

SA's Leading Past Year

Exam Paper Portal



You have Downloaded, yet Another Great Resource to assist you with your Studies 😊

Thank You for Supporting SA Exam Papers

Your Leading Past Year Exam Paper Resource Portal

Visit us @ www.saexampapers.co.za



SA EXAM PAPERS

SA EXAM PAPERS
Proudly South African



**Western Cape
Government**

METRO NORTH EDUCATION DISTRICT
SCHOOL-BASED ASSESSMENT
SEPTEMBER TRIAL COMMON EXAMINATION

MATHEMATICS P2/ WISKUNDE V2
MARKING GUIDELINE/ NASIENRIGLYNE
SEPTEMBER 2025

This Marking Guideline consists of 20 pages

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 memorandum. Stop marking at the second calculation error.
- Assuming answers/values to solve a problem is NOT acceptable.

NOTA:

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.
- As 'n kandidaat 'n antwoord van 'n vraag doodtrek en nie oordoen nie, sien die doodgetrekte poging na.
- Volgehoue akkuraatheid word in ALLE aspekte van die nasienriglyne toegepas. Hou op nasien by die tweede berekeningsfout.
- Om antwoorde/waardes te aanvaar 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 the 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 die rede toegeken as die bewering korrek is)
S/R	Award a mark if statement AND reason are both correct
	Ken 'n punt toe as die bewering EN rede beide korrek is

QUESTION 1 / VRAAG 1

1.1.1	$\bar{x} = \frac{27 + 36 + \dots + 96 + 104}{10}$ $= \frac{649}{10}$ $= 64,9$ AO full marks	✓ Sum of weights ✓ Answer Accept 65	(2)
1.1.2	$\sigma = 23,86$	✓✓ Answer	(2)
1.1.3	1.1.1 if learner uses 64,9 points: / 1.1.1 as leerder 64,9 punte gebruik: $\bar{x} + \sigma = 88,76$ $\bar{x} - \sigma = 41,04$ There are 6 values within one standard deviation from the mean. / Daar is 6 waardes binne een standaardafwyking van die gemiddelde. OR/ OF CA from 1.1.1 if learner uses 65 points: / CA vanaf 1.1.1 as leerder 65 punte gebruik: $\bar{x} + \sigma = 88,86$ $\bar{x} - \sigma = 41,14$ There are 6 values within one standard deviation from the mean. / Daar is 6 waardes binne een standaardafwyking van die gemiddelde.	✓ 88,76 ✓ 41,04 ✓ 6 ✓ 88,86 ✓ 41,14 ✓ 6	(3)



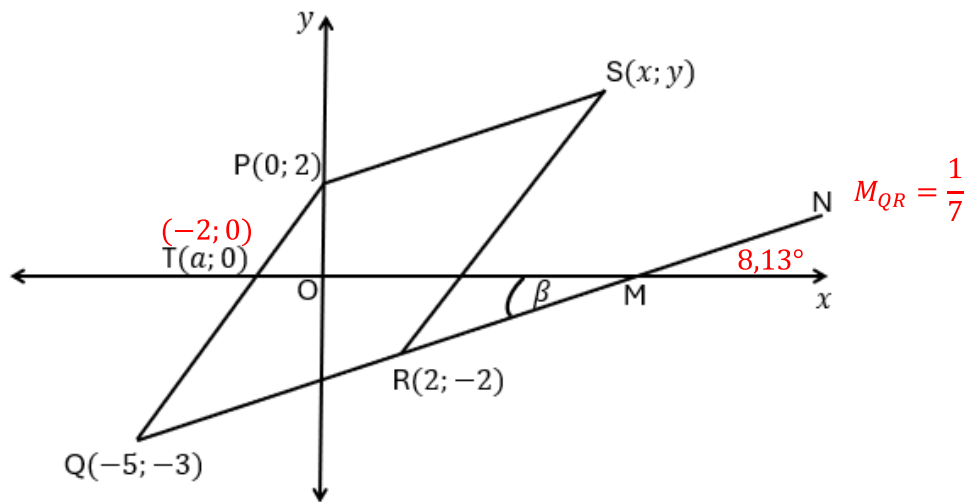
1.2.1	Skewed to the left/ negatively skewed <i>Skeef na links/ negatief skeef</i> $\bar{x} < \text{median} / Q_2$ OR The data is more spread out between Q_1 and Q_2 than between Q_2 and Q_3. OR Or any similar answer	✓ Answer ✓ Reason	(2)
			[9]

