

Gaaffilee Shaakalaa koorsii Ji'ometirii Diriiroo (Maths 111)

I. Deebii sirrii ta'e Filadhuu Deebisi.

1. Fageenyi tuqaalee A(-3,4) fi (0,0) gidduu jiruu meeqa ta'a? A. 3 B. 4 C. 5 D. 25

Furmaata:

Fageenyi tuqaalee lama A(a, b) fi B(x, y) gidduu;

$$d = \sqrt{(x - a)^2 + (y - b)^2}$$

$$d = \sqrt{(0 - -3)^2 + (0 - 4)^2} = \sqrt{9 + 16} = \sqrt{25} = 5$$

deebiin C ta'a.

2. Tuqaalee A, B fi C'n tuqaalee sarara tokkoo yoo ta'anii B'n gidduu A fi C yoo ta'e, B'n gidduu C fi A ta'a. Yaadni kun Agzeemota armaan gadii keessaa kamiin ibsama?

- A. Agzemii Walquumnamtii B. Agzemii Tartiibaa
C. Agzemii walittigalummaa D. Deebii hinqabu.

Furmaata:

Tuqaalee A, B fi C'n tuqaalee sarara tokkoo yoo ta'anii B'n gidduu A fi C yoo ta'e, B'n gidduu C fi A ta'a. Yaadni kun Agzeemota diriiroo Yuukilidii jahan keessaa **Agzemii Tartiibaa** jalatti ibsameera.

Kanaaf deebiin **B** dha.

3. Kanneen armaan gadii keessaa kamtu $\frac{2\pi}{3}$ rad wajjin walqixa?

- A. 60° B. 60' C. 30° D. 120°

Furmaata:

$$\pi \text{ rad} = 180^\circ \text{ waan ta'eef } \frac{2\pi}{3} \text{ rad} = \frac{2(180^\circ)}{3} = 120^\circ$$

Kanaaf deebiin **D** ta'a.

4. Sararri dhaabbataa verteksii rog-sadee tokkorraa ka'uun gara roga fuulleetti perpendikularii ta'uun sararamu _____ rog-sadee jedhama.

- A. iiroo B. miidiyaanii C. qixa hira D. A fi B

Furmaata:

Sararri dhaabbataa verteksii rog-sadee tokkorraa ka'uun gara roga fuulleetti perpendikularii ta'uun sararamu **iiroo** rog-sadee jedhama.

Deebiin **A** ta'a. **Miidiyaaniin** rogafuullee qixa hira.

5. Kofti safari isaa 180° ta'e kofa _____ jedhama.

- A. akkiyuutii B. obtiyuusii C. qajeelaa D. iddoomee

Furmaata:

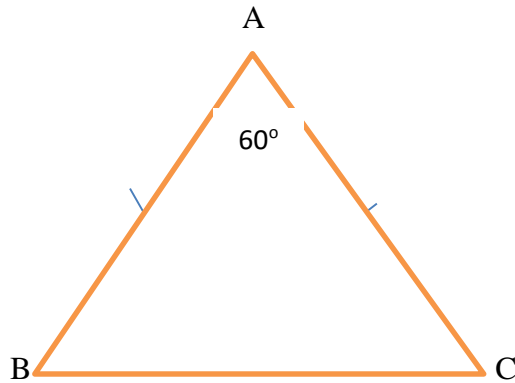
Kofti safari isaa 180° ta'e kofa **qajeelaa** jedhama. Deebiin **C** ta'a.

6. ΔABC keessatti yoo $AB = AC$ fi $S(\angle A) = 60^\circ$ ta'e kanneen armaan gadii keessaa kamtu **soba** dha?

- A. ΔABC 'n rog-sadee ikkulaateraalii dha. B. \overline{BC} 'n hundee ΔABC ti.
C. oleen rog-sadee kanaa miidiyaanii isaa ta'a. D. Deebiin hinkennamne

Furmaata:

ΔABC keessatti yoo $AB = AC$ fi $S(\angle A) = 60^\circ$ ta'e filannoon kennaman hunduu **dhugaa** dha.

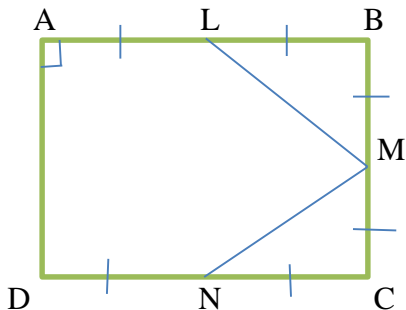


Rog-sadee ABC armaan olii kun rog-sadee ayisosilasii kofi varteksii (kofoota rogoota walittigaloo ta'an gidduutti uumamu) isaa 60° ta'e dha. Kofootni hundee $\angle B = \angle C = 60^\circ$ ta'u. Kanaaf ΔABC 'n rog-sadee ikkulateralii ta'uu danda'a. Kanaaf deebiin **D** ta'a.

7. ABCD'n Iskuweerii ta'ee L, M, fi N tuqaalee walakeesa \overline{AB} , \overline{BC} fi \overline{CD} duraaduubaan yoota'an kanneen armaan gadii keessaa kamtu **Soba dha?**

- A. $\overline{LM} = \overline{MN}$ B. $\overline{AB} = \overline{DM}$ C. $\overline{AN} = \overline{AM}$ D. $\overline{BN} = \overline{DM}$

Furmaata:



ABCD'n Iskuweerii ($\angle A \equiv \angle B \equiv \angle C \equiv \angle D = 90^\circ$) waan ta'eef $AL = LB = BM = MC = CN = ND$ ta'a.

- $\Rightarrow \Delta LBM \equiv \Delta NCM \dots\dots\dots RKR$
- $\Rightarrow LM = NM$ ta'a.
- $\Delta ADN \equiv \Delta ABM \dots\dots\dots RKR$
- $\Rightarrow AN = AM$ ta'a.
- $\Delta BCN \equiv \Delta DCM \dots\dots\dots RKR$
- $BN = DM$ ta'a.

