Grade 12

Mathematics P2-MEMO
September 2020

MARKS: 150
TIME: 3 hours

NOTE:
- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt of a question and not redone the question, mark the crossed out version.
- Consistent accuracy applies in ALL aspects of the marking guidelines. Stop marking at the second calculation error.
- Assuming answers/values in order to solve a problem is NOT acceptable.

NOTA*:*
- As 'n kandidaat 'n vraag TWEE KEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n antwoord van 'n vraag doodtrek en nie oordoen nie, merk die doodgetrekte poging.
- Volgehoue akkuraatheid word in ALLE aspekte van die nasienriglyne toegepas. Hou op nasien by die tweede berekeningsfout.
- Aanvaar van antwoorde/waardes om 'n probleem op te los, word NIE toegelaat nie.

GEOMETRY / MEETKUNDE:

S	A mark for a correct **statement** (a statement mark is independent of a reason)
	*'n Punt vir 'n korrekte **bewering**.* *('n Punt vir 'n bewering is onafhanklik van die rede.)*
R	A mark for a correct **reason.** (a reason mark may only be awarded if the statement is correct.)
	*'n Punt vir 'n korrekte **rede**.* *('n Punt word slegs vir 'n rede toegeken as die bewering korrek is.)*
S&R	Award a mark if the **statement AND reason** are both correct.
	*Ken 'n punt toe as beide die **bewering EN rede** korrek is.*

QUESTION/ *VRAAG* 1

#	Suggested answer(s)/ *Voorgestelde antwoord(e)*	Descriptors/ *Beskrywers*	Mark/ *Punt*	

Recover/ *Herstel*

8	39	63	69	104	141	183	191	301	592

Source/ *Bron*: https://www.worldometers.info/coronavirus/?utm_campaign=homeAdvegas1?#countries

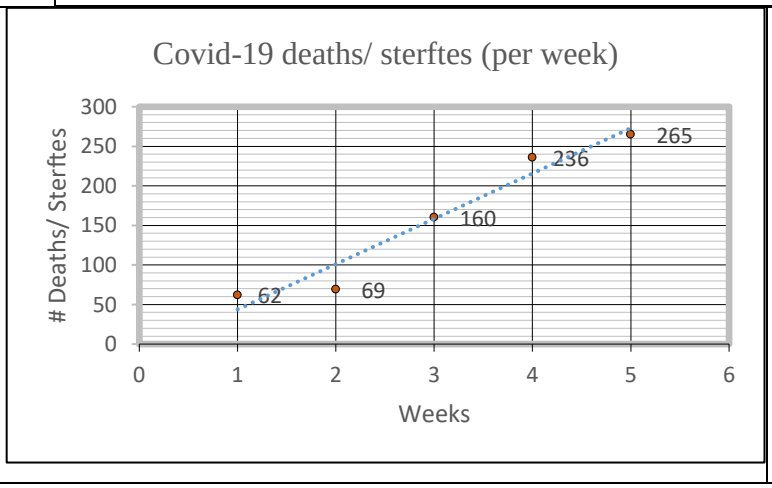
1.1	Standard deviation/ *Standaardafwyking* = 163,13	✓✓ Answer/*Antwoord*	(2)	K
1.2	Mean/ *Gemiddelde*: 169,1 (5,97; 332.23) Thus/ *Dus*: 9 countries/ *Lande*	✓ Mean/ *Gemiddelde* ✓ Boundaries/ *Eindpunte* ✓ Answer/*Antwoord*	(3)	R
1.3	**False;** The infection rate could have been higher./ Virus was probably detected earlier there/ *Vals; Die infeksiekoers kon hoër wees/ Virus was waarskynlik daar gevind :* **True;** better medical facilities/ Earlier detection lead to earlier savety precautions, etc/ *Waar; Better fasiliteite; mediese fasilitiete/ Vroeër waarnemeing lei tot vroeer veiligheidsmaatreels, ens*	✓ Selection/ *Keuse* ✓ Reason/ *Rede* *Reason must justify TRUE/ FALSE* ***2 or 0***	(2)	P
1.4	Sum/ *Som*: 1691 New mean/ *Nuwe gemidd*: $209.72 \times 11 = 2306.92$ $2306.92 - 1691 =$616 cases/ *gevalle*	✓ New Total/ *Nuwe Totaal* ✓ Answer/*Antwoord*	(2)	C
			[9]	