QUESTION 2 / VRAAG 2

2.1	SCATTER DIAGRAM OF LATITUDE LINES AND THE AVERAGE MAXIMUM TEMPERATURES FOR APRIL	✓ first 4 coordinates ✓ last 3 coordinates (If learner connected dots, panelise 1 mark.)	(2)
2.2	$\hat{y} = a + bx$ $a = 40,27$ $b = -0,51$ $y = 40,27 - 0,51x$	✓ a ✓ b ✓ Equation	(3)
2.3	$y = 40,27 - 0,51x$ $y = 40,27 - 0,51(40)$ $y = 19,87$ Accept 19,85 (Calculator)	✓ Subst. ✓ Answer Accept 20 AO full marks	(2)
2.4	$r = -0,91$ The correlation is very strong negative. / <i>Die korrelasie is baie sterk negatief.</i>	✓ r ✓ Strong ✓ Negative	(3)
			[10]



QUESTION 3 / VRAAG 3



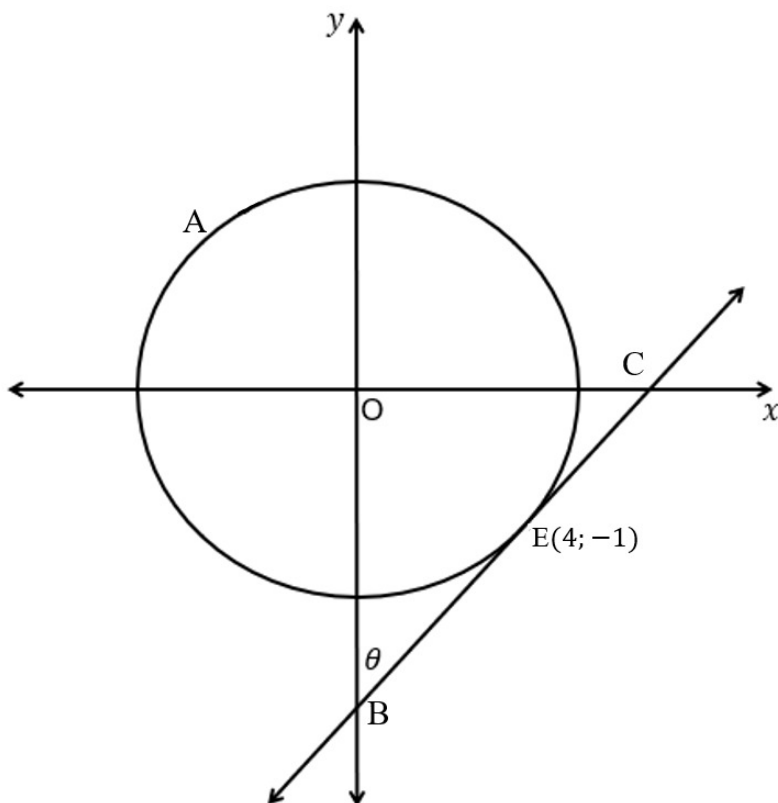
3.1	$m_{QR} = \frac{y_2 - y_1}{x_2 - x_1}$ $m_{QR} = \frac{-3 - (-2)}{-5 - 2}$ $m_{QR} = \frac{1}{7}$ AO full marks	✓ Subst. ✓ Answer	(2)
3.2	$\tan \theta = \frac{1}{7}$ $\theta = 8,13^\circ$ $\beta = 8,13^\circ$ AO full marks	✓ $\tan \theta = \frac{1}{7}$ (subs) ✓ $\theta = 8,13^\circ$ ✓ S	(3)
3.3	$m_{PQ} = \frac{-3 - (2)}{-5 - 0}$ $m_{PQ} = 1$ $y - 2 = 1(x - 0)$ $y = x + 2$ $0 = a + 2$ $a = -2$ OR $m_{PQ} = m_{PT}$ $\frac{-3 - (2)}{-5 - 0} = \frac{2 - 0}{0 - a}$ $\frac{-5}{-5} = \frac{2}{-a}$ $a = -2$	✓ $m = 1$ ✓ straight line / subs ✓ $y = 0$ ✓ $a = -2$ ✓ Equation ✓ subs in correct formula ✓ Simplify ✓ $a = -2$	(4)