Kanaaf deebiin **B** ta'a.

8. Kan armaan gadii keessaa isa kamtu dheerina rogoota rog-sadee tokkoo ta'uu hin danda'u?
 A. 5, 3, 8 B. 0.16, 0.2, 0.05 C. 2, 3, 4 D. $\sqrt{3}$, $\sqrt{9}$, $\sqrt{16}$

Furmaata:

Ida'amni safara roggota lamaa kamiyyuu isa sadaffaa akka caalu agarsiisuu dha. Kanaaf filannoo A yoo fudhannee ilaalle, $5+3 > 8$ hinta'u waan ta'eef, deebiin **A** ta'a.

9. “Rogsadeewwan lama keessatti rogooni walitti dhufoo ta’an lamaa fi kofti gidduu isaanii walitti galoo yoo ta’an rogaseen lachuu walittigaloo ta’u.” Yaadni armaan olii kun Tiyooramoota Walittigalummaa rog-sadee armaan gadii keessaa kamiin ibsama?

- A. RKR B. RRR C. KKK D. Hunda

Furmaata:

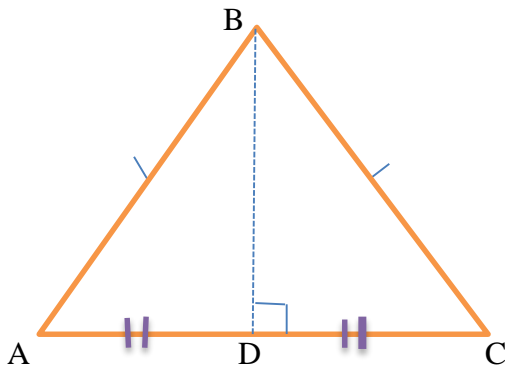
Yaadni armaan olii kun Tiyooramoota Walittigalummaa rog-sadee **RKR** tiin ibsama. Kanaaf deebiin **A** ta’a.

10. $\triangle ABC$ keessatti $\overline{AB} = \overline{BC}$, D’n tuqaa walakkeessoo \overline{AC} yoo ta’e kan armaan gadii keessaa kamtu **dhugaa dha?**

- A. $\triangle ADB \equiv \triangle CDB$ B. $\triangle ABC \equiv \triangle CDB$ C. $\triangle BDC \equiv \triangle ADB$ D. Hunda

Furmaata:

Jalqaba gaaffii kenname fakkii fayyadamuun agarsiisna



Olee \overline{BD} ijaaruu
 $\triangle ABC$ 'n rog-sadee ayisosilasii dha.

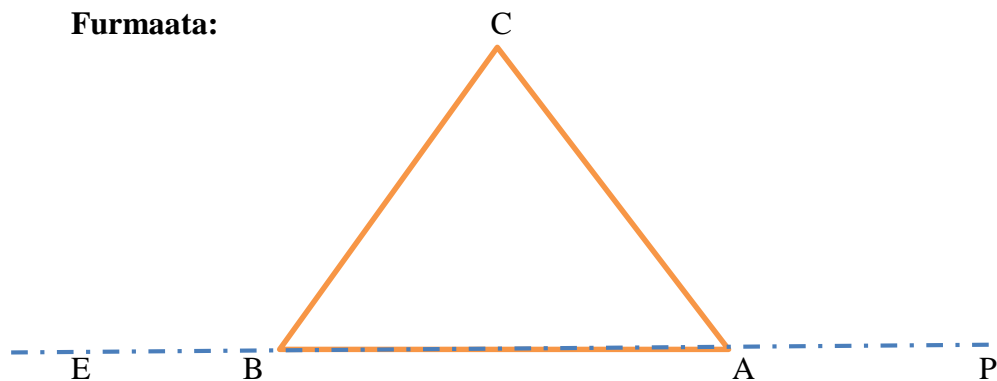
$\triangle ABD \equiv \triangle CBD$ RRR

Kanaaf deebiin **A** ta’a.

11. $\triangle ABC$ keessatti safari kof – alee kofa A 136° fi safarri kof-alee kofa B immoo 107° dha. kan armaan gadii keessaa kamtu waa'ee rog-sadee ABC dhugaa dha?

- A. $\triangle ABC$ 'n rog-sadee Aysoosilasii dha. C. $\triangle ABC$ 'n rog-sadee Obtiyusii dha.
 B. $\triangle ABC$ 'n rog-sadee akkiyutii dha. D. $\triangle ABC$ 'n rog-sadeekofa-sirrii dha.

Furmaata:



$\angle EBC$ kof-alee $\angle B$ fi $\angle CAP$ kof-alee $\angle A$ dha. Kanaaf safari kofa CAP 136° waan ta’eef Safari $\angle BAC = 180^\circ - 136^\circ = 44^\circ$ ta’a. $S(\angle EBC) = 107^\circ$ waan ta’eef $S(\angle ABC) = 73^\circ$ ta’a.

Kanaaf, $S(\angle C) = 180^\circ - (107^\circ + 44^\circ) = 29^\circ$ ta’a. Kanaaf $\triangle ABC$ 'n rog-sadee **kofa akkiyutii** dha. Deebiin **B** ta’a.

12. Safarri kofa varteeksii rog-sadee Aysoosilasii 72.5° yoo ta'e, safari tokkoon tokkoo kofa hundee isaa meeqa?

- A. 72.5° B. 53.75° C. 75.35° D. 107.5°

Furmaata:

Kofootni hundee lamaan walittigaloo waan ta'aniif, mee x haa jennu

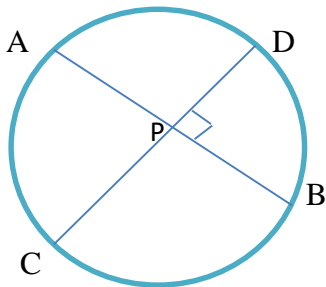
$$\begin{aligned} \text{Kanaaf } x + x + 72.5^\circ &= 180^\circ \\ \Rightarrow 2x &= 107.5^\circ; x = 53.75^\circ \text{ ta'a.} \\ \Rightarrow \text{Deebiin } \mathbf{B} &\text{ ta'a.} \end{aligned}$$

13. Koordonni lama \overline{AB} fi \overline{CD} geengoo tokko keessatti yoo walkiphan kofa sirrii uumu. $s(\angle BAC) = 35^\circ$ yoo ta'e $s(\angle ABD) =$ _____ ta'a.

