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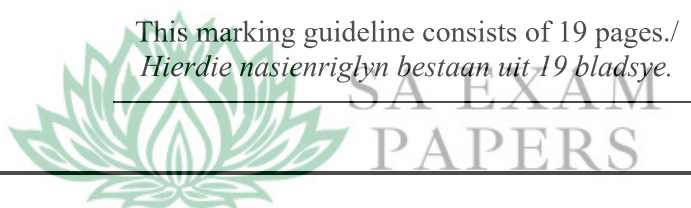
GRADE/GRAAD 12

JUNE/JUNIE 2024

**MATHEMATICS P2/WISKUNDE V2
MARKING GUIDELINE/NASIENRIGLYN**

MARKS/PUNTE: 150

This marking guideline consists of 19 pages./
Hierdie nasienriglyn bestaan uit 19 bladsye.



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 a question, mark the crossed-out version.
- Consistency accuracy applies in ALL aspects of the marking guideline. Stop marking at the second calculation error.
- Assuming answers/values in order to solve a problem is NOT acceptable.

GEOMETRY	
S	A mark for a correct statement. (A statement mark is independent of a reason).
R	A mark for the correct reason. (A reason mark may only be awarded only if the statement is correct.
S/R	Award a mark if a statement and a reason are both correct.

NEEM KENNIS:

- Indien 'n kandidaat 'n vraag TWEE keer beantwoord, merk slegs die EERSTE poging.
- Indien 'n kandidaat 'n poging van 'n vraag deurgetrek het en dit nie oorgedoen het nie, merk die deurgetrekte weergawe.
- Volgehoue akkuraatheid geld in ALLE aspekte van die nasienriglyn. Hou op merk by tweede berekenings fout.
- Om antwoorde/waardes te aanvaar om 'n probleem op te los is NIE aanvaarbaar NIE.

MEETKUNDE	
S	'n Punt vir korrekte stelling. (n Stelling punt is onafhanklik van die rede)
R	'n Punt vir die korrekte rede. (n Rede punt mag net toegeken word as die stelling korrek is).
S/R	'n Punt word toegeken as die stelling en die rede beide korrek is.

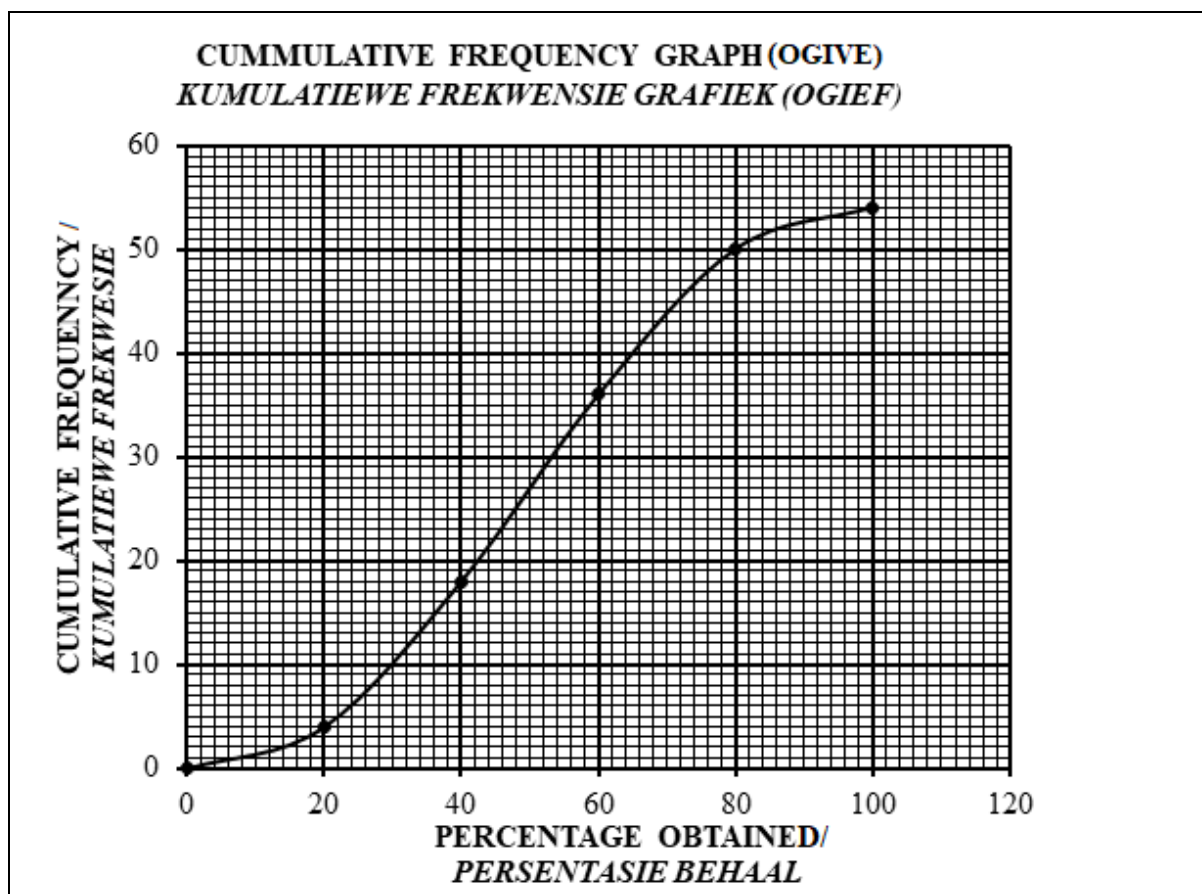


QUESTION/VRAAG 1

17	26	27	27	30	32	34	35	36	37	40
----	----	----	----	----	----	----	----	----	----	----

