GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION
VOORBEREIDENDE EKSAMEN
2025

MARKING GUIDELINES/
NASIENRIGLYNE

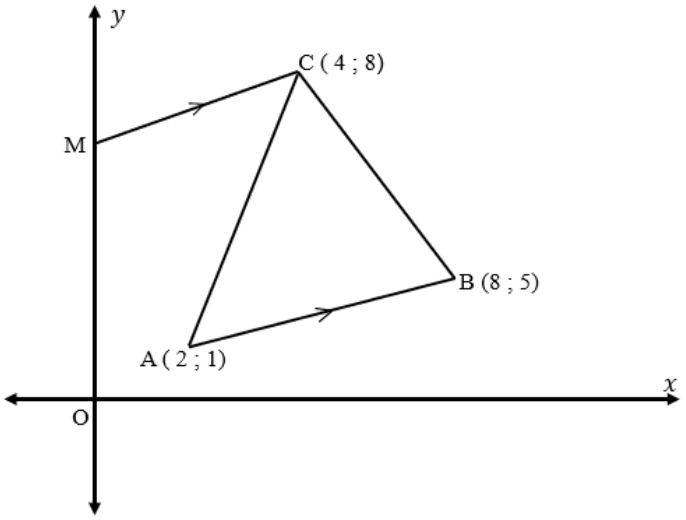
TECHNICAL MATHEMATICS/*TEGNIESE WISKUNDE*
(PAPER/*VRAESTEL* 2) (11092)

22 pages/*bladsye*

Marking Codes/*Nasienkodes*	
A	Accuracy/*Akkuraatheid*
CA	Consistent Accuracy/*Volgehoue akkuraatheid*
M	Method/*Metode*
R	Rounding/*Afronding*
NPR	No penalty for rounding/*Geen penalisering vir afronding nie*
NPU	No penalty for units omitted/*Geen penalisering indien eenhede weggelaat nie*
SF	Substitution into the correct formula/*Vervanging in korrekte formule*
F	Correct formula/*Korrekte formule*
S	Simplification/*Vereenvoudiging*
ST/RE	Statement and reason/*Bewering en rede*
AO	Answer only/*Slegs antwoord*

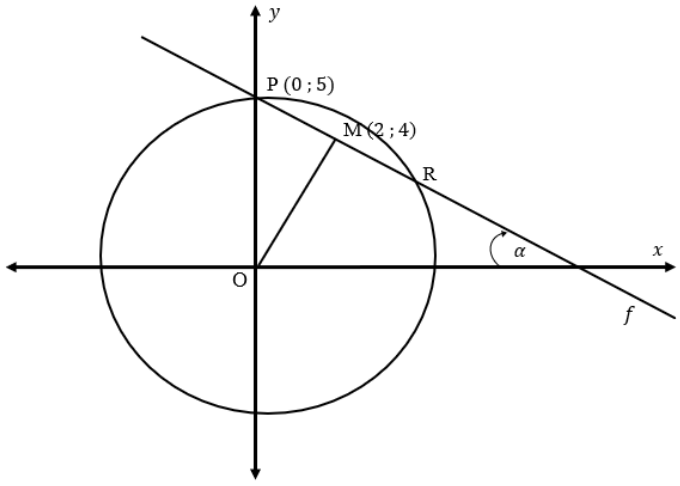
NOTES:
- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt to answer a question and did not redo it, mark the crossed-out version.
- Consistent accuracy applies in all aspects of the marking guidelines, where applicable.

LET WEL:
- *Indien 'n kandidaat 'n vraag TWEE keer beantwoord het, sien slegs die EERSTE poging na.*
- *Indien 'n kandidaat 'n antwoord deurgetrek het en nie weer beantwoord het nie, merk die deurgetrekte antwoord.*
- *Volgehoue akkuraatheid is deurgaans van toepassing op alle aspekte van die nasienriglyne waar van toepassing.*

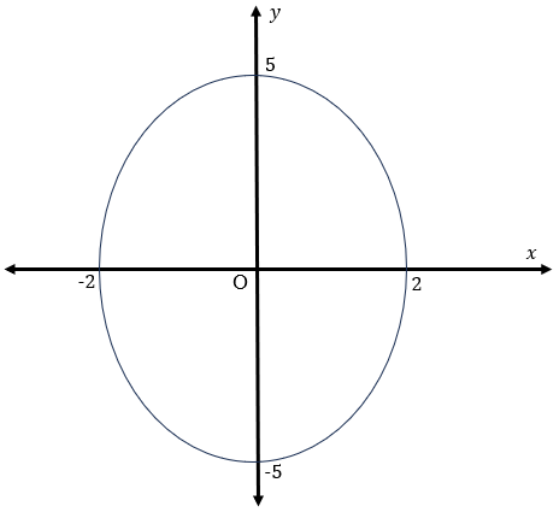
QUESTION/*VRAAG* 1			**CL/*DV***
			
1.1	$BC = \sqrt{(y_B - y_C)^2 + (x_B - x_C)^2}$ $BC = \sqrt{(5-8)^2 + (8-4)^2}$ $BC = \sqrt{25}$ $BC = 5$ units/*eenhede*	✓ **SF** **A** ✓ answer/*antwoord* **CA** **AO: Full marks** (2)	L2
1.2	$m_{AB} = \frac{y_B - y_A}{x_B - x_A}$ $= \frac{5-1}{8-2}$ $= \frac{4}{6}$ $= \frac{2}{3}$	✓SF **A** ✓ $m_{AB} = \frac{2}{3}$ **CA** **AO: Full marks** (2)	L1