- A. 110° B. 90° C. 70° D. 55° E. deebii hinqabu

Furmaata:

Tuqaalee A fi C walqabsiisuun \overline{AC} ijaari.

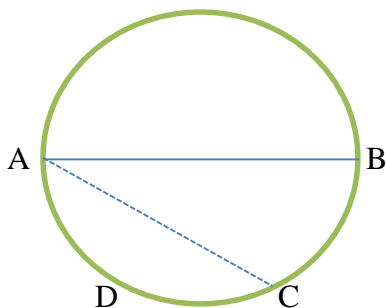


$$\begin{aligned} s(\angle BAC) &= 35^\circ \\ \Rightarrow \text{safari golboo BC} &= 2s(\angle BAC) = 70^\circ \\ s(\angle APD) &= \frac{1}{2}[S(\text{golboo AD}) + S(\text{golboo BC})] \\ 90^\circ &= \frac{1}{2}[S(\text{golboo AD}) + 70^\circ] \\ \Rightarrow S(\text{golboo AD}) &= 180^\circ - 70^\circ = 110^\circ \\ s(\angle ABD) &= \frac{1}{2}[S(\text{golboo AD})] = 55^\circ \end{aligned}$$

Deebiin **D** ta'a.

14. Geengoon ABCD diyaameetiriin isaa \overline{AB} ta'ee safari golboo ADC = 124° yoo ta'e, $s(\angle BAC) =$ _____ ta'a. A. 28° B. 56° C. 112° D. 180°

Furmaata:



$$\begin{aligned} S(\text{golboo BC}) &= 180^\circ - 124^\circ = 56^\circ \\ S(\angle BAC) &= \frac{1}{2} S(\text{golboo BC}) = \frac{1}{2}(56^\circ) = 28^\circ \\ \text{Deebiin } \mathbf{A} &\text{ ta'a.} \end{aligned}$$

15. Ballinnin geengoo tokkoo $36\pi\text{cm}^2$ yoo ta'e naannawi geengoo kanaa meeqa ta'a?

- A. 6cm B. $6\pi\text{cm}$ C. $12\pi\text{cm}$ D. deebiin hinkennamne

Furmaata:

$$\begin{aligned} \text{Ballina geengoo, } B &= \pi r^2 \\ 36\pi\text{cm}^2 &= \pi r^2 \Rightarrow r = 6\text{cm ta'a.} \\ \text{Naannawa geengoo, } N &= 2\pi r = 2\pi(6\text{cm}) = 12\pi\text{cm. Deebiin } \mathbf{C} \text{ ta'a.} \end{aligned}$$

16. Dheerinni golboo geengoo tokkoo $12\pi\text{cm}$ ta'ee safari kofa handhuuraa golboo kana keessa marfatee 120° yoo ta'e, raadiyaasiin geengichaa meeqa ta'a?
 A. $18\pi\text{cm}$ B. 18cm C. 12cm D. $12\pi\text{cm}$

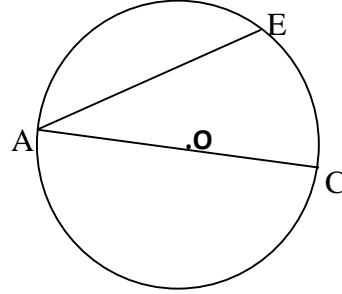
Furmaata:

$$l = \frac{\pi r \theta}{180^\circ}$$

$$12\pi\text{cm} = \frac{\pi r 120^\circ}{180^\circ} = \frac{2\pi r}{3} \Rightarrow r = \frac{3(12\pi\text{cm})}{2\pi} = 18\text{cm} \text{ ta'a. Kanaaf deebiin B ta'a.}$$

17. Fakkii kennamerratti \overline{AC} 'n diyaametirii geengoo dheerinni isaa 4cm , $AE = 3\text{cm}$ fi $s(\angle EAC) = 30^\circ$ yoo ta'an, naannawi $\triangle EAO$ meeqa ta'a?

- A. 7cm
 B. 5cm
 C. πcm
 D. $3\pi\text{cm}$



Furmaata:

$$s(\angle EAC) = \frac{1}{2} S(\text{golboo EC}) = S(\angle EOC)$$

$$S(\angle EOC) = 2(30^\circ) = 60^\circ$$

$$AO = OC = OE = r = 2\text{cm}$$

$$\text{Naannawa } \triangle EAO = EA + AO + EO = 2\text{cm} + 2\text{cm} + 3\text{cm} = 7\text{cm} \text{ ta'a.}$$

Kanaaf deebiin A ta'a.

18. Fakkii gaaffii 17ffaa irraa safarri golboo AE meeqa ta'a?
 A. 120° B. $\frac{2\pi}{3}\text{cm}$ C. $\frac{\pi}{12}\text{cm}$ D. deebii hinqabu.

Furmaata:

$$S(\text{golboo AE}) = s(\angle AOE) = 180^\circ - s(\angle EOC) = 180^\circ - 60^\circ = 120^\circ \text{ ta'a.}$$

Kanaaf deebiin A ta'a.

19. Rog-baay'ee sirnaawaa kan **hin** taane isa kami?
 A. Roombasii B. Iskuweerii C. Rog-sadee Ikulaateeriyaalii D. Hunda

Furmaata:

Rog-baay'ee sirnaawaan kan rogootni isaa hundi fi kofootni isaa hundi walittigaloo ta'ani dha. Rombasiin rogootni arfan walitti galoo ta'anii kofti arfan walittigaloo ta'uu dhiisuu malu. Kanaaf sirnaawaa miti. Deebiin A ta'a.