1.1	$\bar{x} = 31$ <p style="text-align: center;">OR/OF</p> $\bar{x} = \frac{341}{11}$ $= 31$	✓✓ answer / <i>antwoord</i> <p style="text-align: center;">OR/OF</p> ✓ 341 ✓ answer / <i>antwoord</i>	(2)
1.2	$\delta = 6,19$	✓ answer / <i>antwoord</i>	(1)
1.3	$\bar{x} + \delta = 31 + 6,19$ $= 37,19$ ∴ Temperatures were more than one standard deviation for 1 day. <i>Temperatuur was meer as een standaardafwyking vir 1 dag.</i>	✓ $\bar{x} + \delta = 31 + 6,19$ ✓ 37,19 ✓ conclusion / <i>gevolgtrekking</i>	(3)
1.4	$IQR/IKW = 36 - 27$ $= 9$	✓ Q_1 ✓ Q_3 ✓ answer / <i>antwoord</i>	(3)
1.5		✓ min. and/en max. / <i>maks.</i> ✓ Q_1 and/en Q_2 ✓ correct diagram <i>korrekte diagram</i>	(3)
			[12]

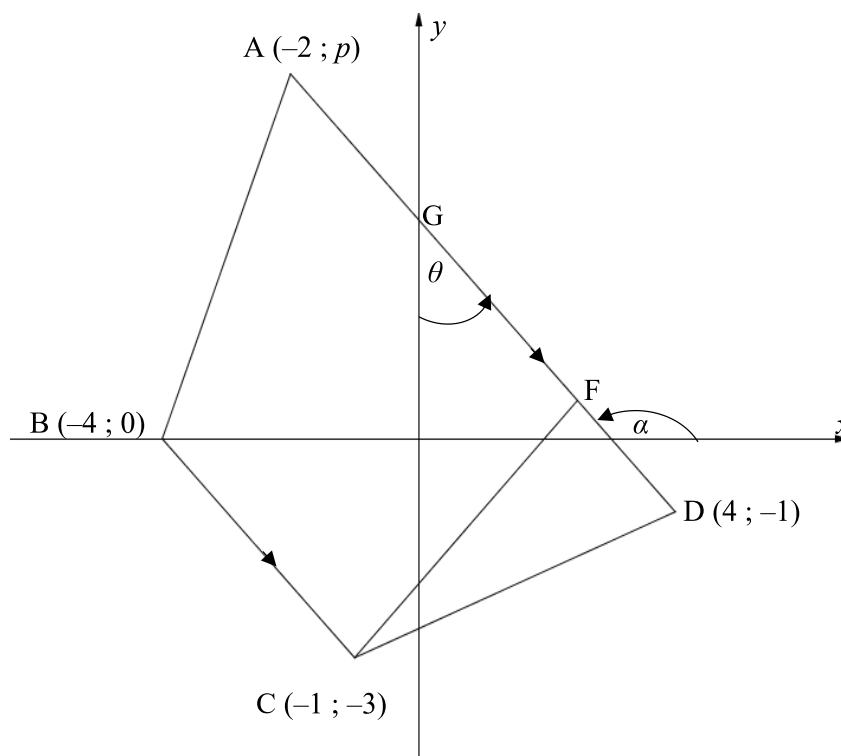
QUESTION/VRAAG 2



2.1	<table border="1"> <thead> <tr> <th>Percentage obtained / <i>Persentasie behaal</i></th> <th>Frequency / <i>Frekwensie</i></th> <th>Cumulative Frequency / <i>Kumulatiewe Frekwensie</i></th> </tr> </thead> <tbody> <tr> <td>$0 \leq x < 20$</td> <td>4</td> <td>4</td> </tr> <tr> <td>$20 \leq x < 40$</td> <td>14</td> <td>18</td> </tr> <tr> <td>$40 \leq x < 60$</td> <td>18</td> <td>36</td> </tr> <tr> <td>$60 \leq x < 80$</td> <td>14</td> <td>50</td> </tr> <tr> <td>$80 \leq x < 100$</td> <td>4</td> <td>54</td> </tr> </tbody> </table>	Percentage obtained / <i>Persentasie behaal</i>	Frequency / <i>Frekwensie</i>	Cumulative Frequency / <i>Kumulatiewe Frekwensie</i>	$0 \leq x < 20$	4	4	$20 \leq x < 40$	14	18	$40 \leq x < 60$	18	36	$60 \leq x < 80$	14	50	$80 \leq x < 100$	4	54	<p>✓ 14 and / en 18</p> <p>✓ 14 and / en 4</p>	(2)
Percentage obtained / <i>Persentasie behaal</i>	Frequency / <i>Frekwensie</i>	Cumulative Frequency / <i>Kumulatiewe Frekwensie</i>																			
$0 \leq x < 20$	4	4																			
$20 \leq x < 40$	14	18																			
$40 \leq x < 60$	18	36																			
$60 \leq x < 80$	14	50																			
$80 \leq x < 100$	4	54																			
2.2	54 matriculants / <i>matriekulante</i>	✓ answer / <i>antwoord</i>	(1)																		
2.3	$40 \leq x < 60$	✓ answer / <i>antwoord</i>	(1)																		
2.4	50 %	<p>✓ reading from the graph <i> lees van grafiek af</i></p> <p>✓ answer / <i>antwoord</i></p>	(2)																		
2.5	12 learners / <i>leerders</i>	<p>✓ reading from the graph <i> lees van grafiek af</i></p> <p>✓ answer / <i>antwoord</i></p>	(2)																		
			[8]																		



