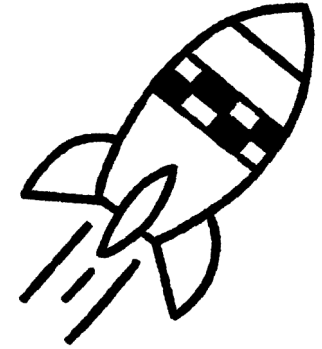


Isbarbardhigga wareegyada taxan iyo kuwa barbar socda



Sayniska

Cutub: Iska caabinta (Resistance) iyo wareegyada barbar socda

Natiijo

Waxaan isbarbardhigi karaa sifooyinka wareegyada taxan iyo kuwa barbar socda ee leh qaybo isku mid ah.

Erayada muhiimka ah

wareeg taxan (series circuit)

wareeg leh hal loop

current

heerka socodka charge-ka ee wareegga

danab (voltage)

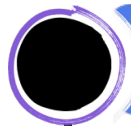
cabirka 'riixista' ee unugga korantadu siinayo charges-ka

wareeg barbar socda (parallel circuit)

wareeg leh isgoysyada u horseeda loops kala duwan

Qaabka casharka

Isbarbardhigga wareegyada taxan iyo kuwa barbar socda



Current iyo danab (voltage) ee wareeg taxan



Ku darista qaybo laamaha



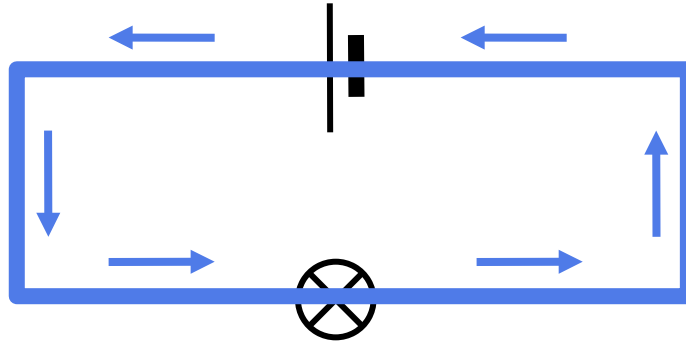
Ku darista laamo wareeg barbar socda

Current iyo danab (voltage) ee wareeg taxan

Kani waa wareeg taxan.

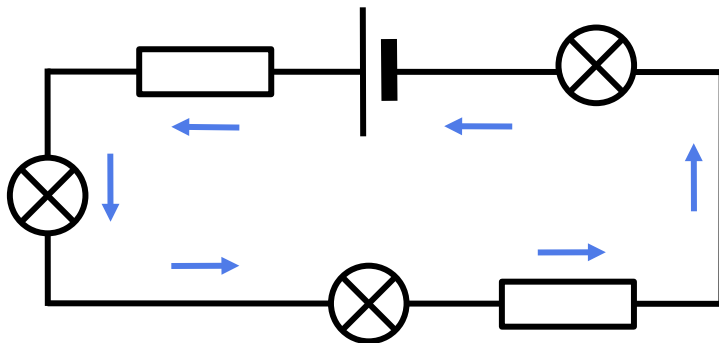
Waxaa jira hal loop.

Current-ku waa isku mid meel kasta oo loop-ka ah.



Ku darista qaybo meel kasta oo wareegga ah waxay kordhin doontaa iska caabinta (resistance) waxayna sababi doontaa in current-ka ku yaraado.

Mar labaad, korontada (current) hoos u dhacday waxay isku mid ku tahay meel kasta oo wareegga (circuit) ah.





Maxay samaynaysaa ku darista qaybaha (components) wareegga taxanaha (series circuit) ah?

a

waxay kordhisaa korontada (current)

b

waxay kordhisaa danabka (voltage)

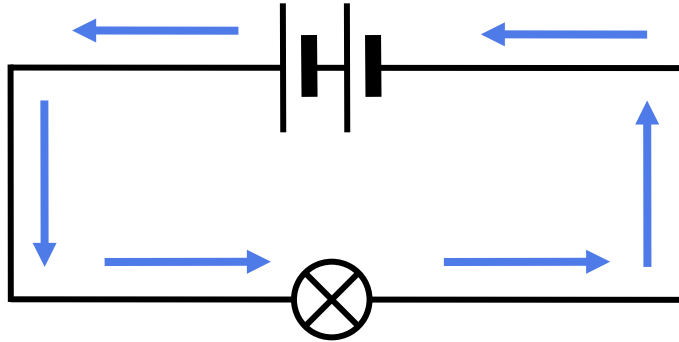
c

waxay kordhisaa iska caabinta (resistance)



Ku darista unug (cell) kale baytariga (battery) waxay keenaysaa in korontadu (current) kordho.

Korontada (current) kordhay waxay isku mid ku tahay meel kasta oo wareegga (loop) ah.



Korontada (Current) iyo danabka (Voltage) ee wareegga taxanaha (series circuit)



Hubi

Koronto (current) intee le'eg ayay baytari (battery) laba unug (cell) 1.5 V ah ku abuuri doontaa wareegga taxanaha (series circuit) haddii unug (cell) 1.5 V uu keeno koronto (current) 0.2 A?

a

0.2 A

b

0.4 A



c

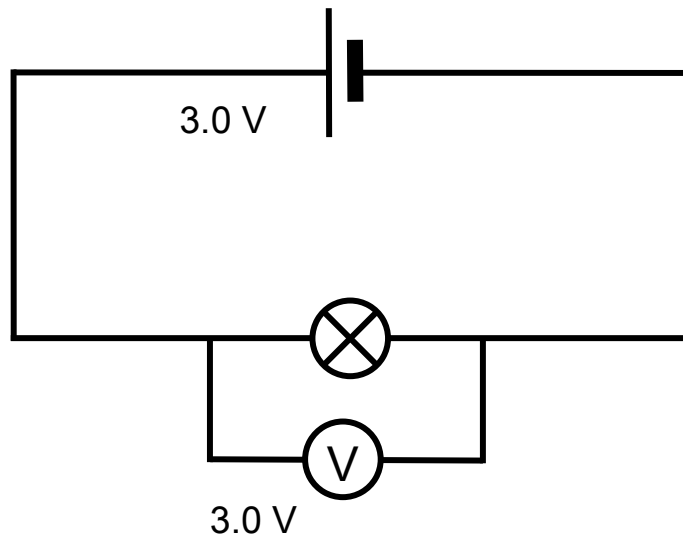
1.5 A

d

3.0 A

Korontada (Current) iyo danabka (Voltage) ee wareegga taxanaha (series circuit)

Unuggu (cell) wuxuu bixiyaa danab (voltage) 3.0 V ah si uu korontada (current) ugu riixo (push) nalka (bulb) dhexdiisa.

