Natijooyinka cutubka: Cutuba kani markuu dhamaado waxaad awoodi doontaa in aad

- ✓ Fahamto fikradaha laxidhiidha cadaadiska .
- ✓ Kobcisid xirfadahaaga laxidhidha masalooyinka cadaadiska .
- ✓ Ubogted xidhiidhka ka dhexeega dhammaan walxaha.
- ✓ Isticmaashid baaxada wayn ee suurtagalisa kor uqaadista aqoontaada fikrada ha muhimka ee fiisigiska.

Hordhac

Fiisigiska fasalkii 7aad waxaadku soobaraytay xooga iyo saamayntiisa. Maxasuusan kartaa saamaynta xooggaga. Cutubkan waxadku baran saamayn kale oo xoogu leeyahay waxaa layidhaa cadaadis marka u horeysa waain aad baratid fikrada cadaadiska ee looisticmaalo shayga adkaha. Markaan waxaad baran cadaadiska dareeraha, atmosfarka (Gibilka). Cabbirka cadaadiska Gibilka, Xeerka Baskal iyo ugu **danbaynta masalooyinka cadaadiska.**
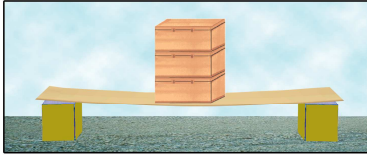
3.1 Qeexida Iyo Halbeega Cadaadiska

Hawlgalka 3.1

Ka ladood su' aalahan soosocda saaxiibadaa ama waalidkaa

1. **Waa maxay xoogu? Waa maxay Bedku?**
2. **Qeex saamaynta xooga ee halbeega bedka.**
3. **Saamayntan maxaa layidhaa**

Hawlgalka 31 waxa uu yahay FahanKaaga ku aadan faraqa udhaxeeya jooga iyo cadaadiska. Xoogu waa riixid ama jiidis oo badala qaabka walaxda lakiin cadaadisku marwalba waa xoog halbeega bedka isagoon badalin jihada laxaadka xooga waxaad helikartaa cadaadis kala duwan is lamarkaa adoo badalaya Jihada bedka xoogukufalmo. (eeg jan – 3.1)

b) baloogyo koruquman

t) baloogyo jiif uquman

Jaantuska . 1.1 Saamaynta bedka cadaadiska

Hawlgal 3.2 ufiirsashada saamaynta cadaadiska ee bedka

Qalabka loo bahanyahay balooga loox ama buuga, mastarad, iyo I.W.M

Jidka lamarayo: mastara du waxay u dhaxay saa la bada wal xood.

Meesha balooga loox, midmid usaar mastarada (Jan 3.1) balooga meeshisa kuceli

b. Joogahaan (Jan 3.10) midbamid buu usaaran ya hay waliba saamaynta culays ka ee baloogu waata mastarada aad ka arki doontid. Maxaad ka fahan tay

t. Jifahaan (Jan 3.1)

kujada xiga, saamayn ta isbar bardhiga culayska balooga dusha mastarada halkee aad logumarin mastarada? Qeex sababta

maxaad ku gabagabayn kalsooni da cadaadis ku saran bedka.

Hawlgalka 3.2 waxaad aragtay. Cadaadiska kufalmaya balooga loox dusha mastarada kutirsan bedka dusha balooga ee uhaysto.

Cadaadiska sareeya marku baloogu sijoogah uqumanya hay meeshu markaa sijifah uhabay san tahay.

cadaadis waa natijada dhacda marka xoogu qabto oogada. Cadaadisku waa caddadka xooga ku falmaya bed halbeegiiba . Summad cadaadisku waa 'P'

$$\text{Cadaadis} = \frac{\text{Xooga lagu qabtay}}{\text{Bedka}} \leftrightarrow P = \frac{F}{A}$$

Halbeega cadaadisku waa Niyuutan oo loo qaybiyey miter laba jibaaran ($N|m^2$) waxaa kaloo layidhaa baskal oo utaagan Pa.

Marka 1 pa = $1 N/m^2$.

Halbeegyadkale ee an caalami ahayn, baar, milibar, iyo toor
1 milibar = $100 P_a$
1 bar = $100,000 P_a$
1 toor = 1 mm Hg
= 0.1 cm Hg
1.01 bar = 1010 milbar
= 768 bar
= 101,000 P_a waxa
Layidha halbeeg
Gibilka cadaadiska

Sida qeexida cadaadis waxa laga fahmi marka cadaadisku kordho in xooguna kordhi.

Hawlgalka 3.2 waxaad ka fahantey cadaadisku in u ku salaysanyahay bedka dushiisa xooga lagu falay.

Su'aalo Furan

1. Mata qaan maroodiga? Lu'ga hiisu waasidee? Mawayn yi hiin mise way yar yihiin?
2. Maxaa kudhici lahaa maroodiga hadii lugahiisu ay noqon lahaayeen kuwa yar - yar.

Sida dabiciga waxaad ogtahay waxyaabaha saameye cadaadiska cagta marodigu waxay qaadan bed balaadhan marka usocodo culayskiisu aadbuu uwaynyahay waxay kufidi cagtisu bedwaasac ah. Sida cadaadiska ama xooga ee halbeegabedku waa yar yahay tani waxayku dhacdaa maroodigu ku socodo dhulJilicsan ee an ladagaynin (aan qusaynin) dhulka jilicdasan.

Jilicdasan

Hadii F tahay Nama N = kg. m/s^2 cabbirkisan kaladuwani[MLT^{-2}], iyo

Hadii a tahay m^2. Cabbiradisa dhinac [L^2]

sidaas darteed cabbirada dhankasta waa $\left[\!\left[\frac{MLT^{-2}}{L^2}\right]\!\right] = [ML^{-1}T^{-2}]$

Su'aal Furan

Maqeex ikartaa sababta cagta taayiradiisu uwaawanyihiin baabuur takale? (bedka taagirada).

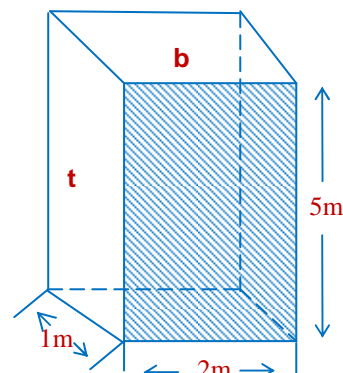<div style="background:#8B2E2E;color:white;padding:4px">Tusaale 3.1</div>

1. Xisaabi cadaadiska ku falmay barta intabadan daadinaysa inlagumusbaar iyo bedka 0.1 cm^2. Dubaha alwaaxa balooga xoogisuyahay 20N.

