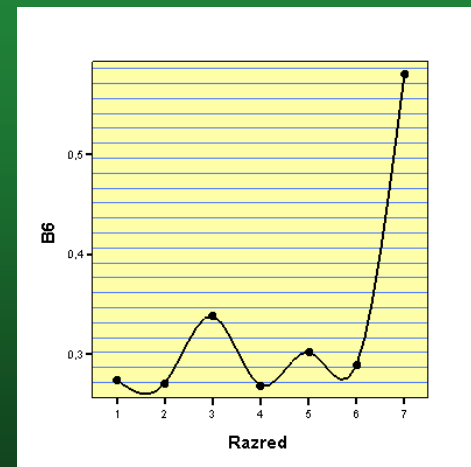
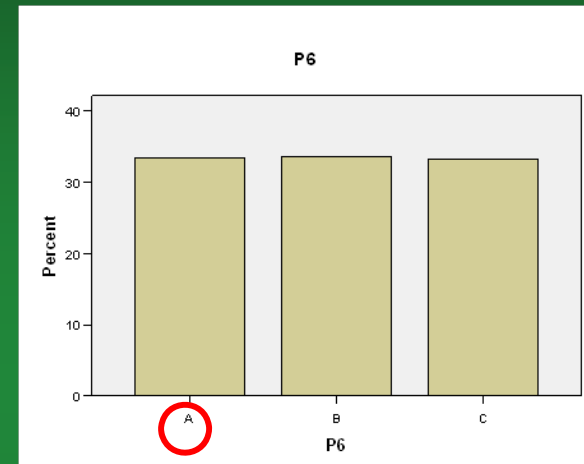
5. Specifični toplinski kapacitet železa je  $460 \text{ J kg}^{-1} \text{ K}^{-1}$ . Toplina potrebna...

<b>M</b>	<b>0.86</b>
<b>SD</b>	<b>0.351</b>
<b>ID</b>	<b>0.324</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



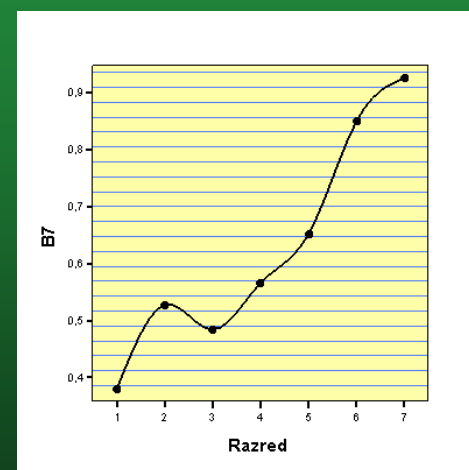
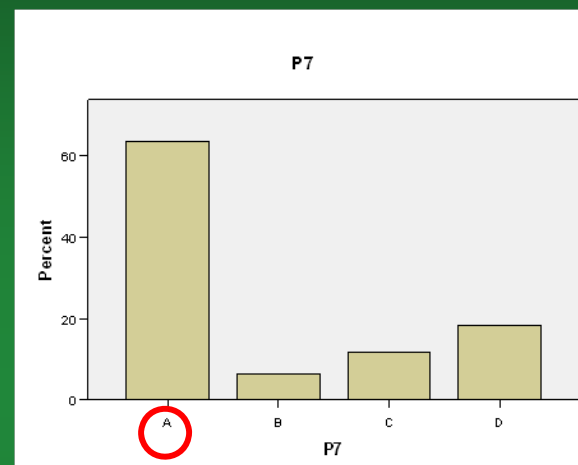
6. Kad se prekidač zatvori u krugu prikazanom na slici, ampermetar će pokazivati:

<b>M</b>	<b>0.33</b>
<b>SD</b>	<b>0.470</b>
<b>ID</b>	<b>0.145</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.891</b>



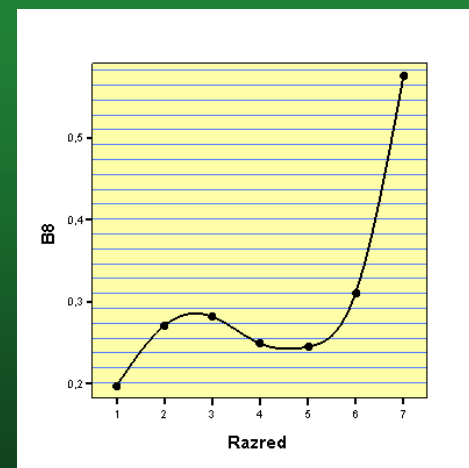
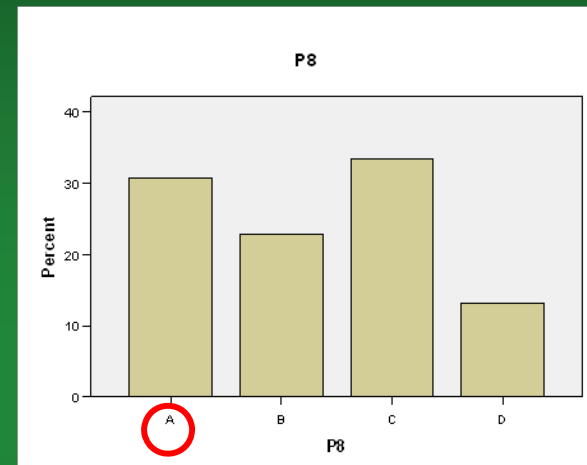
7. Ako je zbroj svih sila koje djeluju na tijelo jednak nuli, onda mora biti jednaka nuli:

<b>M</b>	<b>0.63</b>
<b>SD</b>	<b>0.484</b>
<b>ID</b>	<b>0.348</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



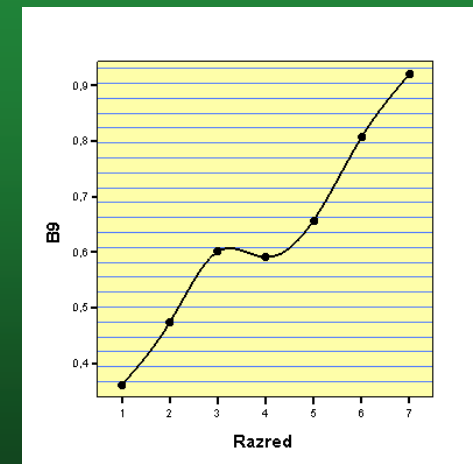
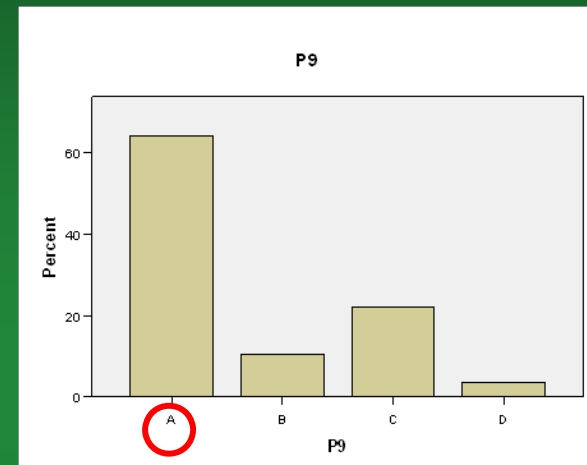
8. Proton koji uleti u homogeno magnetsko polje brzinom usmjerenom kao i polje gibat će se:

<b>M</b>	<b>0.30</b>
<b>SD</b>	<b>0.460</b>
<b>ID</b>	<b>0.192</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



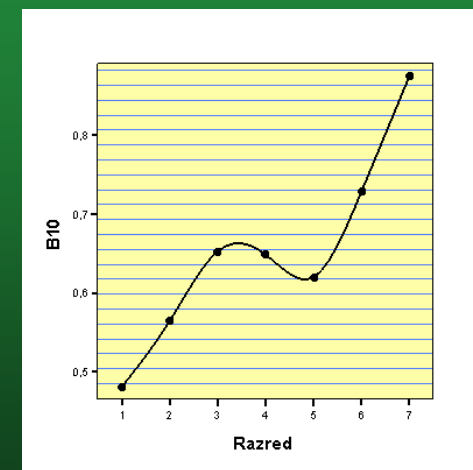
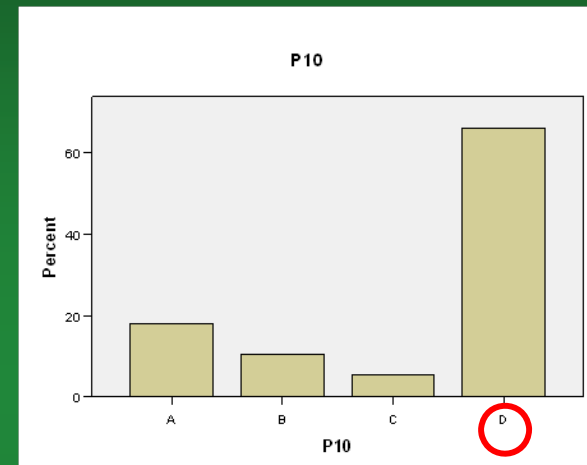
9. Ako se apsolutna temperatura jednoatomnoga idealnoga plina udvostruči, što će se dogoditi...?