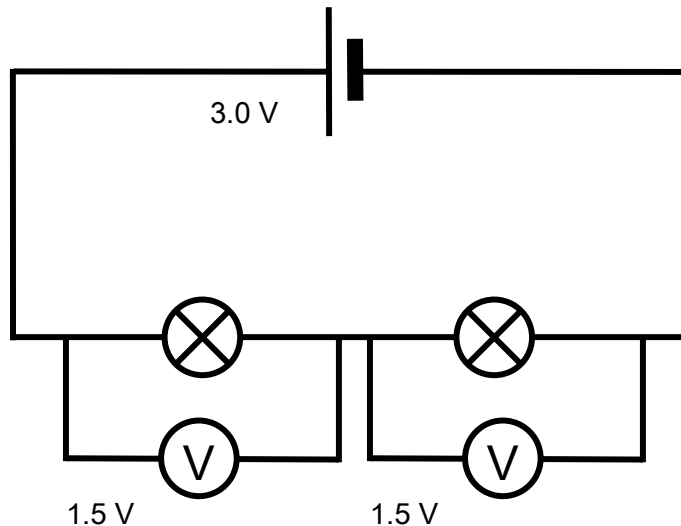


Danabka (voltage) nalka (bulb) ku yaal waa 3.0 V.

Unugga (cell) 3.0 V ah wuxuu korontada (current) u riixi (push) karaa laba nal (bulb) dhexdooda.

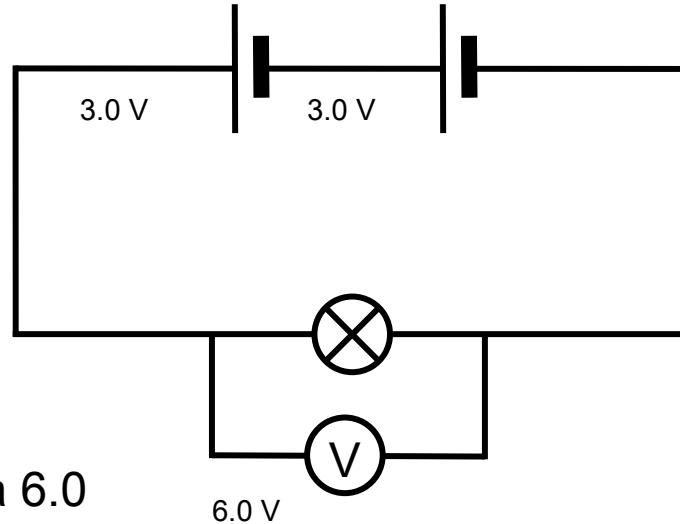
Iska caabintu (resistance) hadda waa ka sareeysaa, laakiin unuggu (cell) sii riixi (push) kari maayo si adag.

Nalku (bulbs) waa iftiin yar yihiin (dimmer).



Danabka (voltage) nalkasta (bulb) ku yaal waa 1.5 V ($1.5 + 1.5 = 3.0$).

Isticmaalka baytari (battery) laba unug (cell) ah wuxuu nalka (bulb) u iftiimin doonaa si dhalaal badan (brightly).



Danabka (voltage) nalka (bulb) ku yaal hadda waa 6.0 V.

Current iyo danab (voltage) ee wareegga taxanaha ah (series circuit)

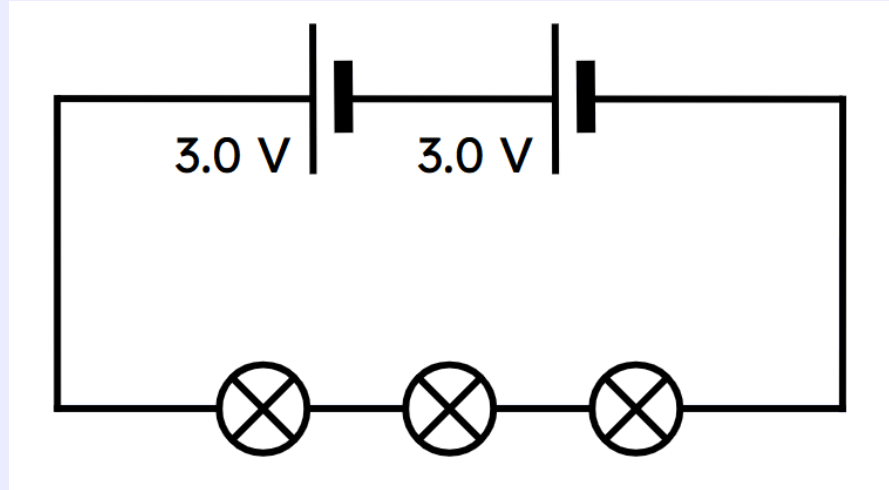
Waa maxay danab (voltage) ku yaalla mid ka mid ah nalalkan isku midka ah?

a 1.5 V

b 2.0 V

c 3.0 V

d 6.0 V



Sharax waxa ku dhacaya current, iska caabinta (resistance) iyo danab (voltage) ee wareegga taxanaha ah (series circuit) xaaladahan soo socda.

- 1) Tirada qaybaha (laakiin ma aha unugyada korantada) waa la kordhiyay.
- 2) Tirada unugyada korantada waa la kordhiyay.

1) Tirada qaybaha (laakiin ma aha unugyada korantada) waa la kordhiyay.

Iska caabinta (resistance) wuu kordhi doonaa, current-ka qulquli kara wuu yaraan doonaa.

Danabka (voltage) ka imanaya unugyada wuxuu ahaan doonaa isku mid.

2) Tirada unugyada korantada waa la kordhiyay.

Danabka (voltage) ka imanaya unugyada wuu kordhi doonaa, current-ka qulquli doona wuu kordhi doonaa.

Iska caabinta (resistance) ee qaybaha waxay ahaan doontaa isku mid.

Qaabka casharka

Isbarbardhigga wareegyada taxanaha iyo kuwa barbar socda



Current iyo danab (voltage) ee wareegga taxanaha ah (series circuit)



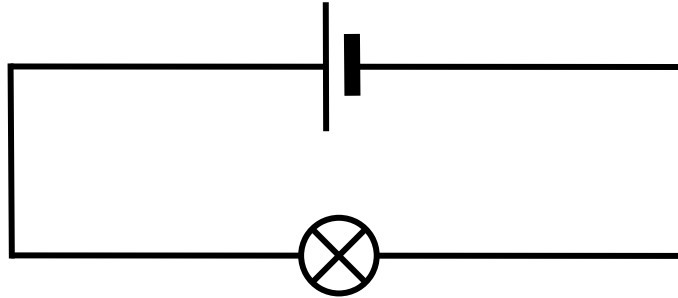
Ku darista qaybo laan (branch)



Ku darista laamo (branches) wareegga barbar socda (parallel circuit)