3.4	$S(0 + 7; 2 + 1)$ $S(7; 3)$	✓ 7 ✓ 3	(2)
3.5	PR: $M_{PR} \left(\frac{0+2}{2}; \frac{2-2}{2} \right) = M_{PR}(1; 0)$ QS: $M_{QS} \left(\frac{-5+7}{2}; \frac{-3+3}{2} \right) = M_{QS}(1; 0)$ $\therefore M_{PR} = M_{QS} = (1; 0)$ $\therefore$ the diagonals bisect each other/ <i>die hoeklyne halveer mekaar.</i>	✓ sub in correct formula ✓ M_{PR} ✓ M_{QS}	(3)
3.6	$PQ = \sqrt{(-5 - 0)^2 + (-3 - 2)^2} = 5\sqrt{2} = \sqrt{50} = 7,07$ $QR = \sqrt{(-5 - 2)^2 + (-3 + 2)^2} = 5\sqrt{2} = \sqrt{50} = 7,07$ $\therefore PQ = QR$ $\therefore PQR$ is an isosceles triangle/ <i>PQR is 'n gelykbenige driehoek</i>	✓ sub in correct formula ✓ PQ ✓ QR	(3)
3.7	Rhombus , parallelogram with one pair adjacent sides = / Ruit , <i>parallelogram met een paar aangrensende sye</i> = OR/ OF Rhombus/ Ruit , $m_{PR} \times m_{QS} = -2 \times \frac{1}{2} = -1$ $\therefore$ diagonals bisect perpendicular / <i>hoeklyne halveer loodreg</i>	✓ Rhombus ✓ Reason ✓ Rhombus ✓ Reason	(2)
3.8	$\beta = 8,13^\circ$ (from 3.2) $m_{PQ} = 1$ (from 3.3) $P\hat{T}M = \tan^{-1} 1$ $P\hat{T}M = 45^\circ$ $\hat{Q} = 45^\circ - 8,13^\circ$ $\hat{Q} = 36,87^\circ$	✓ $m_{PQ} = 1$ ✓ 45° ✓ Answer	(3)
			[22]



QUESTION 4 / VRAAG 4



4.1	$x^2 + y^2 = r^2$ $(4)^2 + (-1)^2 = r^2$ $r^2 = 17$ $r = \sqrt{17}$ AO full marks	✓ Subst. ✓ Answer ✓ Answer	(3)
4.2	$\text{Midpoint}_{AE} = \left(\frac{x+4}{2}, \frac{y-1}{2} \right)$ $= (0; 0)$ $\frac{x+4}{2} = 0$ $x = -4$ $\frac{y-1}{2} = 0$ $y = 1$ AO full marks	✓ -4 ✓ 1	(2)



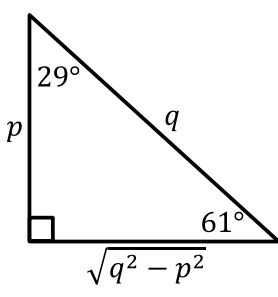
4.3	$m_{OE} = \frac{y_2 - y_1}{x_2 - x_1}$ $m_{OE} = \frac{-1 - (0)}{4 - 0}$ $m_{OE} = -\frac{1}{4}$ $m_{BC} \times m_{OE} = -1$ $m_{BC} = 4$ $y - (-1) = 4(x - 4)$ $y = 4x - 16 - 1$ $y = 4x - 17$ OR $m_{OE} = \frac{y_2 - y_1}{x_2 - x_1}$ $m_{OE} = \frac{-1 - (0)}{4 - 0}$ $m_{OE} = -\frac{1}{4}$ $y = 4x + c$ $-1 = 4(4) + c$ $c = -17$ $y = 4x - 17$	✓ Substitute ✓ Answer ✓ subst m_{BC} and $(4; -1)$ ✓ Answer ✓ Substitute ✓ Answer ✓ Subst m_{BC} and $(4; -1)$ ✓ Answer	(4)
4.4	$y = 4x$	✓✓ Answer	(2)
4.5	$OS = 3OE$ $OS^2 = 9OE^2$ $(a - 0)^2 + (b - 0)^2 = 9(17) = 153$ $a^2 + b^2 = 153 \dots \dots \dots (1)$ $M_{OE} = M_{OS} = -\frac{1}{4}$ $\frac{0 - b}{0 - a} = -\frac{1}{4}$ $a = -4b \dots \dots \dots (2)$ Substitute (2) into (1): $(-4b)^2 + b^2 = 153$ $16b^2 + b^2 = 153$ $17b^2 = 153$ $b^2 = 9$ $b = \pm 3$ But $b < 0$ therefor $b = -3$ $a = -4(-3) = 12$ $S(12; -3)$	✓ Distance ✓ 17 ✓ $-\frac{1}{4}$ (CA from 4.3) ✓ a in terms of b ✓ Subst. ✓ Value of b ✓ Value of a	(7)



