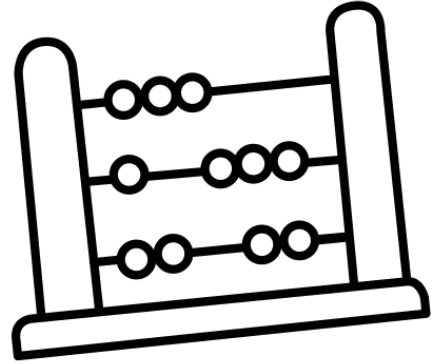


Hubinta iyo sii xoojinta fahamka sharciga is-beddelka (commutative law)

Maths

Cutub: Qaabka caadiga ah (Standard form)



Natiijo

Waxaan sheegi karaa sharciga is-beddelka (commutative law) oo aan u isticmaali karaa si hufan.

Marka tiro lagu dhufo nafteeda marar badan, waxaa loo qori karaa si fudud qaab jibbaar ah (exponential form).

$$\text{e.g. } 2 \times 2 \times 2 = 2^3$$

$$\text{e.g. } 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^6$$

Erayada muhiimka ah

Hawl (operation) waa is-beddel (commutative) haddii qiimaha ay ku shaqeyso lagu qori karo hab kasta iyada oo aan isbeddelin xisaabta.

Tusaale

$$3 + 4 = 4 + 3$$

Tusaale

$$7 \times 2 = 2 \times 7$$

Tusaale aan ahayn

$$10 - 2 \neq 2 - 10$$

Erayada muhiimka ah

Tiro asal ah (prime number) waa tiro dhammaystiran oo ka weyn hal oo leh 2 qaybiyeyaal (factors). Dhammaan tirooyinka ka weyn 1 waa isku-dhafan (composite) ama asal (prime).

Qaybiyeyasha asalka ah (prime factors) waa qaybiyeyasha tiro ee laftoodu asal yihiin.

Qaybinta asal ahaaneed (prime factorisation) waa hab lagu helo qaybiyeyasha asalka ah ee tiro la siiyay.

Qaabka casharka

Hubinta iyo sii xoojinta fahamka sharciga is-beddelka
(commutative law)



Dib u eegista wax soo saarka qaybiyeyaasha asalka ah



Isticmaalka wax soo saarka qaybiyeyaasha asalka ah

Suad iyo Axmed waxay ku tababarayaan qorista tirooyinka sida wax soo saar gaar ah oo qaybiyeyaashooda asalka ah.

600 oo loo qoro sida wax soo saar
qaybiyeyaashiisa asalka ah waa
 $2 \times 2 \times 2 \times 3 \times 5 \times 5$

600 oo loo qoro sida wax soo saar
qaybiyeyaashiisa asalka ah waa
 $2^3 \times 3 \times 5^2$