Siin	Waydin	Furfuris
F = 20N A = 0.1cm^2 = 0.0001m^2	P = ?	$P = {}^{F}/_{A} = \frac{20\,N}{0.00001 m^2}$ = 2,000, 000 N/m^2 or 2,000,000 pa

2. Waaimisa xooga lagu way diyey inuusoosaaro cadaadiska 20,000 N/m^2, markaa ogada bedkuwaa 2m^2?

Siin	Waydiin	Furfuris
P = 20,000 $^{N}/_{m^2}$ A = 2m^2	F = ?	$P = \frac{F}{A} \Rightarrow F = P \times A$ $= 20{,}000\,\frac{N}{m^2} \times 2m^2$ $\Rightarrow F = 40{,}000N$

3. baloog laydi ayaa cufkiisu yahay 50kg leyn dherer 2m, 1m dusha miiska. Waaimisa cadaadiska ku falmay culayska miiska (eeg Ja 3.2)

Jaantuska 3.2 Balooga dhinacyadiisu 1m $\times$ 2m $\times$ 5m

Siin	Waydiin
Cufka baloog = 50 kg cidhifyada = 2m×1m×5m g = 10 m/s^2	P_A = ?

Furfuris

Cutubka kowad, waad soobaratay sida loo xaliyo bedka ogawalba.

Bedka blooga ogadisa 'b' = 1m × 2m = 2m^2

Culayska baloogu W = m$_b$ × g = 50kg × 10m/s^2 = 500N

Cadaadiska uguwayn ee ku Falmaya marka baloogu ku sugnaado cidhif yar ugu badnaantiisu waa

$P_A = \dfrac{F}{A} = \dfrac{W}{A} = \dfrac{500N}{2m^2}$ 250 N/m^2. Sidokale marka ogada bedku uguwaynaan. IskhilaaF ka cadaadisku

waxa uu noqon uguyaraan.

$P = \dfrac{F}{A} = \dfrac{W}{A}$ $\qquad$ $P = \dfrac{500\ N}{10\ m^2}$ $\qquad$ P = 50 N/m^2

Hubin 3.1

1. **Waa maxay cadaadis?**
2. **Waa maxay dhinacyada cadaadisku? Ka adooda halbeegyada cadaadiska?**
3. **Qeex sida cadaadisku u badalo saamayn ta bedka?**

3.2 Dareeraha Cadaadiska

Si aad u fahantid cadaadiska dabiciga ee dareeraha, waa in aad xasu'satid dabeecadah dareeraha.

Hawlqalka3.3

Kaladood saaxibadaa

1. **Faraqa udhexeega iyo waxay wadaagaan adkaha, dareeraha (qaab, mug, culays, Cufnaan. IWM)**
2. **Koonteenar caagah oo biyo kujiraan kuxisaabtan. Hadii laga mudo cidhifyo kala duwan maxaa ku dhicibiyaha? (Fii Jan 3.3)**
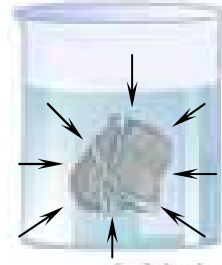

Doodiinii hawlgalka 3.3 waxaad kaga hadasheen.

- Dareeruhu malaha qaab waxa u qaataa qaabka weelka ukujiro.
- Dareeuhu waxa u lee yahay mug, cuf iyo culays.
- Isbar bardhig molkuulada adkaha, kuwa dareeraha si isdabajooga oo madax banaan bayusocdaan

Cufnaanta adkuhu way ka wayntahy tan dareeraha. Hawlgaladkale way ka siman yihiin ee k u tusaya dareeraha cadaadiskiisu kufalmaya weelka jihadiiso dhan Jan 3.3 eeg marka caaga biyuhu ka bux samaan biyaha lagu dalooliyo markaa biyuhu waxay u dhaqaaqan jihooyinkoo dhan.

b. **Caaga bilaastiga oo biyo ka buu xaan**

t. cadaa diska biyuhu Jihoyin koo dhan waa is kumid

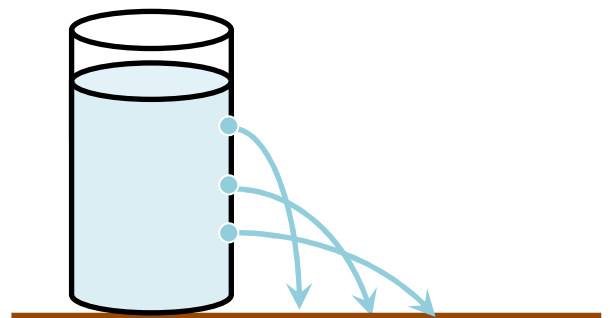*Jaantuska 3.3 Cadaadis ka biyahu waxa uudhacaa dhamaan jihooyinkoodhan.*

Hawlgalka 3.4

Ufiirso qaabka kala duwan iyo baaxada ukujiro qayb dareereah oo iskumidah.

   i. Muxu noqoncadaadiska dareeraha salka weelka kujira?
   ii. Maleegyahay cadaadisku ama maku kala duwan yihiin koontenerka?
   iii. Qaabka koontenerku saamayn makuleyahay cadaadiska?

Jaantuska. 3.4 koontener qaabkala duwan leh dareerihisu waxay kujoogaan joog iskumidah

Jan3.5 saamayn ta ay ku leedahay sare cadaadis joogiisu yahay inta dareerah kujirta. Koonteenerku waxa u leeya hay sadex dalool 1,2 iyo 3. Dareeraha ka soo baxaya da loo ka 3 waxa u ku socon Fogaanta ugu dheermarka loo eego daloolka 1, tani waxay inatusi cadaadiska daloolka3 waxa u kawayn yahay 1 iyo 2 Hawlgalka 3.4 waxay kaa caawin in aad fahamto cadaadiska dareerahu inuku salaysan yahay qaabka weelka iyo salka bedka weelka

Jaantuska 3.5 Cadaadiska dareeraha doku salayn san joog

Taniwaa dareereha cadaadisku inuu ku salysan yahay
   i)   Joog(h) ilaa xaga sare ogada dareeraha
   ii) Cufnaanta dareeraha. Aad ucufan cadaadis badan buu leyahay joog kastaba

Ufirso dareeraha cofnaantiisa (ρ) weelka (koontenerka). Joog su'gan (h), xooga ku falmaya dareeraha wu leeg yahay culayska dareeraha