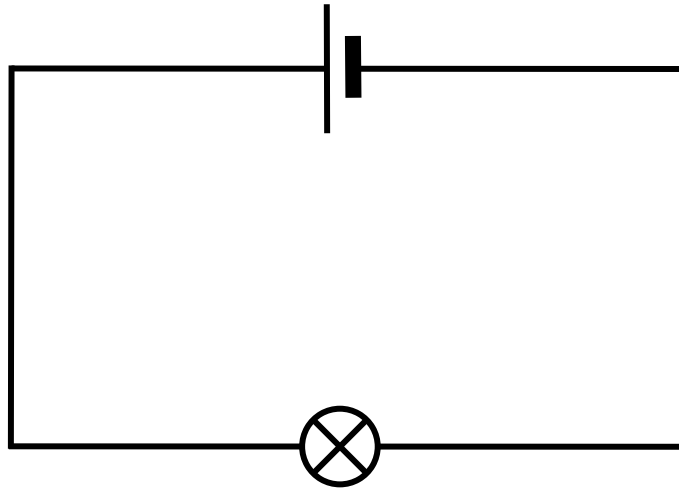
Wareegyada taxanaha ah waa la isku dari karaa si ay u sameeyaan wareeg barbar socda (parallel circuit).

hal wareeg taxane ah (series circuit)



Wareegyada taxanaha ah waa la isku dari karaa si ay u sameeyaan wareeg barbar socda (parallel circuit).

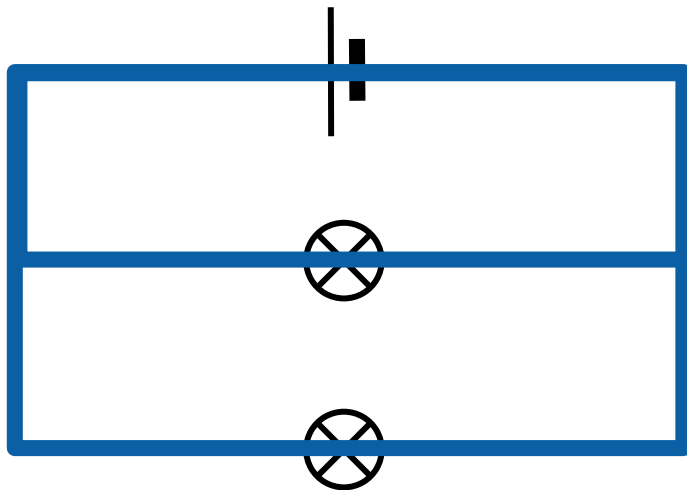
wareeg kale oo taxane ah
(series circuit)



Wareegyada taxanaha (series circuits) waa la isku dari karaa si loo sameeyo wareeg barbar socda (parallel circuit).

Wareegga barbar socda (parallel circuit) wuxuu u dhaqmaa sidii wareegyo taxane ah oo kala duwan oo la isku daray.

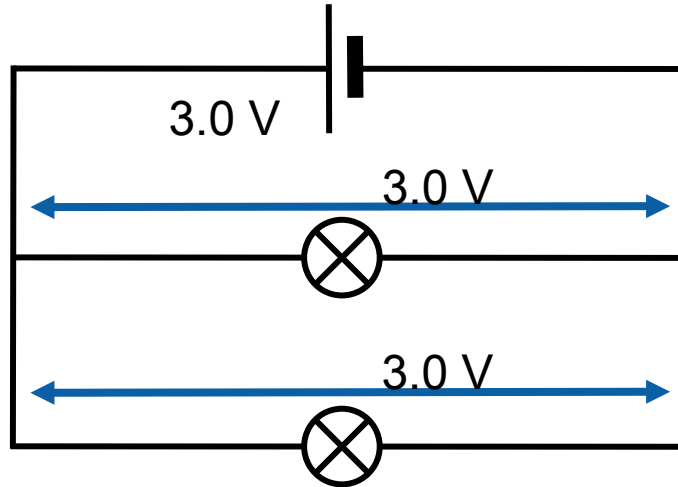
wareeg kale oo taxane ah (series circuit)



Ku darida qaybaha (components) laanta

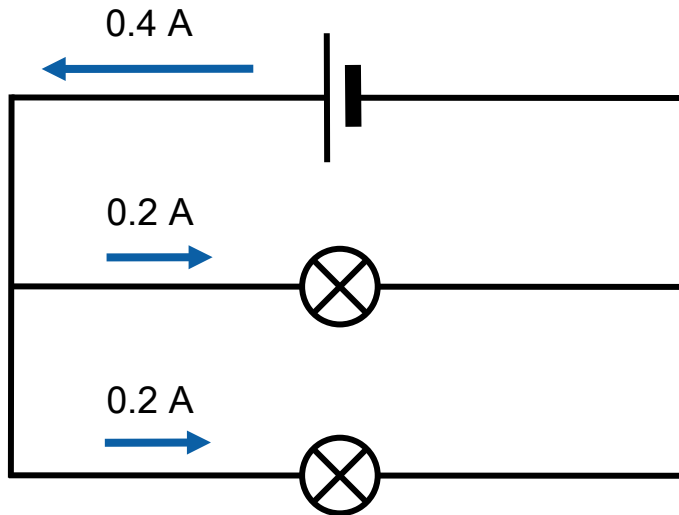
Wareeggan barbar socda (parallel circuit), danabka (voltage) unugga korontadu wuxuu la mid yahay danabka (voltage) laan kasta.

Labada laanba waxay leeyihiin 3.0 V oo dhexdooda ah.



Maaddaama danabka (voltage) laan kasta uu isku mid yahay, haddana korontada (current) sidoo kale way isku mid noqon doontaa.

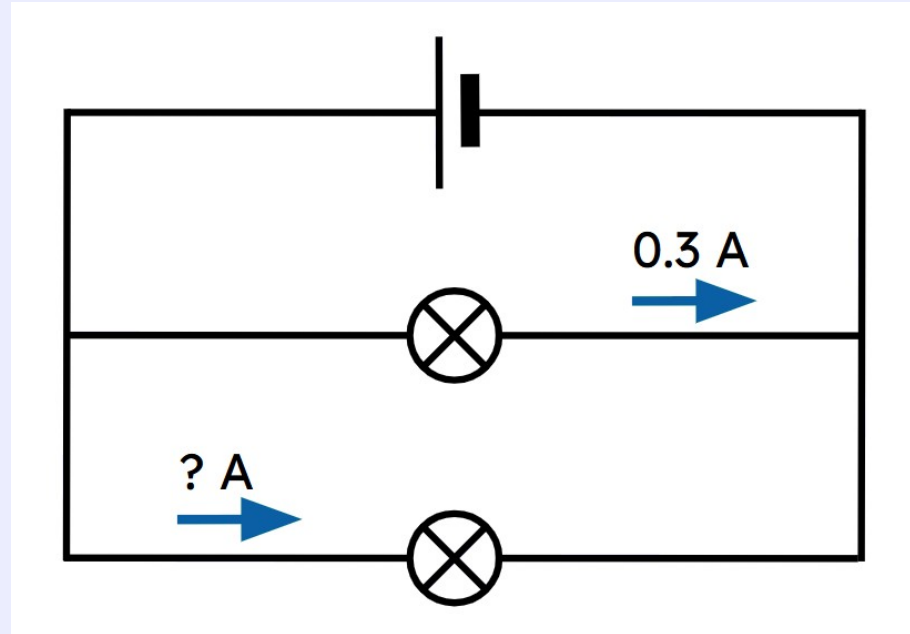
Laan kastaa waxay
yeelan doontaa 0.2 A
oo dhex maraya.
($0.2 + 0.2 = 0.4$)