QUESTION/VRAAG 3



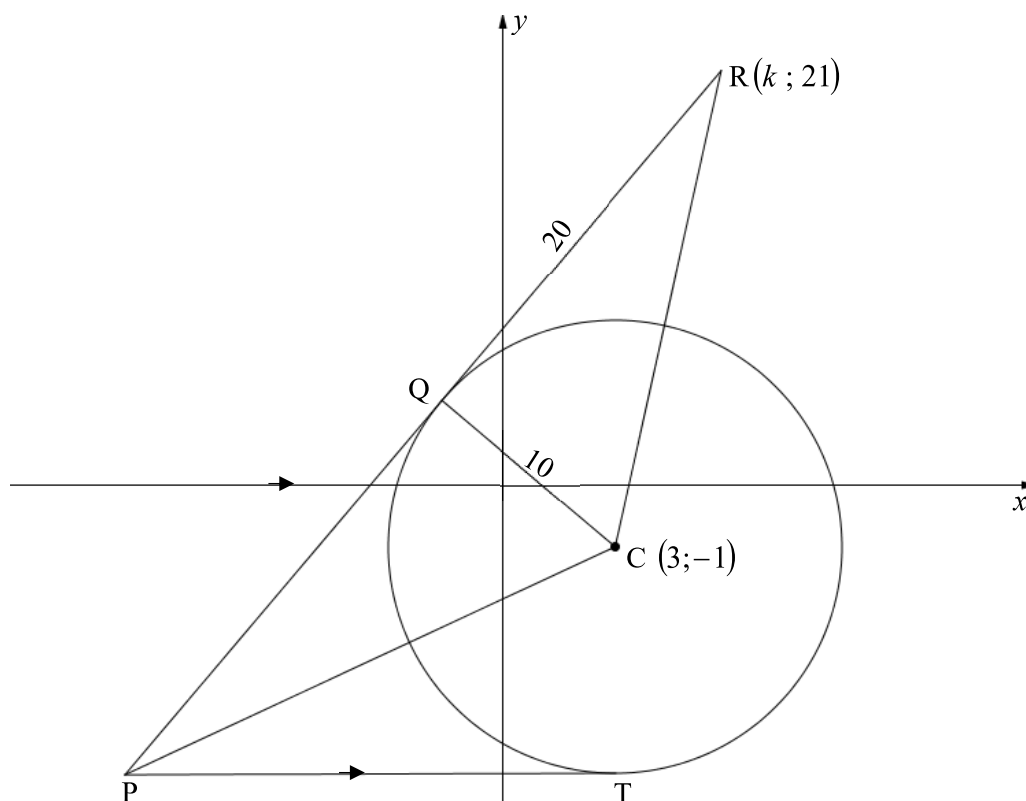
3.1	$BC = \sqrt{(-4+1)^2 + (0+3)^2}$ $= 3\sqrt{2}$	✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i>	(2)
3.2	$m_{BC} = \frac{0+3}{-4+1}$ $= -1$	✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i>	(2)
3.3	$m_{AD} = m_{BC} = -1 \quad [AD \parallel BC]$ $y+1 = -(x-4)$ $y = -x+3$ <p style="text-align: center;">OR/OF</p> $m_{AD} = m_{BC} = -1 \quad [AD \parallel BC]$ $-1 = -(4)+c$ $c = 3$ $y = -x+3$	✓ $m_{AD} = -1$ ✓ correct substitution <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i> <p style="text-align: center;">OR/OF</p> ✓ $m_{AD} = -1$ ✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i>	(3)



3.4	$p = -(-2) + 3$ $= 5$ <p style="text-align: center;">OR/OF</p> $m_{AB} = \frac{p-0}{-2+4}$ $= \frac{p}{2}$ $y-0 = \frac{p}{2}(x+4)$ $y = \frac{px}{2} + 2p$ $\frac{p(-2)}{2} + 2p = -(-2) + 3$ $-p + 2p = 5$ $p = 5$	✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i> <p style="text-align: center;">OR/OF</p> ✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i>	(2)
3.5	$m_{CF} = \frac{-3 - \frac{1}{2}}{-1 - \frac{5}{2}}$ $= 1$ $\therefore m_{AD} \times m_{CF} = -1 \times 1 = -1$	✓ $m_{CF} = 1$ ✓ $m_{AD} \times m_{CF}$	(2)
3.6	$\tan \alpha = m_{AD} = -1$ $\therefore \alpha = 135^\circ$ $\therefore \theta = 45^\circ \quad [\text{ext } \angle \text{ of a } \Delta] / [\text{buite } \angle \text{ van } \Delta]$	✓ $\tan \alpha = m_{AD} = -1$ ✓ $\therefore \alpha = 135^\circ$ $\therefore \theta = 45^\circ$	(3)
3.7	$AD = \sqrt{(-2-4)^2 + (5+1)^2}$ $= 6\sqrt{2}$ $CF = \sqrt{\left(-1 - \frac{5}{2}\right)^2 + \left(4 - \frac{1}{2}\right)^2}$ $= \frac{7\sqrt{2}}{2}$ $\therefore \text{Area of trapezium / Oppervlakte van trapezium}$ $= \frac{1}{2}(AD + BC) \times CF$ $= \frac{1}{2}(6\sqrt{2} + 3\sqrt{2}) \times \frac{7\sqrt{2}}{2}$ $= 31,50$	✓ AD ✓ CF ✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i>	(4)
			[18]