<b>M</b>	<b>0.63</b>
<b>SD</b>	<b>0.483</b>
<b>ID</b>	<b>0.333</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



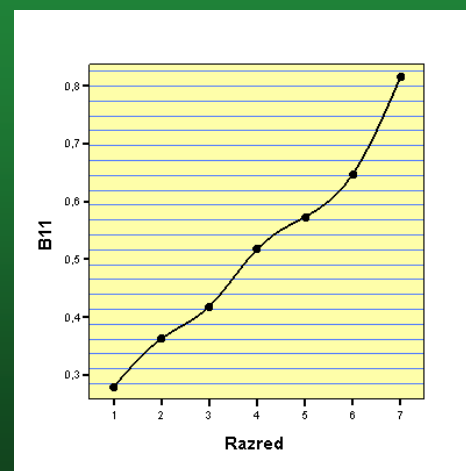
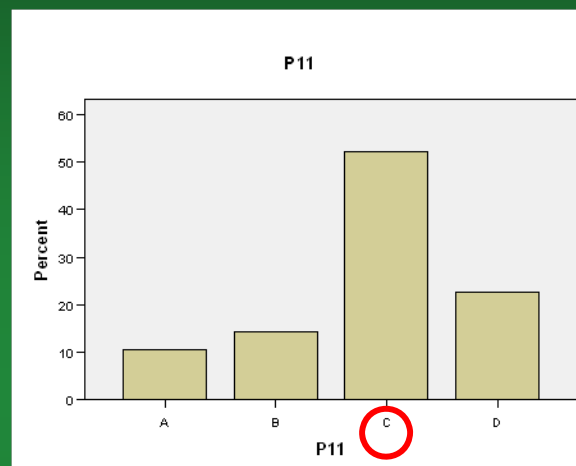
10. Vodič kojim teče struja  $I$  nalazi se u magnetskome polju  $B$  kao na slici.

<b>M</b>	<b>0.65</b>
<b>SD</b>	<b>0.476</b>
<b>ID</b>	<b>0.221</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



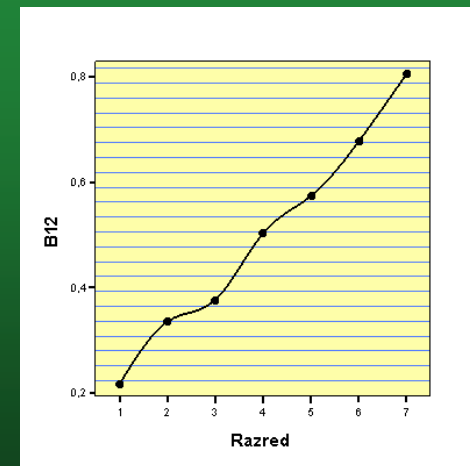
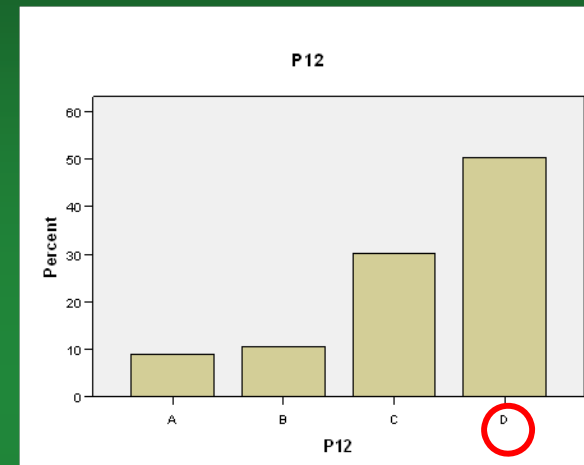
# 11. Prikazani crteži predstavljaju različite tipove toplinskih strojeva...

<b>M</b>	<b>0.51</b>
<b>SD</b>	<b>0.500</b>
<b>ID</b>	<b>0.320</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



# 12. Pri izobarnoj promjeni obujam idealnoga plina se tri puta poveća...

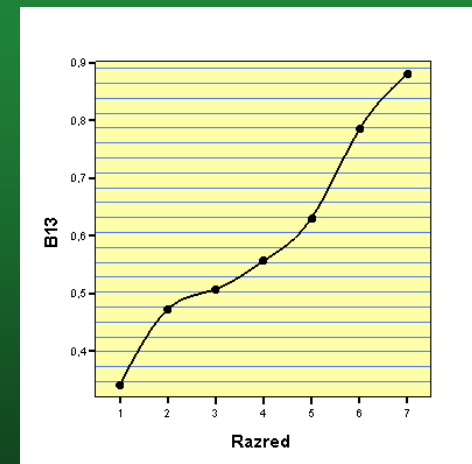
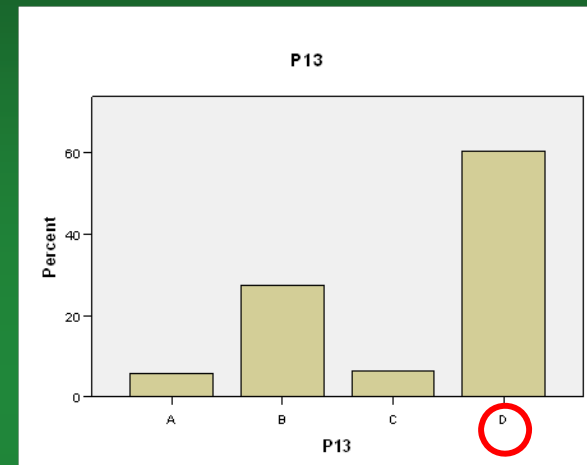
<b>M</b>	<b>0.50</b>
<b>SD</b>	<b>0.500</b>
<b>ID</b>	<b>0.370</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>





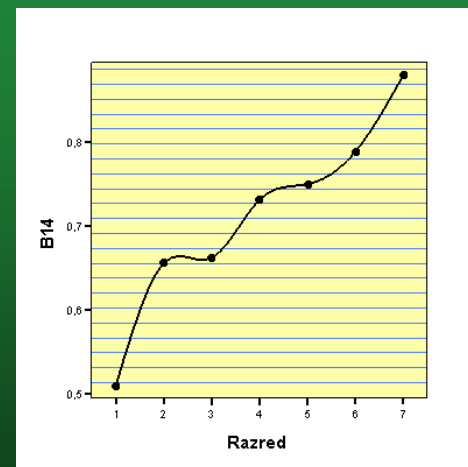
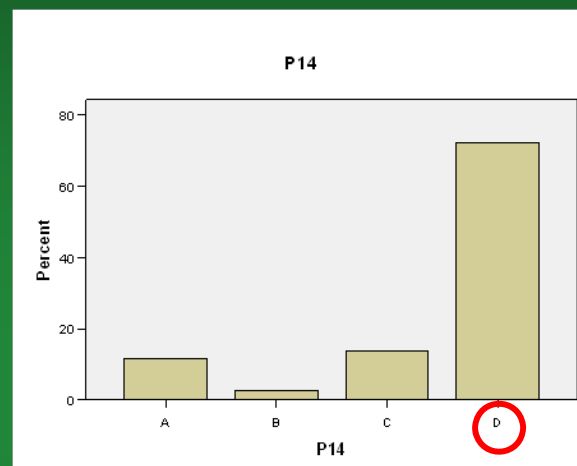
# 13. Na Mjesecu je akceleracija slobodnoga pada šest puta manja nego na Zemlji...

