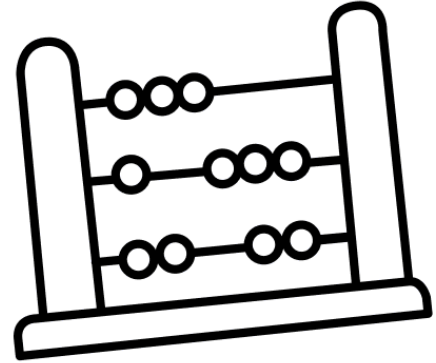


Dhismaha (Construction)

Maths

Unit Xisaabta goobta shaqada (Xisaab in the workplace)



Natiijo

Waxaan fahmi karaa sida xisaabta loogu isticmaalo warshadaha dhismaha (construction industry).

Erayada muhiimka ah

Jaleecaanka hore (front elevation) ee adkaha (solid) waa muuqaalkiisa xagga hore.

Jaleecaanka dhinaca (side elevation) ee adkaha (solid) waa muuqaalkiisa xagga dhinaca.

Bedka (area) waa cabbirka dusha (surface) wuxuuna sheegaa tirada labajibbaaranayaasha (unit squares) ee loo baahan yahay si buuxda u dahaadhan dushaas.

Qaabka casharka

Dhismaha (Construction)



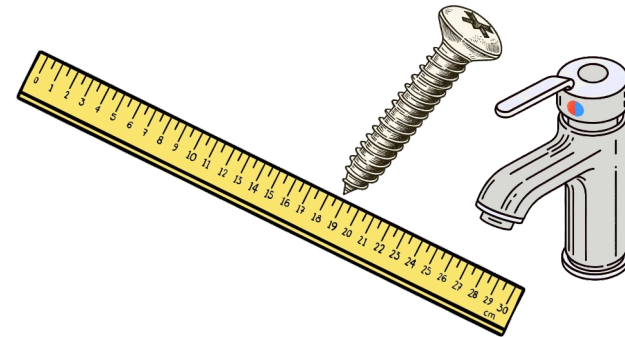
Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha (construction industry)



Qiimaynta (Costing) warshadaha dhismaha (construction industry)

Waa maxay qaybaha xisaabta (maths) aad u qiyaasi lahayd in shaqaalaha dhismuhu (construction worker) isticmaalaan?

- Bed & mug (Area & volume)
- Qorshayaal & jaleecooyin (Plans & elevations)
- Saami (Ratio)
- Boqolleyda (Percentages)
- Lacag (Money)
- Cabbiraadyo (Measures)
- Muuqasho (Proportion)
- Qaaciidooyin (Formulae)
- Qaabka caadiga ah (Standard form)



Inta lagu jiro darsigan (lesson) waxaan eegi doonnaa qaar ka mid ah kuwan.

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha

Waxaa laga yaabaa inay adkaato inaad rumaysato in qaaciidooyin (formulae) badan loo isticmaalo warshadaha dhismaha. Ma ka fikiri kartaa qaaciidooyin (formulae) laga yaabo in la isticmaalo?

Halkan waxaa ah tusaalooyin qaaciidooyin (formulae) ah oo warshadaha dhismahu isticmaalaan:

- ~~Wadarta tirada shubka (concrete) = mugga (volume) shubka $\times$ 1.54~~
- Jiirada (Slope) (boqolkiiba) = (fogaanta toosan (vertical distance) $\div$ fogaanta jiifka (horizontal distance)) $\times$ 100
- Tirada lebenka (bricks) = (mugga (volume) derbiga $\times$ 1000) $\div$ (mugga lebenka + mugga jaajuuska (mortar))
- Joogga (Height) = 2.304 $\times$ cadaadiska (pressure)
- Sharciga Ohm (Ohm's Law)
- Sharciga Joule (Joule's Law)

Noocee ka mid ah shaqaalaha dhismaha ayaa qaaciidooyinkan (formulae) isticmaala?

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha

Waxaa laga yaabaa inay adkaato inaad rumaysato in qaaciidooyin (formulae) badan loo isticmaalo warshadaha dhismaha.

Ma ka fikiri kartaa qaaciidooyin (formulae) laga yaabo in la isticmaalo?

Halkan waxaa ah tusaalooyin qaaciidooyin (formulae) ah oo warshadaha dhismahu isticmaalaan:

- Wadarta tirada shubka (concrete) = mugga (volume) shubka $\times 1.54$
- Jiirada (Slope) (boqolkiiba) = (fogaanta toosan (vertical distance) $\div$ fogaanta jiifka (horizontal distance)) $\times 100$
- Tirada lebenka (bricks) = (mugga (volume) derbiga $\times 1000$) $\div$ (mugga lebenka + mugga jaajuuska (mortar))
- Joogga (Height) = $2.304 \times$ cadaadiska (pressure)
- Sharciga Ohm (Ohm's Law)
- Sharciga Joule (Joule's Law)

Noocee ka mid ah shaqaalaha dhismaha ayaa qaaciidooyinkan (formulae) isticmaala?

Tuubistare (plumber)

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha

Waxaa laga yaabaa inay adag tahay inaad rumaysato in qaaciidooyin (formulae) badan loo isticmaalo warshadaha dhismaha.

Ma ka fikiri kartaa qaaciidooyin (formulae) laga yaabo in la isticmaalo?