QUESTION/VRAAG 4



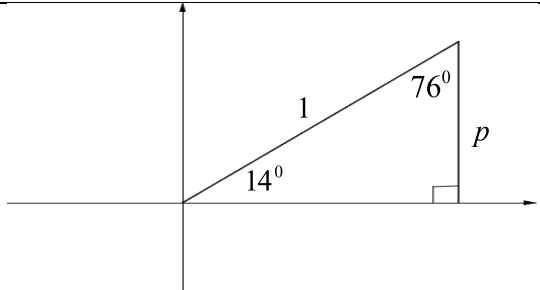
4.1	$\widehat{CQR} = 90^\circ$ [tan \perp chord] / [raaklyn \perp koord]	✓ S	(1)
4.2	$RC^2 = QC^2 + QR^2$ [Pyth. theorem/stelling] $RC^2 = 10^2 + 20^2$ $RC = \sqrt{500}$ or/of $10\sqrt{5}$	✓ correct substitution/ korrekte vervanging ✓ answer / antwoord	(2)
4.3	$(k-3)^2 + (21-(-1))^2 = (10\sqrt{5})^2$ $(k-3)^2 = 500 - 484$ $(k-3)^2 = 16$ $k-3 = \pm 4$ $k = 7$ or / of $k \neq -1$ OR/OF	✓ RC or application of Pyth./ RC of toepassing van Pyth. ✓ simplification/ vereenvoudiging ✓ factors / faktore ✓ correct value of k/ korrekte waarde van k OR/OF	
	$(k-3)^2 + (21-(-1))^2 = (10\sqrt{5})^2$ $k^2 - 6k + 9 + 484 = 500$ $k^2 - 6k - 7 = 0$ $(k-7)(k+1) = 0$ $k = 7$ or $k \neq -1$	✓ RC or application of Pyth./ RC of toepassing van Pyth. ✓ simplification/ vereenvoudiging ✓ factors / faktore ✓ correct value of k/ korrekte waarde van k	(4)



4.4	$(x-3)^2 + (y+1)^2 = 100$	✓ LHS / LK ✓ RHS / RK	(2)
4.5	TC = 10 and/en TC \perp PT $\therefore T(3; -11)$ $\therefore y = -11$	✓ $\therefore T(3; -11)$ ✓ $\therefore y = -11$	(2)
4.6.1	T(3; -11) $3(-11) - 4x = 35$ $\therefore x = -17$ $\therefore P(-17; -11)$	✓ correct substitution/ korrekte vervanging ✓ x-value/ x-waarde	(2)
4.6.2	PQ = PT [tangents from same point are equal in length] [raaklyne vanaf dieselfde punt is gelyk] $= 17 + 3 = 20$	✓ PQ = 20 ✓ R	(2)
4.6.3	Yes / Ja $\Delta QRC \equiv \Delta QCP$ [S \angle S]	✓ Yes / Ja ✓ S ✓ R	(3)
4.7.1	M(3 ; -16)	✓ answer / antwoord	(1)
4.7.2	r = 4	✓ answer / antwoord	(1)
4.7.3	$r_1 + r_2 = 4 + 10 = 14$ and / en $CM^2 = (3-3)^2 + (-16+1)^2$ $= 15^2$ CM = 15 $\therefore CM > r_1 + r_2$ \therefore The 2 circles do not intersect or touch Die 2 sirkels sny of raak nie.	✓ $r_1 + r_2$ ✓ CM = 15 ✓ conclusion/ gevolgtrekking	(3)
			[23]



QUESTION/VRAAG 5

5.1.1	 <p>$\cos 76^\circ = p$</p> <p style="text-align: center;">OR/OF</p> <p>$\cos 76^\circ = \sin 14^\circ$ $= p$</p>	<p>✓ correct sketch/ korrekte skets</p> <p>✓ answer / antwoord</p> <p style="text-align: center;">OR/OF</p> <p>✓ co-ratio / ko-verhouding ✓ answer / antwoord</p>	(2)
5.1.2	<p>$x = \sqrt{1-p^2}$ Pyth. theorem/stelling</p> <p>$\cos 44^\circ = \cos(30^\circ + 14^\circ)$ $= \cos 30^\circ \cdot \cos 14^\circ - \sin 30^\circ \cdot \sin 14^\circ$ $= \frac{\sqrt{3}}{2} \cdot \sqrt{1-p^2} - \frac{1}{2} \cdot p$</p>	<p>✓ x-value / x-waarde</p> <p>✓ $\cos(30^\circ + 14^\circ)$</p> <p>✓ expanding compound angle uitbrei van saamgestelde \angle</p> <p>✓ answer / antwoord</p>	(4)
5.1.3	<p>$2 \sin 218^\circ \cdot \cos 38^\circ = 2(-\sin 38^\circ) \cdot \cos 38^\circ$ $= -\sin 76^\circ$ $= -\sqrt{1-p^2}$</p>	<p>✓ $-\sin 38^\circ$</p> <p>✓ $-\sin 76^\circ$</p> <p>✓ answer / antwoord</p>	(3)



5.2.1	$1 + \frac{\sin(90^\circ + \theta) \cos(\theta - 360^\circ)}{\sin(\theta - 30^\circ - \theta)}$ $= 1 + \frac{(\cos \theta)(\cos \theta)}{(-\sin 30^\circ)}$ $= 1 - \frac{\cos^2 \theta}{\frac{1}{2}}$ $= 1 - 2 \cos^2 \theta$ $= -(2 \cos^2 \theta - 1)$ $= -\cos 2\theta$ <p style="text-align: center;">OR/OF</p> $1 + \frac{\sin(90^\circ + \theta) \cos(\theta - 360^\circ)}{\sin(\theta - 30^\circ) \cos \theta - \sin \theta \cos(\theta - 30^\circ)}$ $= 1 + \frac{\cos \theta \cdot \cos \theta}{(\sin \theta \cos 30^\circ - \sin 30^\circ \cos \theta) \cos \theta - \sin \theta (\cos \theta \cos 30^\circ + \sin \theta \sin 30^\circ)}$ $= 1 + \frac{\cos^2 \theta}{\frac{\sqrt{3}}{2} \sin \theta \cos \theta - \frac{1}{2} \cos^2 \theta - \frac{\sqrt{3}}{2} \sin \theta \cos \theta - \frac{1}{2} \sin^2 \theta}$ $= 1 + \frac{\cos^2 \theta}{-\frac{1}{2}(\cos^2 \theta + \sin^2 \theta)}$ $= 1 - \frac{\cos^2 \theta}{\frac{1}{2}(1)}$ $= 1 - 2 \cos^2 \theta$ $= -(2 \cos^2 \theta - 1)$ $= -\cos 2\theta$	$\checkmark \cos \theta$ $\checkmark \cos \theta$ $\checkmark \sin(\theta - 30^\circ - \theta)$ $\checkmark \frac{1}{2}$ \checkmark simplification/ <i>vereenvoudiging</i> \checkmark answer/ <i>antwoord</i> <p style="text-align: center;">OR/OF</p> $\checkmark \cos \theta$ $\checkmark \cos \theta$ \checkmark expansion of compound angle/ <i>uitbrei van</i> <i>saamgestelde \angle</i> $\checkmark \frac{1}{2}$ \checkmark simplification/ <i>vereenvoudiging</i> \checkmark answer/ <i>antwoord</i>	(6)
5.2.2	Max value/ <i>Maks. waarde</i> = 1 OR/OF $y=1$	\checkmark answer/ <i>antwoord</i>	(1)