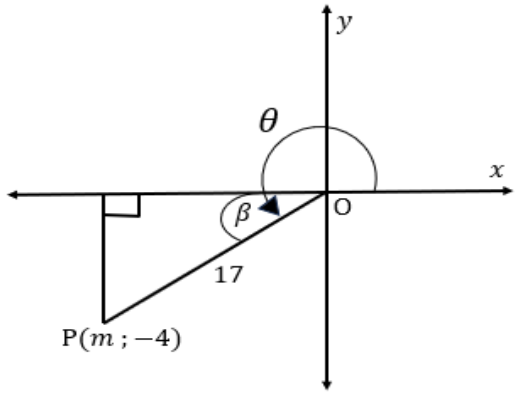
1.3	$m_{AB} = m_{CM}$ $(\parallel lines)$ $y - y_1 = m(x - x_1)$; $m = \frac{2}{3}$ and/en $pt.(4;8)$ $y - 8 = \frac{2}{3}(x - 4)$ $y = \frac{2}{3}x + \frac{16}{3}$ **OR/OF** $y = mx + c$; $m = \frac{2}{3}$ and/en $pt.(4;8)$ $8 = \frac{2}{3}(4) + c$ $c = \frac{16}{3}$ $\therefore\ y = \frac{2}{3}x + \frac{16}{3}$	✓ $m_{CM} = \frac{2}{3}$ **CA** ✓ **SF** **CA** ✓ answer/*antwoord* **A** (3) **OR/*OF*** ✓ $m_{MC} = \frac{2}{3}$ **A** ✓ **SF** **CA** ✓ value of/*waarde van c* **CA** (3)	L3
1.4	$M\left(0;\frac{16}{3}\right)$ **OR/*OF*** $M(0;5,33)$	✓ 0 **A** ✓ $\frac{16}{3}$ or/*of* $5,33$ **A** (2)	L1

1.5	Using the equation of CM to find t/Gebruik die vergelyking van CM om t te verkry $y = \frac{2}{3}x + \frac{16}{3}$ $6 = \frac{2}{3}(t) + \frac{16}{3}$ $\frac{2}{3}t = 6 - \frac{16}{3}$ $\frac{2}{3}t = \frac{2}{3}$ $\therefore t = 1$ **OR/*OF*** Using the equation of CM to find t/*Gebruik die vergelyking van CM om t te verkry.* $3y = 2x + 16$; and/*en* $pt.(t\,;6)$ $3(6) = 2t + 16$ $18 = 2t + 16$ $\therefore 2t = 2$ $t = 1$	**CA from/*van* 1.3** ✓ **SF** **CA** ✓ **S** **CA** ✓ value of/*waarde van* t **CA** (3) **OR/*OF*** **CA from/*van* 1.3** ✓ equation/*vergelyking in* $ax + by = c$ **A** ✓ **S** **CA** ✓ the value of/*waarde van* t **CA** (3)	L3
			[12]

QUESTION/*VRAAG* 2			CL
2.1			
2.1.1	$r^2 = x^2 + y^2$ $r^2 = (0)^2 + (5)^2$ $r^2 = 25$ $x^2 + y^2 = 25$	✓ **SF** **A** ✓ Equation/*Vergelyking* **CA** **AO: Full marks** (2)	L1
2.1.2	Mid-point/$punt_{Rx} = \frac{x_P + x_R}{2}$ $2 = \frac{0 + x_R}{2}$ $4 = x_R$ $\therefore x_R = 4$ Mid-point/$punt_{Ry} = \frac{y_P + y_R}{2}$ $4 = \frac{5 + y_R}{2}$ $8 = y_R + 5$ $\therefore y_R = 3$ $R(4\,;3)$	✓ SF (both/*beide*) **A** ✓ $x_R = 4$ **CA** ✓ $y_R = 3$ **CA** **AO: Full marks** (3)	L2