Marka cadaadiska, $P = \dfrac{F}{A} = \dfrac{mg}{A}$, Halka M waa CuFka lakiin m = ρv , aan isku darno labad su'aalod. Waxaan helaynaan

$P = \dfrac{F}{A} = \dfrac{mg}{A} = \dfrac{\rho Vg}{A}$,

Maadamo mugu soosaaro jooga iyo bedka (V = Ah) marka

$$\Rightarrow P = \dfrac{\rho Ahg}{A} \quad \Rightarrow P = \rho gh$$

Halka p = Cadaadiska dareeraha N/m^2

   ρ = Cadaadiska cutnaanta kg/m^3

   g = xoog cu F isjidadka m/s^2

   h = Jooga (Jooga biyaha)

Waad xisaabi kartaa cadaadiska kufalmaya biyaha weelka, bada, badwayn dabaasha Iwm walxda dusheeda barkasto kamid ah biyaha uisticmaal su'aalaha cadaadiska (P = F/A).

Hawlgalka 3.5

Iska I law cadaadiska hawada Raadi cadaadiska loo qaybiyo miter laba jabaaran. Joogu waa 10m, 100m, 1000m iyo salka badwaynta (2000m) uqaado cufnaanta badwayn ta 1039 kg/m3.

Cadaadiska ku haboon dareeraha negi:

1. Cadaadisku waxa u ku falmaa bar kasta oo dareeraha kamidah
2. Cadaadisku barkaste waa iskumid oo heer koodu is leegyahay dareerayaasha
3. Cadaadisku waxauu saamigalku yahay jooga (jooga hoose ee ogada) iyo cufnaanta dareeraha (ρ)
4. Xooga salka weelku waa cadaadis heerka badka weelka (F = PA). xeerkan waxaa lo isticmaalaa biyo xidheena da.

Tusaale3.2

1. Qaar koontenarada waa kuwo ka buuxa biyo cufnaan 1000 kg/m^3, Jooguna 50cm waaimasa cadaadiska ku Falmaya weelka. (uqaado g = 10 m/s^2)

Siin	Waydiin	Furfuris
$\rho = 1000 kg/m^3$	p = ?	P = ρgh
h = 5cm = 0.5m		P =1000kg/m^3×0.5m×10m/s^2
g =10m/s^2		= 5000N/m^2
		= 5000P$_a$

2. Biyo ayaa lagu shubay weel Joogisu yahay 2m. (xisaabi cadaadiska biyaha ee weelka. (uqaado g = 10 m/s^2, cufnaanta biyahana

ρ_ω = 1000kg/m^3).

Siin	Waydiin	Furfuris
h = 2m, g =10m/s^2 ρ_ω= 1000kg/m^3	P = ?	P = ρgh =1000kg/m^3 × 10m/s^2 × 2m = 2 × 10^{4}N/m^2 = 2× 10$^4 p_a$

Hubin 3.2

1. **Cadee waxayaabaha saameeya cadaadiska dareeraha?**
2. **Sharax side cadaadiska dareeruhu ugukala duwan yahay jooga.**
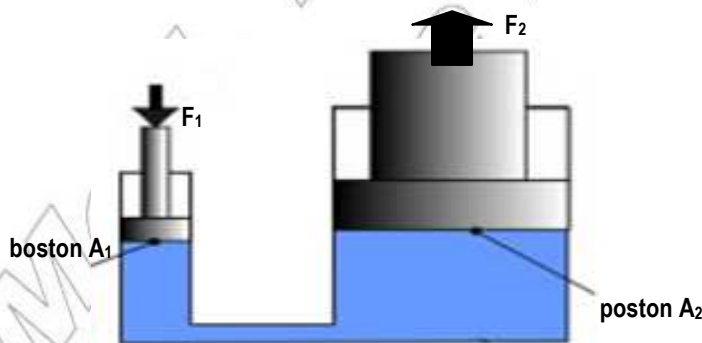
3.3 Xeerka Baskal

Hawlqalka 3.6

Cadaadisku dareeraha makadhex gud baa sabab?

Dareerahu wuu kadhex gud baa cadaadiskasta hooseya oo lagu qabto qaybkasta kamid ah?

Astaantan dareeraha cadaadiska waxaa loo isticmaalaa haydhiroliga hoos urixa haydhiroliga Jabintisu waa inuu soo saaro xoog badan kuna soosaaro joogyar

Hay dhiro liga hoosurixa waxa uka kooban yahay dhululubo dhuuban, mid balaadhan labaduba waxay ka koobanyihiin dareere. (tusaale salid) iyo bostonka b & t (Jan. 3.6 eeg).

Jan 3.6 A Hydhiro lika hoos uriixa

Xooga laqabtay F$_1$ bostonka yar eeka gud baya badka A. sitoosah dusha dareeraha. Sida salida. Markaa cadaadiska $P_1 = \dfrac{F_1}{A_1}$. Cadaadiskan gud baya dhanka aan xaga salida dhululu bada wayn. Taaso ah bedka A$_2$, marka acadaadiska labada ka siman yahay.

$P_1 = P_2$ xaga $P_2 = \dfrac{F_2}{A_2}$. xooga lagu falo bostonka A$_2$ waa P$_2$A$_2$ = F$_2$ sidaa darted aadbay ugawayn yahay sidaas oo kale xeerka Baskal

Xisaab ahaan

$$P_1 = P_2$$
$$\Rightarrow \frac{F_1}{A_1} = \frac{F_2}{A_2}$$
$$\text{ama } F_2 = \frac{A_2}{A_1} \times F_1$$

Su'aalo Furan

Masheegi kartaa isticmaaloo kale oo haydhiroliga xeerkisa kamidah?

> **Dareeraha iyo gaaska ugudban waxaa layidhaa dareere (Fuludh) haddi cadaadis gudeeduuJiro meelbu kuhayaa dareere. Cadaadiska waxa u ugudbi barkasta darreah. Xeerkani waa xeerki Baskal.**
>
> **Xeerka baaskal waxa uu dhigayaa cadaadiska la isticmaalayo dareeraha ugdbaya dhinac la'aanta bar kasta bostonka dareerihisa kamidaah**

Xeerka baskal waxaa loo isticmaalaa aaladaha casriga (techolologic) taaso loo isticmaalo soo saarida xoogwayn sida hay dhirolik hoos urixa

Eeg Jan. 3.6 mujinayaa shaqada xeerka Baskal ee hay dhiro liga.