Ku darida qaybaha (components) laanta

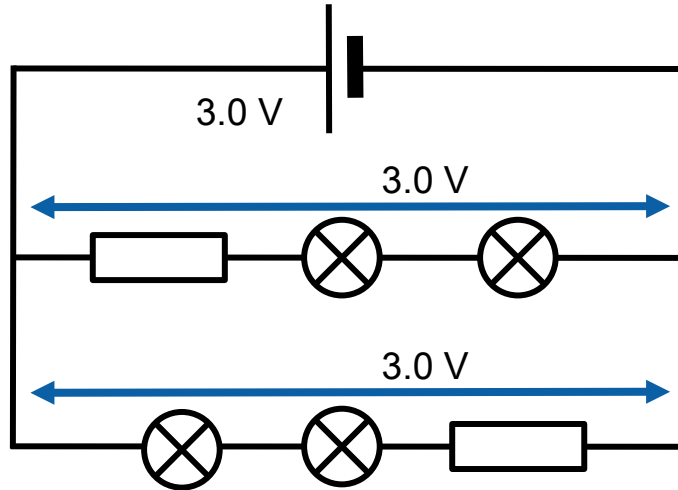
Waa maxay korontada (current) ku socota nalka hoose? Nalkeedu waa isku mid.

- a** 0.1 A
- b** 0.2 A
- c** 0.3 A ✓
- d** 0.4 A



Tirada iyo nooca qaybaha (components) laan kasta kuma saameeyaan danabka (voltage), sababtoo ah laamuhu waxay si toos ah ugu xiran yihiin unugga korontada.

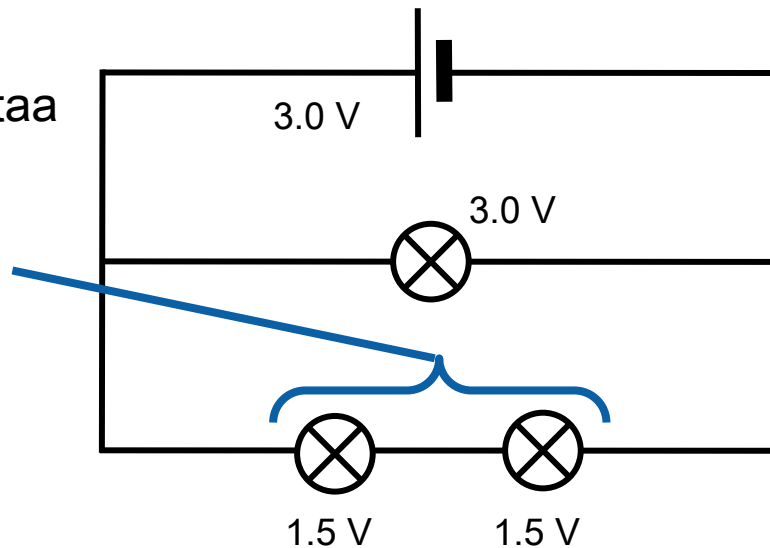
Laamuhu weli waxay leeyihiin 3.0 V oo dhexdooda ah.



Qaybaha (components) laanta waxay 'wadaagaan' danabka (voltage).

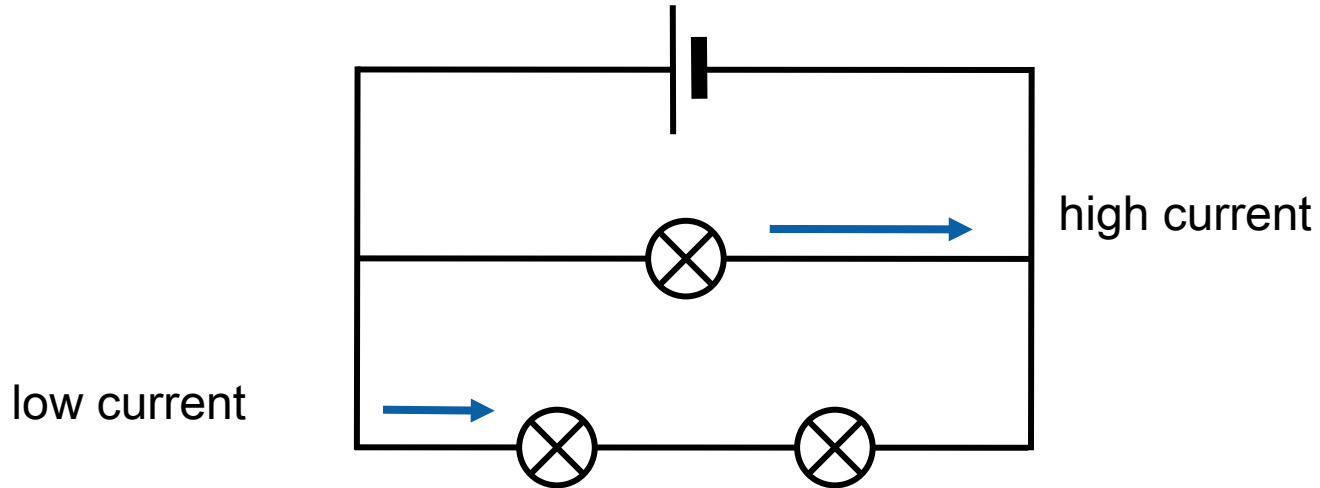
Kordhinta tirada qaybaha (components) laanta waxay yaraynaysaa danabka (voltage) qayb kasta.

Nalkeedani mid kastaa
wuxuu helaa 1.5 V
($1.5 + 1.5 = 3.0$).



Adding components to a branch

Laanta labada nal leh waxay yeelan doontaa iska caabin (resistance) sare, sidaas darteedna waxay yeelan doontaa koronto (current) hoose.