2.1.3	$m_{OM} = \frac{y_M - y_O}{x_M - x_O}$ $= \frac{4-0}{2-0}$ $= \frac{4}{2}$ $= 2$ $m_{PR} = \frac{y_R - y_P}{x_R - x_P}$ $= \frac{3-5}{4-0}$ $= \frac{-2}{4}$ $= -\frac{1}{2}$ $\therefore m_{OM} \times m_{RP}$ $= 2 \times -\frac{1}{2} = -1$ $\therefore OM \perp RP$ **OR/*OF*** Theorem of Pythagoras/*Stelling van Pythagoras in* ΔOPM $OP = 5$ $PM = \sqrt{(5-4)^2 + (0-2)^2}$ $\therefore PM = \sqrt{5}$ $OM = \sqrt{(4-0)^2 + (2-0)^2} = \sqrt{16+4}$ $\therefore OM = \sqrt{20}$ $OP^2 = PM^2 + MO^2$ $OP^2 = \left(\sqrt{5}\right)^2 + \left(\sqrt{20}\right)^2$ $\therefore OP^2 = 25$ $OM \perp PR$ $\therefore \Delta OPM$ is a right-angled triangle at M/*reghoekige driehoek by M*	✓ SF ✓ $m_{OM} = 2$ ✓ $m_{PR} = -\frac{1}{2}$ ✓ $m_{OM} \times m_{RP} = -1$ (4) **OR/*OF*** ✓ SF(Pyth. Theorem) ✓ $PM = \sqrt{5}$ ✓ $OM = \sqrt{20}$ ✓ Conclusion/*Gevolgtrekking* (4)	**A** **CA** **CA** **A** **A** **CA** **CA** **CA**	L3

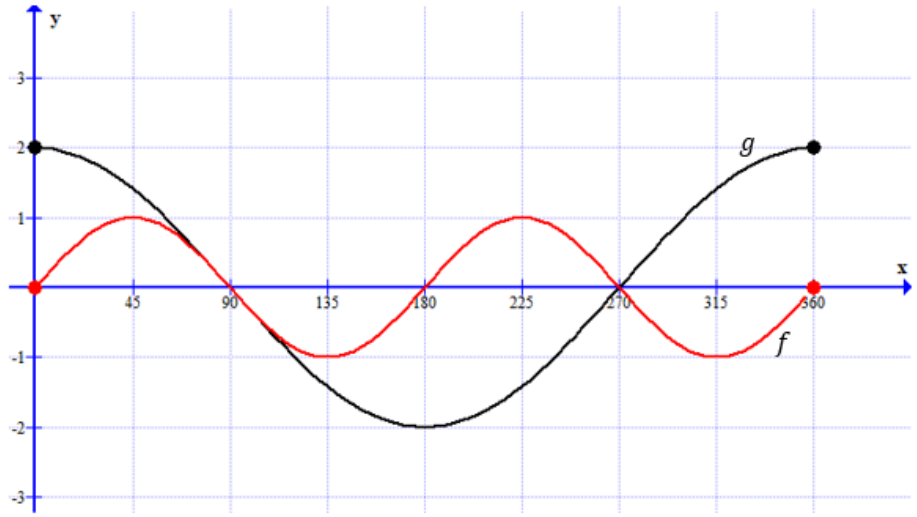
2.1.4	$\alpha = tan^{-1}\left(-\frac{1}{2}\right)$ $\therefore \alpha = 26,6^{\circ}$	✓ **SF** **A** ✓ answer/*antwoord* **CA** (2)	L2
2.2		✓ x-intercepts/*afsnitte* **A** ✓ y-intercepts/*afsnitte* **A** ✓ shape/*vorm* **CA** (3)	L2
			[14]

QUESTION/*VRAAG* 3			**CL/*DV***
3.1.1	 $r^2 = x^2 + y^2$ $(17)^2 = (m)^2 + (-4)^2$ $289 = m^2 + 16$ $m^2 = 273$ $\therefore m = -\sqrt{273}$	✓ **SF** **A** ✓ $m^2 = 273$ **CA** ✓ m= $-\sqrt{273}$ **CA** (3)	L2
3.1.2	$\sec^2\theta - 1$ **OR/*OF*** $\tan^2\theta$ $= \left(\frac{17}{-\sqrt{273}}\right)^2 - 1$ $= \left(\frac{-4}{-\sqrt{273}}\right)^2$ $= \frac{16}{273}$ $= \frac{16}{273}$	✓ $\frac{17}{-\sqrt{273}}$ **CA** ✓ answer/*antwoord* **CA** (2)	L3

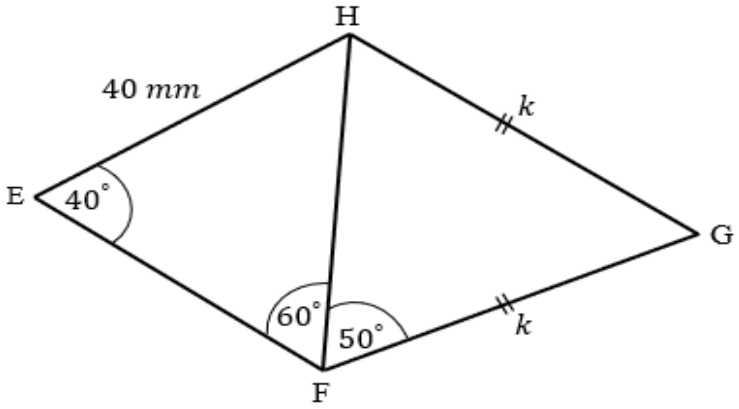
3.1.3	$\sin\theta = \frac{-4}{17}$ $\theta = sin^{-1}\frac{4}{17}$ $\therefore Ref\angle = 13,61^\circ$ $\therefore \theta = 180^\circ + 13{,}61^\circ$ $\theta = 193,61^\circ$ **OR/*OF*** $cos\,\theta = \frac{-\sqrt{273}}{17}$ $\theta = cos^{-1}\left(\frac{\sqrt{273}}{17}\right)$ $\therefore Ref\angle = 13,61^\circ$ $\therefore \theta = 180^\circ + 13{,}61^\circ$ $\theta = 193,61^\circ$ **OR/OF** $\tan\theta = \frac{-4}{-\sqrt{273}}$ Ref $\angle = 13,61^\circ$ $\theta = 180^\circ + 13,61^\circ$ $\theta = 193,61^\circ$	✓ trig ratio/*verhouding* **A** ✓Ref $\angle = 13,61^\circ$ **CA** ✓ correct quadrant/*korrekte kwadrant* **A** ✓ answer/*antwoord* **CA** (4) **OR/*OF*** ✓ trig ratio/*verhouding* **CA** ✓ $Ref\angle = 13,61^\circ$ **CA** ✓correct quadrant/korrekte kwadrant **A** ✓answer/*antwoord* **CA** (4)	L4