Suad

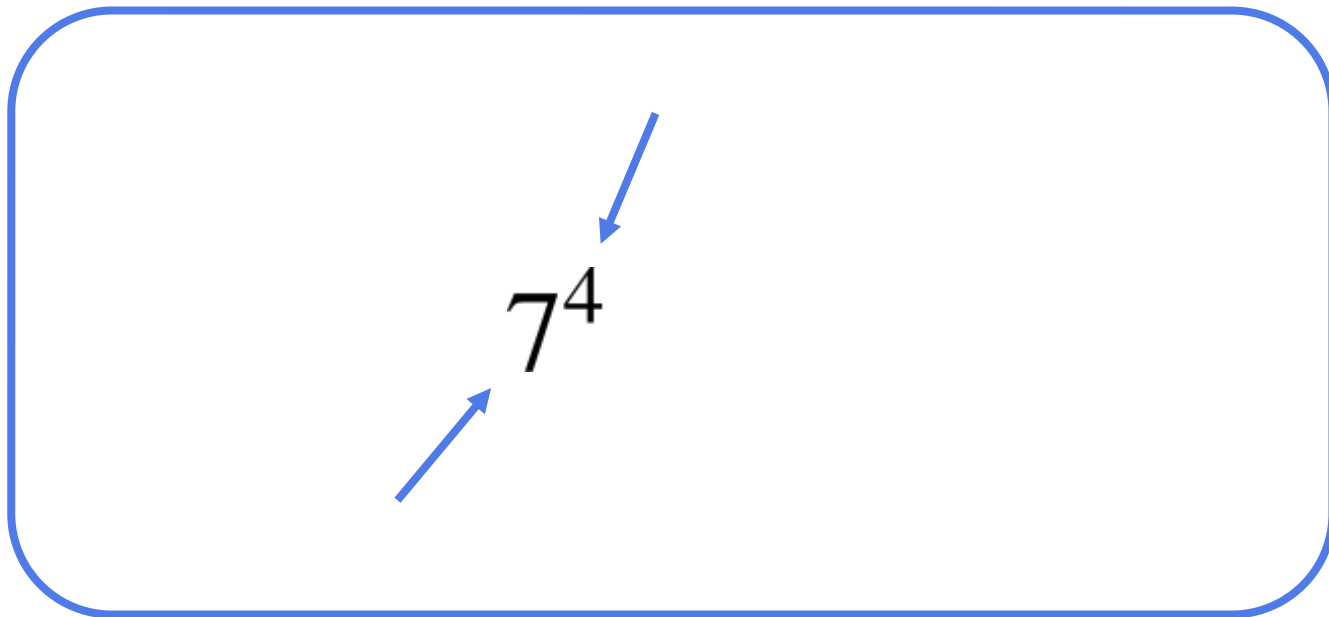
Labadooduba waa sax yihiin.

Axmed wuxuu ku qoray tan iyadoo la adeegsanayo qoraalka tusaha (index notation).



Axmed

Qoraalka tusaha (index notation) waa marka aan u qorno isku dhufashada soo noqnoqota anagoo adeegsanayna sal-dhig (base) iyo jibbaar (exponent).



Dib u eegista soosaarka cunsuriyeyaasha tirada (product of prime factors)



Mid ka mid ah kuwan soo socda ayaa si sax ah u muujinaya $2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 7$ iyadoo la adeegsanayo qoraalka tusaha (index notation)?

a

$$2^2 \times 3^3 \times 35$$

b

$$2^3 \times 3^3 \times 5 \times 7$$

c

$$2^2 \times 3^3 \times 5 \times 7$$



Dib u eegista soosaarka cunsuriyeyaasha tirada (product of prime factors)

U qor 1260 sida soosaar cunsuriyeyaasha tirada (product of prime factors)

$$1260 = 126 \times 10$$

$$= \quad \times \quad ;$$

$$= 2 \times \quad \times 2 \times 5$$

$$= 2 \times 7 \times \quad \times 2 \times 5$$

$$= 2 \times 2 \times 3 \times 3 \times 5 \times 7$$

$$= 2^2 \times 3^2 \times 5 \times 7$$

Dib u eegista soosaarka cunsuriyeyaasha tirada (product of prime factors)

U qor 250 sida soosaarka cunsuriyeyaasheeda tirada (product of its prime factors).

U qor 360 sida soosaarka cunsuriyeyaasheeda tirada (product of its prime factors).

Dib u eegista soosaarka cunsuriyeyaasha tirada (product of prime factors)

$$360 = 2^3 \times 3^2 \times 5$$

Waxaan u isticmaali karnaa tan si aan ugu qorno tirooyin kale sida soosaarka cunsuriyeyaashooda tirada (product of their prime factors) iyadoon aan ku celcelin habka bilowga ah.