$OS = 3OE$ $OS = 3\sqrt{17}$ $\therefore ES = OS - OE$ $= 3\sqrt{17} - \sqrt{17}$ $= 2\sqrt{17}$ $(4 - a)^2 + (-1 - b)^2 = (2\sqrt{17})^2$ $(4 - a)^2 + (-1 - b)^2 = 68$ $M_{OE} = M_{OS} = -\frac{1}{4}$ $\frac{0 - b}{0 - a} = -\frac{1}{4}$ $a = -4b \dots \dots \dots (2)$ $(4 + 4b)^2 + (-1 - b)^2 = 68$ $16 + 32b + 16b^2 + 1 + 2b + b^2 = 68$ $17b^2 + 34b - 51 = 0$ $b^2 + 2b - 3 = 0$ $(b + 3)(b - 1) = 0$ $b = -3 \text{ or } b \neq 1$ $\text{But } b < 0$ $a = -4(-3)$ $a = 12$ $S(12; -3)$ OR $OE = \sqrt{17}$ $ES + OE = 3OE$ $\therefore ES = 2OE = 2\sqrt{17}$ $\text{Equation of OS: } y = -\frac{1}{4}x$ $\therefore S(x; -\frac{1}{4}x)$ $\therefore ES = \sqrt{(4 - x)^2 + (-1 - y)^2} = 2\sqrt{17}$ $16 - 8x + x^2 + 1 - \frac{1}{2}x + \frac{1}{16}x^2 = 4.17$ $17x^2 - 136x - 816 = 0$ $x^2 - 8x - 48 = 0$ $(x + 4)(x - 12) = 0$ $x = -4 \text{ or } x = 12$ $x > 0$ $\therefore y = -\frac{1}{4}(12) = -3$ $\therefore S(12; -3)$	$\checkmark 2\sqrt{17}$ $\checkmark \text{ Sub in distance form}$ $\checkmark -\frac{1}{4} \text{ (CA from 4.3)}$ $\checkmark a \text{ in terms of } b$ $\checkmark \text{ Subst.}$ $\checkmark \text{ Value of } b$ $\checkmark \text{ Value of } a$ $\checkmark 2\sqrt{17}$ $\checkmark -\frac{1}{4} \text{ (CA from 4.3)}$ $\checkmark \text{ coordinate}$ $\checkmark \text{ Sub in distance form}$ $\checkmark \text{ value of } x$ $\checkmark \text{ Subst.}$ $\checkmark \text{ Value of } y$	
		[18]



QUESTION 5 / VRAAG 5

5.1.1	$\sin 61^\circ = \frac{p}{q}$  $\cos 151^\circ$ $= \cos(180^\circ - 29^\circ)$ $= -\cos 29^\circ = -\sin 61^\circ$ $= -\frac{p}{q}$ OR $\cos 151^\circ$ $= \cos(90^\circ + 61^\circ)$ $= -\sin 61^\circ$ $= -\frac{p}{q}$	$\checkmark \sqrt{q^2 - p^2} / -\sin 61^\circ$ $\checkmark \text{Reduction}$ $\checkmark \text{Answer}$ $\checkmark \text{Reduction}$ $\checkmark \sqrt{q^2 - p^2} / -\sin 61^\circ$ $\checkmark \text{Answer}$	(3)
-------	--	--	-----



5.1.3	$\cos 31^\circ$ $= \cos(61^\circ - 30^\circ)$ $= \cos 61^\circ \cos 30^\circ + \sin 61^\circ \sin 30^\circ$ $= \left(\frac{\sqrt{q^2-p^2}}{q}\right)\left(\frac{\sqrt{3}}{2}\right) + \left(\frac{p}{q}\right)\left(\frac{1}{2}\right)$ $= \frac{\sqrt{3}\sqrt{q^2-p^2}}{2q} + \frac{p}{2q}$ $= \frac{\sqrt{3}\sqrt{q^2-p^2}+p}{2q}$ $= \frac{\sqrt{3(q^2-p^2)}+p}{2q}$ OR $= \cos(60^\circ - 29^\circ)$ $= \cos 60^\circ \cos 29^\circ + \sin 60^\circ \sin 29^\circ$ $= \left(\frac{1}{2}\right)\left(\frac{p}{q}\right) + \left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{q^2-p^2}}{q}\right)$ $= \frac{p}{2q} + \frac{\sqrt{3}\sqrt{q^2-p^2}}{2q}$ $= \frac{p+\sqrt{3}\sqrt{q^2-p^2}}{2q}$ $= \frac{p+\sqrt{3(q^2-p^2)}}{2q}$	✓Compound angle ✓Expansion ✓Substitute ✓Answer ✓Compound angle ✓Expansion ✓Substitute ✓Answer	(4)
5.2	$\frac{\sin(-x) \cdot \sin(180^\circ - x) + \cos(90^\circ + x)}{-\sin(360^\circ - x) - \tan 315^\circ}$ $= \frac{-\sin x \cdot \sin x + (-\sin x)}{\sin x + \tan 45^\circ}$ $= \frac{-\sin x(\sin x + 1)}{\sin x + 1}$ $= -\sin x$	✓ $-\sin x$ and $\sin x$ ✓ $-\sin x$ ✓ $\sin x$ ✓ $\tan 45^\circ$ ✓Factorization ✓Answer	(6)