3.2	$\text{cosec}\left(2\pi - \frac{5}{3}\pi\right)$ $= \text{cosec}\left(\frac{1}{3}\pi\right)$ $= \text{cosec}\left(\frac{1}{3}\pi \times \frac{180^\circ}{\pi}\right)$ $= \frac{1}{\sin 60^\circ}$ $= 1,155$ **OR/OF** $\text{cosec}\left(2\pi - \frac{5}{3}\pi\right)$ $= \text{cosec}\left(\frac{1}{3}\pi\right)$ $= \frac{1}{\sin\left(\frac{1}{3}\pi\right)}$ $= 1,155$	✓ $\frac{1}{3}\pi$ **A** ✓ $\frac{1}{\sin 60^\circ}$ **CA** ✓ answer/*antwoord* **CA** **AO: full marks** (3) **OR/OF** ✓ $\frac{1}{3}\pi$ **A** ✓ $\frac{1}{\sin\left(\frac{1}{3}\pi\right)}$ **CA** ✓ answer/*antwoord* **CA**	L4
			[12]

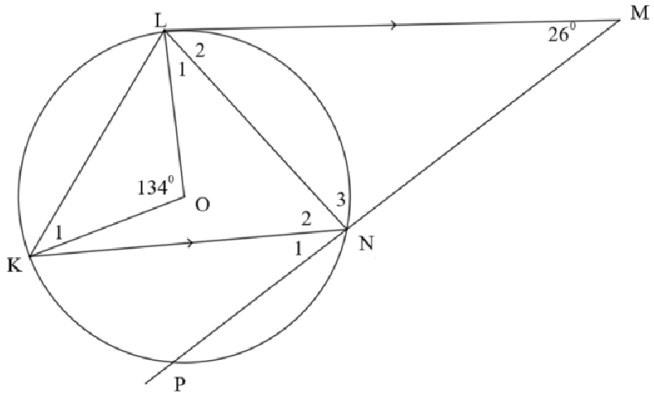
QUESTION/*VRAAG* 4			**CL**
4.1	$1 - cos^2\theta = sin^2\theta$	✓ $sin^2\theta$ **A** (1)	L1
4.2	$\frac{\sin(180^\circ - \theta).\cos(2\pi - \theta).\tan\theta}{1 + \cos\theta.\cos(180^\circ - \theta)}$ $= \frac{(\sin\theta).(\cos\theta).(\tan\theta)}{1 + \cos\theta\,.(-\cos\theta)}$ $= \frac{(\sin\theta).(\cos\theta).\left(\frac{\sin\theta}{\cos\theta}\right)}{1 + \cos\theta\,.(-\cos\theta)}$ $= \frac{sin^2\theta}{1 - cos^2\theta}$ $= \frac{sin^2\theta}{sin^2\theta}$ $= 1$	✓ $\sin\theta$ **A** ✓ $\cos\theta$ **A** ✓ $\tan\theta$ **A** ✓ $\frac{\sin\theta}{\cos\theta}$ **A** ✓ $-\cos\theta$ **A** ✓ $1 - cos^2\theta$ **CA** ✓ 1 **CA** (7)	L3
4.3	$\tan 2x = \sin 41,3^\circ + \sin 153,6^\circ$ $\tan 2x = 0,66 + 0,445$ $\tan 2x = 1,105$ $\therefore 2x = 47,8^\circ$ $x = 23,9^\circ$	✓ 0,66 & 0,445 **A** ✓ 1,105 **CA** ✓ ref. angle/*verw hoek* **CA** ✓ $x = 23,9^\circ$ **CA** (4)	L3
			[12]