Tusale 3.3

1. Haydhirolicka hoos urixa bostonka yar waxau lahaa bed 8cm^2 sido kale bostonka waynina bedkisu 400cm^2 hadii laguisticmaalo 20N xoogdhan bostonka yar waa imisa xooga Bostonka wayni.

Siin	Waydiin	Furfuris
$A_1 = 8\text{cm}^2$	$F_2 = ?$	$\frac{F_1}{A_1} = \frac{F_2}{A_2} \Rightarrow F_2 = \frac{A_2 \times F_1}{A_1}$
$A_2 = 400\text{cm}^2$		$= \frac{0.04\text{m}^2 \times 20\text{N}}{0.0008\text{m}^2}$
$F_1 = 20\text{N}$		$= 1000\text{N}$

2. Bedkuimisa ayuunoqon bostonka wayn ee haydhiroliga hadii u qaado culays dhan $20{,}000\text{N}$ xooga 200N lagu isticmaalo dusha bostonka yar bed 1cm^2?

Siin	Waydiin	Furfuris
$F_1 = 200\text{N}$	$A_2 = ?$	$\frac{F_1}{A_1} = \frac{F_2}{A_2}$
$F_2 = 20{,}000\text{N}$		$\Rightarrow A_2 = \frac{F_2}{F_1} \times A_1$
$A_1 = 1\text{cm}^2$		$= \frac{20{,}000\text{N}}{200\text{N}} \times 1$
		$= 100\text{cm}^2$

3. Haydhirolika hoos uriixa boston kiisa yar bedkiisu waa $6cm^2$ halka bostonka wayni kayahay bedkiisu $300cm^2$. Haddi lagu isticmaalo xoog dhan 30N bostonka yar. Intee ku qaadikaraa culayskan?
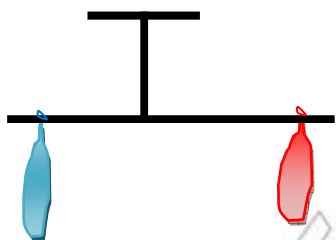
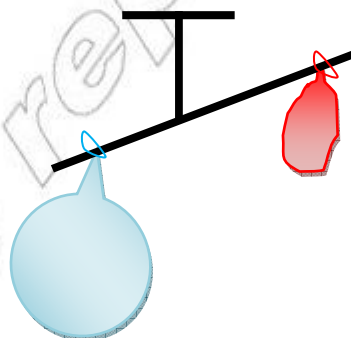| Siin	Waydiin	Furfuris
$A_1 = 6cm^2$	$F_2 = ?$	$\frac{F_1}{A_1} = \frac{F_2}{A_2}$
$A_2 = 300cm^2$		$\Rightarrow F_2 = \frac{F_1}{A1} \times A_2$
$F_1 = 30N$		$= \frac{30N}{6cm^2} \times 300cm^2$
		$= 1500N$

Hubin 3.3

1. **Qeex xeerka Baskal?**
2. **Sawir hydhirolik hoosurixa sharax Faidadiisa.**

3.4 Cadaadiska Gibilka

Dhulka waxaa ku xeeran cufa cimilada weyn oo layidhaa **Atmosfarka (Gibilka).** Xoog cufisjidadku wuxuu ku falmaa hawada. Eeg Jan 3.7 I isticmaalaynaa biibibalaadhan oo culus. Kawayn tan madhan si daas darted hawduwaxay leedahay culays. Culayska lagu falayo cadaadiska walaxda laga helo oogada dhulka cadaadiska waxaa layidhaa cadaadiska Gibilka.
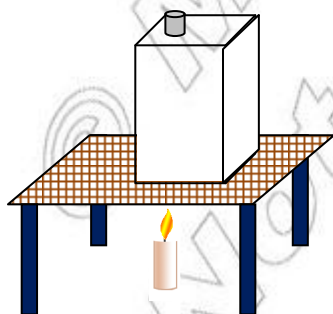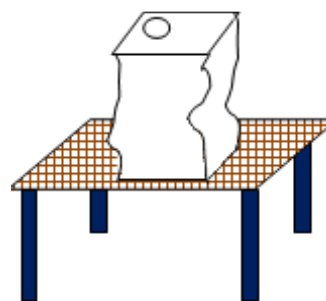

b. Laba bibi oo Faaruqah

t. bibimid howo kabuxdo

Jaantuska 3.7 Hawdu waxay lee dahay culays

b. Biyo kulul kujira

t. biyaha qabaw

Jaantuska 3.8 Tijaabo kadisah

Hawlgalka3.7 tijaabokadisah

Siaad u fahan to saameyn ta cadaadiska Gibilka (Jan 3.8)
Qalabka loobahan yahay tanag, tandhala da lagu furo, biyo yar, isha kulka, (shamac)

Dariiqada 1. Biyo yar oo ku jira dhalo daqiiqado gudaheeda buu ku hagaajin

2. Tanag balaadhan waxaa ka tagaya isha kulka.

3. Biyo hoose ga oo qabow umi baxuna gudaha ayuukujiraa, fadhiisin biyaha iyo cadadis hoose uku umi baxay.

Warbixin gaaban kaqor waxaad kafahan tay adoo ka jawaabaya kuwan sosocda;

1. **Maxaa kudhacay tanaga burburay?**
2. **Waxay farqa kulku iyo fadhisinta tanaga**
3. **Maxaa isbadalay cufka, muga, cufnaanta, heerkulka? Kee baa siyaa da? Beebee hoos udhaca.**

Hawlgalka 3.7 waxaad arki inay is ku gay nayaan eray ahaan eeg Jan 3.8 b tani waa cadaadiska Gibika.