<b>M</b>	<b>0.60</b>
<b>SD</b>	<b>0.491</b>
<b>ID</b>	<b>0.332</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



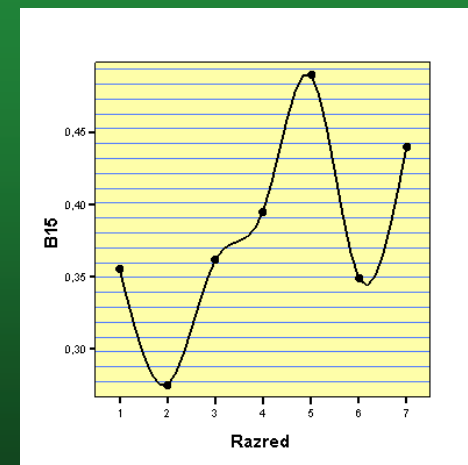
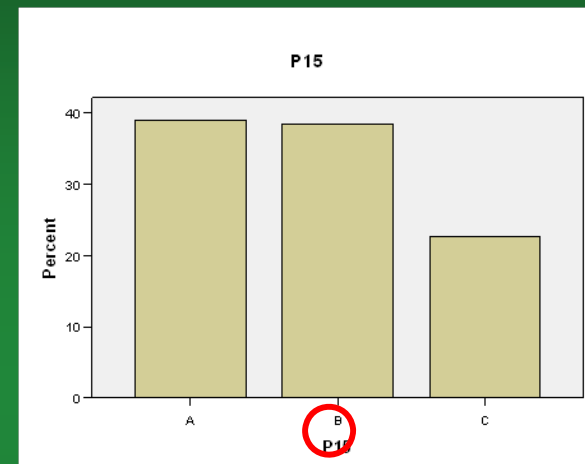
14. Na slici je prikazana vremenska ovisnost položaja tijela prilikom njegova pravocrtnoga gibanja...

<b>M</b>	<b>0.71</b>
<b>SD</b>	<b>0.454</b>
<b>ID</b>	<b>0.222</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



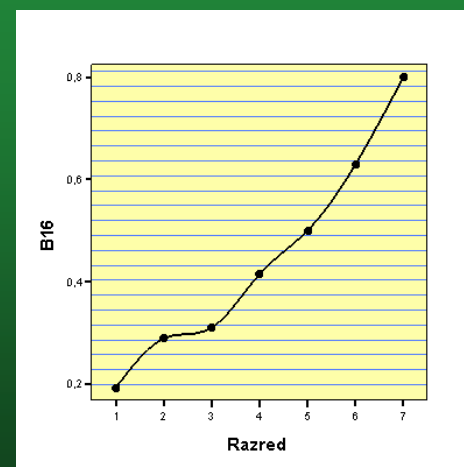
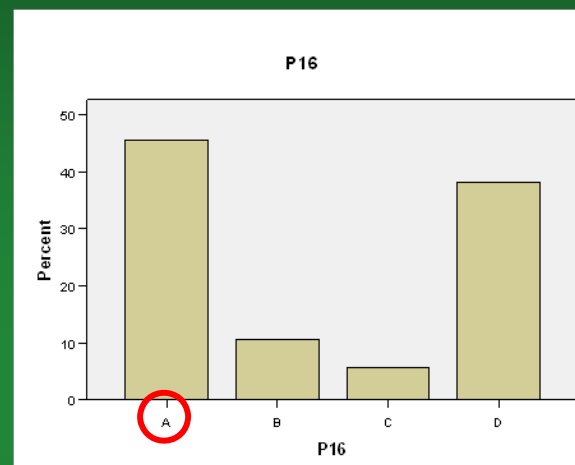
15. Jakost električne struje I kroz strujnu petlju (na crtežu obojena crno) tijekom vremena opada.

<b>M</b>	<b>0.38</b>
<b>SD</b>	<b>0.485</b>
<b>ID</b>	<b>0.060</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.891</b>



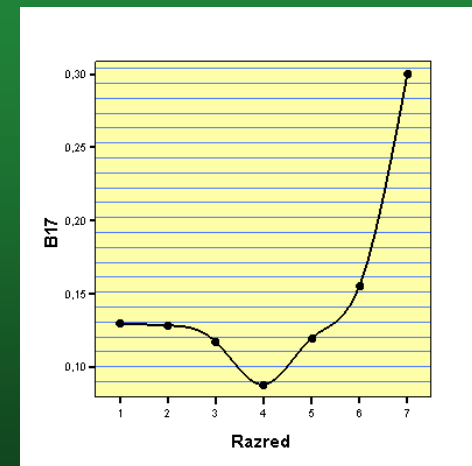
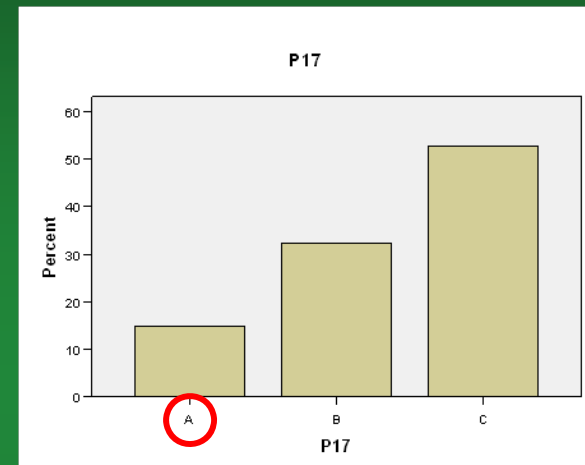
16. Kada se ravni vodič giba okomito na silnice homogenoga magnetskoga polja brzinom 10 m/s...

<b>M</b>	<b>0.45</b>
<b>SD</b>	<b>0.497</b>
<b>ID</b>	<b>0.368</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.889</b>



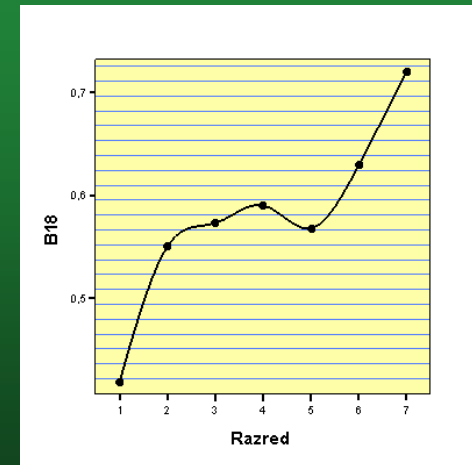
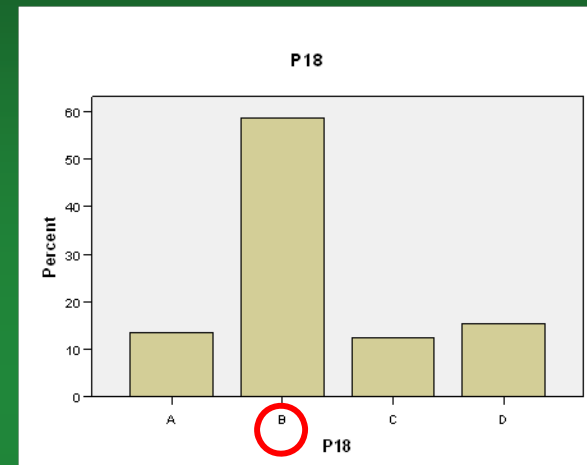
# 17. Dva tijela su u termodinamičkoj ravnoteži ako imaju:

<b>M</b>	<b>0.15</b>
<b>SD</b>	<b>0.355</b>
<b>ID</b>	<b>0.126</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.891</b>



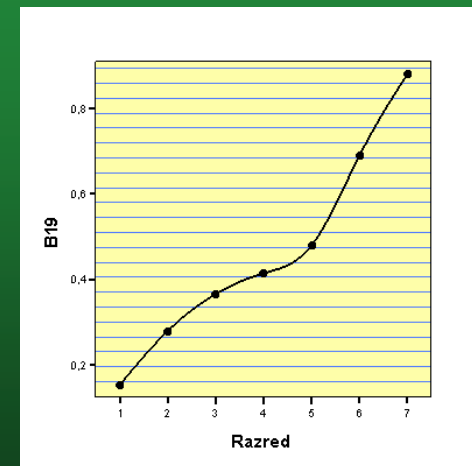
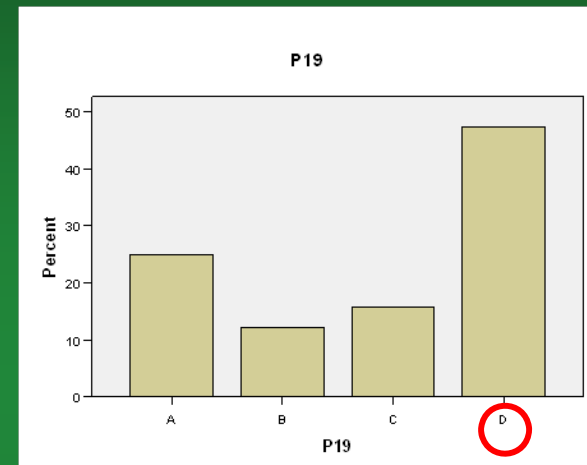
18. Koja slika ispravno prikazuje što se dogodi kad nenabijenomu elektroskopu približimo pozitivno nabijeni štap?