Dib u eegista soosaarka cunsuriyeyasha tirada (product of prime factors)

Saddexda tiro ee si fudud loo heli karo iyadoo la adeegsanayo 120 oo loo qoray sida soosaarka cunsuriyeyasheeda tirada (product of its prime factors)?

a 2400 ✓

b 480 ✓

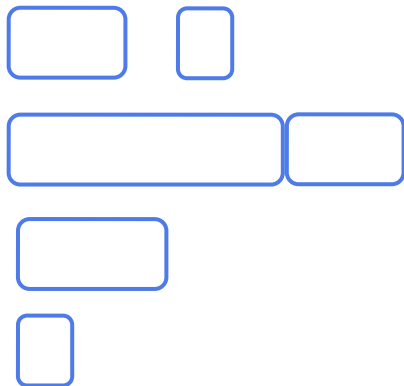
c 90

d 360 ✓

Dib u eegista soosaarka cunsuriyeyaasha tirada (product of prime factors)

Aan isku dayno labo kale:

$$450 = 2 \times 3^2 \times 5^2$$

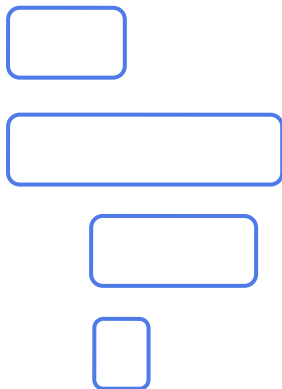


1800 oo loo qoray sida soosaarka cunsuriyeyaasheeda tirada (product of its prime factors) waa $2^3 \times 3^2 \times 5^2$

Dib u eegista soosaarka cunsuriyeyaasha tirada (product of prime factors)

Aan isku dayno labo kale:

$$450 = 2 \times 3^2 \times 5^2$$



150 oo loo qoro sida tirooyin asaasi ah waa $2 \times 3 \times 5^2$

Dib u eegis ku saabsan tirooyin asaasi ah



Adigoo isticmaalaya $225 = 32 \times 52$, u qor 900 sida tirooyin asaasi ah.

900 oo loo qoro sida tirooyin asaasi ah waa $22 \times 32 \times 52$

Dib u eegis ku saabsan tirooyin asaasi ah



Sharaxaad



Waxaan sidoo kale isticmaali karnaa xisaabiyeyaasha sayniska si aan u hubinno kala-goynta tirooyinka asaasiga ah.

Marka hore, hubi in 'Calculate' la muujiyey.

EXE

Dib u eegis ku saabsan tirooyin asaasi ah

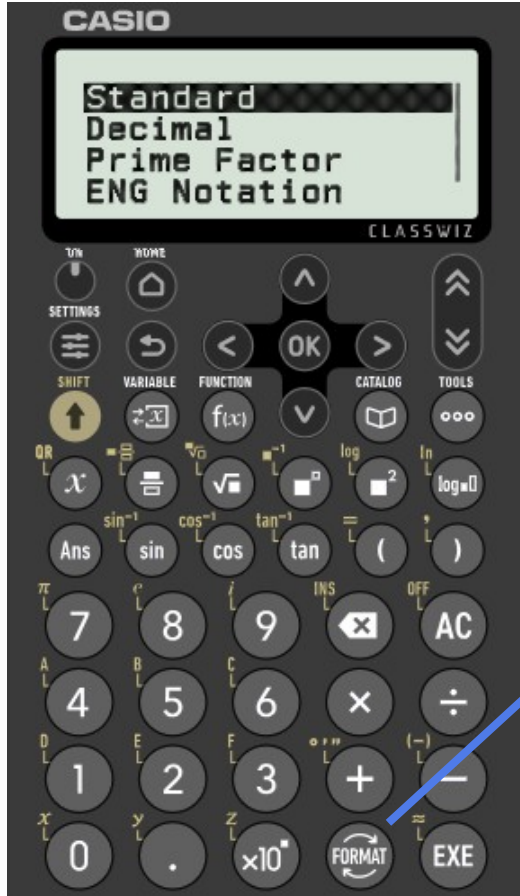


Aan hubinno kala-goynta tirooyinka
asaasiga ah ee 360

EXE

Ku qor 360 oo riix 'EXE'

Dib u eegis ku saabsan tirooyin asaasi ah



Aan hubinno kala-goynta tirooyinka asaasiga ah ee 360



Ku qor 360 oo riix 'EXE'