Hawlgalka 3.8 Tijabada u

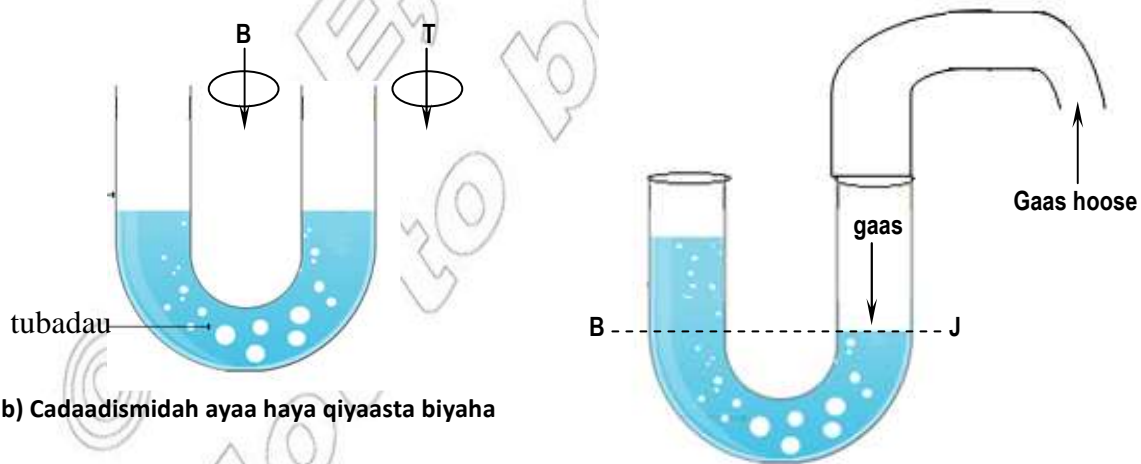qalabka loobaahan yahay tubo 'u' ah, weel biyo kujiaan tubo caag ah

Dariiqada: 1. Biyaha cadiga waxa lagu shubi tubada 'u' qiyaas siman .

2. Waxa laistaabsin tubada iyo 'u' da hawo hoosaysa marka qiyaas ta biya ha hoosaysa .

i.   **Maxaadka dareemi qiyaas ta siman iyo habkay isguxigaan?**

ii.   **Qiyaastoo du shasiman tahay saxibkaa way di mid lamid ah in u qabto, handiwaan galiyo waxa usoobaxa qiyaasta biyaha**

iii.   **Sharax farqiiga udhe xeeya**

b) Cadaadismidah ayaa haya qiyaasta biyaha

Jaantuska 3.9 Tijaaba da dhunta 'u'

Hawlgalka 3.8 qiyaasta biyuhu waa iskumid intaanad dhunta 'u' galin (Jan 3.9 b)

Sababtu waa, cadaadis iskumidah baa ku falmaya dhinaca BiyoT. Lakiin hawadu waxay ka hoosaysaa tubadmidka midah

B. Qiyaas ta biyahuwaxay iskabadalayaan cidhifka kaleislaacadaadis ku dhaco bart J waxay noqon markaa iskumid cadaadiska ka hooseysa hawdan lasinayo cadaadiska waxay taageeri udubka dareeraha ee kubada .

Su'aalFuran

Qeex sababta biyahu afkaaga uyimaadaan markaa tubada soonugaysid?

Cadaadiska hawadu waakala duwan yahay meel ilaa meel haddi aanu kor usocono (ufuulno) buurta ama tuubo diiran nuugid tusaale. Cadaadiska hawada waxaa kudhici inu yaraado markaan korubaxnaba. Qaybkasta kamidah hawada ka saraysa dhulka hoos baa u socadaadin qaybaha kale. Marka cadaadisku waxa u kubadan dhulka.

> **Cadaadiska Gibilku waa saamiga xooga ee bedka halbeegiiba ku falma ogada culays ahaan, Gibilka kasareeya cogada. Waxaa sababa culayska gibilka ka sareeya barta cabbirka ca daadiska hoosana bedka waxaa yareeya cufka Atmosfarka ee ka sareeya bartiisa . Si doo kale qimaynta usiyaadayo waxay yartehay cufka dusha atmosfarka marka cadaadisku hoosbu udhici dhanka jooga bada xaga sare cadaadiska.**

Su'aalo Furan

Sharax sida daree rayaashu ugu sawir maan istirinjada dhun teeda marka larabo in u soo saaro.

Haddii aan ukacno xaga sare (samada) aan gaadho meel kabax san cadaadiska atmos forka wa xaa la yidhaa istratosfar (stratosphere) cadaadisku hoos buu udhacaa ilaa u gaadho zero (0) Joog tani way ku culus tahay dhanka hawada ama hawad kasaraysa.

> ### Hubin 3.4
> 1. **Hawada inagu xeerani cadaadis masamaysaa? Qee xo tusaale kabixi**
> 2. **Waa maxay cadaadiska Gibilku?**
> 3. **Muxu qabtaa oo ugumuhimsan tijaabada du qayn ta ee tanagu?**
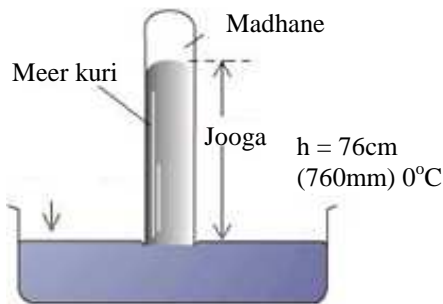> 4. **Qeex sida cadaadiska gibilku ubadalo jooga.**

3.5 Cabbirka Cadaadiska Gibilka

I laa hada waxaad so a ragtay sugnaasha ha cadaadiska hawada ilaabada waa intee in leeg buu ca daa disku adagya hay. Si aad u ogaatid cadaadis adag waxaan u baa hanahay in aan cabbirno.

> **Cadaadiska Gibilku waa cabbirka loo isticmaalo qalabka baro.mitir. Waxaa jira baro mitiro kala duwan laakin wa xaan kahad leynaa oo kaliya merrkuri baaro miter.**
> **Manomitier waxa qalabka loo isticmaalo in lagu cabbidro cadaadiska hawda.**

Su'aalo Furan

Sharax Faraqa u dhe xeeya cadaadiska hawda iyo cadaadiska Giblika.

| b.   Qaab ka meerkuri baro meter | t. meerkuri baro miter |

Jaantuska 3.10 Meerkuri baro mitier

Meerkuri Baaro mitir: Waa tuunbo dhalo ah 80cm dherer le'eg nadiifah qalalan meerkuri leh. Meerkuridu waa ku rogantahay ogadeeda (Jan 3.10a) Qiiyaasta meerkuridu dhunteeda waxaa jira meelo madhan (madhane_ xaga sare). Waxa laygu maga caabaa meerkuribar. Dhidibka meerkuri tubada waxa taageera cadaadiska Gibilka. P_A. ku Falmaya ogada meerkuri da bada (weelka) Furan. Sugnaasha ha Jooga meerkurida waxay ku salay san tahay cadaadiska Gibilka. Sidaas darted cadaadiska waxaa lagu cabbiray Jooga meerkuridu samayso.