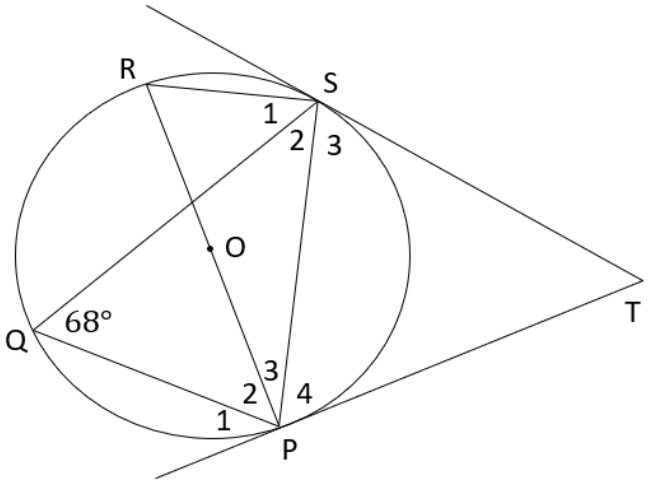
QUESTION/*VRAAG* 5			CL
5.1		**For graph of/*vir grafiek van f*** ✓ shape/*vorm* **A** ✓ intercepts/ *afsnitte* **A** ✓ turning points/ *draaipunte* **A** **For graph of/*vir grafiek van g*** ✓ shape/*vorm* **A** ✓ intercepts/ *afsnitte* **A** ✓TP/*DP* **A** (6)	L2
5.2	180°	✓ answer/ *antwoord* **A** (1)	L1

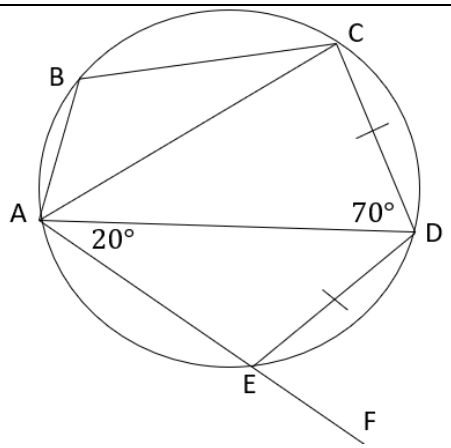
5.3	$-2 \leq y \leq 2$ **OR/*OF*** $y \in [-2; 2]$	✓ values/ *waardes* **CA** ✓ notation/ *notasies* **A** (2)	L2
5.4.1	$x = 90^{\circ}$ or/*of* $x = 270^{\circ}$	CA from graph/***vanaf grafiek*:** ✓ $x = 90^{\circ}$ ✓ $x = 270^{\circ}$ (2)	L1
5.4.2	$x = 0^{\circ}$ or/*of* $x = 360^{\circ}$	✓ $x = 0^{\circ}$ **CA** ✓ $x = 360^{\circ}$ **CA** (2)	L2
			[13]

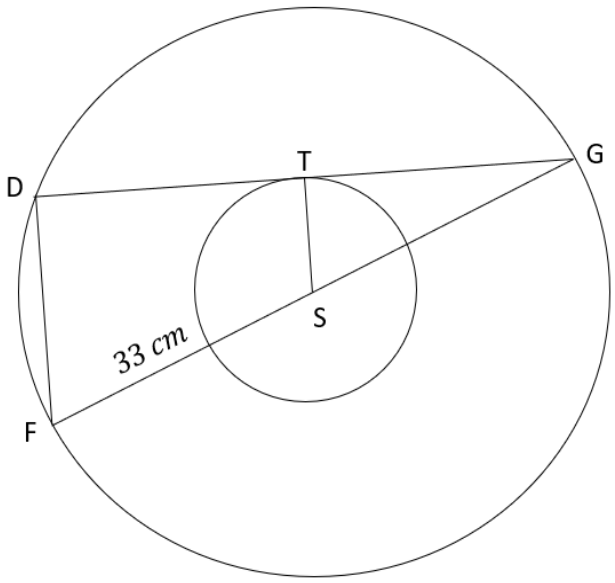
QUESTION/*VRAAG* 6			**CL/*DV***
6.1	Area $\frac{\text{of}}{Opp}$ $van\ \Delta ABC = \frac{1}{2} \times a.c.\sin\widehat{B}$	✓ sinB **A** (1)	L1
6.2			
6.2.1	$\frac{\sin\hat{E}}{HF} = \frac{\sin\hat{F}}{EH}$ (In ΔEFH) $\frac{\sin 40^\circ}{HF} = \frac{\sin 60^\circ}{40}$ $\therefore HF = \frac{40\ mm \times \sin 40^\circ}{\sin 60^\circ}$ $HF = 29{,}69\ mm$ **Accept/*Aanvaar*** $30\ mm$	✓ F **A** ✓ SF **A** ✓ answer/ *antwoord* **CA** (3)	L2
6.2.2	$F\widehat{H}G = H\widehat{F}G = 50^0$ $\hat{G} = 80^0$	✓ answer/ *antwoord* **A** (1)	L1