20. Ida'amni safara kofoota lamaa rog-sadee tokkoo 150° fi wal-caalmaan isaanii 90° yoo ta'e rog-sadichi rog-sadee _____ ti.
 A. aysoosilasii kofa sirrii B. aysoosilasii obtiiyusii
 C. aysoosilasii akkiiyutii D. Aysoosilasii miti.

Furmaata:

Mee safara kofootni lamaa x fi y haa jennu.

$$\begin{cases} x + y = 150^\circ \\ x - y = 90^\circ \end{cases} \Rightarrow 2x = 240^\circ \Rightarrow x = 120^\circ \text{ yoo ta'u } y = 30^\circ \text{ ta'a. Kofti sadaffaan}$$

immoo $= 180^\circ - (120^\circ + 30^\circ) = 30^\circ$ ta'a. safari kofoota lamaa walqixaa fi kofti tokko obtiyuusii waan ta'eef rog-sadeen kun rog-sadee aysoosilasii obtiyuusii ta'a.

Deebiin **B** ta'a.

21. Rog-sadee wal-fakkaatoo lama keessatti safari rogoota walitti dhufoo 40cm fi 0.2m yoo ta'e, reeshoon ballina rog-sadootaa kanaa meeqa ta'a?
- A. 0.2:4 B. 4:1 C. 2:1 D. 200:1

Furmaata:

Rog-sadee walfakkaatoo lama keessatti reeshoon ballina rog-sadoota lamaanii walqixa reesoo iskuweerii rogoota walittidhufoo rog-sadoota kanaa ta'a.

$$\text{Kanaaf, } \frac{A_1}{A_2} = \frac{(40\text{cm})^2}{(0.2\text{m})^2} = \frac{(0.4\text{m})^2}{(0.2\text{m})^2} = \frac{4}{1} = 4:1. \text{ Deebiin } \mathbf{B} \text{ ta'a.}$$

22. Dheerinni rogoota rog-sadee tokkoo 8sm,10sm,12sm fi dheerinni roga gabaabaa rog-sadee wal-fakkaatoo kanaa 6sm yoo ta'e safari roga dheeraa:-
- A. 7.56sm B. 6sm C. 140sm D. 9sm

Furmaata:

Rogsadeen lamaan walfakkaatoo waan ta'niif, reeshoon rogoota walittidhufoo walqixa ta'a. mee safari roga-dheeraa rog-sadee lammaffaa x haa jennu.

$$\text{Kanaaf } \frac{8\text{cm}}{6\text{cm}} = \frac{12\text{cm}}{x\text{cm}} \Rightarrow x = \frac{6\text{cm}(12\text{cm})}{8\text{cm}} = 9\text{cm} \text{ ta'a.}$$

Deebiin **D** ta'a.

23. Geengoo "O" keessatti bal'inni seektarrii kofti handhuurri isaa 120° ta'e $3\pi\text{cm}^2$ yoo ta'e, dheerinni raadiyasii geengichaa:-
- A. 3cm B. 4cm C. 5cm D. 6cm

Furmaata:

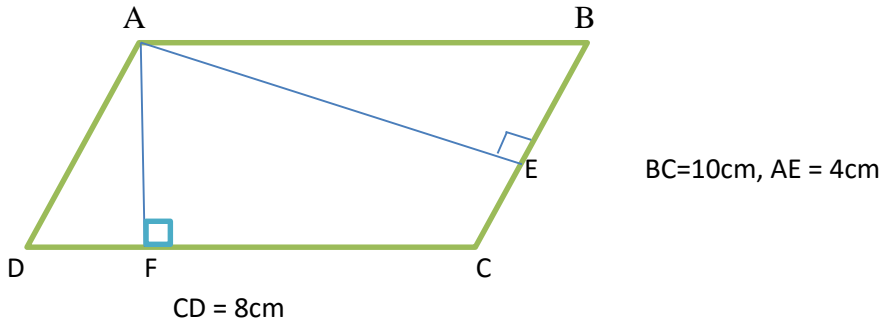
$$\text{Ballina Sektarii geengoo} = \frac{\pi r^2 \theta}{360^\circ}$$

$$3\pi\text{cm}^2 = \frac{\pi r^2 (120^\circ)}{360^\circ} \Rightarrow r^2 = \frac{3\pi\text{cm}^2 (360^\circ)}{\pi (120^\circ)} = 9\text{cm}^2 \Rightarrow r = 3\text{cm}$$

Deebiin **A** ta'a.

24. Paaraleeloogiraamii ABCD keessatti $\overline{AE} \perp \overline{BC}$ fi $\overline{AF} \perp \overline{CD}$ ti. yoo $\overline{BC}=10\text{cm}$, $\overline{CD}=8\text{cm}$ fi $\overline{AE}=4\text{cm}$ ta'e, dheerinni AF = _____
- A. 3cm B. 5cm C. 6cm D. 8cm.

Furmaata:



ABCD paralilogiraamii waan ta'eef, $CD = AB = 8\text{cm}$ fi $BC = AD = 10\text{cm}$ ta'a. Akkasumas $S(\angle D) = S(\angle B)$.

Yaad-rimee Tirigonometrii fayyadamuun $\sin(\angle B) = \frac{AE}{AB} = \frac{4}{10} = \frac{2}{5} \Rightarrow S(\angle B) = 30^\circ$ ta'a.

Akkasumas $\sin(\angle D) = \frac{AF}{AD} = \frac{AF}{10} = \frac{1}{2} \Rightarrow AF = 5\text{cm}$ ta'a. Deebiin **B** ta'a.

25. Ida'amni safara kofoota maddii paralilogiraamii tokkoo _____ ta'a.
 A. 180° B. 90° C. 360° D. hinbeekamu

Furmaata:

Ida'amni safara kofoota maddii paralilogiraamii tokkoo 180° ta'a. Deebiin **A** dha.