QUESTION/ *VRAAG* 2

#	Suggested answer(s)/ *Voorgestelde antwoord(e)*	Descriptors/ *Beskrywers*	Mark/ *Punt*	

Week	1	2	3	4	5
No of Deaths/ *Getal sterftes*	62	69	160	236	265

Source/ *Bron*: https://www.worldometers.info/coronavirus/country/south-africa/

2.1		✓ Correct axes/ *Korrekte asse* ✓ Plotting of points/ *Afstip van punte*	(2)	K

2.2	$A = -13{,}5; B = 57{,}3$ $y = -13{,}5 + 57{,}3x$	✓ A and/ *en* B ✓ equation/ *vergelyking*	(2)	R
2.3	Graph/ *Grafiek*	✓ + gradient/ *gradient;* ✓ through/ *deur* ≈160	(2)	K
2.4	$r = 0.97$; Strong positive relation/ *Sterk positiewe verwantskap*	✓ Value of/ *Waarde van r;* ✓strong positive/ *sterk positiewe*	(2)	K
2.5	Humankind would be totally wiped out/ A cure would be found sooner or later/ People practice safety measures/ *Mense sal dan totaal uitgewis wees/ 'n Entstof sal een of ander tyd gevind word/ mense pas veiligheidmaatreëls toe.*	✓ Answer/ *Antwoord*	(1)	P
2.6	$y = -13{,}5 + 57{,}3(12)$ ≈674	✓ Subst 12 in eq/ *vervang 12 in vgl* ✓ Answer/ *Antwoord* -1 if decimal is stated;	(2)	R
2.7	Reaching its peak by this week OR number of deaths increased drastically over the last few weeks OR the least squares regression model is just an estimation of this situation/ *Bereik sy piek teen hierdie week OF aantal sterftes het drasties toegeneem tydens die vorige paar weke OF die kleinste-kwadrate regressiemodel is slegs 'n benadering van die situasie.*	✓ Valid reason/ *Geldige rede*	(1)	P
			[12]	

QUESTION/ *VRAAG* 3

#	**Suggested answer(s)/ *Voorgestelde antwoord(e)***	**Descriptors/ *Beskrywers***	**Mark/ *Punt***	
3.1.1	$EF = \sqrt{(-2-4)^2 + (-1-2)^2}$ $= \sqrt{45} \quad [= 3\sqrt{5} = 6{,}71]$	✓ subst/ *vervang in* EF ✓ Answer/ *Antwoord*	(2)	K
3.1.2	$m_{DH} = \tan D\hat{H}O$ $= \tan 45°$ $= 1$	✓ $m_{DH} = \tan 45°$ AO = no marks/ *geen punte*	(1)	K
3.1.3	$m_{DE} = \frac{d-(-1)}{2-(-2)} = 1$ $\frac{d+1}{4} = 1$ $d + 1 = 4$ $\therefore\ d = 3$	✓ subst/ *vervang* m_{DE} ✓ simplify/ *vereenvoudig* AO = no marks/ *geen punte*	(2)	R
3.1.4	GF ∥ DE $\quad \therefore m_{GF} = m_{DE} = 1$ $\therefore\ y = x + c$ $(4; 2)$: $2 = 4 + c$ $c = -2$ $\therefore\ y = x - 2$	✓ $m_{GF} = 1$ ✓ subst/ *vervang* $F(4; 2)$ ✓ Answer/ *Antwoord*	(3)	R
3.1.5	$G(8; 6)$	✓ x; ✓ y	(2)	R
3.1.6	$ED = \sqrt{(-2-2)^2 + (-1-3)^2}$ $= \sqrt{32}$ $\frac{EF}{ED} = \frac{\sqrt{45}}{\sqrt{32}}$ $= \frac{3\sqrt{5}}{4\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{10}}{8}$	✓ subst/ *vervang* in ED ✓ Answer/ *Antwoord* ✓ $\frac{EF}{ED}$ ✓ $\times \frac{\sqrt{2}}{\sqrt{2}}$	(4)	C