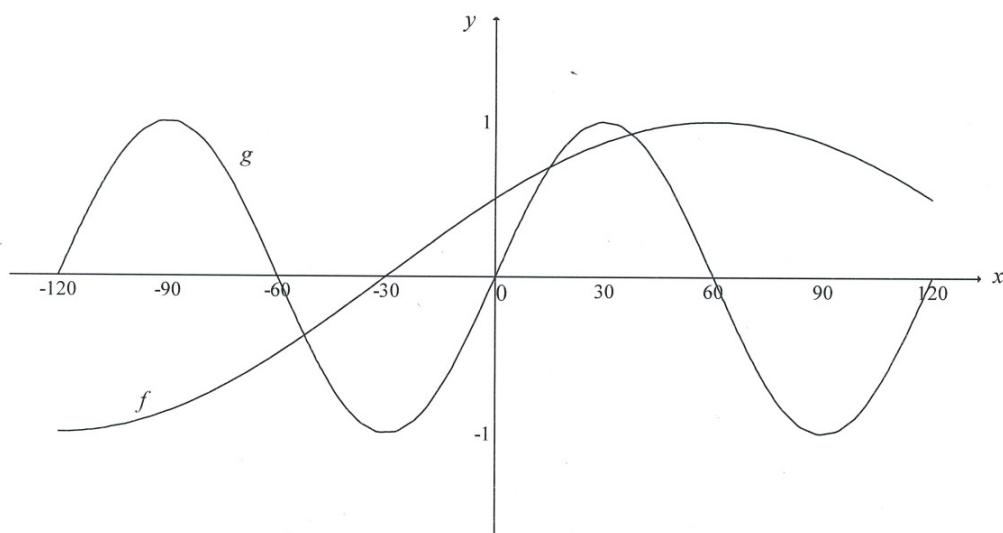
5.3.1	$\begin{aligned} \text{LHS} &= \cos(A + 45^\circ) \\ &= \cos A \cos 45^\circ - \sin A \sin 45^\circ \\ &= \frac{\cos A}{\sqrt{2}} - \frac{\sin A}{\sqrt{2}} \\ &= \frac{\cos A - \sin A}{\sqrt{2}} \\ &= \text{RHS} \end{aligned}$ OR/OF $\begin{aligned} \text{LHS} &= \cos(A + 45^\circ) \\ &= \cos A \cos 45^\circ - \sin A \sin 45^\circ \\ &= \cos A \cdot \frac{\sqrt{2}}{2} - \sin A \cdot \frac{\sqrt{2}}{2} \\ &= \frac{\sqrt{2}}{2} (\cos A - \sin A) \end{aligned}$ $\begin{aligned} \text{RHS} &= \frac{\cos A - \sin A}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} \\ &= \frac{\sqrt{2}(\cos A - \sin A)}{2} \\ &= \text{LHS} \end{aligned}$	✓ Expansion ✓ Subst. ✓ Simplification	
5.3.2	$\cos(A + 45^\circ) = \frac{\frac{1}{\sqrt{2}}}{\sqrt{2}}$ $\cos(A + 45^\circ) = \frac{1}{2}$ Reference angle / Verwysingshoek = 60° $A + 45^\circ = 60^\circ$ $A = 15^\circ$	✓ Subst. ✓ $\frac{1}{2}$ ✓ Reference angle ✓ 15°	(3)
5.4	$2\sin x \cdot \cos x - 0,8 = 0$ $\sin 2x = 0,8$ Reference angle / Verwysingshoek = $53,13^\circ$ Q₁: $2x = 53,13^\circ + k \cdot 360^\circ \quad k \in \mathbb{Z}$ $x = 26,57^\circ + k \cdot 180^\circ$ Q₂: $2x = 180^\circ - 53,13^\circ + k \cdot 360^\circ$ $x = 63,44^\circ + k \cdot 180^\circ$	✓ Double angle ✓ Reference angle ✓ $k \cdot 360^\circ$ and $k \in \mathbb{Z}$ ✓ Q ₁ : $26,57^\circ$ ✓ Q ₂ : $63,43^\circ$ ✓ $k \cdot 180^\circ$	(6)