26. Geengoo tokko keessatti bal'inni sektarii kofti handhuurri isaa 120° ta'e $3\pi\text{cm}^2$ yoo ta'e, dheerinni golboo kofa handhuuraa kenname haguugee meeqa ta'a?
 A. 3cm B. $2\pi\text{cm}$ C. 5cm D. Deebiin Hinkennamne

Furmaata:

$$\text{Ballina Sektarii geengoo} = \frac{\pi r^2 \theta}{360^\circ}$$

$$3\pi\text{cm}^2 = \frac{\pi r^2 (120^\circ)}{360^\circ} \Rightarrow r^2 = \frac{3\pi\text{cm}^2 (360^\circ)}{\pi (120^\circ)} = 9\text{cm}^2 \Rightarrow r = 3\text{cm}$$

$$l = \frac{\pi r \theta}{180^\circ} = \frac{\pi (3\text{cm}) (120^\circ)}{180^\circ} = 2\pi\text{cm} \text{ ta'a. Deebiin } \mathbf{B} \text{ ta'a.}$$

27. Ballinni rog-sadee ikkulateraalii dheerinni roga isaa 4sm ta'ee _____ sm^2 ta'a.
 A. $4\sqrt{3}$ B. 4 C. 8 D. deebiin hinkennamne

Furmaata:

Foormulaa Heeroon fayyadamuu dandeenya. Innis dheerinni rogootaa $a=b=c=4\text{cm}$ fi

$$s = \frac{4\text{cm} + 4\text{cm} + 4\text{cm}}{2} = 6\text{cm} \text{ waan ta'aniif}$$

$$\text{Ballina, } A = \sqrt{s(s-a)(s-b)(s-c)} = \sqrt{6\text{cm}(2\text{cm})(2\text{cm})(2\text{cm})} = 4\sqrt{3}\text{cm}^2$$

Kanaaf deebiin **A** ta'a.

28. Ballinni paralilogiraamii dheerinni rogoota maddii 4sm fi 6sm fi kofti tokko 30° ta'ee meeqa dha? A. 6sm^2 B. 12sm^2 C. $12\sqrt{3}\text{sm}^2$ D. deebiin hinkennamne.

Furmaata:

$$\text{Ballina, } A = (4\text{cm})(6\text{cm})\sin 30^\circ = 12\text{cm}^2. \text{ Deebiin } \mathbf{B} \text{ ta'a.}$$

29. Ida'amni safara koofta keessoo rog-shanee tokoo _____ dha.
 A. 180° B. 540° C. 360° D. deebiin hinkennamne

Furmaata:

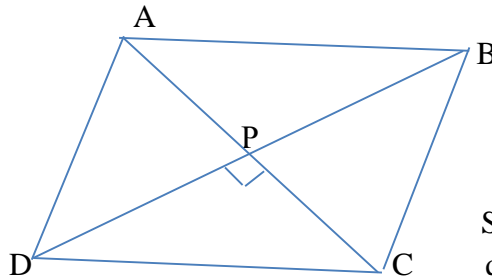
Ida'amni safara koofta keessoo rog-baayyee baayyinni rogoota isaa n ta'ee;

$$s = (n - 2)180^\circ \text{ dha. Kanaaf } n = 5 \text{ yoo ta'e,}$$

$$s = (5 - 2)180^\circ = 3(180^\circ) = 540^\circ \text{ ta'a. Kanaaf deebiin } \mathbf{B} \text{ ta'a.}$$

30. Naannawi Rombasii dheerinni saarbiiwwan isaa 16sm fi 12 sm ta'e _____ sm ta'a
 A. 10sm B. 20sm C. 30sm D. 40sm

Furmaata:



Mee ABCD'n rombasii yoo ta'e

Saarbiiwwan AC fi BD tuqaa P irratti qixa-hiraa parpendikularii ta'u.

Kanaaf $AP = PC = 6\text{cm}$ ta'a. Akkasumas, $DP = PB = 8\text{cm}$ ta'a.

$\triangle APB$ 'n rog-sadee kofa-sirrii ta'a. Tiyoramii Payitagorasii fayyadamuun AB arganna.

Kunis $AP^2 + PB^2 = AB^2$ ta'a.

$AB^2 = (6\text{cm})^2 + (8\text{cm})^2 = 100\text{cm}^2 \Rightarrow AB = 10\text{cm}$ ta'a. ABCD'n rombasii waan ta'eef $AB = BC = CD = DA = 10\text{cm}$ ta'u. Kanaaf,

Naannawi ABCD = $10\text{cm} + 10\text{cm} + 10\text{cm} + 10\text{cm} = 40\text{cm}$ ta'a. Deebii **D** ta'a.

31. Ballinni rog-sadee hundeen isaa 4sm fi oleen isaa 2sm ta'ee _____ sm^2 ta'a
 A. 8 B. 6 C. 4 D. 2

Furmaata:

Ballinni rog-sadee hundeen isaa b , fi oleen isaa h kennamee

$$A = \frac{1}{2}bh = \frac{1}{2}(4\text{cm})(2\text{cm}) = 4\text{cm}^2 \text{ ta'a. Deebii } \mathbf{C} \text{ ta'a.}$$

32. Ballinni iskuweerii dheerinni roga isaa 3sm ta'ee:

- A. 6sm^2 B. 9sm^2 C. $12\sqrt{3}\text{sm}^2$ D. deebiin hinkennamne

Furmaata:

$$A = (3\text{cm})^2 = 9\text{cm}^2 \text{ ta'a. Kanaaf Deebiin } \mathbf{B} \text{ ta'a.}$$

33. Meeshaa kofa safaruuf gargaaru kan ta'e kami?

- A. pirotiraaktarii B. kompaasii C. Raadiyanii D. deebiin hinkennamne

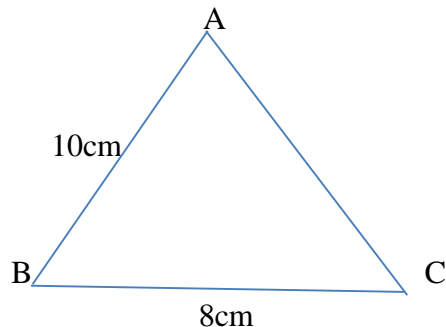
Furmaata:

Meeshaa kofa safaruuf gargaaru Pirotiraktarii jedhama.