5.3	$\begin{aligned} LHS / LK &= \frac{\sin 3x}{\sin x} \\ &= \frac{\sin(2x+x)}{\sin x} \\ &= \frac{\sin 2x \cos x + \sin x \cos 2x}{\sin x} \\ &= \frac{2 \sin x \cos x \cdot \cos x + \sin x \cos 2x}{\sin x} \\ &= \frac{\sin x(2 \cos^2 x + \cos 2x)}{\sin x} \\ &= 2 \cos^2 x + \cos 2x \\ &= 2(1 - \sin^2 x) + 1 - 2 \sin^2 x \\ &= 2 - 2 \sin^2 x + 1 - 2 \sin^2 x \\ &= 3 - 4 \sin^2 x \end{aligned}$ <p style="text-align: center;">OR / OF</p> $\begin{aligned} LHS / LK &= \frac{\sin 3x}{\sin x} \\ &= \frac{\sin(2x+x)}{\sin x} \\ &= \frac{\sin 2x \cos x + \sin x \cos 2x}{\sin x} \\ &= \frac{2 \sin x \cos x \cdot \cos x + \sin x \cos 2x}{\sin x} \\ &= \frac{\sin x(\cos^2 x + \cos 2x)}{\sin x} \\ &= \cos^2 x + \cos 2x \\ &= 1 - \sin^2 x + 1 - 2 \sin^2 x \\ &= 2 - 2 \sin^2 x + 1 - 2 \sin^2 x \\ &= 3 - 4 \sin^2 x \end{aligned}$	<p>✓ $\sin(2x+x)$</p> <p>✓ expansion / <i>uitbreiding</i></p> <p>✓ $\sin 2x = 2 \sin x \cos x$</p> <p>✓ factors / <i>faktore</i></p> <p>✓ expression in terms of $\sin^2 x$ / <i>uitdrukking in terme van $\sin^2 x$</i></p> <p style="text-align: center;">OR / OF</p> <p>✓ $\sin(2x+x)$</p> <p>✓ expansion / <i>uitbreiding</i></p> <p>✓ $\sin 2x = 2 \sin x \cos x$</p> <p>✓ factors / <i>faktore</i></p> <p>✓ expression in terms of $\sin^2 x$ / <i>uitdrukking in terme van $\sin^2 x$</i></p>	(5)
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5.4.1	$\sin^2 x + \sin 2x - 3 \cos^2 x = 0$ $\sin^2 x + 2 \sin x \cos x - 3 \cos^2 x = 0$ $(\sin x - \cos x)(\sin x + 3 \cos x) = 0$ $\sin x = \cos x$ or / of $\sin x = -3 \cos x$ $\tan x = 1$ or / of $\tan x = -3$ $x = 45 + 180^\circ \cdot k$ or / of $x = 108,44^\circ + 180^\circ \cdot k, k \in \mathbb{Z}$ OR / OF $x = 45^\circ + 360^\circ \cdot k$ or / of $x = 225^\circ + 360^\circ \cdot k$ or $x = 108,44^\circ + 360^\circ \cdot k$ or / of $x = 288,44^\circ + 360^\circ \cdot k, k \in \mathbb{Z}$	\checkmark $2 \sin x \cos x$ \checkmark factors / faktore \checkmark both equations in terms of $\tan x$ <i>beide vergelykings i.t.v $\tan x$</i> \checkmark $x = 45^\circ + 180^\circ \cdot k$ \checkmark $x = 108,44^\circ + 180^\circ \cdot k, k \in \mathbb{Z}$ OR / OF \checkmark both equations / <i>beide vergelykings</i> \checkmark both equations and $k \in \mathbb{Z}$ / <i>beide vergelykings en $k \in \mathbb{Z}$</i>	(5)
5.4.2	$x = -71,44^\circ$ or / of $x = 45^\circ$ or / of $x = 108,44^\circ$	$\checkmark \checkmark \checkmark$ each x -value/ <i>elke x-waarde</i>	(3)
			[29]