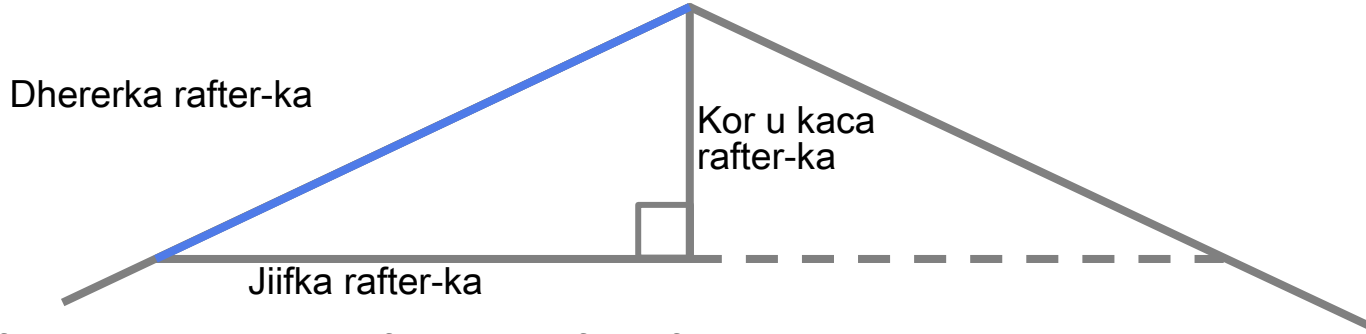
Waa kuwan tusaalooyin qaaciidooyin (formulae) ah oo warshadaha dhismahu isticmaalaan:

- Wadarta tirada shubka (concrete) = mugga shubka $\times 1.54$
- Jiirada (boqolkiiba) = (fogaanta tooska ah $\div$ fogaanta jiifka ah) $\times 100$
- Tirada lebenka = (mugga gidaarka $\times 1000$) $\div$ (mugga lebenka + mugga xabagta (mortar))
- Joogga = $2.304 \times$ cadaadiska (pressure)
- Sharciga Ohm (Ohm's Law)
- Sharciga Joule (Joule's Law)

Waa nooc ee shaqaale dhisme (construction worker) ayaad u malaynaysaa inuu isticmaalo qaaciidooyinkan?



Waa kan tusaale kale oo qaaciido (formula) ah oo ay isticmaalaan dhismayaasha.



$$\text{Dhererka rafter-ka}^2 = \text{kor u kaca rafter-ka}^2 + \text{jiifka rafter-ka}^2$$

Ma u eg tahay wax aad taqaan?

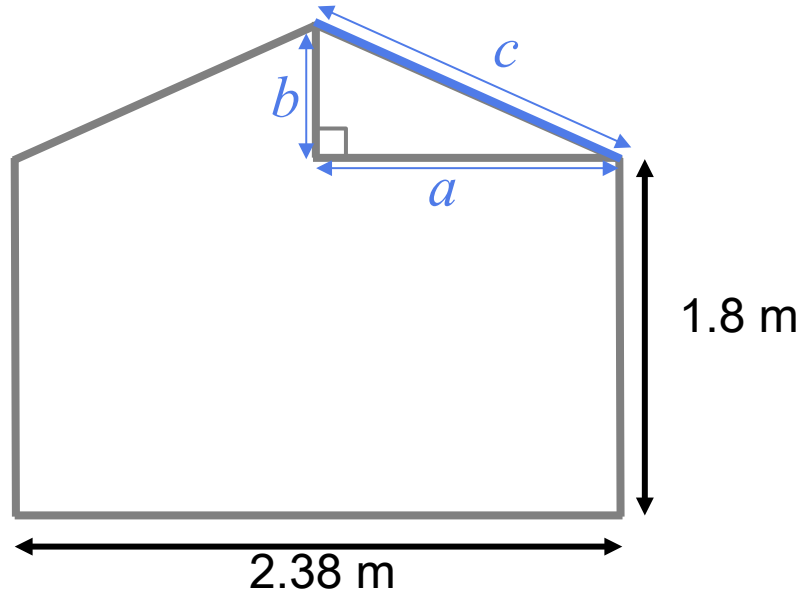
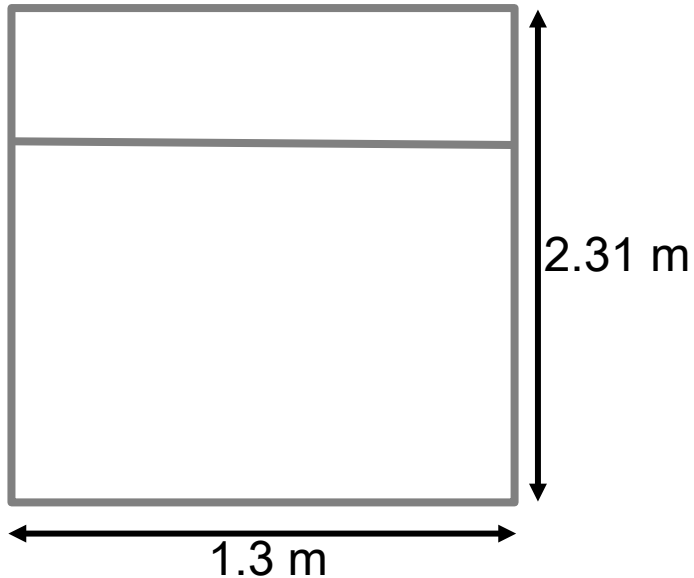
Waa aragtida Pythagoras (Pythagoras' theorem).

Using formulae in the construction industry

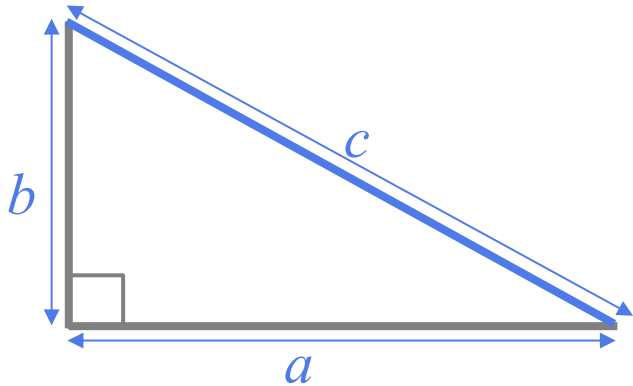
Waa kuwan muuqaalka hore iyo dhinaca ee daasadda.

Nijaarku wuxuu u baahan yahay inuu beddelo rafter-yada daasadda.

Rafter-yadu dhererkoodu waa imisa?