3.1.7	$x^2 + y^2 = 45$	✓ x^2 ;✓ y^2 or centre (0; 0) ✓ 45	(3)	C
3.2.1	AD ∥ x-axis/ *as* $\therefore \tan\theta = \frac{3}{2}$ $\theta = 56{,}31°$	✓ $\tan\theta = \frac{3}{2}$ ✓ Answer/ *Antwoord*	(2)	R
3.2.2	Let A be the point/ *Laat* A *die punt* $\left(x;\frac{3}{2}x\right)$ *wees* $\therefore$ D $\left(5;\frac{3}{2}x\right)$ AD^2 = DC^2 OR AD = DC $(5-x)^2 = \left(\frac{3}{2}x\right)^2$ | $5 - x = \frac{3}{2}x$ $25 - 10x + x^2 = \frac{9}{4}x^2$ | $10 - 2x = 3x$ $4x^2 - 40x + 100 = 9x^2$ | $10 = 5x \Rightarrow \boldsymbol{x = 2}$ $0 = 5x^2 + 40x - 100$ $= x^2 + 8x - 20$ $= (x-2)(x+10)$ $\therefore \boldsymbol{x = 2}$ $\therefore A(2;3)$	✓ method/ *metode* ✓ equate lengths/ *stel lengtes* = ✓ standard form/ *standaardv* ✓ x ✓ y	(5)	P
			[24]	

QUESTION/ *VRAAG* 4

#	**Suggested answer(s)/ *Voorgestelde antwoord(e)***	**Descriptors/ *Beskrywers***	**Mark/ *Punt***	
4.1	$x^2 - 10x + y^2 + 6y - 2 = 0$ $(x^2 - 10x + 25) + (y^2 + 6y + 9) = 2 + 25 + 9$ $(x-5)^2 + (y+3)^2 = 36$ Centre/ *Middelpt* $(5;-3)$	✓ LHS/ *LK*: $+25 + 9$ ✓ RHS/ *RK*: $+25 + 9$ ✓ equation/ *vergelyking* ✓ x; ✓ y	(5)	R
4.2.1	G $\left(0;\frac{8}{5}\right)$	✓ x ✓ y	(2)	K
4.2.2	Area/ *Oppervlakte* $= \frac{1}{2} \times EF \times OG$ $= \frac{1}{2} \times 2\left(\frac{8}{5}\right) \times \frac{8}{5}$ $= \frac{64}{25}$ units^2/ *eenhede*^{2}	✓ substitute/ *vervanging* ✓ Answer/ *Antwoord*	(2)	R
4.2.3	$m_{MA} = \frac{2}{5}$ [radius ⊥ tangent/ *raaklyn*] $\therefore y = \frac{2}{5}x + c$ $\therefore y = \frac{2}{5}x - 4$	✓ $m = \frac{2}{5}$ ✓ equation/ *vergelyking*	(2)	R

4.2.4	$-3 = \frac{2}{5}a - 4$ OR $m_{rad} = \frac{-3-(-4)}{a-0} = \frac{2}{5} = \frac{1}{a}$ $\therefore\ a = 2\frac{1}{2}$ $r^2 = \left(2\frac{1}{2} - 0\right)^2 + (-3+4)^2$ OR $\left(2\frac{1}{2} - 5\right)^2 + (-3+2)^2$ $= 7{,}25$ $\therefore\ \left(x - 2\frac{1}{2}\right)^2 + (y+3)^2 = 7{,}25$ OR/ *OF* $MA^2 = MB^2$ $a^2 + (-3+4)^2 = (a-5)^2 + (-3+2)^2$ $a^2 + 1 = a^2 - 10a + 25 + 1$ $10a = 25$ $a = 2\frac{1}{2}$ $\therefore\ r^2 = \left(2\frac{1}{2}\right)^2 + 1$ $= 7{,}25$ $\therefore\ \left(x - 2\frac{1}{2}\right)^2 + (y+3)^2 = 7{,}25$	✓ substitute/ *vervanging* ✓ a ✓ r^2 ✓ equation/ *vergelyking* ✓ substitute/ *vervanging* ✓ a ✓ r^2 ✓ equation/ *vergelyking*	(4) (4)	C
			[15]	