<b>M</b>	<b>0.58</b>
<b>SD</b>	<b>0.494</b>
<b>ID</b>	<b>0.144</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.891</b>



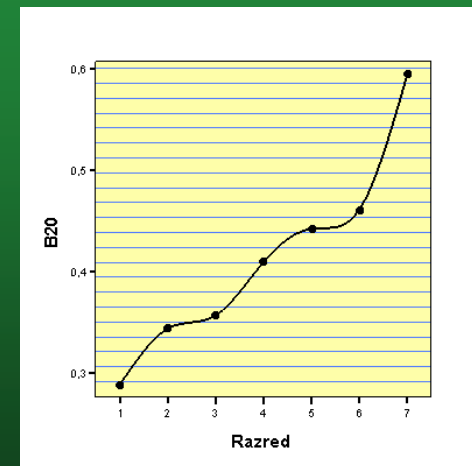
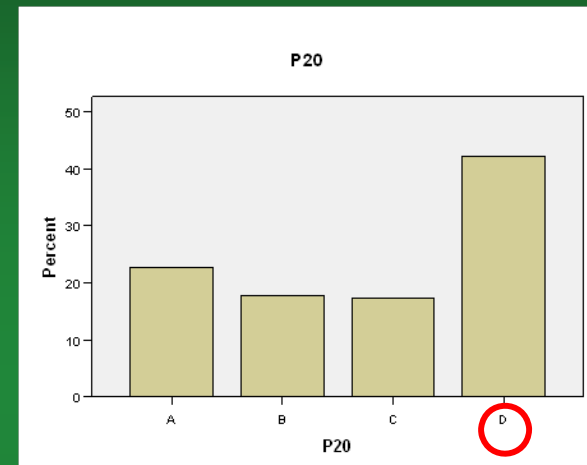
19. Koji se od strujnih krugova prikazanih shemama može uporabiti da se izmjeri iznos otpora R?

<b>M</b>	<b>0.47</b>
<b>SD</b>	<b>0.499</b>
<b>ID</b>	<b>0.431</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.888</b>



# 20. Kuglica obješena na niti kruži u horizontalnoj ravnini, kako je prikazano na slikama...

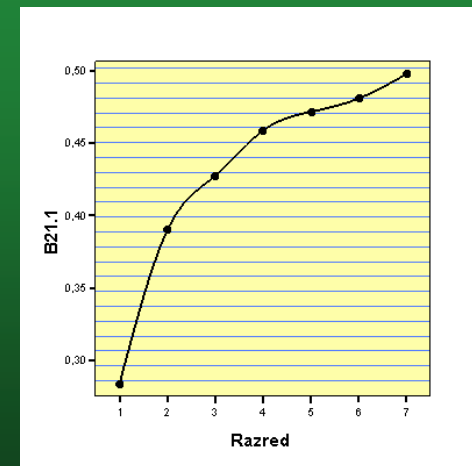
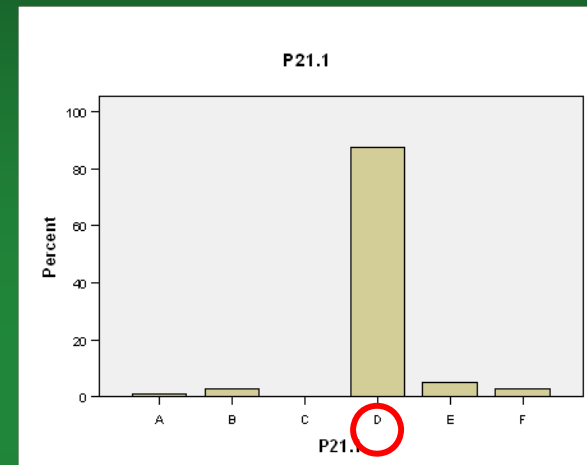
<b>M</b>	<b>0.41</b>
<b>SD</b>	<b>0.493</b>
<b>ID</b>	<b>0.163</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.891</b>





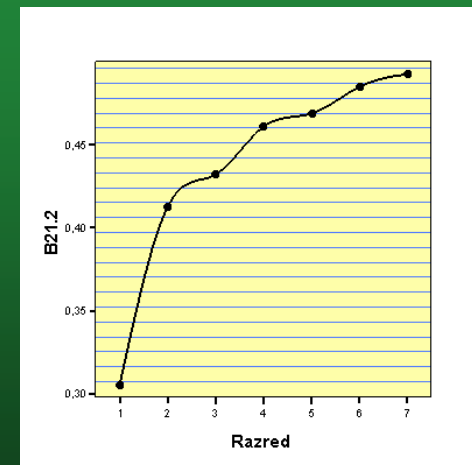
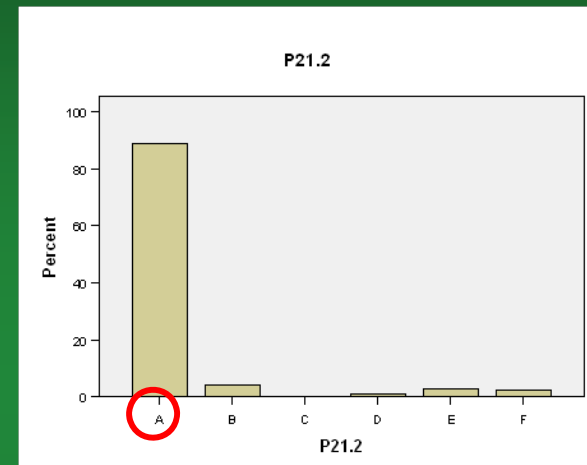
# 21.1 Fizikalnim veličinama pridružite njihove jedinice

<b>M</b>	<b>0.43 (0.86)</b>
<b>SD</b>	<b>0.174</b>
<b>ID</b>	<b>0.360</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



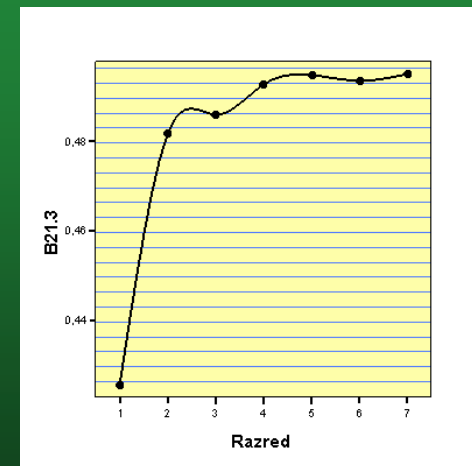
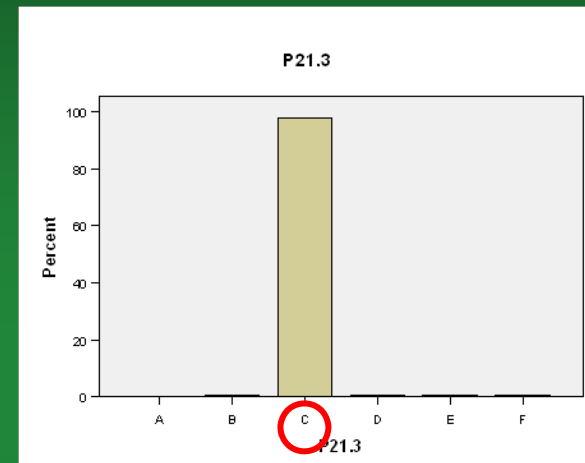
# 21.2 Fizikalnim veličinama pridružite njihove jedinice

<b>M</b>	<b>0.44 (0.88)</b>
<b>SD</b>	<b>0.166</b>
<b>ID</b>	<b>0.332</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



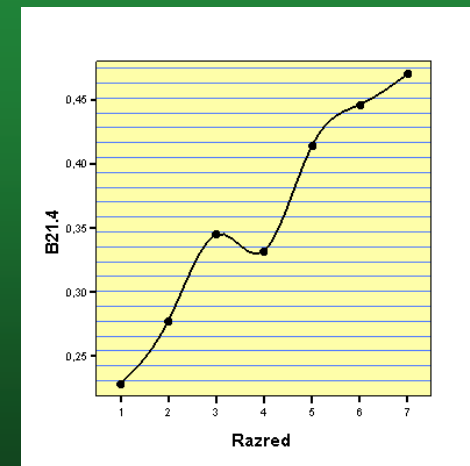
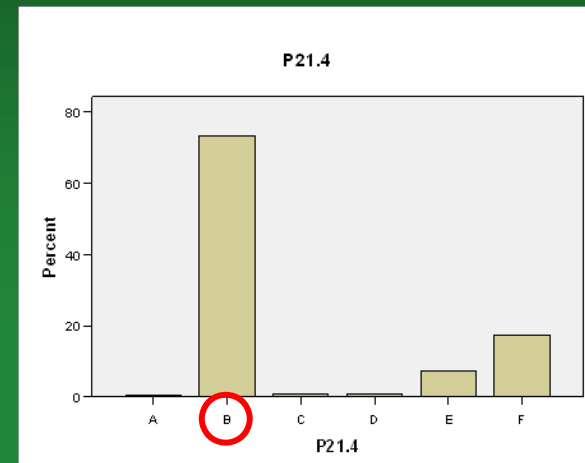
# 21.3 Fizikalnim veličinama pridružite njihove jedinice