Cadaadiska atmosfeerka Jooga bada 76cm Hg. Taniwaa cadaadiska atmosfeerku inuleeg yahay salka dhidibka meerkuriga 76cm Joog. Marrarka qaar ca daadis ka Gibliku waxaa lagu cadeyaa torr halk 1 torr = 1mm meerkuri si aad uraadisid qiimaha cadaadiska ee halbeega waxaan uisticmaalaynaa

$p = \rho gh$ halka $g = 10m/s^2$,

$\qquad \rho = 1.36 \times 10^4 \, kg/m^3$, ($\rho$ meerkur))

$\qquad h = 0.76$ m,

Marka 76 cm Hg = 1×10^5 N/m^2 = 1×10^5 p$_a$.

Heerka Gibilka cadaadisku waxaa looqaataa 75mm Jooga dhidibka meerkuri Jooga bada heerka cadaadis kan waxa lagu qeexa dhidibka cagta meerkuri 76mm Joog oo leeg

$1.01 \times 10^5 Pa = 1$ stander

Halbeeg kale oo loo isticmaalo cadaadiska cimilada milibar (mb). 1mb = 100 Pa.

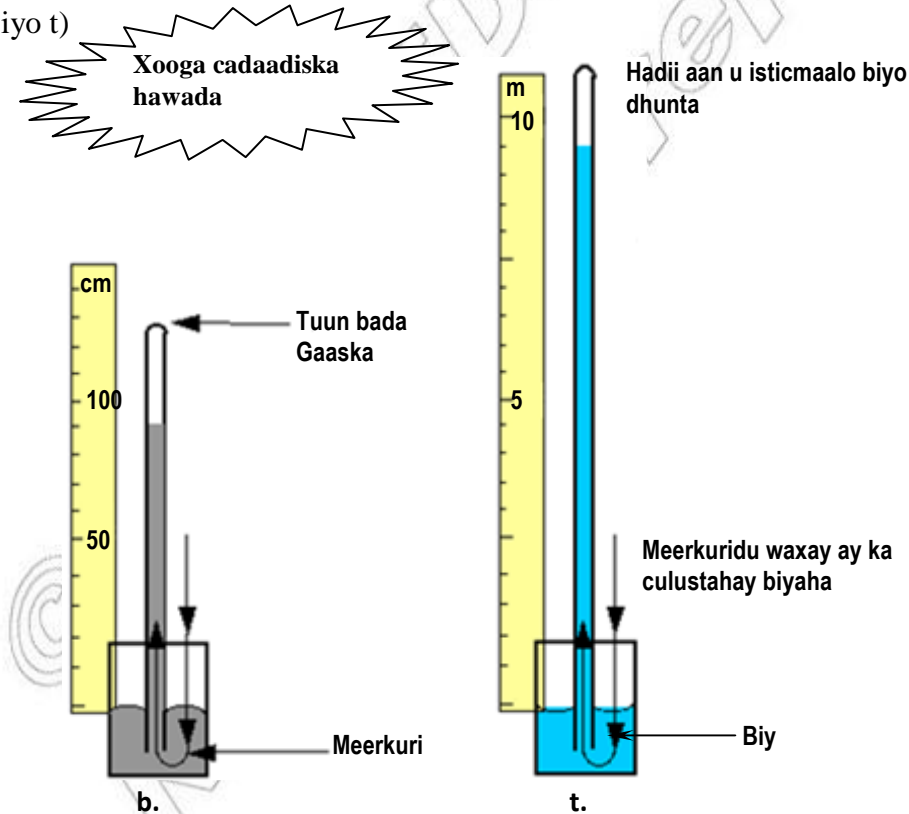| Farqiga udhexeeya xidhidhada cadaadiska atmosfeerka |
|---|
| 1mmilibar = 100 Pa |
| 1 bar = 100,000 Pa |
| 1 toor = 1mm Hg |
| = 0.1mm Hg |
| 1.o1 bar = 1010 mb |
| = 760 torr |
| = 101, 000 Pa tan wax a layidhaa S.A.P |

Hawlgal 3.9

1. **Sharax maxay dadku uisticmaali waayen baaro mitirka biyaha intay isticmaalayaan meerkurida baaromitirka?**
2. **Tax ugu yaraan 3 Faaidodara oo loo isticmaalo baaro mitir ka**
3. **Waamaxay Faaiiada ugu muhim san ee lo isticmaalo meerkuri baaro mitier.**

Ka sooqaad inaa nu isticmaalayno baaro mitier qiyaastisa cadaadiska Gibilka 76cm Hg. Taa macnaheedu waa cadaadiska atmosfeerka taageera 75cm dhidibka meerkuri aynu xisaabino Jooga biyaha baaro mitirka kaaso cadaadiska taagera.

Kasoo qaad biyo h_m iyo h_w waa jooga meerkurigiyo biyaha taageera cadaadiska atmosfarka sijoogota ah (Jan 3.1 iyo t)

Jaantuska 3.11 Kalabaxa meerkurida iyo biyaha baromiter

Atmosfeerka waxa uu ku falmaa cadaadis labad baro mitier dushooda sida ay umeelaysan yihiin sida muhimka ugutahay jooga biyuhu uleegyahay 75cm Hg waa 1034cm ama 10.34m taasiwaa dhidibka kor uqaada 10.34m tubada dhexdiisa. Taniwaa isticmaalka baro mitier lagu waydiyay waxaan haysanaa tuunbo dherer 10m meerkuri baro mitier aad buu uyaryahay dhanka baaxa da marka kor lagu qaado 75cm.

Gudahaan, meerkuriguwaa xulashada kogida baromitier kuwan muhimka ee sosocda

1. Waa cufanyahay sidas darted kaliya marka loo eego dhidibkayar waa loo baahan yahay
2. Waa fududyahay isticmaalka
3. Fadhiisan maayo qabow kasta
4. Inyar baa umibaxa kulunta

Tusaale 3.4

1. Waa imisa cadaadis torr agagaar ka atmosfoorka cadaadiska 64cm Hg.

Siin	Waydiin	Furfuris
P= 64 cm –Hg	P 'torr' =?	Madaamu 1cm =10mm,
		P = 64 cm Hg = 640 mm-Hg.
		lakiin 1mm Hg = 1 torr, markaa
		640mm- Hg = 640 torr

2. Bedka sugan ee cadaadiska atmosferku 820 toor ubadal baskal, bar, iyo milibar.

Siin	Waydiin
P (in torr) = 820 torr	i) P(in Pascal)= ?
	ii) P (in bar) =?
	iii) P (in millibar) = ?

Furfuris

i) 760 torr = 101,000 pa

820 torr =?

$\Rightarrow$P(in pa) =

$\dfrac{101,000Pa \times 820torr}{760torr}$

108,933.68Pa=

ii) Hadii

760 torr = 1.01 bars marka

820 torr = ?