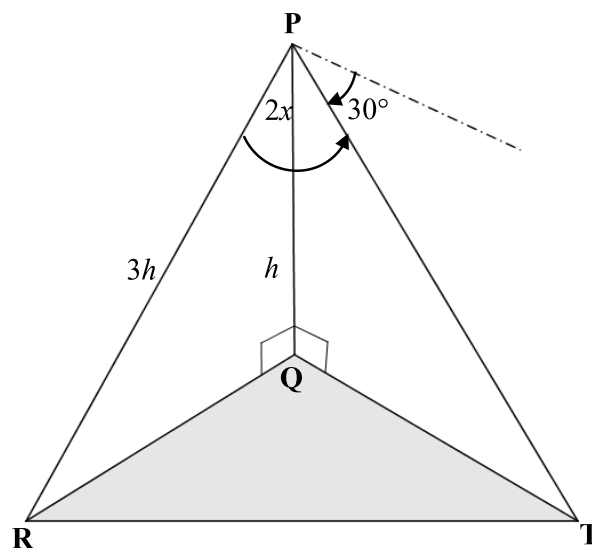


QUESTION/VRAAG 6

6.1		<p>f:</p> <ul style="list-style-type: none"> ✓ intercepts with the axes/ <i>afsnitte met die asse</i> ✓ turning points/ <i>draaipunte</i> ✓ shape / <i>vorm</i> <p>g:</p> <ul style="list-style-type: none"> ✓ intercepts with the axes/ <i>afsnitte met die asse</i> ✓ asymptotes/ <i>asimptote</i> ✓ shape / <i>vorm</i> 	(6)
6.2.1	360°	✓ answer / <i>antwoord</i>	(1)
6.2.2	$x = -180^{\circ}$ or / of $x = 180^{\circ}$	<ul style="list-style-type: none"> ✓ $x = -180^{\circ}$ ✓ $x = 180^{\circ}$ 	(2)
6.2.3	$-5 \leq y \leq 1$ or / of $y \in [-5; 1]$	<ul style="list-style-type: none"> ✓ both cv's correct/ <i>beide kw's korrek</i> ✓ correct notation/ <i>korrekte notasie</i> 	(2)
6.2.4	3 solutions / 3 <i>oplossings</i>	✓ answer / <i>antwoord</i>	(1)
			[12]



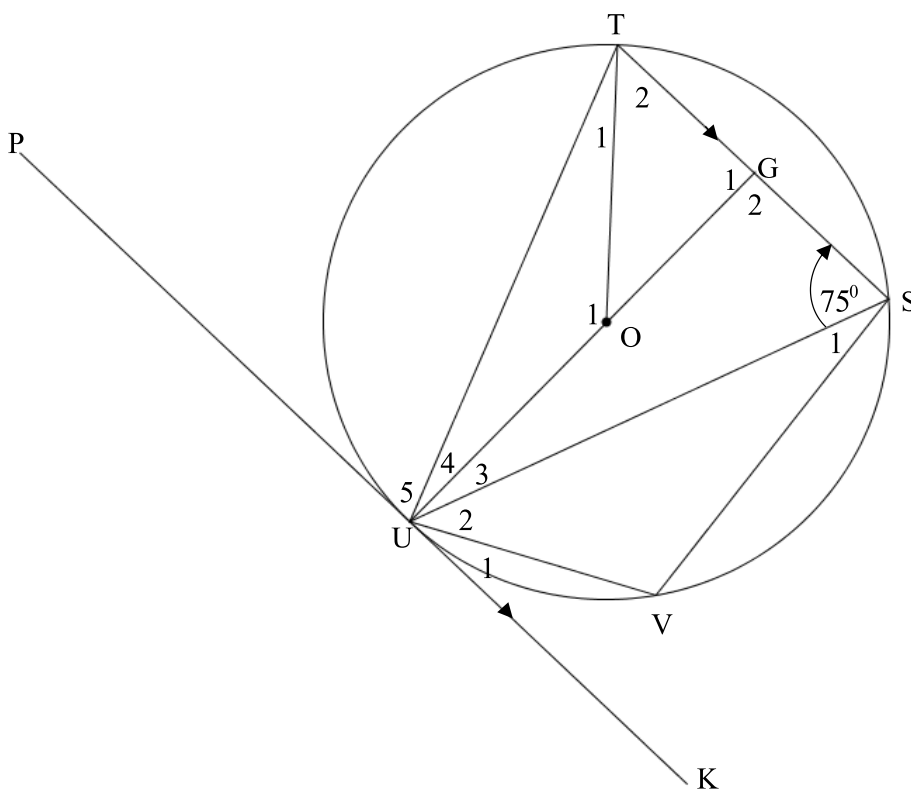
QUESTION/VRAAG 7



7.1	$\hat{P}TQ = 30^\circ$	✓ answer / antwoord	(1)
7.2	$\frac{PQ}{PT} = \sin \hat{P}TQ$ $PT = \frac{h}{\sin 30^\circ}$ $= \frac{h}{\frac{1}{2}}$ $= 2h$	✓ correct trig. ratio/ korrekte trig. verhouding ✓ correct substitution/ korrekte vervanging ✓ answer / antwoord	(3)
7.3	$RT^2 = PT^2 + PR^2 - 2 \cdot PT \cdot PR \cdot \cos \hat{P}$ $(\sqrt{7}h)^2 = (2h)^2 + (3h)^2 - 2(2h)(3h) \cdot \cos 2x$ $7h^2 = 4h^2 + 9h^2 - 12h^2 \cos 2x$ $12h^2 \cos 2x = 6h^2$ $\cos 2x = \frac{1}{2}$ $2x = 60^\circ$ $x = 30^\circ$	✓ cosine rule of ΔPRT / cosinusreël van ΔPRT ✓ correct substitution/ korrekte vervanging ✓ simplification/ vereenvoudiging ✓ correct ratio / korrekte verhouding ✓ answer / antwoord	(5)
			[9]