Adding components to a branch

Waa maxay hadda (current) ku socda nalalka hoose? Nalalku waa isku mid.

a

0.1 A



b

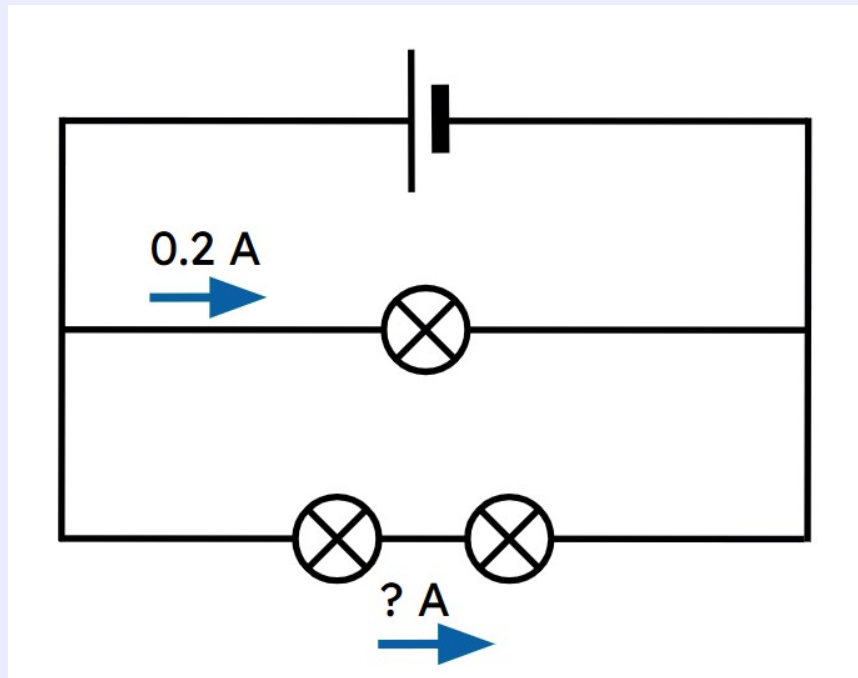
0.2 A

c

0.3 A

d

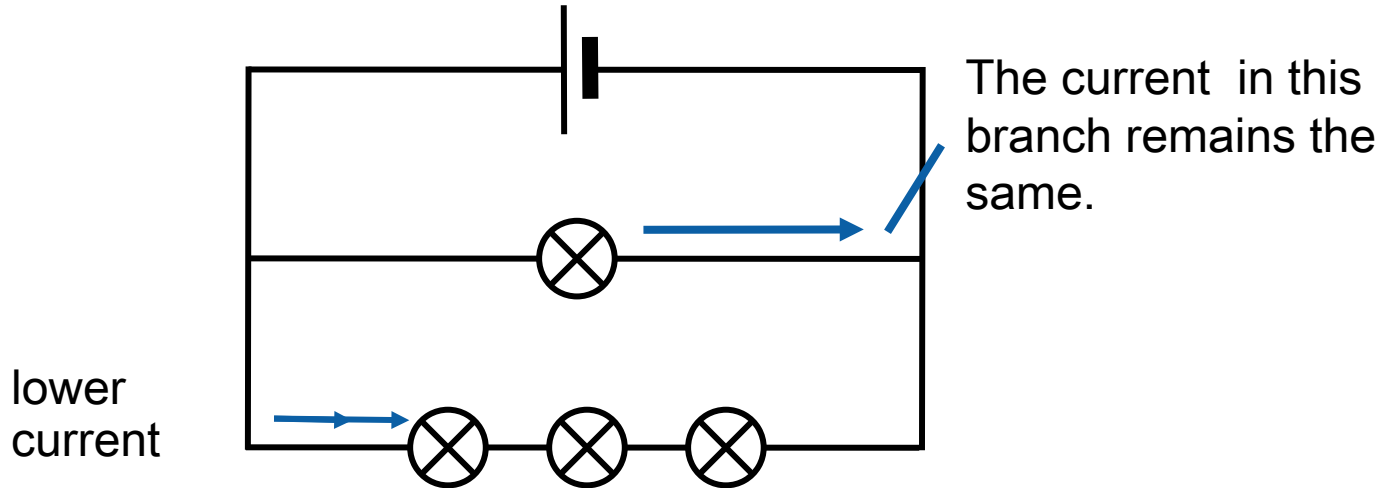
0.4 A



Adding components to a branch

Laanta nalal badan leh waxay yeelan doontaa iska caabin (resistance) sare, sidaas darteed waxay yeelan doontaa hadda (current) hoose.

Ku darista nalka kale waxay sii yarayn doontaa hadda (current).



Adding components to a branch

Run mise been?

If a resistor is added to the lower branch in series, the current flowing through the single bulb will remain at 0.2 A.



Run



Been

Sabab u sheeg jawaabtaada

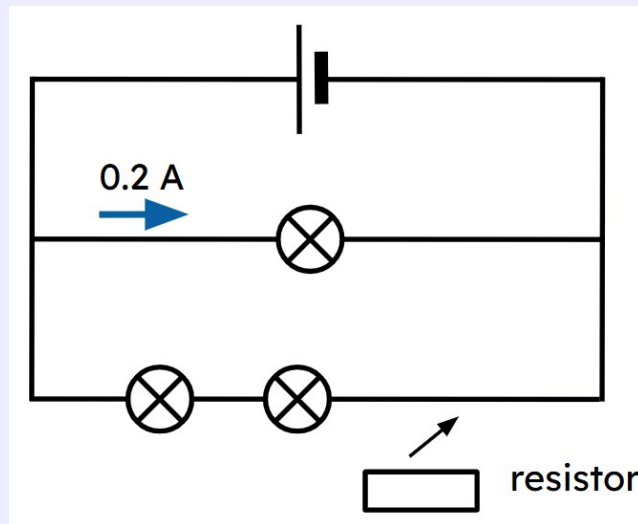
a

Korantada (voltage) ku taal laanta hal nalka ah waa isku mid.



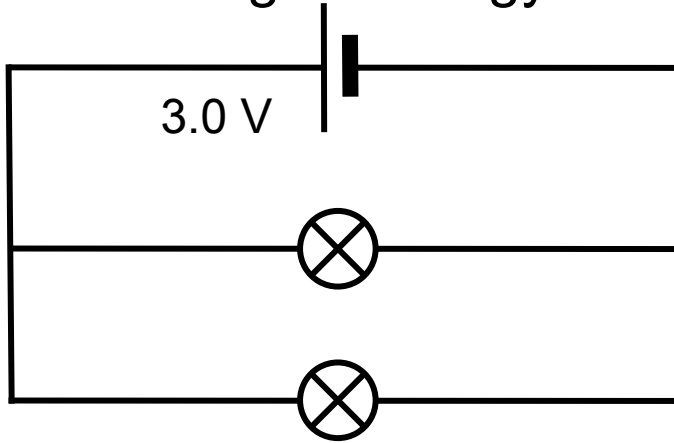
b

Laanta hoose waxay leedahay iska caabin (resistance) sare.