Nijaarku wuxuu raba inuu ogaado dhererka rafter-yada si uu u dalbado alwaaxda.



$$a = 1.19$$

$$b = 0.51$$

$$c^2 = a^2 + b^2$$

$$c^2 = 1.19^2 + 0.51^2$$

$$c^2 = 1.6762$$

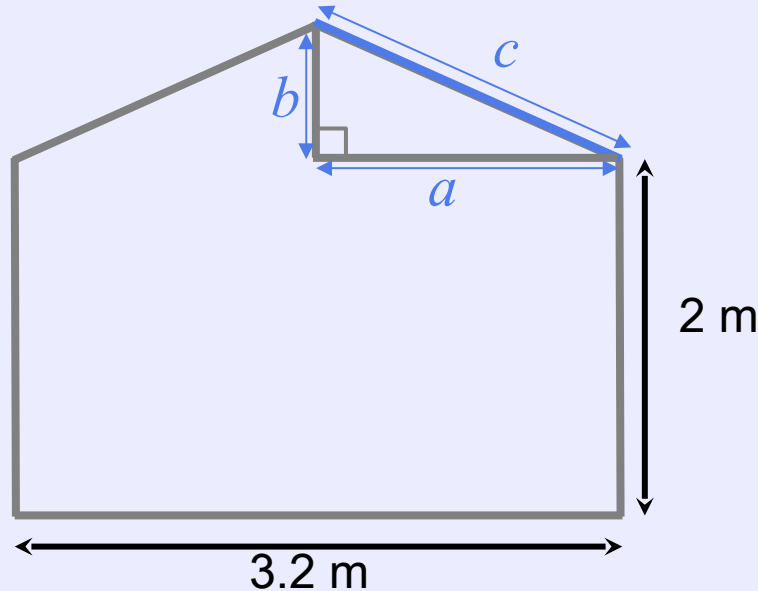
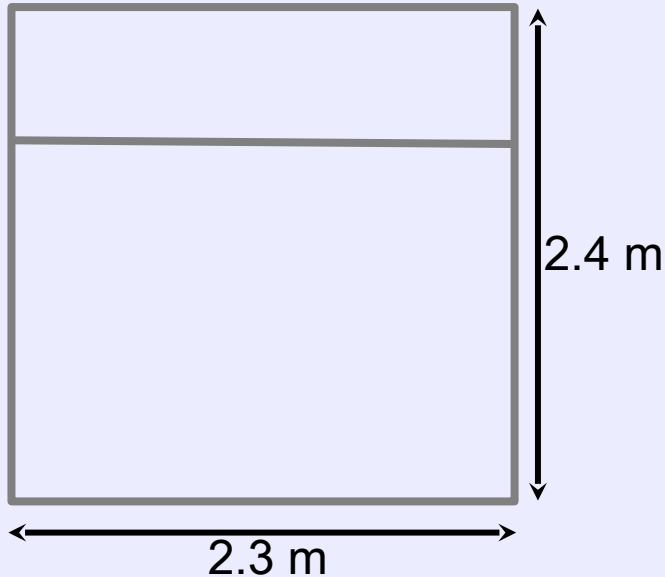
$$c = \sqrt{1.6762}$$

Using formulae in the construction industry

Waa kuwan muuqaalka hore iyo dhinaca ee daasadda.

Nijaarku wuxuu u baahan yahay inuu beddelo rafter-yada daasadda.

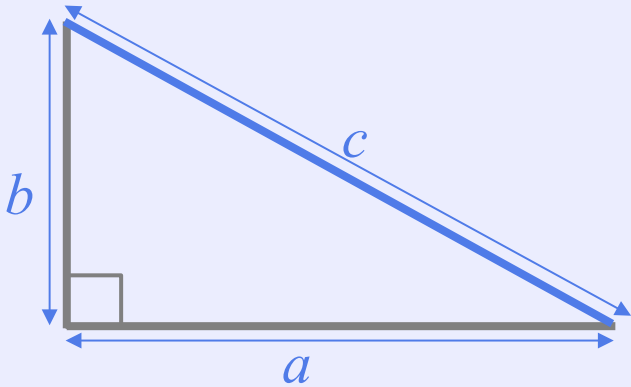
Rafter-yadu dhererkoodu waa imisa?



Nijaarku wuxuu raba inuu ogaado dhererka rafter-yada si uu u dalbado alwaaxda.

$$a = 1.6$$

$$b = 0.4$$



$$c = \sqrt{2.72}$$

Tuubo-yaqaannadu waxay isticmaalaan qaacidada hoose si ay u xisaabiyaan heerka qulqulka.

$Q = A \times v$ halka Q ay tahay heerka socodka, A waa bedka socodka iyo v waa xawaaraha (velocity)

Biyuhu waxay ku socdaan tuubo wareegsan xawli 10 m/s.

Dhexroorka tuubadu waa 25 mm.

What is the flow rate in m³ per hour?

Tuubooleyaashu waxay isticmaalaan qaacidada (formula) hoose si ay u xisaabiyaan heerka qulqulka (flow rate).

$$Q = A \times v$$

halkaas Q waa heerka qulqulka (flow rate), A waa bedka qulqulka (flow area) iyo v waa xawaaraha (velocity)

Biyuhu waxay ku socdaan tuubo wareegsan xawaarihiisu yahay 10 m/s.

Dhexroorka (diameter) tuubada waa 25 mm.

Waa maxay heerka qulqulka (flow rate) m³ saacaddii?

Xisaabi bedka (area) isgoyska tuubada ilaa 2 s.f.

$$A = \pi \times \left(\frac{0.025}{2} \right)^2$$

$$A = 4.9 \times 10^{-4} \text{ m}^2$$

Tuubooleyaashu waxay isticmaalaan qaacidada (formula) hoose si ay u xisaabiyaan heerka qulqulka (flow rate).

$$Q = A \times v$$

halkaas Q waa heerka qulqulka (flow rate), A waa bedka qulqulka (flow area) iyo v waa xawaaraha (velocity)

Biyo (water) waxay ku socdaan tuubo wareegsan (cylindrical) xawaarihiisu yahay 10 m/s.

$$A = 4.9 \times 10^{-4} \text{ m}^2$$

Waa maxay heerka qulqulka (flow rate) (ilaa 2 d.p.) m^3 saacaddii?

$$Q = 4.9 \times 10^{-4} \times 10 \times 3600$$

$$Q = 17.67 \text{ m}^3 \text{ per hour}$$

Isticmaalka qaacidooyinka (formulae) warshadaha dhismaha



Hubi

Tuubooleyaashu waxay isticmaalaan qaacidada (formula) hoose si ay u xisaabiyaan heerka qulqulka (flow rate).

$$Q = A \times v$$

halkaas Q waa heerka qulqulka (flow rate), A waa bedka qulqulka (flow area) iyo v waa xawaaraha (velocity)

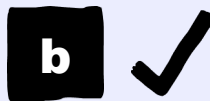
Biyo (water) waxay ku socdaan tuubo wareegsan (cylindrical) dhexroorkedu (diameter) yahay 32 mm xawaarihiisu yahay 10 m/s.