$\Rightarrow$ P (bar)

$= \dfrac{1.01 bar \times 820 torr}{760 torr}$

= 1.08 bar

iii) Marka 1bar

= 1000 millibar

$\Rightarrow$P (milbar) =

1.08 × 1000 milibar

= 1080 milibar

Hubin 3.5

1. **Qeex sida atmosfarik cadaadis kiisuyahay cabbirka dhidibka daree reha lataagero.**
2. **Kala dood halbeega cadaadiska atmosfarka.**
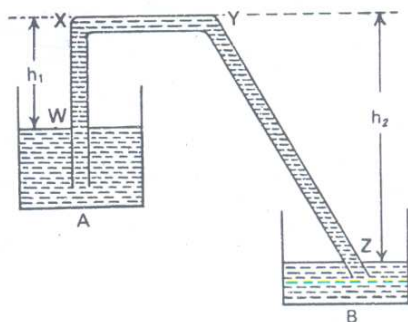3. **Waa maxay baro mitier lagu akhrinayo heerka atmosfeerka cadaadiska.**

3.6 Habka Cadaadiska Hawada

Qalabayo badan baa loo isticmaalaa cadaadiska atmosfarka sayfon waa dhuunta banbada , istirinjada waa teknolojiga logu isticmaalo cadaadiska atmosfarka.

1. Sayfoon

Waa aqoonta logu isticmaalo cadaadiska atmosfarka.

> **Say foonwaa qalabka gudbinta dareeraha qiyaasta sare ilaa tan hoose qay bin la'aan dhareeraha oodhan bara bixiya weelka.**

b.   t.

Jaantuska 3.12 Sayfoon

Sayfoonwaa tuunbo ama dhuun gudbisa biyaha (dareerekale) meel sare barta sare una soodejisa meelaha hoose sayfonkuwaa awooda biyuhu ay ku fuu'laan waxajoojinaya. Taniwaxay yeeshaa kaladuwanaasho iyo xiso. Sido kale mid faaido wayn leh. Say fonka waxa loo isticmaalaa beeraha siuu'udha qaajiyo biyaha ukasoo qaado kaydka geeyana meelaha hoose. Waxa kale loisticmaalaa kasoo saaride baabuurta booyadaha ee uqaaday baabuurka dibadiisa. Iskutijaabi sidaad ufahmilahayd isticmaalka say foonka ee deegaankiina.

Su'aalo fu'ran

Tijaabada say fonka

1. **Hadii laba haamood oo qiyaastoodu kala duwan tahay ee biyaha say fonka. Natiijadu maxay noqon. Wakhtidheer kadib?**
2. **Maxaa dhici hadii aad dalacdid tubada (koruqaadid)?**
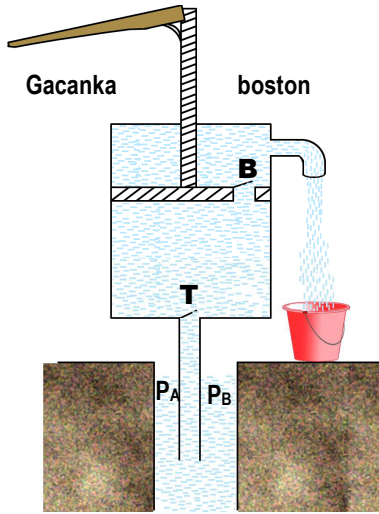
Xaaladaha shaqo ee say foonka

i) Say Foonku kumashaqeeyo madhanaha

ii) Say foonka tubad waa in uu ka buuxo dareere.

iii) Jooga qo toma 'h₁' barta sare 'x' lanta gaaban ee qiyaasta dareera ha weelka. Waa inay kagaraato baromitierka jooga dareeraha (Jan 3.12 a)

iv) Qiyaasta dareeraha weelk u kayimid dareerahani waa inuu ka sareeyo kuwso kale.

v) Hadii lafuro awaan laant yz (Jan 3.12b) qiyaasta hoose ee daree raha A. say fonkuna wiish yahay. Siuu u gudbiyo dareera tartiib

2. Bamka midigta (Bamka Biyaha)

Bamka midigtu waa qalab sibalaadhan oo kala duwan looga faaidaysto wadankeena. Waxa laga yaabaa inaad ka la socotay telfeshinka (TV). Marka dadka reer baadiyaha Itoobiya ay isticmaalayaan bamkan biyaha ee ceelasha gunta dheer. Taniwaa mid aad muhiim uah Jan 3.13.

Bamka midigta waxau leeyahay labafaaido. Mid waa boston kamidna gunta socelinya (gun ta socelinaysa)

b. Qaab dhismeedka bamka midigta

t. bamka midigta oo falkujira

Jaantuska 3.13 Bamka midigta

Si uu'ubilaabo bamku hawsha, Gacanku waa in uu kor iyo hoos uwareegaa sida qiyaasta 'T' way xidhantaa biyuhuna waxa usoo raaci dhuunta "B" marka gacanku koruwareego, qiyaasta 'B' way xidhmi, barta qiyaasta 'T' ayka Furmi biyuhuna korbay uriix mayaan dhunta gudaheeda qiyaasta "B" cadaadiska atmosforka lawareeji gacanka koriyo hoos sijoogto ah buu'ugu saaraa afka.

Hawlgalka 3.10 Haw Imashruceed ka rikibida bamkagamceed
Qalabka loobaahan ya hay bam botubeed, baaldi biyood iyo dhuumo la isku xiro. Jidka lamarago   i.   Booqo biyo soo saare dhaqameed xaruntiisa taa sooku shaqaynaysa bambo midig   ii. Baro qaabdhis meedka bambad biyaha   iyo siday ushaqayso.   iii. Rikib bam bo midiged ku gaar ah isticmaalaya tusmoyinka qalabka.   iv. Qeex sida bamboo midigeda lo gu tsticmaalo bulshada dhexdeeda.