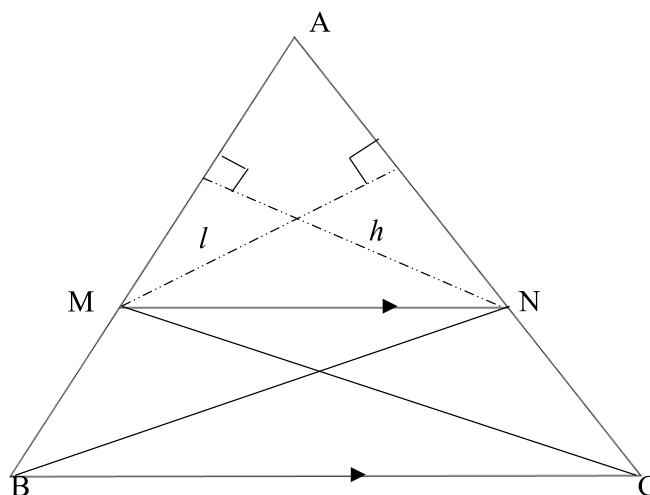


QUESTION/VRAAG 8



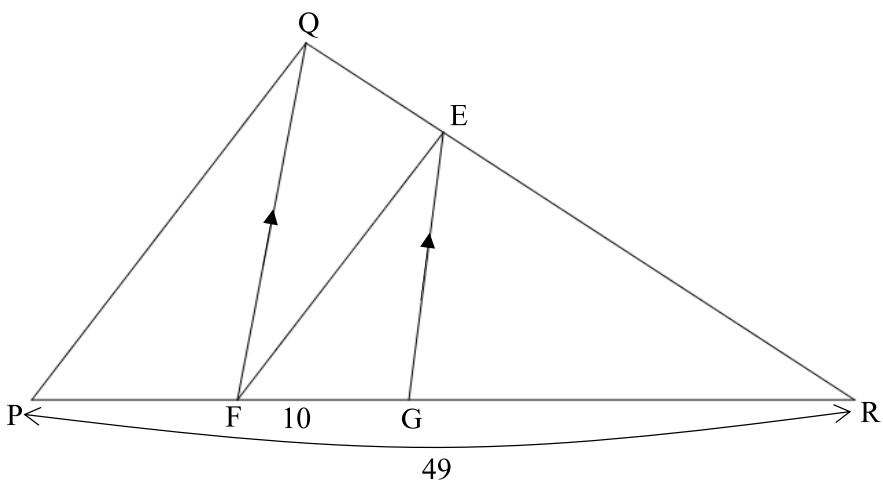
8.1.1	$\hat{O}_1 = 150^\circ$ [\angle at centre = $2 \times \angle$ at circumference] [middelpunts $\angle = 2 \times$ omtreks \angle]	✓ S ✓ R	(2)
8.1.2	$\hat{U}_5 = 75^\circ$ [tan chord theorem] / [raaklyn-koord stelling]	✓ S ✓ R	(2)
8.1.3	$\hat{T}_1 = \hat{U}_4$ [\angle s opp = sides] / [\angle teenoor = sye] $2\hat{T}_1 = 180^\circ - 150^\circ$ [\angle s in a Δ] / [\angle in 'n Δ] $\hat{T}_1 = 15^\circ$	✓ S/R ✓ S/R ✓ answer / antwoord	(3)
8.1.4	$\hat{U}_5 = \hat{T} = 75^\circ$ [alt. \angle s, TS \parallel PK] / [verw. \angle e, TS \parallel PK] $\therefore \hat{V} = 105^\circ$ [opp. \angle s of a cyclic quad] [teenoorst. \angle e van 'n koordevierhoek]	✓ S/R ✓ S ✓ R	(3)
8.1.5	$\hat{U}_3 + \hat{U}_4 + \hat{U}_5 = \hat{V}$ [tan chord theorem] / [raaklyn-koord stelling] $\hat{U}_3 = 15^\circ$	✓ S ✓ R	(2)
8.1.6	$\hat{U}_5 + \hat{U}_4 = 90^\circ$ [tan \perp rad] / [raaklyn \perp radius] $\hat{G}_2 = 90^\circ$ [alt. \angle s, TS \parallel PK] / [verw. \angle e, TS \parallel PK]	✓ S ✓ R ✓ answer antwoord	(3)
8.2	$TG = GS = \frac{1}{2} \times \sqrt{80} = 2\sqrt{5}$ [line from centre \perp to the chord] [lyn vanaf middelpunt \perp op die koord]	✓ S ✓ R	(2)
			[17]

QUESTION 9 / VRAAG 9



9.1	<p>Construction: Draw \perp height (h) to AM and \perp height (l) to AN. Join BN and MC</p> <p>Konstruksie: Teken \perp hoogte(h) na AM en \perp hoogte(l) na AN. Verbind BN en MC</p> $\frac{\text{Area } \triangle AMN}{\text{Area } \triangle MNB} = \frac{\frac{1}{2} \times AM \times h}{\frac{1}{2} \times MB \times h}$ $= \frac{AM}{MB} \quad \text{[same height] / [dieselfde hoogte]}$ $\frac{\text{Area } \triangle AMN}{\text{Area } \triangle NBC} = \frac{\frac{1}{2} \times AN \times l}{\frac{1}{2} \times NC \times l}$ $= \frac{AN}{NC} \quad \text{[same height] / [dieselfde hoogte]}$ <p>$\text{Area } \triangle MNB = \text{Area } \triangle NBC$ [same base, same parallel lines] [dieselfde basis, dieselfde ewewydige lyne]</p> $\therefore \frac{AM}{MB} = \frac{AN}{NC}$	<p>✓ constructions/ konstruksies</p> <p>✓ S</p> <p>✓ R</p> <p>✓ S</p> <p>✓ R</p>	(5)
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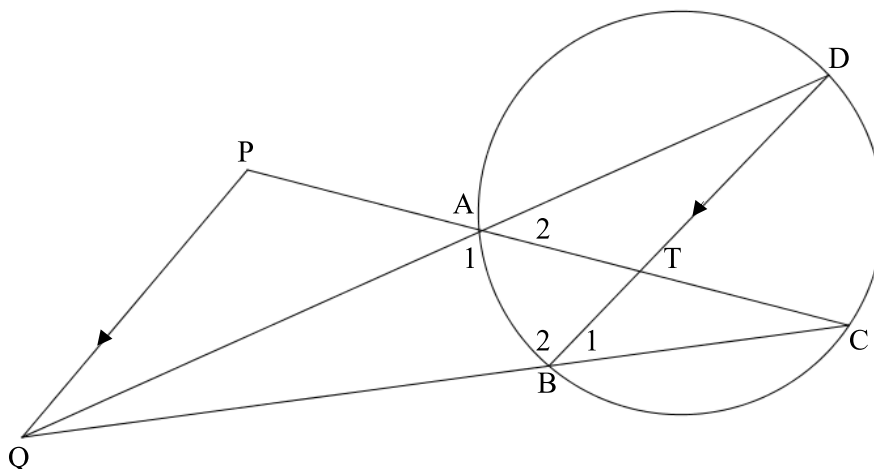