<b>M</b>	<b>0.48 (0.96)</b>
<b>SD</b>	<b>0.095</b>
<b>ID</b>	<b>0.228</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.891</b>



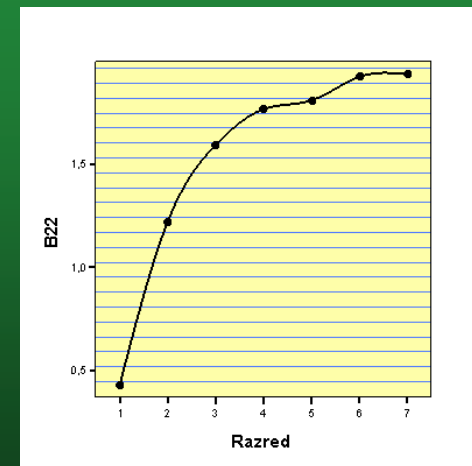
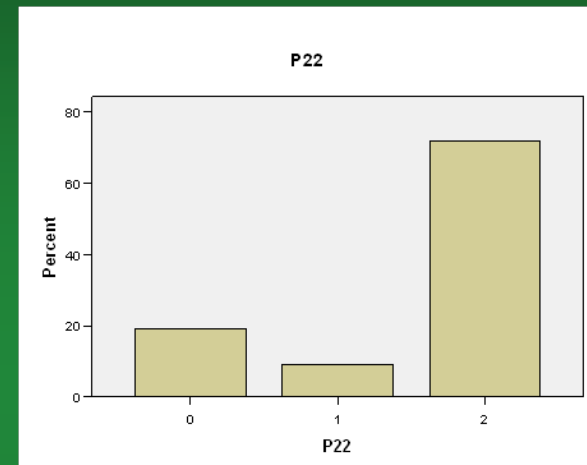
# 21.4 Fizikalnim veličinama pridružite njihove jedinice

<b>M</b>	<b>0.36 (0.72)</b>
<b>SD</b>	<b>0.225</b>
<b>ID</b>	<b>0.357</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.890</b>



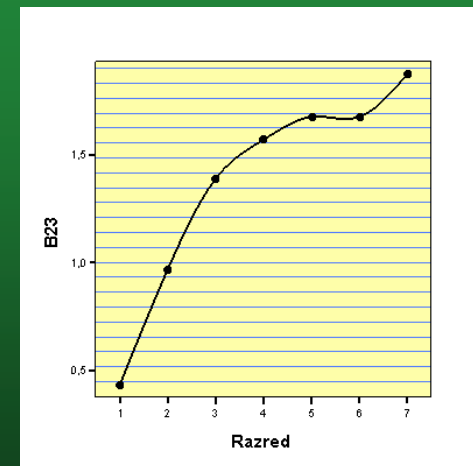
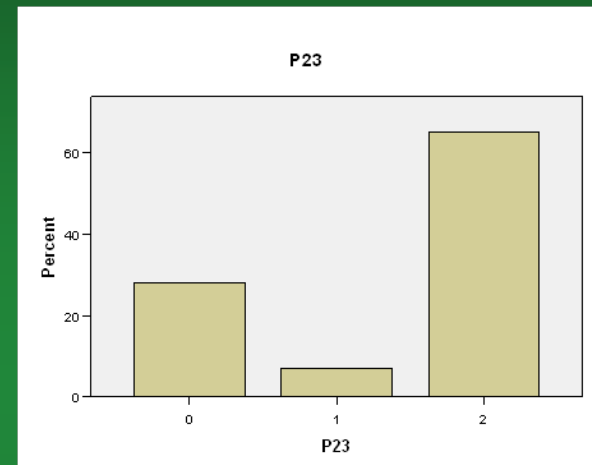
22. Čovjek mase 80 kg penje se po stubama. Pritom mu se gravitacijska potencijalna energija poveća za 1 200 J.

<b>M</b>	<b>1.52 (0.76)</b>
<b>SD</b>	<b>0.797</b>
<b>ID</b>	<b>0.526</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.886</b>



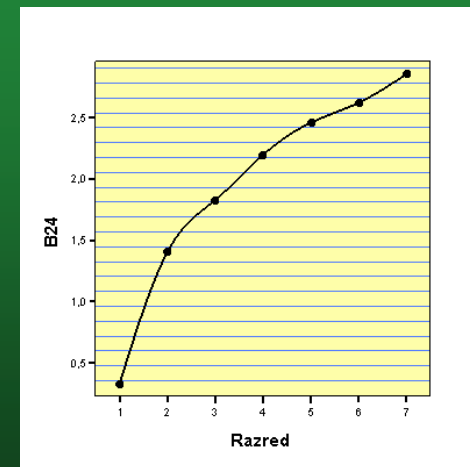
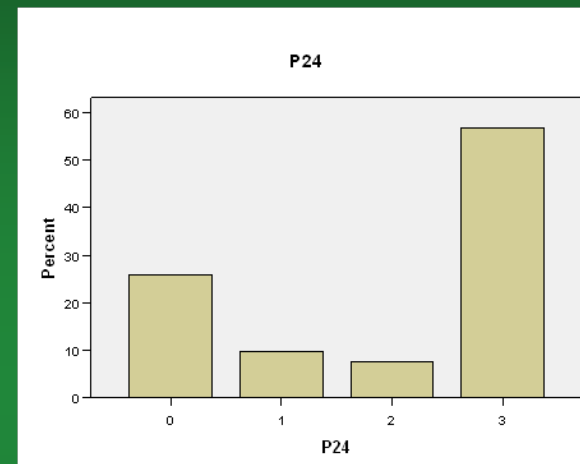
23. Tenisač prilikom servisa daje loptici mase 0.06 kg početnu horizontalnu brzinu od 55 m/s.

<b>M</b>	<b>1.37 (0.69)</b>
<b>SD</b>	<b>0.893</b>
<b>ID</b>	<b>0.450</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.887</b>



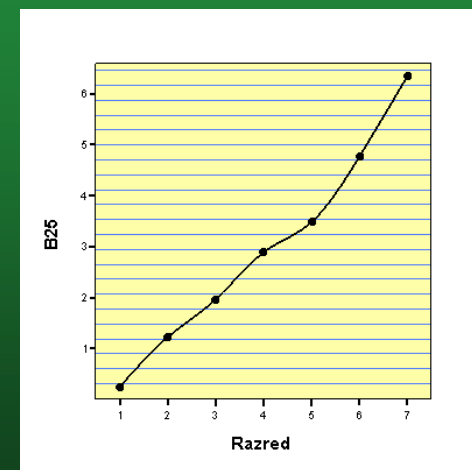
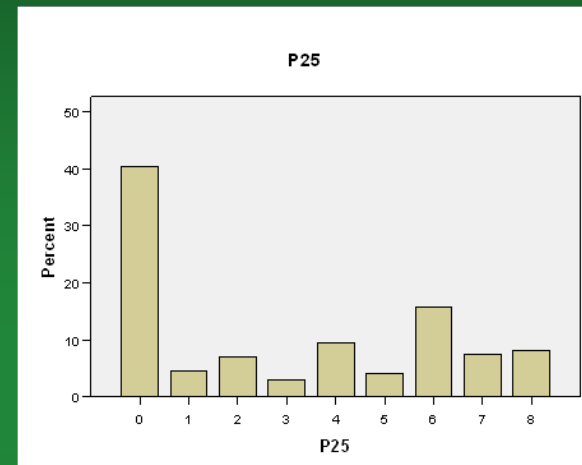
24. Filip gura sanjke mase 5 kg po snijegu tako da ih na putu od 10 m ubrzava...