Kanaaf deebiin **A** ta'a.

34. $\triangle ABC$ keessatti $AB=10\text{sm}$, $BC =8\text{sm}$ fi $S (B) = 30^\circ$ yoo ta'e bal'inni $\triangle ABC$ sm^2 meeqa? A. 20 B. 80 C. 10 D. 40

Furmaata:



$\angle B$ kofa gidduu roga AB fi roga BC ti. Kanaaf ballinni rog-sadee kanaa

$$A = \frac{1}{2}(AB)(BC) \sin(\angle B) = \frac{1}{2}(10\text{cm})(8\text{cm}) \sin(30^\circ) = 20\text{cm}^2$$

Deebiin **A** ta'a.

35. Rog-jaheen sirnaawaan tokko raadiyasiin isaa 'r' yoo ta'e, naannawni isaa maal ta'a?

A. $6\sqrt{3}r$ B. $12r$. C. $\frac{\sqrt{3}r}{2}$ D. $6r$

Furmaata:

Rog-jahee sirnaawaadhaaf dheerinni radiyesii isaa fi dheerinni roga isaa walqixa ta'a.

$r = s$ ta'a. Baayyinni rogoota isaa 6 waan ta'eef naannawi isaa $6s=6r$ ta'a.

Deebiin **D** ta'a.

36. Yoo $\triangle ABC \sim \triangle DEF$ ta'ee fi $AB = 4x+4$, $AC = 10x-14$, $DE = 4$, $DF = 6\text{sm}$ fi $BC = 20$

ta'e $EF = \underline{\hspace{2cm}}$ ta'a. A. 3.3sm B. 4sm C. 5sm D.10sm

Furmaata:

$\triangle ABC \sim \triangle DEF$ waan ta'eef $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ ta'a.

$$\Rightarrow \frac{4x+4}{4} = \frac{20}{EF} = \frac{10x-14}{6}$$

$$\Rightarrow \frac{4x+4}{4} = \frac{10x-14}{6}$$

$$\Rightarrow x = 5 \text{ ta'a.}$$

$$\text{Kanaaf } \frac{4x+4}{4} = \frac{20}{EF} \Rightarrow \frac{4(5)+4}{4} = \frac{20}{EF} \Rightarrow \frac{24}{4} = \frac{20}{EF} \Rightarrow EF = \frac{20(4)}{24} = \frac{20}{6} = \frac{10}{3} = 3.3 \text{ ta'a.}$$

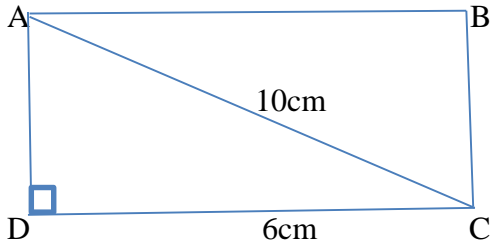
Deebiin **A** ta'a.

37. Bal'inni rektaangiliin hundeen isaa 6sm fi saarbiin isaa 10sm ta'e meeqa ta'a?

A. 24sm^2 B. 48sm^2 C. 60sm^2 D. 25sm^2

Furmaata:

Mee ABCD'n rektangilii haa ta'u. AC'n saarbii dha.



AB=DC=6cm fi AC = 10cm dha.

$$AD^2 + DC^2 = AC^2$$

$$AD^2 + (6cm)^2 = (10cm)^2$$

$$AD^2 = 64cm^2 \Rightarrow AD = 8cm$$

Ballinni rektangilii ABCD = (AD)(DC) = (8cm)(6cm) = 48cm² ta'a.

Kanaaf deebiin **B** ta'a.

38. Rog-baay'ee tokko keessatti ida'maan safara kofoota keessaa 900⁰ yoo ta'e ,
rog-baay'een kun rogoota meeqa qaba?

A.7 B.10 C. 12 D.deebiin hinkennamne

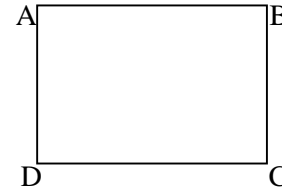
Furmaata:

Ida'amni safara kofoota keessoo rog-baayyee = (n-2)180⁰

$$900^0 = 180^0n - 360^0 \Rightarrow n = \frac{900^0 + 360^0}{180^0} = 7 \text{ ta'a. Kanaaf deebiin A dha.}$$

39. Fakkii kennamerratti hundaa'uun kan armaan gadii
keessaa kamtu **soba**?

- A. ABCD'n rektaamgilii yoo ta'e $(AD)^2 + (DC)^2 = (DB^2)$ ta'a.
B. ABCD'n iskuweerii ta'ee $AC = \sqrt{8}$ cm yoo ta'e, naannawi
ABCD 8cm ta'a.
C. ABCD'n rombasii ta'ee $s(\angle B) = 90^0$ yoo ta'e ABCD'n iskuweerii ta'a.
D. ABCD'n kaayitii yoo ta'e $AC = AB$ ta'a. E. A fi D



Furmaata:

- A) ABCD'n rektaamgilii yoo ta'e $(AD)^2 + (DC)^2 = (DB^2)$ ta'a.

sababni isaa $AC = DB$ waan ta'eef dha.

- B) ABCD'n iskuweerii $(AD = DC)$ ta'ee $AC = \sqrt{8}$ cm yoo ta'e, $(AD)^2 + (DC)^2 = (AC^2)$
 $2(AD)^2 = 8 \Rightarrow AD=DC=2cm$ ta'a.

Kanaaf naannawi ABCD = 2cm+2cm+2cm+2cm = 8cm ta'a.

- C) ABCD'n rombasii ta'ee $s(\angle B) = 90^0$ yoo ta'e ABCD'n iskuweerii ta'a.

- D) ABCD'n kaayitii yoo ta'e $AD = AB$ ta'a. Kanaaf deebiin **D** ta'a.