Kee ka mid ah kuwan soo socda ayaa ah xisaabta saxda ah ee heerka qulqulka (flow rate) m3 saacaddii?

$$Q = 0.032^2 \times \pi \times 10 \times 3600$$



$$Q = 0.016^2 \times \pi \times 10 \times 3600$$



$$Q = 16^2 \times \pi \times 10 \times 3600$$



Koronto-yaashu waxay isticmaalaan sharciga Ohm si ay u go'aamiyaan danabka (voltage), iska caabbinta (resistance) ama hadda (current) ee wareegga korantada (electric circuit).

$$V = I \times R$$

halkaas V waa danabka (voltage) (volts), I waa hadda (current) (amps) iyo R waa iska caabbinta (resistance) (ohms)

Waxay sidoo kale isticmaalaan qaacidadan (formula) si ay u xisaabiyaan awoodda (power).

$$P = I \times V$$

halkaas P waa awoodda (power) (watts), I waa hadda (current) (amps) iyo V waa danabka (voltage) (volts)

Wareeg 120 volt, 20 amp ayaa loo isticmaalaa in lagu siiyo koronto tiirarka nalka ee garoonka baabuurta.

Imisa tiir oo nalka ah ayaa si badbaado leh loo rakibi karaa haddii nalka (bulbs) uu yahay 400 watts?

Guud ahaan, awoodda (power) waxaa lagu bixiyaa kiilowatts (kW).

Awoodda (power) kettledu waa 2 kW.

Intee bay watts tahay?

Imisa watts ayaa ku jira kiilowatt?

Horgalaha (prefix) kilo wuxuu matalaa 1000.

Waa maxay awoodda (power) kettleda?

Awoodda (power) kettledu waa 2000 watts.

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha



Hubi

Xisaabi awoodda (power) qalabka guriga ee soo socda ee watts.

Shower = 8 kW

Kulayliyaha biyaha (water tank heater) = 3 kW

Nalka (light bulb) = 60 W

Nadiifiyaha (vacuum cleaner) = 0.9 kW

Kulayliyaha marawaxada (fan heater) = 2.4 kW

Timajilifaha (hairdryer) = 2.2 kW

Microwave = 1.5 kW

Korantada (voltage) guryaha UK waa 230 volts.

Koronto-yaqaan ayaa u baahan inuu ku rakibo qubays 8 kW.

Wareegyada (Circuits) waxaa laga heli karaa 6, 10, 16, 20, 32, 40, 50 iyo 63 amps.

Kee wareeg (circuit) waa in la rakibaa?

$$P = I \times V$$

$$8000 = I \times 230$$

$$I = 8000 \div 230$$

$$I = 34.8 \text{ amps (1 d.p.)}$$

Waa in la rakibaa wareeg (circuit) 40 amp.

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha



Korantada (voltage) guryaha UK waa 230 volts.

Koronto-yaqaan ayaa tijaabinaya kettle (kettle) 2 kW oo cillad ah.

Macluumaadka soo saaraha (manufacturer) ayaa muujinaya iska caabinta (resistance) kettle-ka oo ah 25 ohms.

Kettle-ku ma cilladaysan yahay?

$$V = I \times R$$

$$230 = (2000 \div 230) \times R$$

$$R = 230 \div (2000 \div 230)$$

$$R = 26.45 \text{ ohms}$$

Tani waxay ku dhowdahay qiimaha (value) la filayo. Sidaa darteed waxay u badan tahay in kettle-ku aanu cilladaysnayn.

$$P = I \times V$$

$$2000 = I \times 230$$

$$I = (2000 \div 230) \text{ amps}$$

Run mise been?

$$P = I \times V$$

Korantada (voltage) guryaha UK waa 230 volts, sidaa darteed waa in la rakibaa wareeg (circuit) 6 amp oo loogu talagalay microwave 1.5 kW.



Run



Been



$$I = 1500 \div 230$$

$$I = 6.52 \text{ amps (2 d.p.)}$$

Qulqulka (current) ayaa ka sarreeya 6 amps. Sidaa darteed, wareeg (circuit) 6 amp kuma filna.

Tubiye (plumber) ayaa isticmaali doona qaaciido (formula) si uu u xisaabiyo cabbirka ugu habboon ee raadiyatorrada (radiators) loo baahan yahay qolka.

Tani waxay ku salaysan tahay cabbirka qolka, heerkulka (temperature) qolka loo baahan yahay in lagu kululeeyo iyo meelaha kulaylka (heat) lagu lumiyo, tusaale ahaan daaqadaha.

Hoos waxaa ku qoran qaaciidada (formula) lagu xisaabiyo BTU (British Thermal Units).

$BTU = \text{mugga (volume) qolka} \times \text{ogolaanshaha luminta kulaylka (heat loss)}$

Qol (Room)	Qiime (Allowance)
Musqul (Bathroom)	121.5
Qolka jiifka (Bedroom)	108
Qolka cuntada (Dining room)	135

Hoos waxaa ku qoran cabbirrada qolka fadhiga.

Dherer (Length) = 7.6 m

Ballac (Width) = 6.3 m

Joog (Height) = 2.3 m

Xisaabi BTU-ga.

BTU = mugga qolka × qiimaha (allowance) luminta kulaylka

BTU = $7.6 \times 6.3 \times 2.3 \times 135$

BTU = 15 000 (2 s.f.)