6.2.3	$HF^2 = FG^2 + GH^2 - 2.FG.GH.\cos\widehat{G}$ (In ΔGHF) $HF^2 = k^2 + k^2 - 2.k.k.\cos(180^\circ - 100^\circ)$ $HF^2 = 2k^2 - 2k^2\cos80^\circ$ $HF^2 = 2k^2(1 - \cos80^\circ)$	✓ **F** **A** ✓ **SF** **CA** (2)	L3
6.2.4	$HF^2 = 2k^2(1 - \cos80^\circ)$ $(30)^2 = 2k^2(1 - \cos80^\circ)$ $2k^2 = \frac{900}{1 - \cos80^\circ}$ $2k^2 = 1089,1244$ $k^2 = 544,562\ldots$ $\therefore k = 23,34\ mm$	**CA** HF from/*van* 6.2.1 ✓ F **CA** ✓ **SF** **CA** ✓ answer/ *antwoord* **CA** **NPR** (3)	L2
6.2.5	Area of/Opp van $\Delta HFG = \frac{1}{2}.GH.GF.\sin\widehat{G}$ Area of/Opp van $\Delta HFG = \frac{1}{2} \times 23,34 \times 23,34 \times \sin80^\circ$ $= 268,24\ mm^2$ **OR/*OF*** Area of/Opp van $\Delta HFG = \frac{1}{2}.GH.GF.\sin\widehat{G}$ Area of/Opp van $\Delta HFG = \frac{1}{2}.(23,34)^2.\sin80^\circ$ $(GH = GF)$ $= 268,24\ mm^2$	✓ F **A** ✓ **SF** **CA from 6.2.4** ✓ answer/ *antwoord* **CA** (3) **OR/*OF*** ✓ F **A** ✓ **SF** **CA** ✓ answer/ antwoord **CA** (3)	L2
			[13]

QUESTION/*VRAAG* 7			CL/ *DV*
7.1	perpendicular/loodreg	✓ answer/ *antwoord* **A** (1)	L1
			
7.2.1	$\hat{K}_1 + K\hat{L}O + 134° = 180°$ $(Int\ \angle s/binne\ \angle^e\ \Delta)$ $\hat{K}_1 + K\hat{L}O = 46°$ $\hat{K}_1 = K\hat{L}O = 23°$ $(\angle s\ opp = sides/\ \angle^e teenoor\ gelyke\ sye)$	✓ ST/RE **A** ✓ $\hat{K}_1 = 23°$ **A** ✓ RE **A** (3)	L2
7.2.2	$\hat{N}_2 = 67°$ (∠ at centre = 2 × ∠ at circ/ *mdpt.* ∠ $= 2 \times omtr.\angle$.)	✓ST **A** ✓ RE **A** (2)	L1
7.2.3	$M\hat{L}O = 90°$ (tan ⊥ radius/$raaklyn \perp radius$) $\hat{L}_2 = \hat{N}_2 = 67°$ (alt. $\angle' s/verw\angle^e, LM \parallel KN$) $\therefore\ \hat{L}_1 = 23°$	✓ ST **A** ✓ RE **A** ✓ST/RE **CA** ✓answer/*antwoord* **CA** (4)	L2
7.2.4	$\hat{N}_3 = 180° - (26° + 67°)$ $= 87°$ **OR/*OF*** $\hat{N}_1 = 26°$ (corr. $\angle' s/ooreenk\angle^e., LM \parallel KN$) $\hat{N}_3 = 87°$ ($\angle' s$ on str line/$\angle^e\ op\ reguitlyn$)	✓ ST **CA** ✓answer/*antwoord* **CA** **OR/*OF*** ✓ ST/RE **CA** ✓answer /*antwoord* **CA** (2)	L2
		[12]	

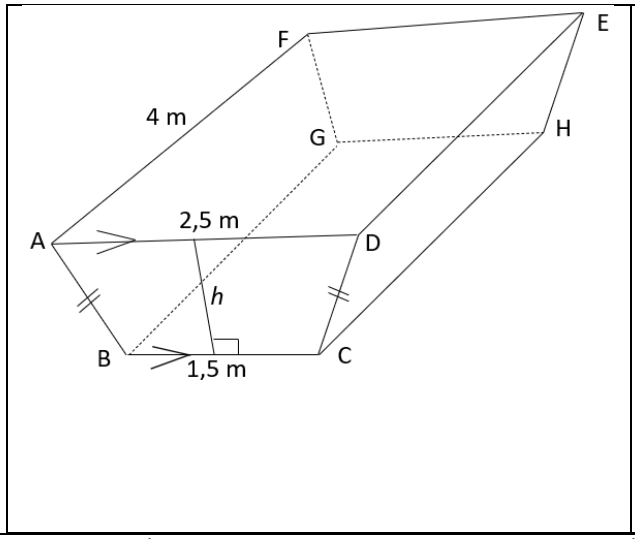
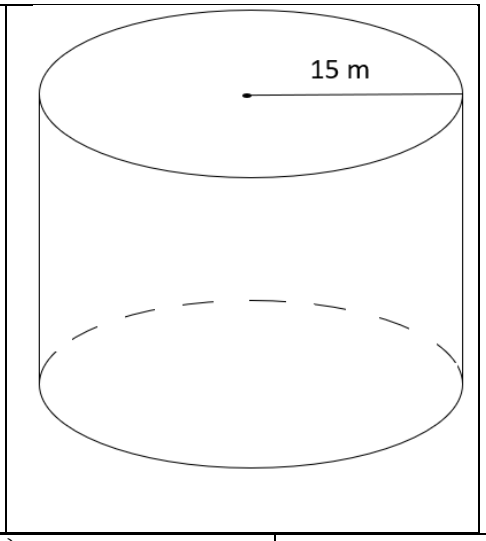
QUESTION/*VRAAG* 8				CL/ DV
8.1	Equal/*gelyk* **OR/*OF*** equal in length/*ewe lank*		✓ **A** (1)	
				