40. Heksagooniin tokko yoo geengoo raadiyasii 6cm ta'een marfame kan armaan gadii keessaa kamtu
dhugaaa dha? A. naannawi isaa 36cm ta'a. B. ballinni isaa 36 sq.cm ta'a.

C. ballinni geengoo rog-baayyicha marse 36 sq.cm ta'a D. deebii hinqabu.

Furmaata:

Baayyinni rogoota heksagonii, $n = 6$ fi kofti handhuura $\theta = \frac{360^\circ}{n} = \frac{360^\circ}{6} = 60^\circ$ ta'a.

Safari kofoota sadan rog-sadee tuqaa handhuuraa fi roga rog-baayyee tokkoon uumamuu = 60° ta'a. kanaaf rog-sadichi rog-sadee ikkulateralii ta'a.

\Rightarrow Dheerinni rogoota sadanii walqixa ta'a.

$\Rightarrow r = s = 6\text{cm}$ ta'a.

A) Naannawi isaa, $N = 6s = 6(6\text{cm}) = 36\text{cm}$ ta'a.

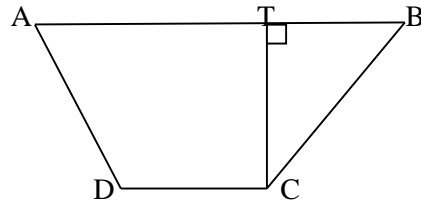
B) ballinni isaa, $A = \frac{1}{2}nr^2 \sin \frac{360^\circ}{n} = \frac{1}{2}6(6\text{cm})^2 \sin \frac{360^\circ}{6} = 108 \sin 60^\circ \text{cm}^2 = 54\sqrt{3}\text{cm}^2$

C) Ballinni geengichaa, $A = \pi r^2 = \pi(6\text{cm})^2 = 36\pi\text{cm}^2$. Kanaaf deebiin **A** ta'a.

41. Fakkii kennamerratti $\overline{AB} \parallel \overline{DC}$, $s(\angle CBA) = 60^\circ$,

$s(\angle DAB) = 30^\circ$, $BC = 4\text{cm}$, $DC = 5\text{cm}$ yoo ta'an kan armaan gadii keessaa kamtu **dhugaa dha?**

- A. $CT = 6\text{cm}$ B. $AD = 4\text{cm}$
- C. $b(\text{ABCD}) = \sqrt{54} \text{cm}^2$ D. $AB = 13\text{cm}$
- E. Hunda

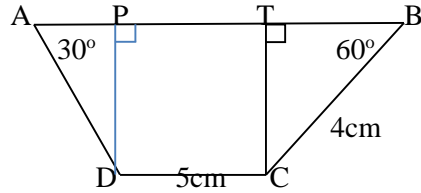


Furmaata:

Fakkii kennamerratti $\overline{AB} \parallel \overline{DC}$, $s(\angle CBA) = 60^\circ$

$s(\angle DAB) = 30^\circ$, $BC = 4\text{cm}$, $DC = 5\text{cm}$

$$DP = CT$$



A) $\sin 60^\circ = \frac{CT}{4\text{cm}} \Rightarrow \frac{\sqrt{3}}{2} = \frac{CT}{4\text{cm}} \Rightarrow CT = 2\sqrt{3}\text{cm}$

B) $\sin 30^\circ = \frac{DP}{AD} \Rightarrow \frac{1}{2} = \frac{2\sqrt{3}\text{cm}}{AD} \Rightarrow AD = 4\sqrt{3}\text{cm}$

C) $\cos 30^\circ = \frac{AP}{AD} \Rightarrow \frac{\sqrt{3}}{2} = \frac{AP}{4\sqrt{3}\text{cm}} \Rightarrow AP = 6\text{cm}$; $\cos 60^\circ = \frac{TB}{CB} \Rightarrow \frac{1}{2} = \frac{TB}{4\text{cm}} \Rightarrow TB = 2\text{cm}$

$PT = DC = 5\text{cm}$.

Kanaaf $AB = AP + PT + TB = 6\text{cm} + 5\text{cm} + 2\text{cm} = 13\text{cm}$

Ballinni tirapeziyemii $\text{ABCD} = \frac{1}{2}(AB + DC)(TC) = \frac{1}{2}(13\text{cm} + 5\text{cm})2\sqrt{3}\text{cm} = 18\sqrt{3}\text{cm}^2$

D) $AB = 13\text{cm}$ ta'a. Kanaaf deebiin **D** ta'a.

42. Fakkii gaaffii 41ffaa irratti dheerinni miidiyaanii isaa meeqa ta'a?

- A. 5sm B. 9sm C. 13sm D. 18sm

Furmaata:

Miidiyaanii, $m = \frac{1}{2}(AB + DC) = \frac{1}{2}(18\text{cm}) = 9\text{cm}$ ta'a. Deebiin **B** ta'a.

43. Tuqoota sadii, koliinerii hintaanen, Sararoota wal-tarree ta'an cimdii meeqa ijaaruun

- danda'ama? A. 3 B. 1 C. 2 D.4

Furmaata:

Tuqoota sadii, koliinerii hintaanen, baayyinoota sararoota wal-tarree cimdii ta'an argachuuf; $3C2 = \frac{3!}{2!(3-2)!} = \frac{3 \times 2 \times 1}{2 \times 1} = 3$. Kanaaf deebiin **A** ta'a.

44. Digirii tokko radiyaanii meeqa ta'a?

- A. 57.3 rad B. $\frac{\pi}{180} rad$ C. πrad D. $\frac{1}{360} rad$

Furmaata: Hariiroon digirii fi radiyaanii $\pi rad = 180^\circ \Rightarrow 1^\circ = \frac{\pi rad}{180}$ ta'a. Deebiin **B** ta'a.