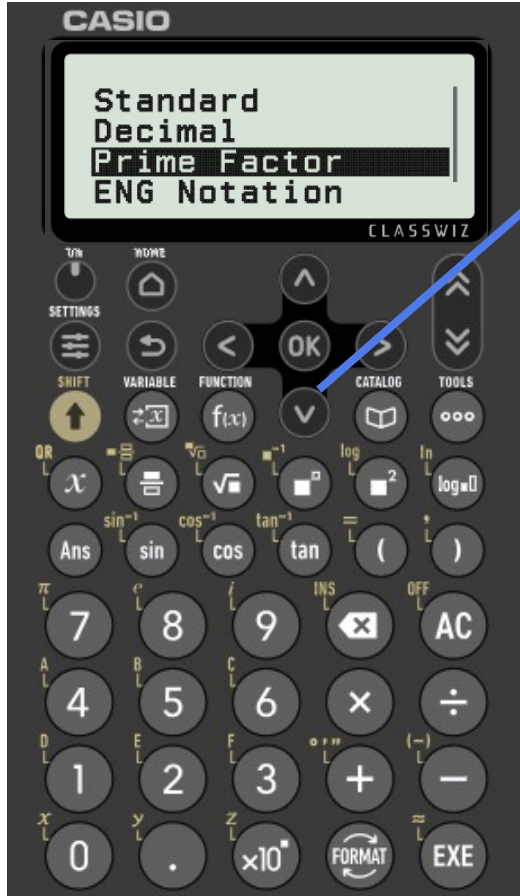


Kadib dooro 'FORMAT'

Dib u eegis ku saabsan tirooyin asaasi ah



Sharaxaad



Hoos u dhaadhac ilaa 'Prime Factor' la muujiyey.



Kadib riix 'EXE' mar kale

Dib u eegis ku saabsan tirooyin asaasi ah



Tani waxay muujin doontaa tirada sida tirooyin asaasi ah.

$$360 = 2^3 \times 3^2 \times 5$$

1) Ku qor kuwan sida tirooyin (product) oo ah tirooyin asaasi ah (prime factors), adigoon isticmaalin xisaabiyaha (calculator).

a) 200

b) 196

c) 378

d) 308

e) 23 400

2) Isticmaal $60 = 2 \times 3 \times 5$ si aad ugu qorto kuwan, adigoon isticmaalin xisaabiyaha (calculator), sida tirooyin (product) oo ah tirooyin asaasi ah (prime factors).

- a) 120
- b) 180
- c) 300
- d) 600
- e) 6000
- f) 4200
- g) 30

1) Ku qor kuwan sida tirooyin (product) oo ah tirooyin asaasi ah (prime factors), adigoon isticmaalin xisaabiyaha (calculator).

a) 200

$$2^3 \times 5^2$$

b) 196

$$2^2 \times 7^2$$

c) 378

$$2 \times 3^3 \times 7$$

d) 308

$$2^2 \times 7 \times 11$$

e) 23 400

$$2^3 \times 3^2 \times 5^2 \times 13$$



2) Isticmaal $60 = 2 \times 3 \times 5$ si aad ugu qorto kuwan, adigoon isticmaalin xisaabiyaha (calculator), sida tirooyin (product) oo ah tirooyin asaasi ah (prime factors).

a) 120

$$= 60 \times 2 = 2^2 \times 3 \times 5 \times 2 = 2^3 \times 3 \times 5$$

b) 180

$$= 60 \times 3 = 2^2 \times 3 \times 5 \times 3 = 2^2 \times 3^2 \times 5$$

c) 300

$$= 60 \times 5 = 2^2 \times 3 \times 5 \times 5 = 2^2 \times 3 \times 5^2$$

d) 600

e) 6000

$$= 60 \times 10 = 2^2 \times 3 \times 5 \times 2 \times 5 = 2^3 \times 3 \times 5^2$$