QUESTION/ *VRAAG* 5

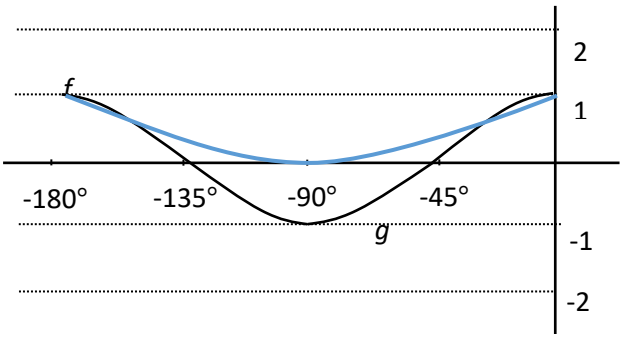
#	**Suggested answer(s)/ *Voorgestelde antwoord(e)***	**Descriptors/ *Beskrywers***	**Mark/ *Punt***	
5.1	$\sin(90° + x).\cos(-x) - \cos(180° - x)\tan(x - 180°).\sin(x)$ $= \cos x \cos x - (-\cos x)(\tan x)(\sin x)$ $= cos^2x - (-\cos x)\left(\frac{\sin x}{\cos x}\right)\sin x$ $= cos^2x + sin^2x$ $= 1$	✓✓ $\cos x$; $\cos x$ ✓ $-\cos x$ ✓ $\frac{\sin x}{\cos x}$ or tan x ✓ Answer/ *Antwoord*	(5)	R
5.2.1	$\sin 56° = \sin(42 + 14) = \sin 42°.\cos 14° + \cos 42°.\sin 14°$ $= a + b$	✓Expand/ *Uitbrei* ✓ Answer/ *Antwoord*	(2)	C
5.2.2	$\sin 28° = \sin(42 - 14) = \sin 42°.\cos 14° - \cos 42°.\sin 14°$ $= a - b$	✓Expand/ *Uitbrei* ✓ Answer/ *Antwoord*	(2)	C
5.2.3	$\cos 56°$ $= \cos(2 \times 28°)$ $= 1 - 2\sin^2 28°$ $= 1 - 2(a-b)^2$ $= 1 - 2(a^2 - 2ab + b^2)$ $= 1 - 2a^2 + 4ab - 2b^2$	✓ $\cos(2 \times 28°)$ ✓ Expansion/ *Uitbreiding* ✓Substitute/ *Vervang* $(a-b)$	(3)	C

5.3.1	$\frac{cos2\theta + sin^2\theta}{1+sin\theta} = 1 - sin\theta$ $LHS = \frac{\cos^2\theta - \sin^2\theta + \sin^2\theta}{1+\sin\theta}$ $= \frac{\cos^2\theta}{1+\sin\theta}$ $= \frac{1-\sin^2\theta}{1+\sin\theta}$ $= \frac{(1-\sin\theta)(1+\sin\theta)}{1+\sin\theta}$ $= 1 - sin\theta = RHS$	✓ $\cos^2\theta - \sin^2\theta$ ✓Simplify/ *Vereenvoudig* ✓$\cos^2\theta = 1 - \sin^2\theta$ ✓Factorise/ *Faktoriseer*	(4)	C
5.3.2	$\sin\theta = -1$ $\theta = 270° + k.360°$ for / *vir* $k \in \mathbb{Z}$	✓equation/ *vergelyking* ✓ Answer/ *Antwoord*	(2)	R
5.4	$(\cos\theta + 2)^2 + (\sin\theta - 1)^2 = \left(\sqrt{6}\right)^2$ $\cos^2\theta + 4\cos\theta + 4 + \sin^2\theta - 2\sin\theta + 1 = 6$ $1 + 4\cos\theta - 2\sin\theta + 5 = 6$ $-2\sin\theta = -4cos\theta$ $\frac{\sin\theta}{\cos\theta} = 2$ $\tan\theta = 2$	✓Substitution/ *vervanging* ✓Simplify/ *Vereenvoudig* ✓Answer/ *Antwoord*	(3)	P
			[21]	