Qol (Room)	Qiime (Allowance)
Musqul (Bathroom)	121.5
Qolka jiifka (Bedroom)	108
Qolka cuntada (Dining room)	135
Marinka (Hallway)	81
Jiko (Kitchen)	81
Qolka fadhiga (Living room)	135

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha

BTU-ga loo baahan yahay qolka fadhiga waa 15 000.

Kuwaas raadiyator (radiator) ee ugu habboon qolkan?

U qaad in qolku yeelan doono 2 raadiyator (radiator).

$$15\,000 \div 2 = 7500 \text{ BTU}$$

2 ka mid ah 600 × 1400 ayaa ah kuwa ugu habboon cabbirka qolka fadhiga.

(Sidan waxaan u isticmaalnaa raadiyator (radiator) isku cabbir ah.)

Joog (Height) (mm)	Ballac (Width) (mm)	BTU
600	400	2184
600	600	3280
600	800	4372
600	1000	5464
600	1200	6556
600	1400	7649
600	1600	8744

Isticmaalka qaaciidooyinka (formulae) warshadaha dhismaha



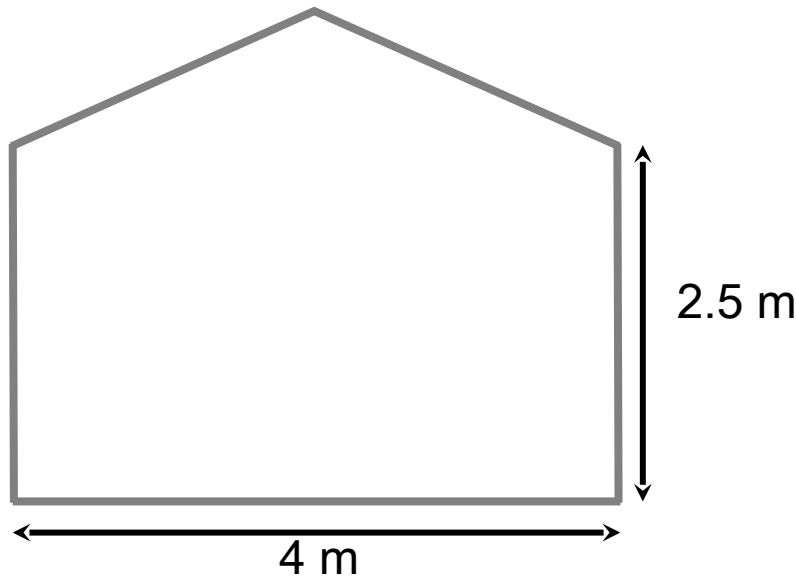
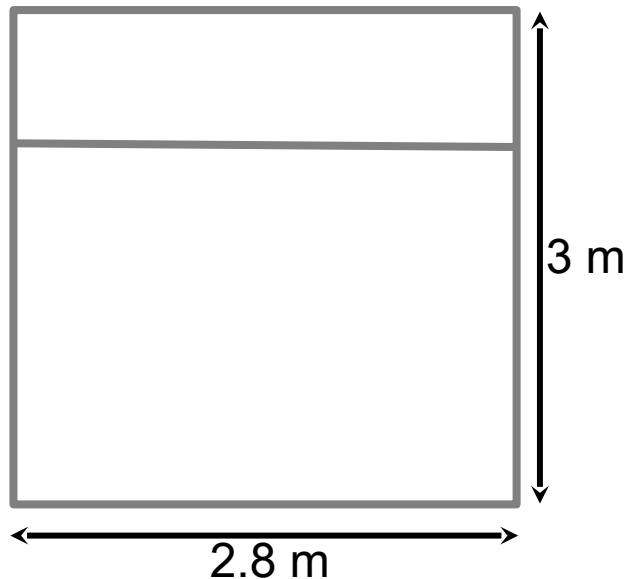
Hubi

BTU-ga loo baahan yahay jikada waa 3208.

Cabbirkee raadiyator (radiator) ee la isticmaali karaa?

Joog (Height) (mm)	Ballac (Width) (mm)	BTU
600	400	2184 ✓
600	600	3280
600	800	4372
600	1000	5464
600	1200	6556
600	1400	7649
600	1600	8744

- 1) Waa kuwan muuqaalka hore iyo muuqaalka dhinaca ee daasad (shed).
Dhisuhu wuxuu u baahan yahay inuu beddelo rafter-yada (rafters) ee daashka.
Imisa ayay dheer yihiin rafter-yada (rafters)?



2) $Q = A \times v$ halka Q uu yahay heerka socodka (flow rate), A uu yahay bedka socodka (flow area), v -na uu yahay xawaaraha (velocity)

Biyo (water) waxay ku maraan tuubo wareegsan (cylindrical pipe) xawaare (velocity) ah 10 m/s.

Dhexroorka (diameter) tuubadu waa 40 mm.

Waa maxay heerka socodka (flow rate) m³ saacaddii?

$$3) P = I \times V$$

halka P uu yahay awoodda (power) (watts), I uu yahay hadda (current) (amps), V-na uu yahay korantada (voltage) (volts)

Korantada (voltage) guryaha UK waa 230 volts.

Koronto-yaqaan (electrician) wuxuu u baahan yahay inuu rakibo foornada korontada (electric oven) 2.15 kW.

Wareegyada (circuits) waxaa laga heli karaa 6, 10, 16, 20, 32, 40, 50 iyo 63 amps.

Kee wareeg (circuit) waa in la rakibaa?

4) BTU = mugga qolka (volume of the room) × ogolaanshaha luminta kulaylka (allowance for heat loss)

Hoos waxaa ku qoran cabbirrada (dimensions) qolka jiifka (bedroom).

Dhererka (Length) = 4.6 m

Ballaca (Width) = 2.6 m

Joogga (Height) = 2.4 m

a) Xisaabi BTU-ga.