45. Bal'inni muraa geengoo safarri kofa handhuura geengoo 60° fi raadiyasiin geengoo 6sm ta'ee meeqa ta'a?

- A. $(6\pi - 9\sqrt{3})sm^2$ B. $6\pi sm^2$ C. $(6\pi - 9)sm^2$ D. deebiin Hinkennamne

Furmaata:

Bal'inni muraa geengoo safarri kofa handhuura geengoo 60° fi raadiyasiin geengoo 6cm ta'ee;

Ballinni muraa geengoo;

$$A_{seg} = \frac{\pi r^2 \theta}{360^\circ} - \frac{1}{2} r^2 \sin \theta = \frac{\pi (6cm)^2 60^\circ}{360^\circ} - \frac{1}{2} (6cm)^2 \sin 60^\circ = (6\pi - 9\sqrt{3})cm^2$$

Deebiin **A** dha.

46. Saffara tokkoon tokkoo kofoota alaa rog-baay'ee sirnaawaa baay'inni rogoota isaa 12 ta'ee meeqa dha? A. 30° B. 60° C. 90° D. 360°

Furmaata: Saffara tokkoon tokkoo kofoota alaa rog-baay'ee sirnaawaa baay'inni rogoota isaa 12 ta'ee; safarri kof-alee rog-baay'ee sirnaawaa baay'inni rogoota isaa n ta'e $\frac{360^\circ}{n}$

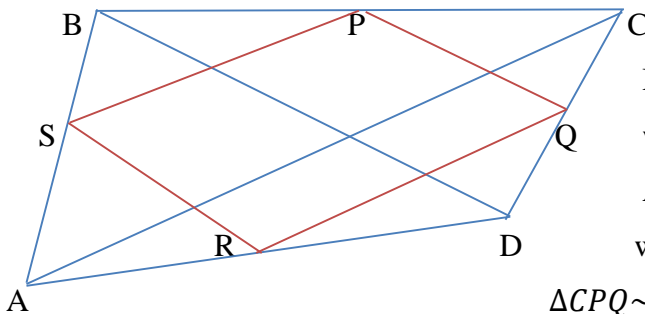
ta'a. Kanaaf yoo $n=12$ ta'e, $\theta = \frac{360^\circ}{12} = 30^\circ$ ta'a. Deebiin **A** dha.

47. Mee ABCD'n rog-afree tokko haa ta'u. \overline{AC} fi \overline{BD} 'n saarbiiwan yoo ta'anii fi $AC = 20sm$, $BD = 10sm$ yoo ta'an naannawa rog-afree verteksoonni isaa tuqaa walakkeessoo rog-afree ABCD ta'ee meeqa ta'a?

- A. 15sm B. 30sm C. 40sm D. Deebiin hinkennamne

Furmaata:

Mee ABCD'n rog-afree tokko haa ta'u. \overline{AC} fi \overline{BD} 'n saarbiiwan dha.



Mee P, Q, R, fi S tuqaalee walakkeessoo rogoota BC, CD, DA fi AB haa ta'an. Tuqaalee kana yoo walqabsiifne rog-afree PQRS arganna.

$$\Delta CPQ \sim \Delta CBD, \Delta BPS \sim \Delta BAC, \Delta ASR \sim \Delta ABD$$

fi $\Delta DRQ \sim \Delta DAC$ ta'u. sababni isaa tuqaaleen P, Q, R,

fi S walakkeessoo waan ta'niif $\frac{CP}{CB} = \frac{CQ}{CD} = \frac{1}{2}$ ta'a.

kanaaf $\frac{CP}{CB} = \frac{PQ}{BD} = \frac{1}{2}; \Rightarrow PQ = \frac{1}{2}BD = 5cm = RS \text{ ta'a.}$

Akkasumas $\frac{BP}{BC} = \frac{PS}{CA} = \frac{1}{2}; \Rightarrow PS = \frac{1}{2}AC = 10cm = RQ \text{ ta'a.}$

Kanaaf naannawi PQRS = 5cm+5cm+10cm+10cm = 30cm ta'a. Deebii **B** ta'a.

48. Yoo D(2,6), A(4,-5) fi R(-3,0) varteksoota Δ DAR ta'an, Δ DAR 'n gosoota rog-sadee keessaa kam ta'a?

- A. Ayisosilasii B. Iskeelenii C. Ikuilateralii D. Hinbeekamu

Furmaata:

$$DA = \sqrt{(4-2)^2 + (-5-6)^2} = \sqrt{125} = 5\sqrt{5},$$

$$DR = \sqrt{(-3-2)^2 + (0-6)^2} = \sqrt{61} \text{ fi } AR = \sqrt{(-3-4)^2 + (0-5)^2} = \sqrt{74}$$

Δ DAR rog-sadee iskalenii dha. Deebii **B** dha.

49. Dheerinni rogoota rog-sadee tokkoo yuunitiin 10, 6, fi **x** yoo ta'an gatiin **x** lakkoofsa meeqaa fi meeqa jidduu ta'uu qaba?

- A. $4 < x < 16$ B. $5 \leq x \leq 15$ C. $0 < x < 16$ D. Deebiin Hinkennamne

Furmaata:

Dheerinni rogoota rog-sadee tokkoo yuunitiin 10, 6, fi **x** yoo ta'an gatiin **x**

$$x < 10 + 6; \quad 10 < 6 + x \quad 6 < 10 + x$$

$$x < 16 \text{ ta'a} \quad 4 < x \text{ ta'a.} \quad -4 < x \Rightarrow 0 < x$$

Kanaaf $4 < x < 16$ ta'uu qaba. Deebiin **A** ta'a.

50. Ida'amni safara kof-alee rog-sadee sirnaawaa tokkoo _____ dha.

- A. 60° B. 90° C. 180° D. 360°

Furmaata:

Safari kof-alee tokkoo rog-sadee sirnaawaa $\frac{360^\circ}{3} = 120^\circ$ ta'a. kanaaf ida'amni kofoota

$$\text{alaa sadan rog-sadee sirnaawaa} = 120^\circ + 120^\circ + 120^\circ = 360^\circ$$

Deebiin **D** ta'a.

Kan qopheessee

B/saa Malaakuu Taakkalee

Adoolessa bara 2012