QUESTION/ *VRAAG* 6

#	**Suggested answer(s)/ *Voorgestelde antwoord(e)***	**Descriptors/ *Beskrywers***	**Mark /*Punt***

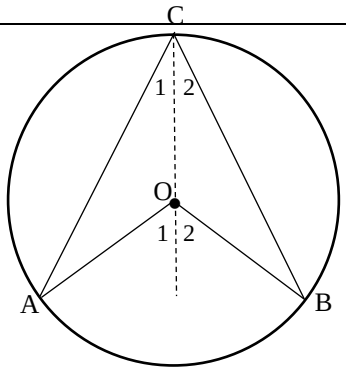
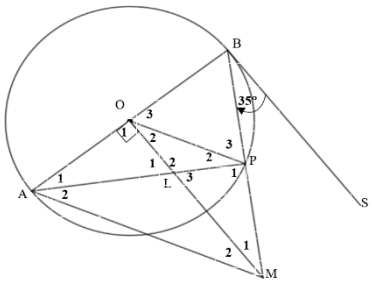
6.1	$\sin x = \cos 2x - 1$ $\sin x = 1 - 2\sin^2 x - 1$ $2\sin^2 x + \sin x = 0$ $\sin x\,(2\sin x + 1) = 0$ $\sin x = 0$ or/ *of* $\sin x = -\frac{1}{2}$ $x = 0° + k.360°$ OR $x = 210° + k.360°$ $x = 180° + k.360°$ $x = 330° + k.360°/ -30° + k.360°$ $\therefore x = -180°; -150°; -30°; 0°$	✓ $1 - 2\sin^2 x$ ✓Standard form/ *Standaardvorm* ✓$\sin x = 0$ or $\sin x = -\frac{1}{2}$ ✓✓General solution/ *Algemene Oplossing [1 from each group/ block]* ✓ Answer/ *Antwoord*	(6)	C

6.2.1		✓x-intercept/ *afsnit* $(-90°; 0)$ ✓$(-180°; 1)$ and/ *en* $(0; 1)$	(2)	R
6.2.2	$h(x) = -\sin x - 1$	✓ Answer/ *Antwoord*	(1)	K
6.2.3	$-180° \leq x \leq -90°$	✓ endpoints/ *eindpunte* ✓ inequality notation/ *ongelykheidsnotasie*	(2)	P
			[11]	

QUESTION/ *VRAAG* 7

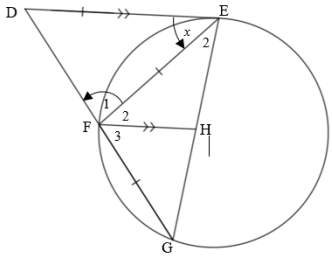
#	**Suggested answer(s)/ *Voorgestelde antwoord(e)***	**Descriptors/ *Beskrywers***	**Mark/ *Punt***	
7.1	$\cos(90° - x) = \frac{\text{PA}}{3}$ $\sin x = \frac{\text{PA}}{3}$ $\text{PA} = 3\sin x$	✓Reduction/ *Reduksie* – $\sin x$ ✓ Answer/ *Antwoord*	(2)	R
7.2	*In* Δ PAT: $\frac{\sin(90° + x)}{PT} = \frac{\sin 2x}{PA}$ $\frac{\cos x}{\text{PT}} = \frac{2\sin x \,.\cos x}{3\sin x}$ $\text{PT} = \frac{3\sin x \cos x}{2\sin x \cos x}$ $= \frac{3}{2}$ Yes, they are 1,5m apart/ *Ja, hulle is 1,5m van mekaar*	✓Subst / *vervang* in sin rule/ *reël* ✓expansion/ *uitbreiding:* sin 2x ✓ Answer/ *Antwoord* ✓Conclusion/ *Afleiding*	(4)	C
7.3	$\therefore \text{A}\hat{\text{P}}\text{T} = 30°$ Area/*Oppervlakte* $\Delta\text{PAT} = \frac{1}{2}(\text{PA})(\text{PT})\sin 30°$ $= \frac{1}{2}(3\sin 20°)\left(\frac{3}{2}\right)\left(\frac{1}{2}\right)$ $= 0{,}38\ m^2$	✓A$\hat{\text{P}}$T ✓Subst/ *Vervang* in Area rule/ *reël* ✓ Answer/ *Antwoord*	(3)	R
			[9]	