<p>9.2</p>		
<p>9.2.1</p>	$\frac{RG}{FG} = \frac{ER}{QE} \quad [\text{line } \parallel \text{ to one side of a } \Delta] / [\text{lyn } \parallel \text{ aan een sy van 'n } \Delta]$ $\frac{RG}{10} = \frac{5}{2}$ $RG = 25$ <p style="text-align: center;">OR/OF</p> $\frac{QR}{ER} = \frac{FR}{GR} \quad [\text{line } \parallel \text{ to one side of a } \Delta] / [\text{lyn } \parallel \text{ aan een sy van 'n } \Delta]$ $\frac{7p}{5p} = \frac{10 + GR}{GR}$ $7GR = 50 + 5GR$ $2GR = 50$ $GR = 25$ <p style="text-align: center;">OR/OF</p> $\frac{QE}{QR} = \frac{FG}{FR} \quad [\text{line } \parallel \text{ to one side of a } \Delta] / [\text{lyn } \parallel \text{ aan een sy van 'n } \Delta]$ $\frac{2p}{7p} = \frac{10}{FG + GR}$ $\frac{2}{7} = \frac{10}{10 + GR}$ $20 + 2GR = 70$ $2GR = 50$ $GR = 25$	<p>✓ S ✓ R</p> <p>✓ correct substitution/ korrekte vervanging</p> <p>✓ answer / antwoord</p> <p style="text-align: center;">OR/OF</p> <p>✓ S ✓ R</p> <p>✓ correct substitution/ korrekte vervanging</p> <p>✓ answer / antwoord</p> <p style="text-align: center;">OR/OF</p> <p>✓ S ✓ R</p> <p>✓ correct substitution korrekte vervanging</p> <p>✓ answer / antwoord</p> <p style="text-align: right;">(4)</p>

9.2.2	$\frac{RF}{RP} = \frac{35}{49}$ $= \frac{5}{7}$ <p>and / en</p> $\frac{RE}{QR} = \frac{5}{7}$ $\therefore \frac{RF}{RP} = \frac{RE}{QR} \quad \left[\text{both / beide} = \frac{5}{7} \right]$ <p>$\therefore PQ \parallel FE$ [line divides 2 sides of Δ in proportion]/ [lyn deel 2 sye van Δ eweredig]</p> <p>[converse prop theorem]/ [omgekeerde eweredigheidstelling]</p> <p>[converse line to one side of a Δ]/ [omgekeerde lyn aan een sy van 'n Δ]</p>	<p>✓ correct value of $\frac{RF}{RP}$ korrekte waarde van $\frac{RF}{RP}$</p> <p>✓ correct value of $\frac{RE}{QR}$ korrekte waarde van $\frac{RE}{QR}$</p> <p>✓ R</p>	<p>(3)</p> <p>[12]</p>
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QUESTION 10 / VRAAG 10



10.1	$\frac{CT}{PC} = \frac{BC}{QC}$ <p>[line to one side of a Δ] [lyn aan een sy van 'n Δ]</p> <p>[prop theorem, $BT \parallel QP$] [eweredigheid stelling, $BT \parallel QP$]</p> $= \frac{BC}{6BC}$ $= \frac{1}{6}$	<p>✓ S ✓ R</p> <p>✓ QC in terms of BC/ QC in terme van BC</p>	(3)
10.2	$\hat{Q} = \hat{Q}$ [common] / [gemeen] $\hat{C} = \hat{D}$ [\angle s in same seg] / [\angle e in dies. segment] $\hat{A}_1 = \hat{B}_2$ [3rd \angle s] / [3de \angle e] $\Delta QAC \parallel \Delta QBD$ [$\angle \angle \angle$] <p style="text-align: center;">OR / OF</p> $\hat{Q} = \hat{Q}$ [common] / [gemeen] $\hat{C} = \hat{D}$ [\angle s in same seg] / [\angle e in dies. segment] $\hat{A}_1 = \hat{B}_2$ [3rd \angle s] / [3de \angle e] $\Delta QAC \parallel \Delta QBD$ [$\angle \angle \angle$]	<p>✓ S ✓ S ✓ R</p> <p>✓ R for/vir $\angle \angle \angle$</p> <p style="text-align: center;">OR / OF</p> <p>✓ S ✓ S ✓ R</p> <p>✓ S for 3rd angles vir 3^{de} hoeke</p>	(4)
10.3	$\frac{QC}{QD} = \frac{QA}{QB}$ [$\parallel \Delta$ s] <p>$QD \times QA = QC \times QB$ $= 6BC \times 5BC$ $QD \cdot QA = 30BC^2$</p>	<p>✓ S ✓ R</p> <p>✓ $6BC \times 5BC$</p>	(3)
			[10]

TOTAL/TOTAAL: 150