<b>M</b>	<b>1.95 (0.65)</b>
<b>SD</b>	<b>1.30</b>
<b>ID</b>	<b>0.530</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.885</b>



# 25. Tijelo se gibalo niz kosinu, a njegovo se gibanje snimalo...

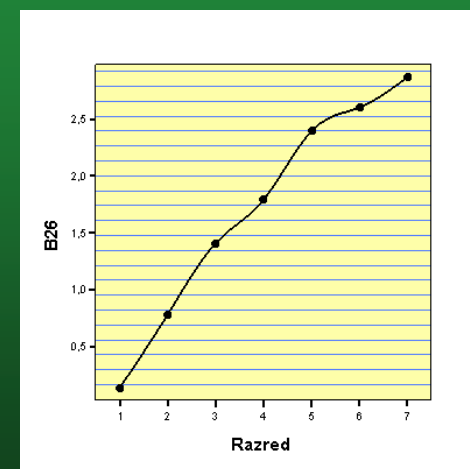
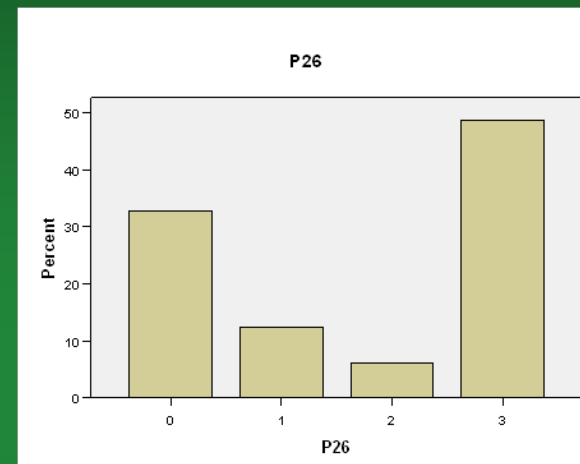
<b>M</b>	<b>2.98 (0.37)</b>
<b>SD</b>	<b>2.969</b>
<b>ID</b>	<b>0.530</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.900</b>





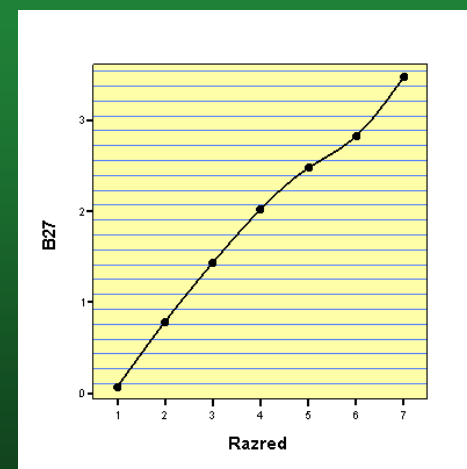
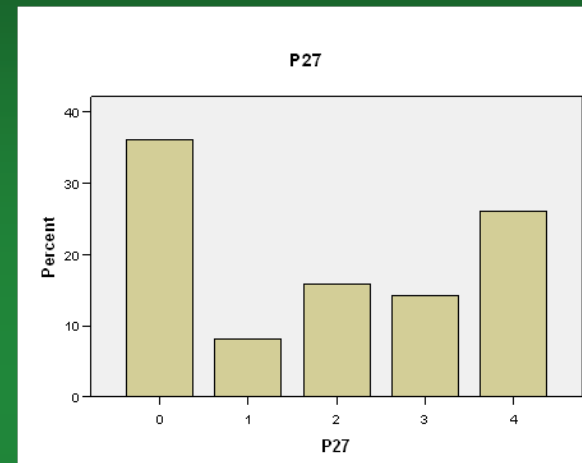
# 26. Imamo dva uzorka iste vrste ulja.

<b>M</b>	<b>1.71 (0.57)</b>
<b>SD</b>	<b>1.356</b>
<b>ID</b>	<b>0.620</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.883</b>



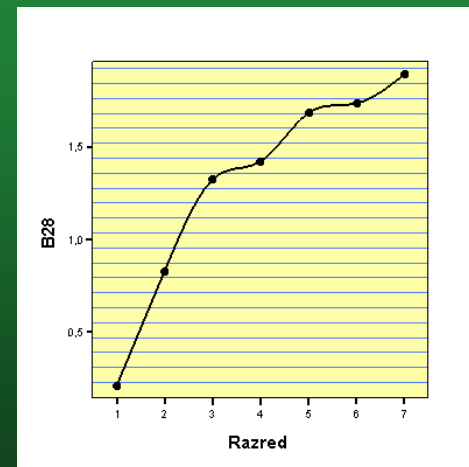
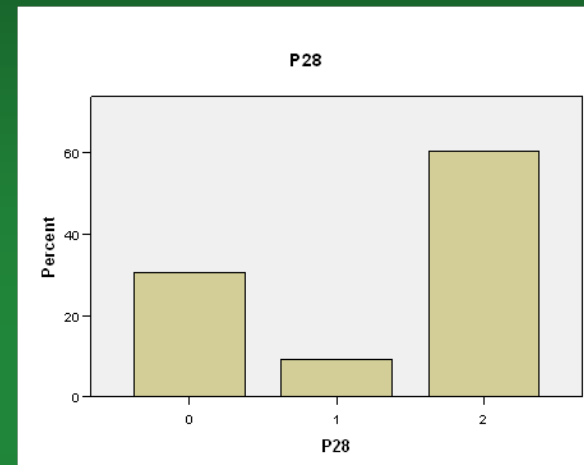
# 27. Pločasti kondenzator ispunjen je dielektrikom relativne permitivnosti 6.

<b>M</b>	<b>1.86 (0.47)</b>
<b>SD</b>	<b>1.638</b>
<b>ID</b>	<b>0.601</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.884</b>



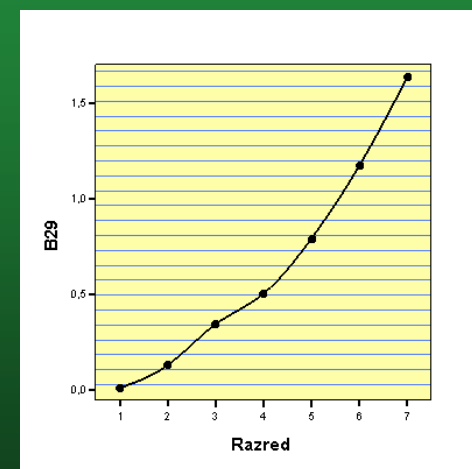
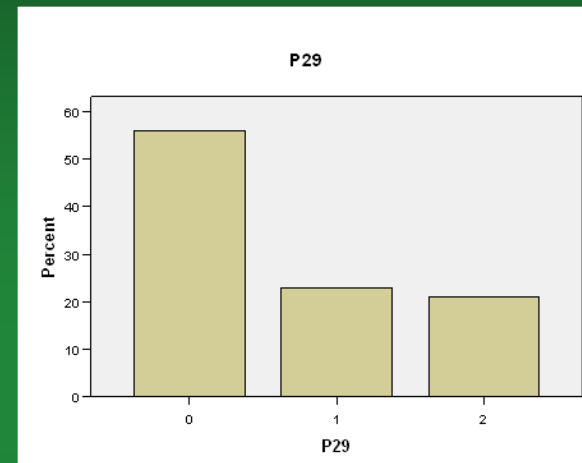
# 28. Matematičko njihalo duljine 1 m njiše periodom od 2 s.

<b>M</b>	<b>1.30 (0.65)</b>
<b>SD</b>	<b>0.906</b>
<b>ID</b>	<b>0.527</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.886</b>



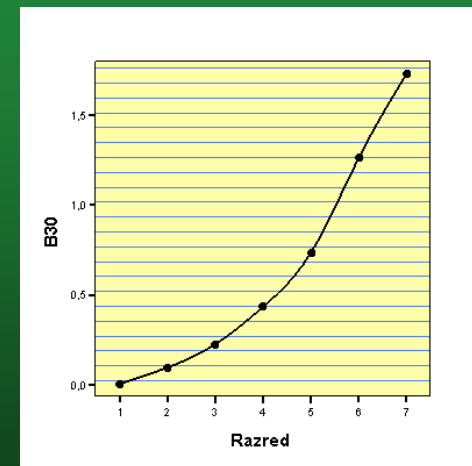
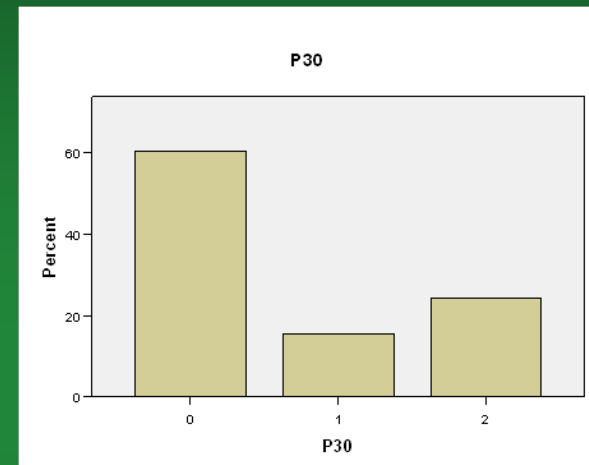
29. U zatvorenoj posudi nalazi se zrak temperature  $100\text{ }^{\circ}\text{C}$ .