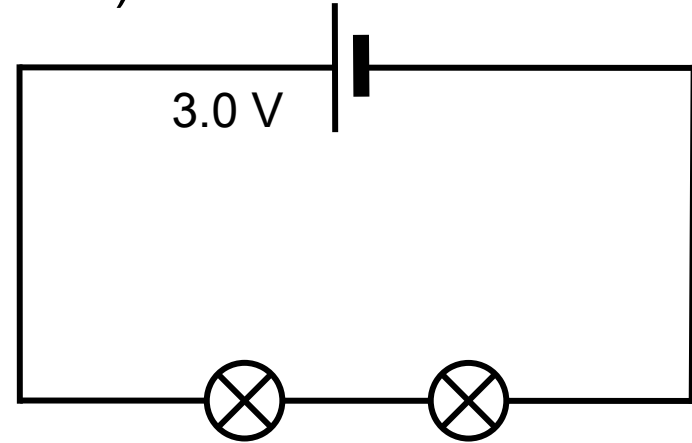


Adding components to a branch

Wareegyada barbar (parallel) waxay leeyihiin faa'iidooyin marka loo eego wareegyada taxane (series).



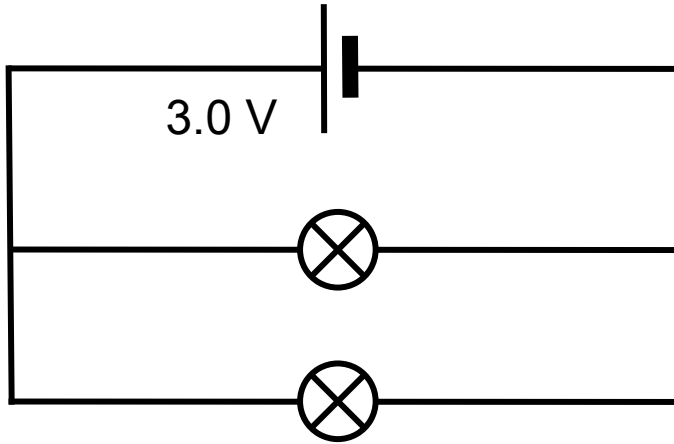
Nalalkan mid kastaa wuxuu leeyahay koronto (voltage) sare (3.0 V) oo waa iftiin badan.



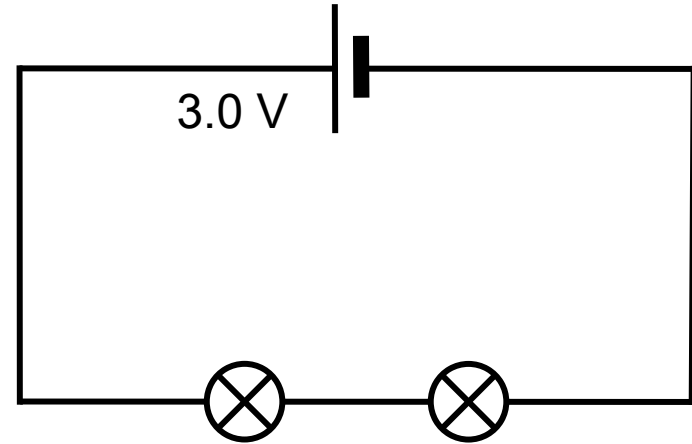
Nalalkan mid kastaa wuxuu leeyahay koronto (voltage) hoose (1.5 V) oo waa iftiin yar.

Adding components to a branch

Wareegyada barbar (parallel) waxay leeyihiin faa'iidooyin marka loo eego wareegyada taxane (series).



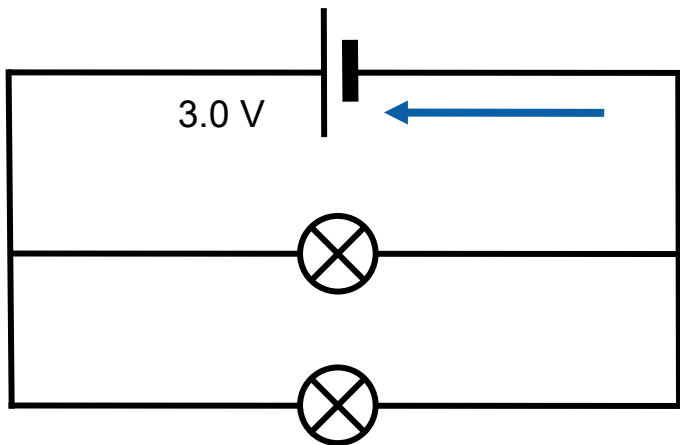
Haddii mid ka mid ah nalalkan uu qarxo, kan kale wuxuu weli shidi doonaa.



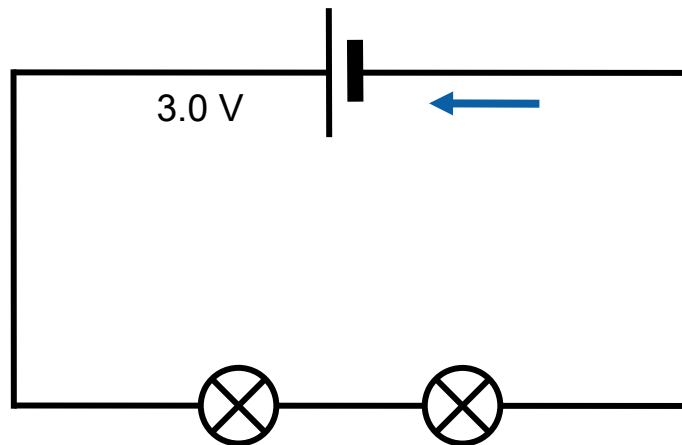
Haddii mid ka mid ah nalalkan uu qarxo, kan kale wuxuu joogsan doonaa shaqada.

Ku darista qaybaha laanta (branch)

Si kastaba ha ahaatee, koronto (current) badan ayaa ku qulqulaya unugga korantada ee wareegga barbar-socda (parallel circuit).



Unugga korantada wuxuu si dhakhso leh u dhamaan doonaa tamartiisa.



Unugga korantada wuxuu qaadanayaa waqti dheer inta uusan tamartiisa ka dhamaan.

Ku darista qaybaha laanta (branch)

Mid ka mid ah weedhahan ma aha faa'iidada wareegga barbar-socda (parallel circuit) marka la barbar dhigo wareegga taxanaha ah (series circuit) ee laba nal?