f) 4200

$$= 60 \times 100 = 2^2 \times 3 \times 5 \times 2^2 \times 5^2 = 2^4 \times 3 \times 5^3$$

g) 30

$$= 60 \times 70 = 2^2 \times 3 \times 5 \times 7 \times 10 = 2^2 \times 3 \times 5 \times 7 \times 2 \times 5$$

$$= 2^3 \times 3 \times 5^2 \times 7$$

$$= 60 \div 2 = 2^2 \times 3 \times 5 \div 2 = 2 \times 3 \times 5$$

Qaabka casharka

Hubinta iyo sii xoojinta fahamka sharciga isbeddelka (commutative law)



Dib u eegista tirooyinka (product) ee tirooyinka asaasiga ah (prime factors)



Isticmaalka tirooyinka (product) ee tirooyinka asaasiga ah (prime factors)

Layla iyo Yacquub waxay ka hadlayaan sida loo xisaabiyo 35×22



Layla

Ma isticmaali karnaa tirooyinka (products) ee tirooyinka asaasiga ah (prime factors) si aan u fududayno xisaabinta?

Waxaan u qori karnaa labadoodaba sida tirooyin (products). Laakiin, ma fududaynaysaa?



Yacquub

Isticmaalka tirooyinka (product) ee tirooyinka asaasiga ah (prime factors)

35 iyo 22 waxaa loo qoray sida tirooyin (product) oo ah tirooyinkooda asaasiga ah (prime factors):

$$35 = 5 \times 7$$

$$35 \times 22 = 5 \times 7 \times 2 \times 11$$

$$22 = 2 \times 11$$

$$35 \times 22 = 5 \times 2 \times 7 \times 11$$

$$35 \times 22 = 10 \times 77$$

$$35 \times 22 = 770$$



Layla

Waxaan dib u habeyn karnaa xisaabtan adigoo isticmaalaya sharciga is-beddelka (commutative law).
Taasi dhab ahaan way fududaysay xisaabtaas

Waxaan filayaa in la iska diro 2 iyo 5 oo jaxa
fududaysay xisaabta waa 10



Yacquub

Ma qorista 105 iyo 231 sida wax soo saarka tirada asaasiga ah waxay fududayn kartaa xisaabtan:
 105×231 ?

$$\begin{aligned}105 &= 5 \times 21 \\ &= 5 \times 3 \times 7\end{aligned}$$

$$\begin{aligned}231 &= 3 \times 77 \\ &= 3 \times 7 \times 11\end{aligned}$$

$$105 \times 231 = 5 \times 3 \times 7 \times 3 \times 7 \times 11$$

Ma arki karo lammaane aan fududayn karo xisaabtan.



Yacquub

Aan eegno tirooyinka asaasiga ah ee ay u badan tahay inaan aragno oo aan go'aamino lammaanaha faa'iidada leh ee fududayn kara xisaabta.

Ma xusuusan kartaa 8da tiro asaasi ah ee ugu horreeya?

2, 3, 5, 7, 11, 13, 17, 19, ...



Layla

Haa, hab fudud oo lagu dhufan
karo 9 waa in lagu dhufato 10
Waxay ila tahay in 2 iyo 5 ay
kadiiba laga jarro mid ka mid ah
yihiiin kaliya lammaanaha
faa'iidada leh.

Haddii ay jiraan laba 3, taasi
waxay noqon kartaa faa'iido,
maxaa yeelay wax soo saarkoodu
waa 9



Yacquub

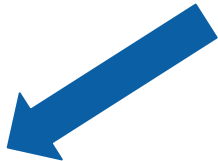
Xisaabi 33×21

$$33 = 3 \times 11$$

$$21 = 3 \times 7$$

$$33 \times 21 = 3 \times 11 \times 3 \times 7$$

dib u habeyn adigoo isticmaalaya
sharciga is-beddelka



$$\begin{aligned} 33 \times 21 &= 3 \times 3 \times 11 \times 7 \\ 33 \times 21 &= 9 \times 77 \\ &= 10 \times 77 - 1 \times 77 \\ &= 770 - 77 \\ &= 693 \end{aligned}$$