5.5	$\sqrt{-\cos^2(90^\circ - M) - \cos M \cdot \cos(-M)}$ $= \sqrt{-\sin^2 M - \cos^2 M}$ $= \sqrt{-(\sin^2 M + \cos^2 M)}$ $= \sqrt{-1}$ Not real/ nie-reël	✓ $-\sin^2 M$ ✓ $-\cos^2 M$ ✓ Factorization ✓ -1 or answer	(4)
			[33]



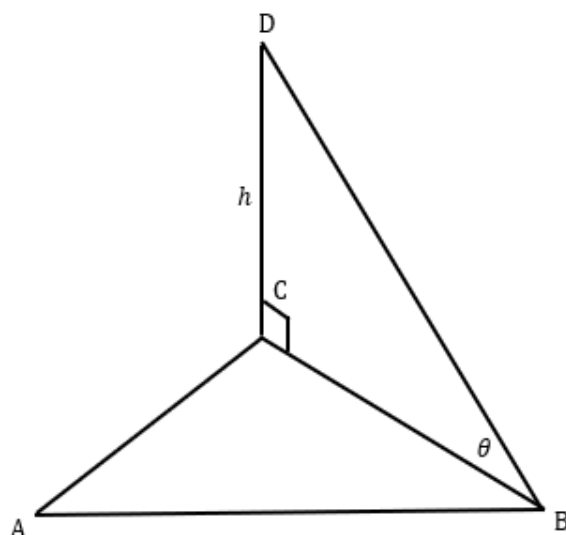
QUESTION 6 / VRAAG 6



6.1	120°	✓ Answer	(1)
6.2	$a = 3$	✓ Answer	(1)
6.3	$-2 \leq y \leq 0$ OR $y \in [-2; 0]$	✓ Values ✓ Notation ✓ Values ✓ Notation	(2)
6.4	$h(x) = -\cos(x - 60^\circ - 30^\circ)$ $= -\cos(x - 90^\circ)$ $= -\sin x$	✓ – ✓ -90° ✓ Simplification	(3)
6.5	$-30^\circ < x < 60^\circ$	✓ Critical values ✓ Notation	(2)
			[9]



QUESTION 7 / VRAAG 7



7.1	$\tan \theta = \frac{h}{CB}$ $CB = \frac{h}{\tan \theta}$ OR $\frac{CB}{\sin(90^\circ - \theta)} = \frac{h}{\sin \theta}$ $CB = \frac{h \cos \theta}{\sin \theta}$ $= \frac{h}{\tan \theta} \text{ OR } h \cot \theta$	✓ Ratio ✓ Answer ✓ Ratio ✓ Answer	(2)
7.2	$\hat{A}CB = 180^\circ - \alpha - \beta = 180^\circ - (\alpha + \beta)$ $\frac{AB}{\sin[180^\circ - (\alpha + \beta)]} = \frac{(\frac{h}{\tan \theta})}{\sin \alpha}$ $\frac{AB}{\sin(\alpha + \beta)} = \frac{h}{\tan \theta \cdot \sin \alpha}$ $AB = \frac{h \sin(\alpha + \beta)}{\tan \theta \cdot \sin \alpha}$	✓ $\hat{A}CB = 180^\circ - (\alpha + \beta)$ ✓ Correct use of sine rule ✓ subst. ✓ Reduction	(4)
7.3	$AB = \frac{31,2 \sin(52,2 + 23,5)}{\tan 42,3 \cdot \sin 52,2}$ AO full marks	✓ Substitution ✓ Answer	(2)
			[8]



QUESTION 8 / VRAAG 8

	$\hat{O}_1 = 19^\circ$ (angles opp = sides / <i>hoeke teenoor = sye</i>) $\hat{M}_2 = 19^\circ + 19^\circ = 38^\circ$ (ext $\angle$ of Δ / <i>buite $\angle$ van Δ</i>) $\hat{L} = 38^\circ$ (angles opp = radii / <i>hoeke teenoor = radiusse</i>) $\hat{O}_3 = 57^\circ$ (ext $\angle$ of Δ / <i>buite $\angle$ van Δ</i>)	✓ S ✓ S / R ✓ S ✓ R ✓ S / R	(5) [5]