a haddii hal nal uu qarxo, kan kale wuxuu shaqeeyaa wareegga barbar-socda

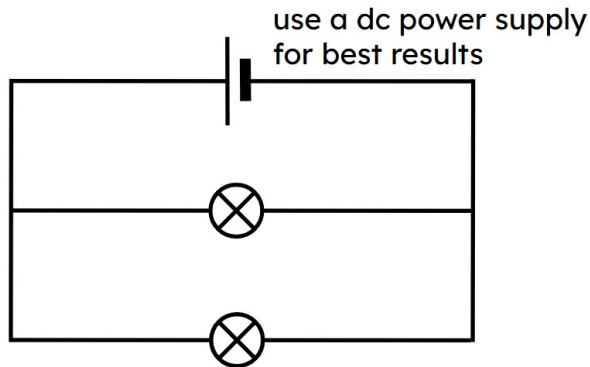
b nalalka ku jira wareegga barbar-socda way ka iftiimi badan yihiin

c koronto (current) sare ayaa ku qulqulaya unugga

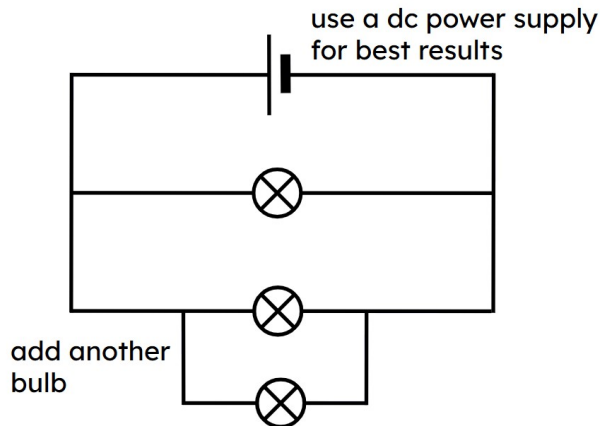


d nalalka wareegga barbar-socda waxay helayaan danab (voltage) sare

1) Dhis wareegga la muujiyey oo cabbir danabka (voltages) nalalka iyo korontada (current) iyaga dhex mara.

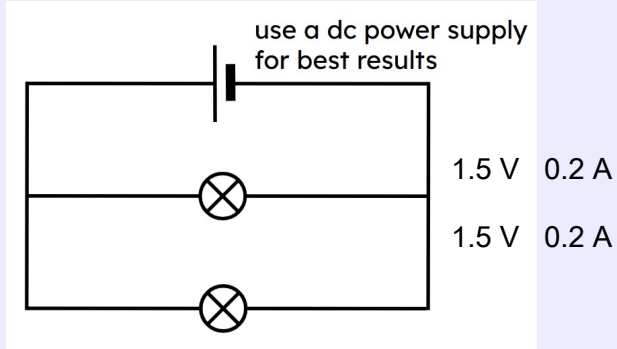


2) Ku dar nal kale oo barbar-socda (parallel), sida la muujiyey, oo cabbir danabka (voltages) nalalka iyo korontada (current) iyaga dhex mara.



Natiijooyin tusaale ahaan:

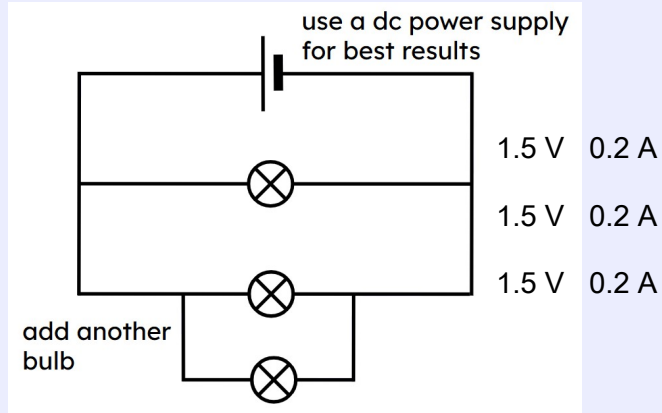
1)



Nalalka waxay had iyo jeer lahaayeen danab (voltage) 1.5 V oo iyaga dhex mara, koronto (current) 0.2 A ayaa iyaga dhex qulqulaysa.

Iftiinkoodu wuxuu ahaa mid isku mid ah.

2)



Qaabka casharka

Isbarbardhigga wareegyada taxanaha (series) iyo barbar-socda (parallel)



Koronto (current) iyo danab (voltage) wareegga taxanaha ah (series circuit)



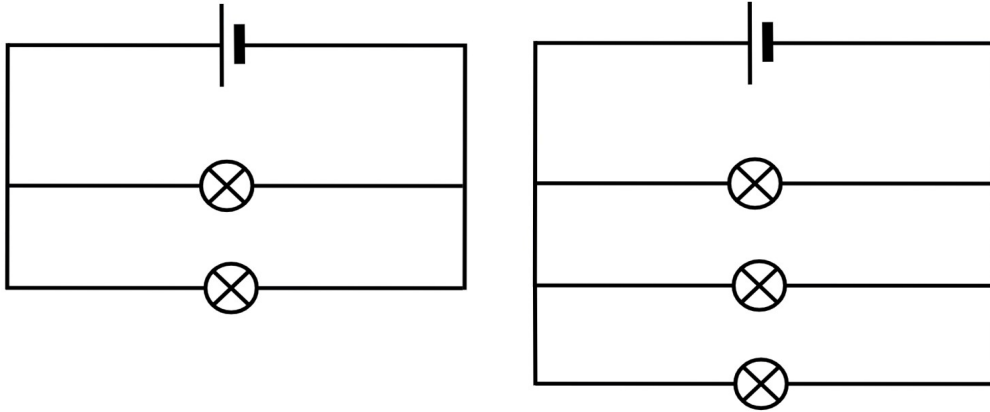
Ku darista qaybaha laanta (branch)



Ku darista laamaha (branches) wareegga barbar-socda (parallel circuit)

Ku darista laamo wareegga barbar socda (parallel circuit)

Nal la mid ah ayaa lagu dari karaa wareegga barbar-socda (parallel circuit) laan (branch) kale.

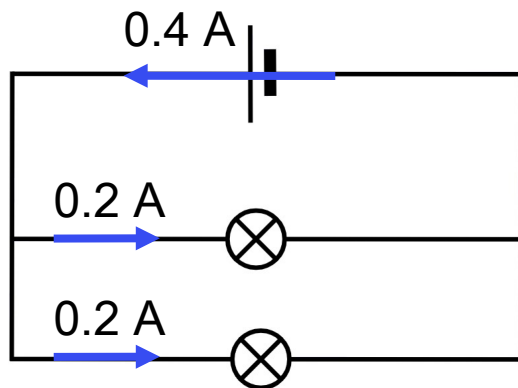


Nalalka cusub iyo kuwii hore waxay ku sii jiraan iftiin isku mid ah.

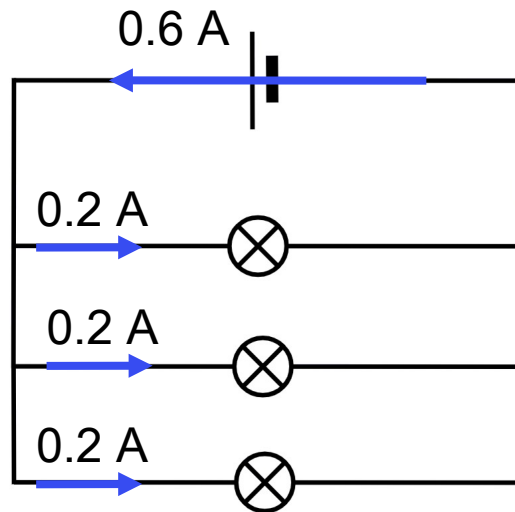
Sababtoo ah nalalka waxay leeyihiin danab (voltage) isku mid ah oo dhex mara, sidaas darteed waxaa dhex mari doona hadda (current) isku mid ah.