Xisaabi 42×75 adigoo isticmaalaya tirooyinka asaasiga ah.

$$42 = 2 \times 21$$

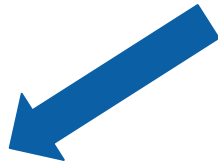
$$= 2 \times 3 \times 7$$

$$75 = 3 \times 25$$

$$= 3 \times 5 \times 5$$

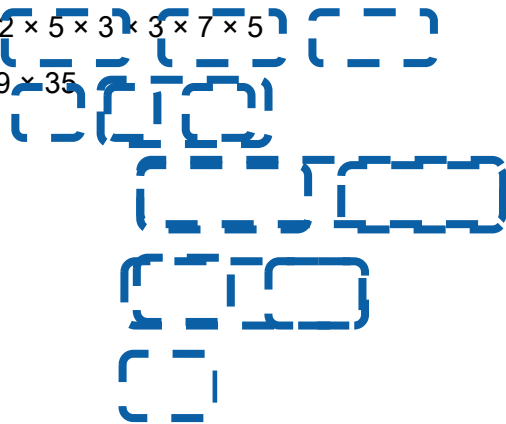
$$42 \times 75 = 2 \times 3 \times 7 \times 3 \times 5 \times 5$$

dib u habayn iyadoo la adeegsanayo sharciga
is-beddelka (commutative law)



$$42 \times 75 = 2 \times 5 \times 3 \times 3 \times 7 \times 5$$

$$= 10 \times 9 \times 35$$



Isticmaalka tirooyinka asaasiga ah (product of prime factors)



Xisaabi 36×175 adigoo isticmaalaya tirooyinka asaasiga ah.

$$36 = 2^2 \times 3^2$$

$$175 = 5^2 \times 7$$

$$\begin{aligned} 36 \times 175 &= 2^2 \times 3^2 \times 5^2 \times 7 \\ &= 2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 7 \\ &= 2 \times 5 \times 2 \times 5 \times 3 \times 3 \times 7 \\ &= 10 \times 10 \times 9 \times 7 \\ &= 100 \times 63 \\ &= 6300 \end{aligned}$$

$$42 = 2 \times 3 \times 7$$

$$308 = 2^2 \times 7 \times 11$$

$$35 = 5 \times 7$$

$$195 = 3 \times 5 \times 13$$

$$90 = 2 \times 3^2 \times 5$$

$$198 = 2 \times 3^2 \times 11$$

1) Isticmaal tirooyinka asaasiga ah ee kor ku xusan si aad u xisaabiso kuwan soo socda:

a) 42×90

b) 198×42

c) 198×35

d) 90×308

e) 195×198

$$42 = 2 \times 3 \times 7$$

$$308 = 2^2 \times 7 \times 11$$

$$35 = 5 \times 7$$

$$195 = 3 \times 5 \times 13$$

$$90 = 2 \times 3^2 \times 5$$

$$198 = 2 \times 3^2 \times 11$$

1) Isticmaal tirooyinka asaasiga ah ee kor ku xusan si aad u xisaabiso kuwan soo socda:

a) 42×90

b) 198×42

c) 198×35

3780

d) 90×308

8316

e) 195×198

6930

27 720

38 610

Hubinta iyo sii xoojinta fahamka sharciga is-beddelka

Dhammaan tirooyinka isku-dhafan (composite numbers) waxaa loo qori karaa tirooyin asaasi ah oo gaar ah. Tusaale:

$$52 = 2 \times 2 \times 13$$

Tirooyinka asaasiga ah waxaa loo qori karaa si hufan iyadoo la adeegsanayo qoraalka tusmada (index notation). Tusaale:

$$52 = 2^2 \times 13$$

Sharciga is-beddelka iyo tirooyinka asaasiga ah waxaa loo isticmaali karaa si fudud loogu helo tirooyinka isku dhufashada marka maskaxda lagu xisaabinayo.