QUESTION / VRAAG 9

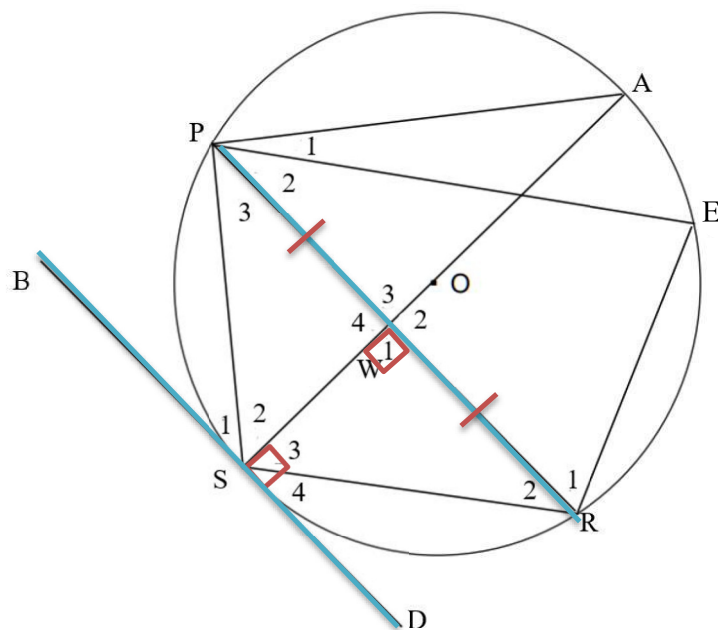
9.1	Interior opposite angle/ <i>teenoorstaande hoek</i>	✓ Answer	(1)
9.2	Construction: Draw diameter BOF and join FE/ <i>Konstruksie: Teken deursnee BOF en verbind FE</i> Let $\widehat{EBC} = x$ $E_1 + E_2 = 90^\circ$ ($\angle$ in semi $\odot$ / $\angle$ in semi $\odot$) $B_2 = 90^\circ - x$ (tan $\perp$ radius / <i>raaklyn $\perp$ radius</i>) $F = x$ (sum of $\angle$s of Δ / <i>som van $\angle$e van Δ</i>) $D = x$ ($\angle$ in the same segment / $\angle$ in <i>dieselfde segment</i>) $\widehat{EBC} = \widehat{D}$ OR/ OF Construction: Draw radii OB and OE/ <i>Konstruksie: Teken radiusse OB en OE</i> Let $\widehat{EBC} = x$ $\widehat{OBC} = 90^\circ$ [radius $\perp$ tangent / <i>raaklyn $\perp$ radius</i>] $\therefore \widehat{OBE} = 90^\circ - x$ $\therefore \widehat{OEB} = 90^\circ - x$ [$\angle$s opposite equal radii / $\angle$e teenoor gelyke radiusse] $\therefore \widehat{BOE} = 2x$ [sum of $\angle$s of Δ / <i>som van $\angle$e van Δ</i>] $\therefore \widehat{D} = x$ [$\angle$ at centre = $2 \times \angle$ at circumference / <i>middelpunts$\angle$ = $2 \times$ omtreks$\angle$</i>] $\therefore \widehat{EBC} = \widehat{D}$	✓ Construction ✓ S/R ✓ S/R ✓ S ✓ S/R ✓ Construction ✓ S/R ✓ S/R ✓ S ✓ S/R	(5)



9.3			
9.3.1	$CDO = 90^\circ$ (line from centre to midpt of chord / lyn van middelpunt van $\odot$ tot middelpunt van koord)	✓ S ✓ R	(2)
9.3.2	$B_1 = 59^\circ$ (tan-chord theorem / raaklyn koord)	✓ S ✓ R	(2)
9.3.3	$B\hat{A}G = 90^\circ$ ($\angle$ in semi $\odot$ / $\angle$ in semi $\odot$) $G_2 = 180^\circ - 90^\circ - 59^\circ = 31^\circ$ ($\angle$ sum in Δ / som van $\angle$ e van Δ) OR $G_2 = 31^\circ$ (radius $\perp$ tangent)	✓ S ✓ R ✓ S ✓ R	(4)
9.3.4	$G_3 = 59^\circ$ (alt. $\angle$; $AB \parallel EG$ / verwisselende $\angle$ e; $AB \parallel EG$)	✓ S ✓ R	(2)
9.3.5	$C_1 = 31^\circ$ ($\angle$ in the same segment / $\angle$ in dieselfde segment)	✓ S ✓ R	(2)
9.4	$C_2 = 180^\circ - 31^\circ - 59^\circ = 90^\circ$ (opp. $\angle$ of cyclic quad. / teenoorstaande $\angle$ e van kdvh) $C\hat{D}O + C_2 = 180^\circ$ $AC \parallel OD$ (co-int $\angle$ s supp / ko – binne hoeke supplementêr)	✓ S / R ✓ S ✓ R	(3)
			[21]