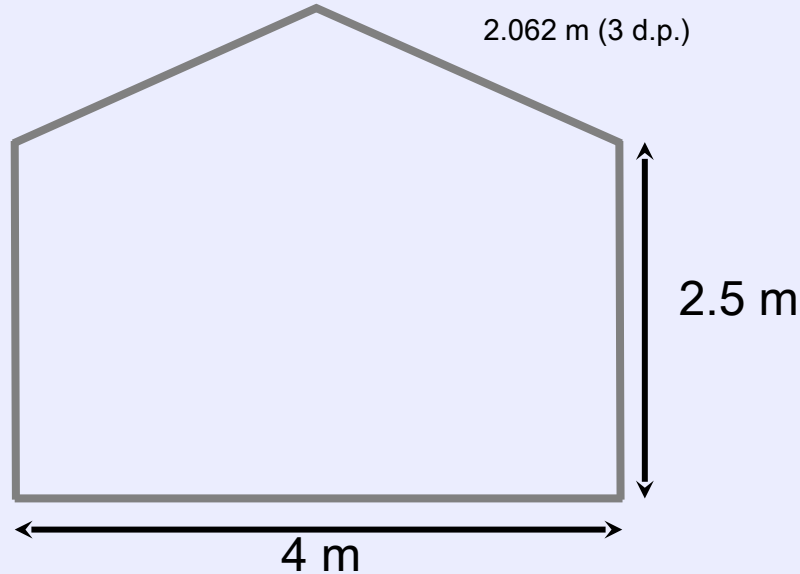
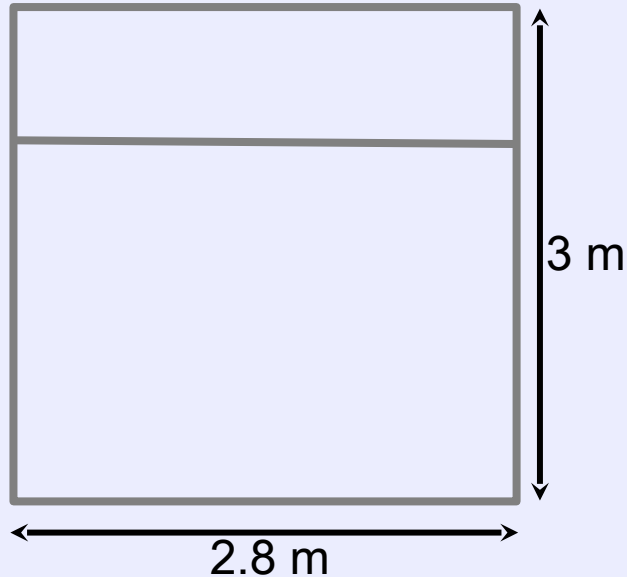
b) Qolka jiifka (bedroom) wuxuu yeelan doonaa hal radiator (radiator).

Waa maxay cabbirka (size) la rakibi karo?

Qol (Room)	Qiyaasta (Allowance)
Musqul (Bathroom)	121.5
Qolka jiifka (Bedroom)	108
Qolka	135

Dhererka (Height) (mm)	Ballaca (Width) (mm)	BTU
600	400	2184
600	600	3280
600	800	4372
600	1000	5464
600	1200	6556
600	1400	7649
600	1600	8744

- 1) Waa kuwan hore iyo dhinacyada (elevations) ee daasadda (shed).
Nijaar (builder) wuxuu u baahan yahay inuu beddelo rafter-yada daasadda.
Imisa ayay dherer yihiin rafter-yada?





2) $Q = A \times v$ halka Q uu yahay heerka socodka (flow rate), A waa bedka socodka (flow area) iyo v waa xawaaraha (velocity)

Biyo (water) waxay ku socdaan tuubo wareegsan (cylindrical pipe) xawaarihiisu yahay 10 m/s.

Dhexroorka (diameter) tuubadu waa 40 mm.

Waa maxay heerka socodka (flow rate) m³ saacaddii?

$$Q = 0.02^2 \times \pi \times 10 \times 3600$$

$$Q = 45.24 \text{ m}^3 \text{ per hour (2 d.p.)}$$



3) $P = I \times V$

halka P uu yahay awoodda (power) (watts), I waa hadda (current) (amps) iyo V waa korantada (voltage) (volts)

Korantada (voltage) guryaha UK waa 230 volts.

Koronto-yaqaan (electrician) wuxuu u baahan yahay inuu rakibo foornada korontada (electric oven) 2.15 kW.

Wareegyada (circuits) waxaa laga heli karaa 6, 10, 16, 20, 32, 40, 50 iyo 63 amps.

Kee (circuit) waa in la rakibaa?

$$I = 2150 \div 230$$

$$I = 9.35 \text{ amps (2 d.p.)}$$

Waa in la rakibaa wareeg (circuit) 10 amp.

4) BTU = mugga qolka (volume of the room) × ogolaanshaha luminta kulaylka (allowance for heat loss)

Hoos waxaa ku qoran cabbirrada qolka jiifka (bedroom).

Dhererka (Length) = 4.6 m

Ballaca (Width) = 2.6 m

Joogga (Height) = 2.4 m

a) Xisaabi BTU.

$4.6 \times 2.6 \times 2.4 \times 108 = 3100.032$

b) Qolka jiifka (bedroom) wuxuu yeelan doonaa hal radiator.

Cabbirkee (size) waa in la rakibaa?

600×600

Qol (Room)	Gunnada (Allowance)
Suuli (Bathroom)	121.5
Qolka jiifka (Bedroom)	108
Qolka	135

Dhererka (mm) (Height (mm))	Ballaca (mm) (Width (mm))	BTU
600	400 (Hallway)	2184
600	600 (Jiko)	3280
600	800 (Kitchen)	4372
600	1000 (Qolka)	5464
600	1200 (fadhiga)	6556
600	1400 (Living room)	7649
600	1600	8741

Dhismaha (Construction)