8.2.1	$R\hat{S}P = 90°$	(∠ in semi-circle/ *∠ in halwe sirkel*/)	✓ **ST** **A** ✓ **RE** **A**	L2
	$R\hat{P}T = 90°$	(tan ⊥ radius/*raaklyn* ⊥ *radius* s)	✓ **ST** **A**	
	$\hat{P}_1 + \hat{P}_2 = 90°$	(tan ⊥ radius/*raaklyn* ⊥ *radius* ∠*s* on a tan-chord theorem/∠ *tussen raaklyn en koord* ∠*'s* on str line/∠^{e} *op reguitlyn*/)	✓ **RE** **A** ✓ **ST** **A** (5)	
8.2.2	(a) $\hat{R} = 68°$	(∠*s* in same segment /∠^{e} *in dies. segment*)	✓ **ST** **A** ✓ **RE** **A** (2)	L1
	(b) $\hat{P}_3 = 22°$	(int ∠*s* of Δ/∠^{e} *van*Δ)	✓ **ST/RE** **CA**	L3
		$\hat{P}_4 = 68°$	✓ **ST** **CA**	
	$\hat{P}_4 = \hat{S}_3 = 68°$	(∠*s* opp. = sides/ ∠^{e}*teenoor gelyke sye*, ST=TP)	✓ **RE** **CA**	
	$\hat{T} = 44°$	(int ∠*s* of Δ/∠^{e}*van* Δ)	✓ $\hat{T} = 44°$ **CA**	
	OR/*OF*		**OR/*OF***	
	ST = PT	(tans from same point/ *raaklyne dieselfde punt gelyk*)	✓ **ST/RE** **A**	
	$\hat{P}_4 = \hat{S}_3 = 68°$	(∠*s* opp. = sides/ ∠^{e}*teenoor gelyke sye*,)	✓ **ST** **A** ✓ **RE** **A**	
	$\hat{T} = 44°$	(int ∠*s* of Δ/∠^{e}*van* Δ)	✓ $\hat{T} = 44°$ **CA** (4)	
8.3	exterior/*buitehoek*		✓ **A** (1)	L1

8.4			
8.4.1	Equal chords, equal angles/*gelyke koorde, gelyke hoeke*	✓ **RE** **A** (1)	L1
8.4.2	$C\hat{A}D = 20°$ (= chords = $\angle s/(= \ koorde \ = \angle^e)$ $A\hat{C}D = 90°$ (int $\angle s$ of $\Delta/\angle^e van \ \Delta$) AD subtends an angle of 90° at the circumference of the circle./*AD onderspan 'n hoek van* 90°*by die omtrek van die sirkel*)	✓ **ST/RE** **A** ✓ **ST** **A** ✓ conclusion/ *gevolgtrekking* **A** (3)	L2
8.4.3	$D\hat{E}F = 90°$ (ext. $\angle$ of cyclic quad/ $buite \angle van \ kvh$)	✓ **ST** CA ✓ **RE** **A** (2)	L1
		[19]	

QUESTION/*VRAAG* 9			CL
			
9.1	GS = FS = 33 cm	(FS and GS are the radii of the bigger circle/*FS en GS is die radii van die groter sirkel*)	✓ **ST** **A** ✓ **RE** **A** (2)	L1
9.2	$G\hat{T}S = 90°$ $G\hat{D}F = 90°$ TS || DF	(tan ⊥ radius/ *raaklyn* ⊥ *radius*) (∠ in semi-circle/ *∠ in halwe sirkel*) (corr. ∠*s* equal/ *ooreenk*$\angle^{e}$ *gelyk*.)	✓ **ST/RE** **A** ✓ **ST/RE** **A** ✓ conclusion/ *gevolgtrekking* **A** (3)	L2
9.3	$\hat{G}$ $G\hat{T}S = G\hat{D}F$ $G\hat{S}T = G\hat{F}D$ ΔOMT||| ΔOPV	(common/*gemeenskaplike* ∠) (both/*beide* 90°) (3rd ∠ of Δ/3^{de} ∠ *van* Δ) (∠,∠,∠)	✓ **ST/RE** **A** ✓ **ST/RE** **A** ✓ conclusion/ *gevolgtrekking* **A** (3)	L1
			[8]	