<b>M</b>	<b>0.65 (0.33)</b>
<b>SD</b>	<b>0.806</b>
<b>ID</b>	<b>0.632</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.885</b>



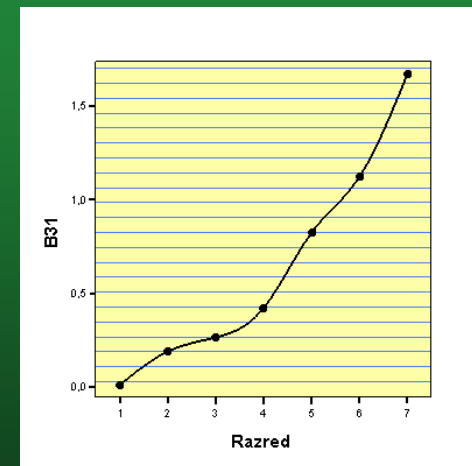
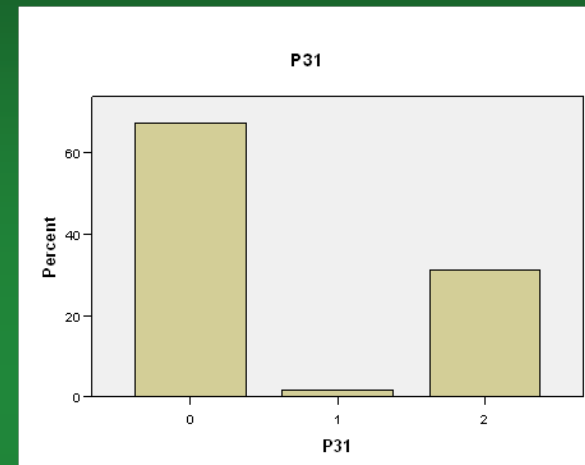
# 30. Proton se giba u homogenome magnetskome polju...

<b>M</b>	<b>0.64 (0.32)</b>
<b>SD</b>	<b>0.847</b>
<b>ID</b>	<b>0.650</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.884</b>



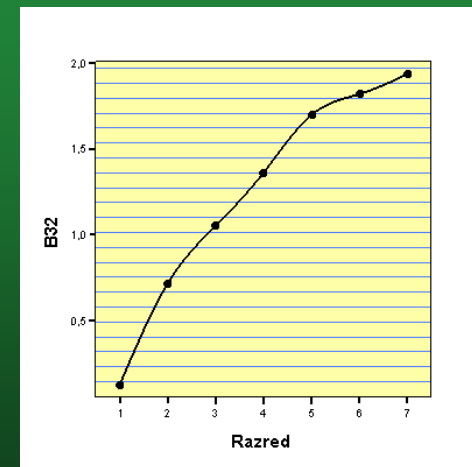
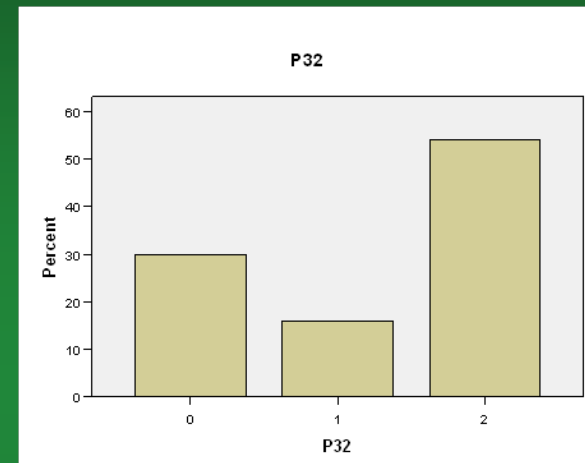
# 31. Preko učvršćene koloture prebaćen je konop.

<b>M</b>	<b>0.64 (0.32)</b>
<b>SD</b>	<b>0.923</b>
<b>ID</b>	<b>0.545</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.886</b>



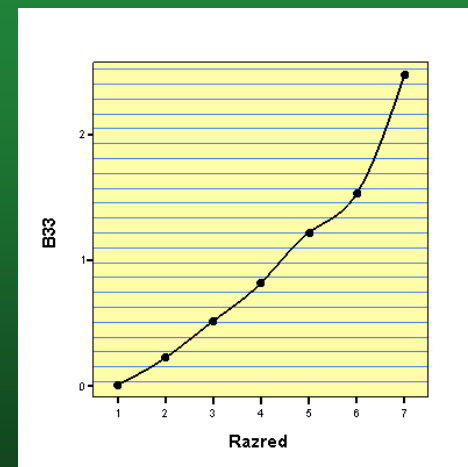
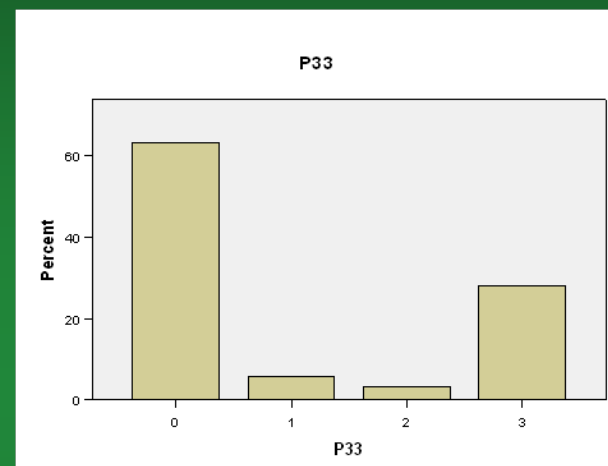
# 32. Pri izobarnome širenju plin obavi rad od 1 200 J.

<b>M</b>	<b>1.24 (0.62)</b>
<b>SD</b>	<b>0.884</b>
<b>ID</b>	<b>0.628</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.884</b>



33. Kamen mase 100 g izbacimo vertikalno uvis brzinom 10 m/s.

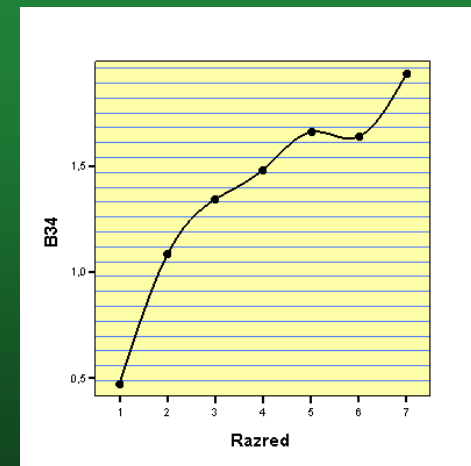
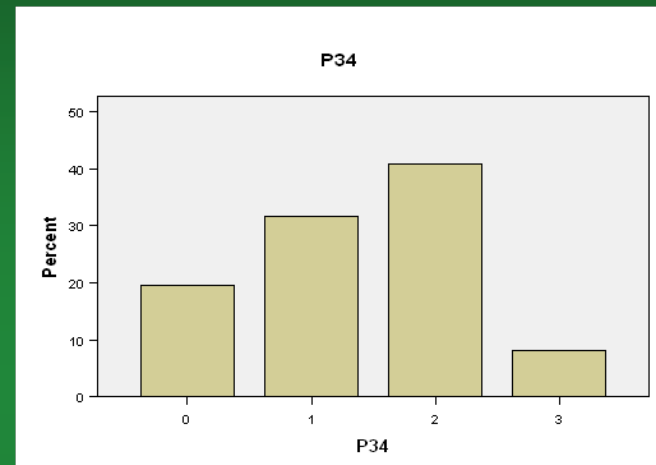
<b>M</b>	<b>0.96 (0.32)</b>
<b>SD</b>	<b>1.334</b>
<b>ID</b>	<b>0.528</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.885</b>





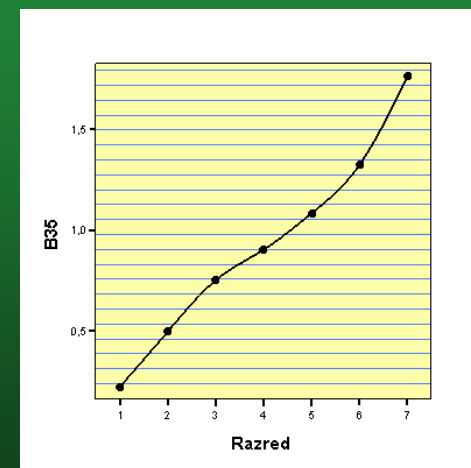
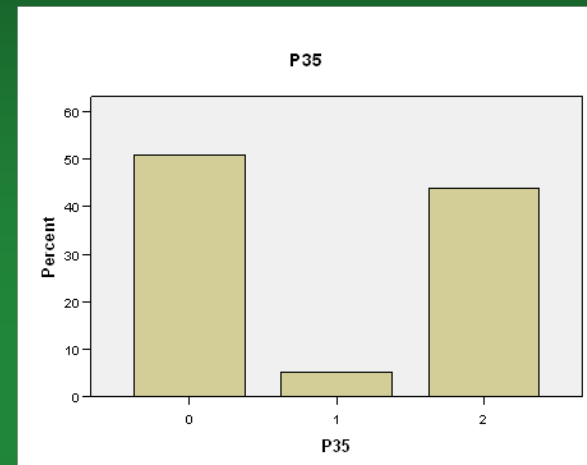
34. Učenci su izmjerili duljinu nekoga predmeta četiri puta i dobili sljedeće vrijednosti...