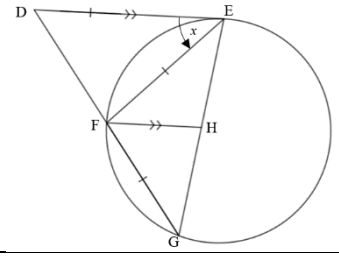
QUESTION/ *VRAAG* 8

#	Suggested answer(s)/ *Voorgestelde antwoord(e)*	Descriptors/ *Beskrywers*	Mark/ *Punt*	
8.1				
	Construction/ *Konstruksie*: Draw CO produced/ *Trek CO verleng* Proof/ *bewys:* $\hat{C}_1 = \hat{A}$ [∠s opposite = sides/ *∠e teenoor = sye*] $\therefore \hat{O}_1 = 2\hat{C}_1$ [ext.∠ of Δ/ *buite ∠ van* Δ] Similarly/ *Netso*: $\hat{O}_2 = 2\hat{C}_2$ Now/ *Nou*: $\hat{O}_1 + \hat{O}_2 = 2\hat{C}_1 + 2\hat{C}_2$ $\therefore A\hat{O}B = 2(\hat{C}_1 + \hat{C}_2)$ $= 2A\hat{C}B$	✓ Construction/ *Konstruksie* ✓ S/ R ✓ S/ R ✓ S (Similarly/ *Netso)* ✓ S (any/ *enige* 1)	(5)	K
8.2				
8.2.1	(a) $\hat{A}_1 = 35°$ [tan- chord thm/ *raakl-koordstelling*]	✓ S ✓ R	(2)	K
	(b) $\hat{O}_3 = 70°$ [∠ at centre = 2 ∠ at circumf/ *middelpts∠ = 2 omtr.∠*	✓ S ✓ R	(2)	K
	(c) $\hat{P}_3 = 55°$ [∑ interior/ *binne ∠* of/ *van* (isosceles/*gelykbenige*) Δ]	✓ S ✓ R	(2)	K
	(d) $B\hat{O}M = 90°$ [adjacent/ *aanligg* – suppl.] And/ *en* $O\hat{B}M = 55°$ ° **[∑ ∠ *s* of/ *van* (isosceles/*gelykbenige*) Δ]** **OR/ *OF* [∠s opposite = radii/ sides/ *∠e teenoor = radiusse/ sye*]** **OR/*OF* $O\hat{B}S = 90°$ [tan/ *raakl.*⊥ radius]** $\therefore \hat{M}_1 = 35°$ [∑ ∠ *s* of/ *van* Δ] **OR/OF** $A\hat{P}B = 90°$ [∠ in semi circle/ *∠ in halwe sirkel*] $\therefore \hat{P}_1 = 90°$ [adj./ *aanligg./* suppl] $= \hat{O}_1$ AMPO is cycl quad/ *is 'n kvh* [conv. ∠s Subt by same chord/ *omg. ∠e ondersp. deur selfde koord]* $\therefore \hat{M}_1 = \hat{A}_1 = 35°$ [∠s Subt by same chord/ *∠e ondersp. deur selfde koord*	✓ S/ R ✓ S/ R ✓ S	(3)	K
8.2.2	(a) $A\hat{P}B = 90°$ [∠in semi-circle/ *∠ in halwe sirkel*] $= \hat{O}_1$ [Given/ *Gegee*] $\therefore$OLPB is a cycl. quad/ *is 'n kvh* [ext∠=opp. int ∠/ *buite∠=teenoorst. binne∠*]	✓ S ✓ R ✓ R	(3)	R

	(b)	$O\hat{B}S = 90°$ [tan/ *raakl.*⊥ radius] $= \hat{O}_1$ [Given/ *Gegee*] ∴ BS // OM [corresp.∠s =/ *ooreenk.∠e* =] OR/ *OF*	✓ S/ R ✓ R	(2)	
		$O\hat{B}S = 90°$ [tan/ *raakl.*-radius] $= B\hat{O}M$ [Proved/ *Bewys*] ∴ BS // OM [co-int.∠s suppl./ *ko-binne ∠e suppl.*] OR/ *OF*	✓ S/ R ✓ R	(2)	
		$\hat{M}_1 = 35°$ [Proved/ *Bewys*] $= M\hat{B}S$ [Given/ *Gegee*] ∴ BS // OM [alt.∠s =/ *verw.∠e* =]	✓ S ✓ R	(2)	R
	(c)	$\hat{P}_2 = \hat{A}_1 = 35°$ [∠s opposite = sides/radii/ *∠e teenoor = sye/ radiusse*] $= \hat{M}_1$ ∴ OP is a tangent to the circle through P, L and M [converse tan-chord thm/ *omgekeerde raakl-koordstelling*]	✓ S ✓ R ✓ R	(3)	R
				[22]	