3. Sariinji (syringe)

waad taqaaney sariinjiga caruurnimadii waadku ciyaari jirtay sariinjiga waxaa isticmaala dhakhtarka iyo kalkaaliyayaasha siay ugu turqaan. Waxay kakoobantahay cabbir sugan. Bostan wax lagu shubo dhuntani waxay celin iyado lagu riixo dareeraha. Waxa u dib ugu soocelin bostonka. Taniwaxay yareen cadaadiska hawada ee dhuunta. Xooga cadaadiska atmosfarka dareeraha kor bu uqaadi. Hoos uriixda bostanka waxa udhaqaajin dareeraha kana saari naaska.
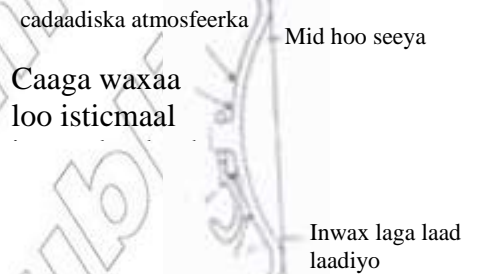

Jaantuska 3.14

4. Caaga wax nuuga (rubber sucker)

isticmaalka ugu fudud ee ugu waanaagsan cadaadiska atmosferka waxaa weeyi goobo muqaaleed caag koob ah waxaana lagu magacaabaa nuuge (jaqe) caaga nuugaha waxaa loo istic maalaa insawirada lagu dhajiyo korka tukaanada, muraayadaha baaburta (Jan 3.15 b) waxa laga yaabaa in aadka fahamte nuugahan ee muraayadaha tay siyada laga laad laadiyo sawirada markad usosocotid iskuulka, marka qoyaan unugo siu usameeo hawo wanaagnsan ukudabolo kusaley naya sinaasha ogada.

Koobku waa Fidsan yahay hawo nadifah o'ka baxsan nuguda. Markaa cadaadiska atmosferka aaa kuhya ogada

Caaggaga nugayaasha ahi waxa loo isticmaalaa, alawaadaha, qusaya in la iska daayo diyaar u ah qalabkooda tasoobalooga biyuhu socoda (Jan 3.15b) dhuntayar ee wax lagu cabo (eeg jan 3.16) usha qaynaya kaalmayta cadaadiska. Markaad hawda kunugtid dhuunta cabbitanka yar, eed afkaaga ku haysid waa madhane.

Cadaadiska atmosforka ee ogadu Juuska (sharaabka) ee kujira koobka xoog dhuunta ku soomari Juusku. Waxad hawada nugtaba waxa afkaaga soogaadhi Juus kii

cadaadiska atmosfeerka

Mid hoo seeya

Caaga waxaa loo isticmaal

Inwax laga laad laadiyo

a)

b)

Jaantuska 3.15 Caaga nuuga
Dhuunta cabbitaanka lagunuugo

Jaantuska 3.16 Dhun ta cabbitaan ka lagu nugo ama lagu cabo.

Hubin 3.6

1. **Magacaw faaidoyinka saxarada cadaadiska atmosfeerka (Gibilka)**
2. **Qeex sida say foonka, bambada, sariinjida, caaga waxa nuga waxqabadkooda.**

Soo Koobbidda cutubka

Cutubkan waxaad ku soo baratay

➢ **Cadaadisku waa saamiga xooga ee bed halbeegiba. P=F/A. Halbeegisu waa N/m² ama Pa. hal baskal oo cadaadis waa xooga hal niyuu tan kufalma bedka laba jibaaranaha (miter laba jibaaran)**

   i.e 1 pa = 1N/m²`

➢ **Cadaadiska adkahu waxa ukusalaysan yahay bedka halka xoogukufalo. Cadaadiska dareeruhu waanegi. Ja hooyinkoodhan u falma. Cadaadiska dareeru hu waxau ku salaysan ya hay jooga dareeraha iyo cufnaan ta dareeraha (P=ρgh)**

➢ **Xeerka baskal waxa ulee yahay "cadaadiska isticmaalka meelku hayntiisu gudubka dareeraha jiho la'aan tisuwaa meelwalba dareeraha ka midah" isticmaalka ni waa hydhiro lika hoose rixa.**

   taniwaa $\dfrac{F_1}{A_1} = \dfrac{F_2}{A_2}$

➢ **Hawada inagu xeersan inaga waxay lee dahay culays iyo cadaa disk u fal maya ogada dhulka. Cadaadiska atmosferku waa 76cm meerkuri (Hg)**

   760 mm Hg = 1 atm; Halka 1 atm = 1.01×10^5 pa

➢ **Cadaadiska atmosfarka waxa uu ka cayaaraa door muhiim ah qalabya da bambada, biyaha say fonkaiyo caaga waxa nuga. Waxay iyagu qabtaan Abuurista cadaadiska kordhintiisa a iyo yareyntiisa dareere.**

Nakhtiinka su'aalaha iyo masalooyinka

I. Meelaha banaan erayga ama weedhaku haboon gali.

1. Halbeega cadaadisku waa _____.
2. Labada ugu muhimsan saamaynta cadaadiska dareere ahaan ____iyo ____.
3. Qalabka lagu cabbiro cadaadiska atmosfarku waa _____.
4. Cabbirka cadaadiska atmosfeerku waxa u eeg yahay _____ Pa ama _____cm Hg.

II. Jawaab gaaban kabixi

1. Waa maxay cadaadisku?
2. Saamayn ta cadaadisku saleysan yahay waamaxay?
3. Waa maxay hab xisaabeedka aad uisticmaalaysid xalinta cadaadiska dareeraha jooga? Talaaboyinkiis sharax
4. Cadee xeerka uu ku shaqeeyo haydroliga aado ku salay naya xeerarka baskal.
5. Qor qaybaha looisticmaalo cadaadiska gibilka?
6. Sawir bamka midigeed oo waliba sharax siduu ushaqeeyo?

III. xali masaloyinka soosocde

1. Sanduuq birah culayskiisu 20N neg ku ahaa 1m iyo 0.6m dhinacyada dusha sibidhka. Cadaadis intee leg baa lagu falay birtan saduuqah eedultaal dusha sibidhka? (uqaado g = 10m/s^2).
2. Haan leydiah oodhinceedu yahay 50cm iyo 30cm. 00 ka buuxa biyo Joogisuyahay 0.5cm cadaadis intee baa lagufalay? (ρ_w =1000 kg/m^3, g = 10m/s^2)
3. Cadaadis intee in le'eg baa ku falmay barta kubadu abaartay bedka 1mm^2. Lagu riixay xooga warqada 24N?
4. Kasoo qaad saynisyahanku rikibay baromitir dareerah bilaabmay laba labka cufka meerkuri. markaa waa imisajooga dareeraha qiyaasta cadaadiska?
5. Haan dh ululubo ah ayaa joogeedu yahay 32cm ayaa laga buuxiyay salid, haddii cadaadiska ku falmayo salka weel ku yahay 2550 pa, mar kaa waa imisa cufnaanta saliidu?