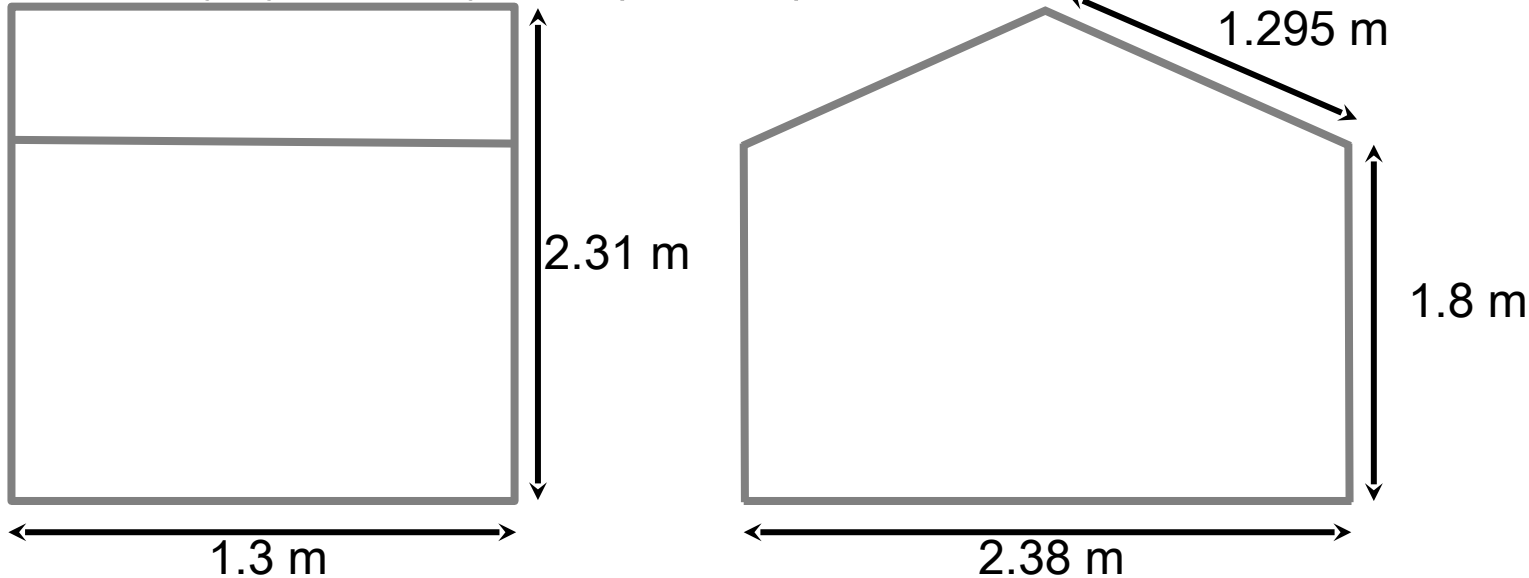
Isticmaalka qaaciidooyinka warshadaha dhismaha (Using formulae in the construction industry)



Qiimeynta warshadaha dhismaha (Costing in the construction industry)

Qiimeynta warshadaha dhismaha (Costing in the construction industry)

Aynu ku noqonno dhibaatadii hore halkaas oo dhiseku ku beddelayay rafter-yada (rafters) ee daarta.



Waxay u baahan yihiin inay beddelaan 8 rafter (rafter).

Jadwalkan wuxuu muujinayaa dhererka iyo qiimaha alwaaxa loo iibiyo.

Rafter kasta wuxuu dhererkiisu yahay 1.295 m.

Immisa ayay ku kacaysaa iibsashada alwaaxa?

Dhererka (mm) (Length (mm))	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Ma heli karnaa wadarta dhererka 8-ta rafter (rafter) oo isticmaali karnaa dhererkan?

Maya, dhererka buuxa ee rafter (rafter) kasta waa inuu yahay hal qayb.

Aynu xisaabino tirada rafter (rafter) ee aan ka samayn karno dherer kasta oo alwaax ah.

Qiimaynta (costing) warshadaha dhismaha

Jadwalkani wuxuu muujinayaa dhererka iyo qiimaha (price) alwaaxa lagu iibiyo.

Rafter (rafter) kasta waa 1.295 m dherer.

Immisa ayay ku kacaysaa iibsashada alwaaxa?

Dherer (mm)	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Marka hore, waa inaan hubinaa in cabbirada oo dhami isku halbeeg yihiin.

Aynu dhammaan u beddelno millimitir.

Qiimaynta (costing) warshadaha dhismaha

Jadwalkani wuxuu muujinayaa dhererka iyo qiimaha (price) alwaaxa lagu iibiyo.

Rafter (rafter) kasta waa 1295 mm dherer.

Immisa ayay ku kacaysaa iibsashada alwaaxa?

Dherer (mm)	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

$$2400 \div 1295 = 1.85... \rightarrow 1 \text{ rafter (rafter)}$$

$$3000 \div 1295 = 2.31... \rightarrow 2 \text{ rafter (rafter)}$$

$$3600 \div 1295 = 2.77... \rightarrow 2 \text{ rafter (rafter)}$$

$$4200 \div 1295 = 3.24... \rightarrow 3 \text{ rafter (rafter)}$$

$$4800 \div 1295 = 3.70... \rightarrow 3 \text{ rafter (rafter)}$$

Qiimaynta warshadaha dhismaha (Costing in the construction industry)

$2400 \div 1295 = 1.85... \rightarrow 1$ rafter

$3000 \div 1295 = 2.31... \rightarrow 2$ rafters

$3600 \div 1295 = 2.77... \rightarrow 2$ rafters

$4200 \div 1295 = 3.24... \rightarrow 3$ rafters

$4800 \div 1295 = 3.70... \rightarrow 3$ rafters

Dhererka (mm)	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Haddii aan iibsano 2 rafters, kee baa ka fiican qiime (value) lacagta, dhererka 3000 mm ama dhererka 3600 mm?

Dhererka 3000 mm.

Qiimaynta warshadaha dhismaha (Costing in the construction industry)

$2400 \div 1295 = 1.85... \rightarrow 1$ rafter

$3000 \div 1295 = 2.31... \rightarrow 2$ rafters

~~$3600 \div 1295 = 2.77... \rightarrow 2$ rafters~~

$4200 \div 1295 = 3.24... \rightarrow 3$ rafters

$4800 \div 1295 = 3.70... \rightarrow 3$ rafters

Dhererka (mm)	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Haddii aan iibsano 3 rafters, kee baa ka fiican qiime (value) lacagta, dhererka 4200 mm ama dhererka 4800 mm?