QUESTION/ *VRAAG* 9

#	Suggested answer(s)/ *Voorgestelde antwoord(e)*	Descriptors/ *Beskrywers*	Mark/ *Punt*	
				
9.1	$E\hat{F}H = x$ [alt.∠s; DE//FH/ *verw.∠e; DE//FH*]	✓ S ✓ R	(6)	K
	$\hat{G} = x$ [tan- chord thm/ *raakl-koordstelling*]	✓ S ✓ R		
	$F\hat{E}G = \hat{G} = x$ [∠s opposite = sides/ *∠e teenoor* = sye]	✓ S ✓ R		
9.2.1	$\frac{EH}{HG} = \frac{DF}{FG}$ [FH//DE or line // 1 side of Δ/ *lyn // 1 sy van Δ*] $= \frac{DF}{DE}$ [FG = DE; given/ *Gegee*] $= y$	✓ S ✓ R ✓ S	(3)	R
9.2.2	In ΔDEF: $\hat{D} = \frac{180°-x}{2}$ [$\sum \angle s$ of/ *van* (isosceles/*gelykbenige*) Δ] In ΔDEG: $\hat{D} = 180° - 3x$ [$\sum \angle s$ of/ *van* Δ] $\therefore \frac{180°-x}{2} = 180° - 3x$ $\therefore 180° - x = 360° - 6x$ $\therefore 5x = 180°$ $\therefore x = 36°$ $\therefore \hat{D} = \frac{180°-36°}{2} = 72°$	✓ S ✓ R ✓ S ✓ (equating/ *gelyk stel*) ✓ Simplify/ *Vereenvoudig* ✓ value of/ *waarde van x*	(5)	C

9.2.3	In ΔDGE and/ *en* ΔDEF: 1. $\hat{D}$ is common/ *gemeen* 2. $\hat{G} = D\hat{E}F = x$ [proved/ *bewys*] 3. $\therefore D\hat{E}G = D\hat{F}E$ [3rd/ *3de* ∠] $\therefore$ ΔDGE ||| ΔDEF [∠, ∠, ∠]	✓ S ✓ S ✓ S OR/ *OF* ✓ R (∠, ∠, ∠) (Can also work with 72° etc)	(3)	R
9.2.4	$\therefore \frac{DG}{DE} = \frac{GE}{EF} = \frac{DE}{DF}$ from/ *vanaf* 9.2.3 OR/ *OF* ΔDGE ||| ΔDEF $\Rightarrow DE^2 = DF.DG$	✓ S ✓ R ***Can only give needed 2 ratios***	(2)	K
9.2.5	$\frac{DE}{DF} = \frac{DG}{DE}$ $\frac{1}{y} = \frac{DF+FG}{DE}$ $= \frac{DF}{DE} + \frac{FG}{DE}$ $= y + 1$ $\therefore y^2 + y = 1$	✓ S Correct Proportion/ *Korrekte Eweredigheid* ✓ $\frac{DE}{DF} = \frac{1}{y}$ ✓ $\frac{DG}{DE} = \frac{DF+FG}{DE}$ ✓ $\frac{1}{y} = \frac{DF}{DE} + \frac{FG}{DE}$ ✓ $\frac{FG}{DE} = 1$	(5)	P
9.2.6	In ΔDEF: $EF^2 = DF^2 + DE^2 - 2\,DF.\,DE.\cos D$ $\therefore \cos D = \frac{DF^2+DE^2-EF^2}{2\,DF.DE}$ $= \frac{DF^2}{2\,DF.DE} = \frac{DF}{2\,DE}$ $\therefore \cos 72° = \frac{1}{2}y$ 	✓ cos rule/ *reël* for/ *vir* ΔDEF ✓ $DE^2 - EF^2 = 0$ ✓ Simplify/ *Vereenvoudig*	(3)	P
			[27]	
		TOTAL/ *TOTAAL*	**150**	