QUESTION 10 / VRAAG 10



10.1	$\widehat{WSD} = 90^\circ$ [tan $\perp$ radius OR tan $\perp$ diameter / raaklyn $\perp$ radius OF raaklyn $\perp$ deursnee / middellyn] $\widehat{W}_1 = 90^\circ$ [co – interior $\angle^s$; PR $\parallel$ BS / ko – binne $\angle e$; PR $\parallel$ BS] $\therefore PW=WR$ [line from centre $\perp$ to chord / lyn van middelpunt $\perp$ koord] OR $\widehat{WSD} = 90^\circ$ [tan $\perp$ radius OR tan $\perp$ diameter / raaklyn $\perp$ radius OF raaklyn $\perp$ deursnee / middellyn] $\widehat{W}_1 = 90^\circ$ [co – interior $\angle^s$; PR $\parallel$ BS / ko – binne $\angle e$; PR $\parallel$ BS] $\widehat{S}_1 = \widehat{P}_3$ [alt $\angle^s$; PRBS / verw $\angle e$; PR $\parallel$ BS] $\widehat{S}_1 = \widehat{R}_2$ [tangent, chord / raaklyn koord] $\widehat{P}_3 = \widehat{R}_2$ In $\triangle PWS$ and $\triangle RWS$ 1. $\widehat{P}_3 = \widehat{R}_2$ 2. WS is common 3. $\widehat{W}_4 = \widehat{W}_1$ (angles in straight line / hoeke op reguit lyn) $\therefore \triangle PWS \equiv \triangle RWS$ ($\angle\angle s$) $\therefore PW=WR$ [$\triangle PWS \equiv \triangle RWS$]	✓ S / R ✓ S ✓ R ✓ R ✓ S ✓ R ✓ S ✓ S ✓ S	(4)
------	---	--	-----

10.2	In ΔWRS and ΔPAS: 1 $\widehat{R}_2 = \widehat{A}$ [$\angle$s is same segment / $\angle$ in dieselfde segment] 2 $\widehat{W}_1 = \widehat{P}$ [$\angle$ in semi $\odot$ or $\angle$s on a straight line / $\angle$ in semi $\odot$ of $\angle$e op 'n reguit lyn] 3 $\widehat{S}_3 = \widehat{S}_2$ [sum $\angle^s \Delta$ / som van $\angle$e van Δ] $\Delta WRS \Delta PAS$ [$\angle$; $\angle$; $\angle$]	✓ S ✓ R ✓ S ✓ R ✓ sum $\angle^s \Delta$ or [$\angle$; $\angle$; $\angle$]	(5)
10.3	$\frac{WR}{AP} = \frac{RS}{AS} = \frac{WS}{PS}$ [Δ^s] PS.RS = AS.WS $\widehat{S}_1 = \widehat{P}_3$ [alt $\angle^s$; PR $\parallel$ BS/ verw $\angle$e; PR $\parallel$ BS] $\widehat{S}_1 = \widehat{R}_2$ [tangent, chord / raaklyn koord] $\widehat{P}_3 = \widehat{R}_2$ PS = RS [sides opp equal $\angle$s / sye teenoor gelyke $\angle$e] RS.RS = AS.WS $RS^2 = AS.WS$ OR $\frac{WR}{AP} = \frac{RS}{AS} = \frac{WS}{PS}$ [Δ^s] PS.RS = AS.WS $\widehat{P}_3 = \widehat{R}_2$ [from 10.1] PS = RS [sides opp equal $\angle$s / sye teenoor gelyke $\angle$e] RS.RS = AS.WS $RS^2 = AS.WS$ OR In ΔPWS and ΔRWS: 1. $\widehat{W}_4 = \widehat{W}_1$ (angles in straight line / hoeke op reguit lyn) 2. $PW = RW$ 3. WS is common $\therefore \Delta PWS \equiv \Delta RWS$ [S; $\angle$; S] $\therefore PS = RS$ $PS^2 = WS.SA$ [perp from right-angled vertex] $RS^2 = WS.SA$	✓ S / R ✓ S ✓ S / R ✓ S / R ✓ S ✓ Subs ✓ S / R ✓ S ✓ S ✓ R ✓ S ✓ Subs ✓ S / R ✓ S ✓ S ✓ R	(6)
			[15]