<b>M</b>	<b>1.37 (0.46)</b>
<b>SD</b>	<b>0.889</b>
<b>ID</b>	<b>0.450</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.887</b>



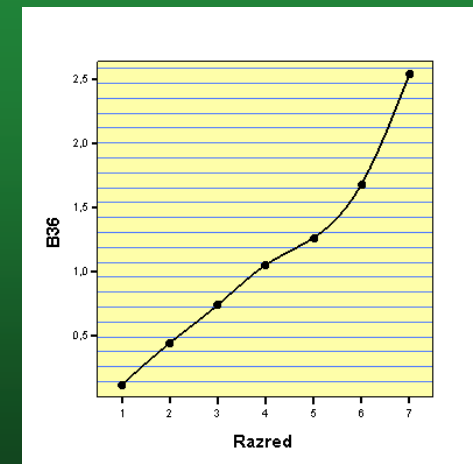
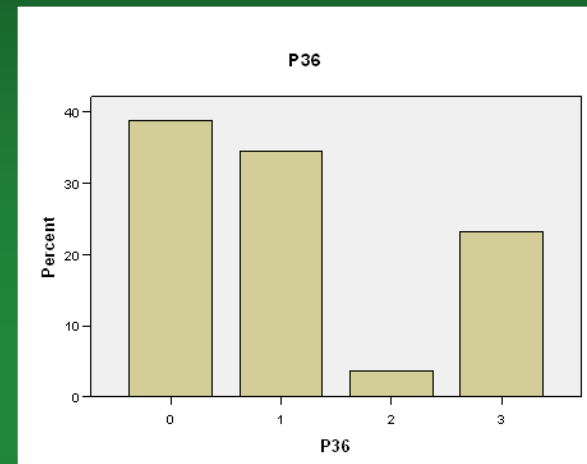
# 35. Duljina živina stupca u termometru iznosi 10 cm...

<b>M</b>	<b>0.93 (0.47)</b>
<b>SD</b>	<b>0.971</b>
<b>ID</b>	<b>0.446</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.887</b>



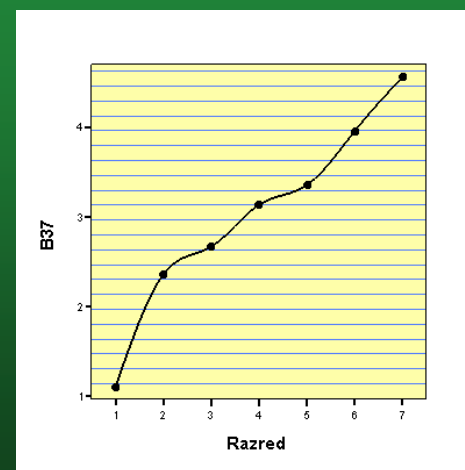
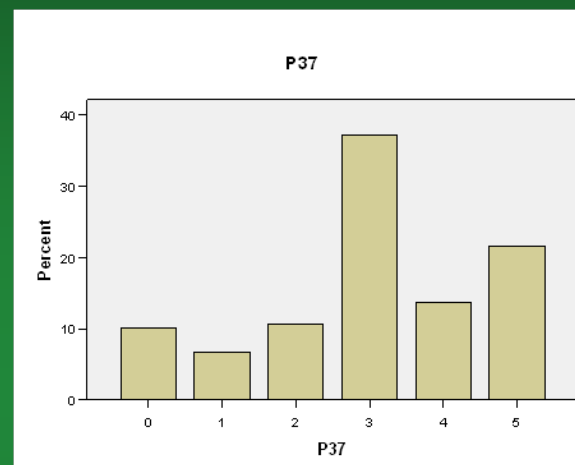
# 36. Otpornici otpora $4 \Omega$ , $8 \Omega$ i $8 \Omega$ spojeni su u strujni krug...

<b>M</b>	<b>1.11 (0.37)</b>
<b>SD</b>	<b>1.158</b>
<b>ID</b>	<b>0.604</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.884</b>



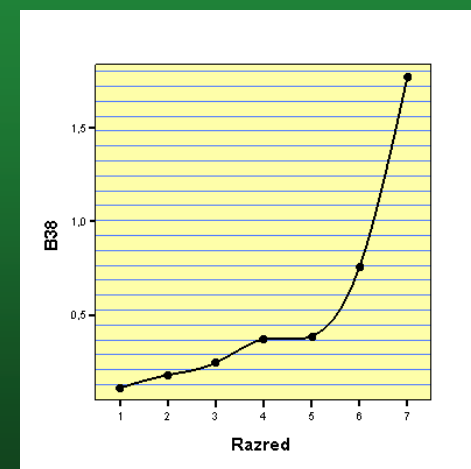
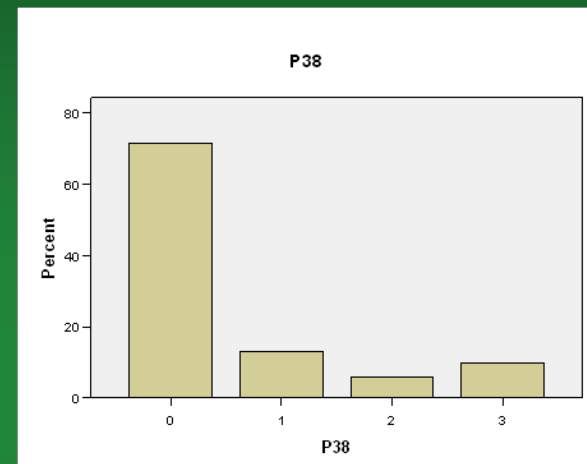
37. Crtež prikazuje tijelo mase  $m$  ovješeno o oprugu konstante  $50 \text{ N/m}$ .

<b>M</b>	<b>3.02 (0.60)</b>
<b>SD</b>	<b>1.518</b>
<b>ID</b>	<b>0.642</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.883</b>



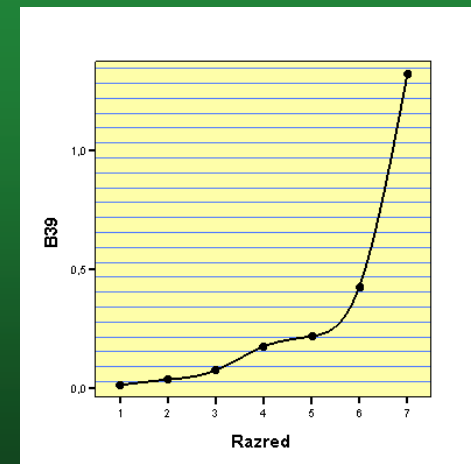
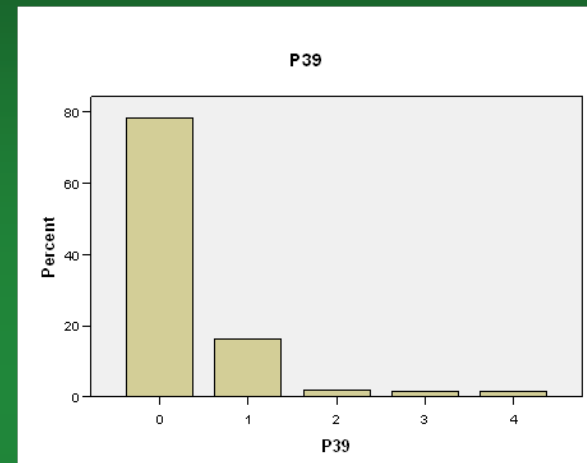
38. Proton i elektron gibaju se u homogenome magnetskome polju jednakim brzinama.

<b>M</b>	<b>0.54 (0.18)</b>
<b>SD</b>	<b>0.974</b>
<b>ID</b>	<b>0.459</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.887</b>



39. Na crtežu su prikazana dva električna naboja,  $q_1 = -1 \text{ nC}$  i  $q_2 = 4 \text{ nC}$ ...

<b>M</b>	<b>0.32 (0.08)</b>
<b>SD</b>	<b>0.744</b>
<b>ID</b>	<b>0.506</b>
<b><math>\alpha</math> - zadatak</b>	<b>0.887</b>



40. U (p,V) dijagramu prikažite izohorni proces u kojem se tlak plina povećava...

<b>M</b>	<b>0.56 (0.28)</b>
<b>SD</b>	<b>0.838</b>
<b>ID</b>	<b>0.539</b>
<b>α - zadatak</b>	<b>0.886</b>