Dhererka 4200 mm.

Qiimaynta warshadaha dhismaha (Costing in the construction industry)

$2400 \div 1295 = 1.85... \rightarrow 1$ rafter

$3000 \div 1295 = 2.31... \rightarrow 2$ rafter (rafter)

~~$3600 \div 1295 = 2.77... \rightarrow 2$ rafter (rafter)~~

$4200 \div 1295 = 3.24... \rightarrow 3$ rafter (rafter)

~~$4800 \div 1295 = 3.70... \rightarrow 3$ rafter (rafter)~~

Dherer (Length) (mm)	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Waa maxay ikhtiyaarrada aan u haysto iibsashada 8 rafter (rafter)?

3×3 rafter (rafter) (1 spare)

2×3 rafter (rafter) + 1×2 rafter (rafter)

Waxaa jira ikhtiyaarro kale laakiin mid ka mid ah kuwan ayaa noqon doona kan ugu qiime (value) badan. Ma garan kartaa sababta?

Qiimaynta (Costing) warshadaha dhismaha (construction industry)



Sharaxaad

$2400 \div 1295 = 1.85... \rightarrow 1$ rafter (rafter)

$3000 \div 1295 = 2.31... \rightarrow 2$ rafter (rafter)

~~$3600 \div 1295 = 2.77... \rightarrow 2$ rafter (rafter)~~

$4200 \div 1295 = 3.24... \rightarrow 3$ rafter (rafter)

~~$4800 \div 1295 = 3.70... \rightarrow 3$ rafter (rafter)~~

Dherer (Length) (mm)	Qiimaha (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Waa maxay ikhtiyaarrada aan u haysto iibsashada 8 rafter (rafter)?

3×3 rafter (rafter) (1 spare) Qiimaha (Cost) = £22.05

2×3 rafter (rafter) + 1×2 rafter (rafter) Qiimaha (Cost) = £19.95

Run mise been?

Habka ugu jaban ee lagu sameeyo 8 rafters oo mid kasta dhererkiisu yahay 1.5 m waa £21.



Run



Been

Dhererka (mm)	Qiimaha
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

2 rafter (rafter) ayaa laga gooyin karaa dhererka (length) 3000 mm iyada oo aan wax laga lumin (wastage).

Waxaad u baahan tahay inaad iibsato 4 kuwan. $4 \times 5.25 = £21$

1) Jadwalkan wuxuu muujinayaa qiimaha iyo dhererka alwaaxda lagu iibiyo.

Xisaabi qiimaha ugu jaban ee iibsashada kuwan soo socda:

a) Labaatan 1 m dherer

b) Shan iyo toban 1.8 m dherer

c) 3 siyaabood oo kala duwan oo loo iibsado 600 1.2 m dherer

d) Maxay 3 siyaabood oo kala duwan u jiraan qaybta (c)?

Dhererka (mm)	Qiimaha
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

1) Jadwalkan wuxuu muujinayaa qiimaha iyo dhererka alwaaxda lagu iibiyo.

Xisaabi qiimaha ugu jaban ee iibsashada kuwan soo socda:

a) Labaatan 1 m dherer

Dhererka 3000 mm wuxuu soo saaraa saddex 1 m dherer.

6×3000 mm dherer + 1×2400 mm dherer waxay siinayaan labaatan 1 m dherer qiimaha £35.70

Dhererka (mm)	Qiimaha
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

1) Jadwalkan (table) wuxuu muujinayaa qiimaha (prices) iyo dhererka (lengths) alwaaxda (wood) la iibiyo.

Xisaabi qiimaha (price) ugu jaban (cheapest) ee iibsashada (purchasing) kuwan soo socda:

b) Shan iyo toban (Fifteen) 1.8 m dherer (lengths)

3600 mm dhererku (length) wuxuu soo saaraa (produces) laba 1.8 m dherer (lengths).

7×3600 mm dherer (lengths) + 1×2400 mm dherer (length) waxay bixin doonaan (will give) shan iyo toban (fifteen) 1.8 m dherer (lengths) qiimo (cost) £48.30 ah.

Dherer (Length) (mm)	Qiimo (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

1) Jadwalkan (table) wuxuu muujinayaa qiimaha (prices) iyo dhererka (lengths) alwaaxda (wood) la iibiyo.

Xisaabi qiimaha (price) ugu jaban (cheapest) ee iibsashada (purchasing) kuwan soo socda:

c) 3 siyaabood oo kala duwan (different ways) oo loo iibsado (to buy) 600 1.2 m dherer (lengths)

$300 \times 2400 \text{ mm dherer (length) = £1260}$

$200 \times 3600 \text{ mm dherer (length) = £1260}$

$150 \times 4800 \text{ mm dherer (length) = £1260}$

Dherer (Length) (mm)	Qiimo (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

1) Jadwalkan (table) wuxuu muujinayaa qiimaha (prices) iyo dhererka (lengths) alwaaxda (wood) la iibiyo.

Xisaabi qiimaha (price) ugu jaban (cheapest) ee iibsashada (purchasing) kuwan soo socda:

d) Sababta (Why) 3 siyaabood oo kala duwan (different ways) u jiraan qaybta (part) (c)?

Sababtoo ah (Because) dhererka (lengths) 2400 mm, 3600 mm & 4800 mm mid kasta (each) wuxuu soo saaraa (produces) qashin la'aan (no wastage) qiimaha (cost) mitirkiiba (per metre) alwaaxda (wood) waa isku mid (the same) dhammaantood (for all three).

Dherer (mm)	Qiimo (Price)
2400	£4.20
3000	£5.25
3600	£6.30
4200	£7.35
4800	£8.40

Meelo badan oo ka mid ah warshadaha dhismaha ayaa adeegsada qaaciidooyin (formulae).

Halbeegyada (Units) iyo qiyaasaha saxda ah ayaa lama huraan u ah hubinta waxyaabaha sida badbaadada.

Qiimaynta (Costing) ayaa sidoo kale qodob aad muhiim u ah warshadaha dhismaha.

Qashinka (Wastage) ayaa sidoo kale la tixgeliyaa marka la iibsano agabka shaqada.