Ku darista laamo wareegga barbar socda (parallel circuit)

Haddii laam kasta uu 0.2 A ku qulqulo, wadarta hadda (total current) la qaadi doono way ka duwan tahay.



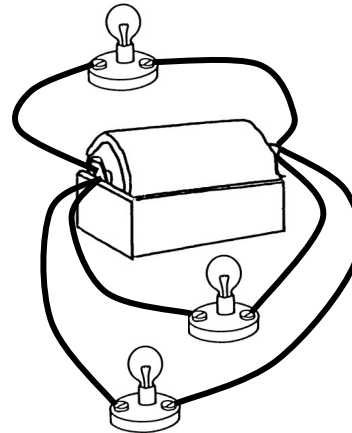
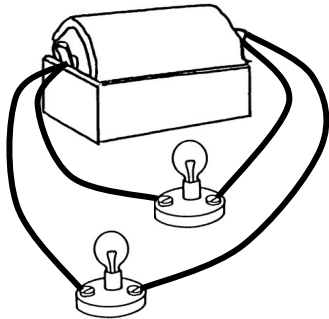
wadarta hadda (total current)
 $0.2 + 0.2 = 0.4\text{ A}$



wadarta hadda (total current)
 $0.2 + 0.2 + 0.2 = 0.6\text{ A}$

Ku darista laamo wareegga barbar socda (parallel circuit)

Kordhinta tirada wareegyada (loops) ee wareegga waxay keentaa in hadda (current) badan uu dhex maro unugga korantada (electrical cell).



Hadda (current) sare waxay si dhakhso ah u dhamayn doontaa kaydka tamarta unugga korantada.

Ku darista laamo wareegga barbar socda (parallel circuit)

Run mise been?

Ku darista wareegyo (loops) dheeri ah oo leh nalal wareegga kama saameyn doonto hadda (current) ee wareegyada asalka ah. U qaad in unugga korantadu si fiican u shaqeeyo.



Run



Been

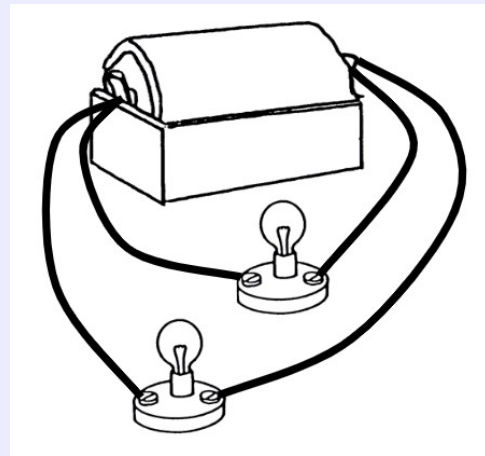
Sabab u sheeg jawaabtaada

a

Wareeg kasta oo dheeri ah wuxuu keenaa hadda (current) badan inuu ku qulqulo unugga.

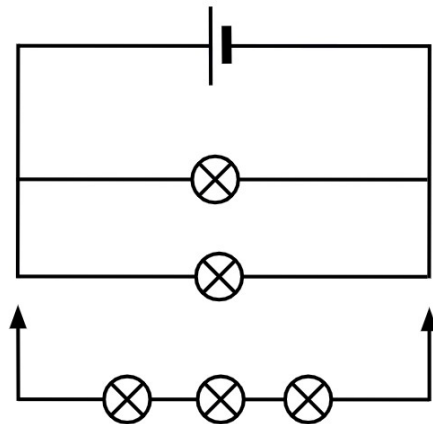
b

Wareeg kastaa wuxuu la mid yahay wareeg taxane (series circuit) oo gooni ah oo si toos ah ugu xiran unugga.



Cali iyo Layla waxay isku dayayaan inay saadaaliyaan waxa dhici doona haddii ay ku daraan laan leh saddex nalal wareeggan barbar socda.

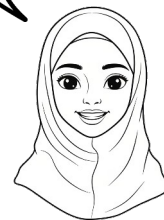
Ku darista laanta saddexda nalal waxay ka dhigaysaa dhammaan nalalka kuwo gudcur ah.



Marka laan leh saddex nalal lagu daro, dhammaan nalalku waxay noqon doonaan kuwo iftiin isku mid ah.



Sheeg qofka saxda ah ama qaldan, oo sharax sababta adigoo sheegaya waxa dhici doona iska caabinta (resistance), hadda (current) iyo danabka (voltage).



Hawsha C Ku darista laamo (branches) wareeg (circuit) barbar socda (parallel)



Sheeg cidda saxan ama qalad, oo sharax sababta adigoo sheegaya waxa ku dhici doona korantada (current), korantada (voltage) iyo iska caabbinta (resistance).

Cali iyo Layla labaduba waa qaldan yihiin.

Nalalka keliya ee laamaha asalka ah waxay ku sii jiri doonaan iftiin isku mid ah, laakiin saddexda nalal ee la daray waxay noqon doonaan kuwo gudcur ah.

Hadda (current) dhex maraysa, iyo danabka (voltage) ku yaalla, nalalka keliya waxay ku sii jiri doonaan isku mid.

Korantada (current) ku socota laanta (branch) saddex nal (bulbs) leh way yarayn doontaa, korantada (voltage) waxaa wadaagi doona saddexda nal, sidaas darteed way yarayn doontaa.

Iska caabbinta (resistance) guud ee wareegga (circuit) way yarayn doontaa, sababtoo ah waxaa jira wareeg (loop) kale, taas oo macneheedu yahay in unugga korantada (electrical cell) uu qaadi doono koronto (current) badan.

Wareegga (circuit) taxan (series), korantada (current) waa isku mid meel kasta oo wareegga (loop) ku jirta.

Ku darista qaybaha (components) wareegga (loop) waxay kordhin doontaa iska caabbinta (resistance) oo sababi doonta in korantada (current) yaraato.

Qaybaha (components) lagu daray taxan (series) waxay wadaagi doonaan korantada (voltage), sidaas darteed qayb kastaa waxay helaysaa koronto (voltage) yar.

Wareegyada (circuits) barbar socda (parallel), laan (branch) kastaa waxay helaysaa isku koronto (voltage), korantada (current) ku socota unugga korantada (electrical cell) ama batteriga (battery) way kordheysaa. Tamarta ku jirta unugga korantada (ama batteriga) way si dhakhso leh u dhammaan doontaa.

Nalalka (bulbs) ku jira wareegyada (circuits) barbar socda (parallel) way ka iftiin badan yihiin kuwa wareegyada (circuits) taxan (series), haddii hal nal (bulb) ku dhaco wareegga (circuit) barbar socda (parallel), kuwa kale wali way shaqeeyaan.