QUESTION/*VRAAG* 10			CL
10.1.1	$A\hat{O}D = 315° = 315° \times \frac{\pi}{180}°$ $= \frac{7}{4}\pi \; or/of \; 5{,}50 \text{ radians}/radiale$	✓ 315° **A** ✓ answer/ *antwoord* **CA** (2)	L1
10.1.2	Arc length/*Booglengte* $= r\theta$ $= 2{,}25 \times \frac{7}{4}\pi$ $= \frac{63}{16}\pi$ $= 12{,}37\ m$	✓ F **A** ✓ **SF** **CA** ✓ answer/ *antwoord* **CA** (3)	L1
10.1.3	$V = \pi Dn$ $= \pi(2{,}25 \times 2)\left(\frac{12}{60}\right)$ $= \frac{9}{10}\pi\frac{m}{s}$ $= 2{,}83\ m/s$	✓ F **A** ✓diameter A ✓ **SF** **CA** ✓ answer/ *antwoord* **CA** (4)	L2
10.1.4	$\omega = 2\pi n$ $= 2\pi\left(\frac{12}{60}\right)$ $= \frac{2}{5}\pi\ rad/s$ $= 1{,}26\ rad/s$	✓ **F** **A** ✓ **SF** **CA** ✓answer/ *antwoord* **CA** (3)	L2
10.2	Area/*Opp* $= \frac{r^2\theta}{2}$ $= \frac{2{,}25^2 \times \frac{7}{4}\pi}{2}$ $= \frac{567}{128}\pi$ $= 13{,}92m^2$ **OR/*OF*** Area/*Opp* $= \frac{rs}{2}$ $= \frac{2{,}25 \times 12{,}37}{2}$ $= 13{,}92\ m^2$	✓ **F** A ✓ **SF** **CA** ✓ answer/ *antwoord* **CA** (3) **OR/*OF*** ✓ **F** **A** ✓ **SF** **CA** ✓ answer/ *antwoord* **CA**	L2

		(3)	
		[15]	

QUESTION/*VRAAG* 11			CL/ *DV*
	 		
11.1.1	Area/$Opp = \frac{(\text{sum of parallel sides}/som\ van\ ewewydige\ sye)}{2} \times h$ $8 = \frac{(2{,}5 + 1{,}5)}{2} \times h$ $16 = 4h$ $h = 4\ m$	✓ **SF** **A** ✓ answer/ *antwoord* **A** (2)	L2
11.1.2	$AB = \sqrt{0{,}5^2 + 4^2}$ $= 4{,}03\ m$	✓pyth theorem/ *stelling* **A** ✓ 0,5 **CA** ✓ answer/ *antwoord* **CA** (3)	L3

11.2	Surface area/$Buite - Opp = (2 \times 8) + 2(4 \times 4{,}03) + (1{,}5 \times 4)$ $= 54{,}24\ m^2$ Cost of painting interior/*Koste om binne te verf* $= R70 \times 54{,}24$ $= R3\ 796{,}80$	✓ **SF** **A** ✓$R70 \times 54{,}24$ **CA** ✓answer/ *antwoord* **CA** (3)	L2
11.3	Volume = area of base × height/*opp van basis* × $hoogte$ $= 8 \times 4$ $= 32m^3$ $= 32\ 000$ litres/$liters$	✓ **SF** **A** ✓ $32m^3$ **CA** ✓ 32 000 l **CA** (3)	L2
11.4	$Volume = \pi r^2 h$ $32 \times 100^3 = \frac{22}{7}(15^2)h$ $h = \frac{448000}{99}$ $= 45\ 252{,}53$ cm **OR/*OF*** $Volume = \pi r^2 h$ $32 = \frac{22}{7}(15^2)h$ $h = \frac{112}{2475} \times 100^3$ $h = \frac{448000}{99}$ $= 45\ 252{,}53$ cm	✓ **F** **A** ✓ 100^3 **CA** ✓answer/ *antwoord* **CA** (3) **OR/*OF*** ✓ **F** **A** ✓ 100^3 **CA** ✓answer/ *antwoord* **CA** (3)	L4
		[14]	

QUESTION/*VRAAG* 12			CL/ *DV*
12.1	$A_T = a\left(\frac{o_1 + o_2}{2} + o_2 + o_3 + \cdots + o_{n-1}\right)$ $= 8\left(\frac{12+9}{2} + 6{,}5 + 7{,}2 + 8{,}1 + 7{,}9 + 6{,}7\right)$ $= 375\frac{1}{5}$ $= 375{,}2\ cm^2$ **OR/OF** $A_T = a\left(m_1 + m_2 + m_3 + \ldots + m_n\right)$ $A = 8\left(\frac{12+6{,}5}{2} + \frac{6{,}5+7{,}2}{2} + \frac{7{,}2+8{,}1}{2} + \frac{8{,}1+7{,}9}{2} + \frac{7{,}9+6{,}7}{2} + \frac{6{,}7+9}{2}\right)$ $A = 375{,}2\ \text{units}^2$	✓ **F** **A** ✓ **SF** **A** ✓answer/ *antwoord* **CA** (3) **OR/OF** ✓ **F** **A** ✓ **SF** **A** ✓answer/ *antwoord* **CA** (3)	L2
12.2	Area/$Opp = L \times B$ $= (2{,}2)\left(6 \times \frac{8}{100}\right)$ $= 1{,}056\ m^2$	✓$\frac{8}{100}$ **A** ✓ **SF** **CA** ✓ $1{,}056\ m^2$ **CA** (3)	L2
		[6]	

TOTAL/*TOTAAL* : 150