



**NATIONAL
SENIOR CERTIFICATE
*NASIONALE
SENIORSERTIFIKAAT***

GRADE/*GRAAD* 11

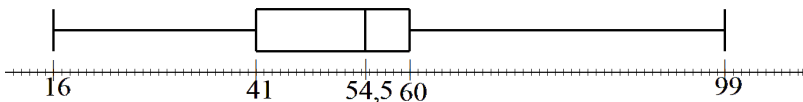
NOVEMBER 2024

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

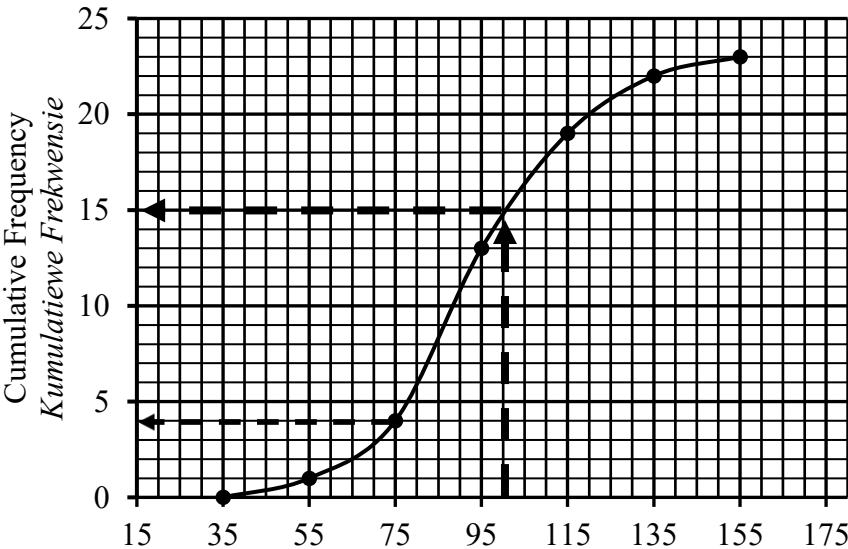
MARKS/*PUNTE*: 150

This marking guideline consists of 17 pages.
Hierdie nasienriglyn bestaan uit 17 bladsye.

QUESTION 1 / VRAAG 1

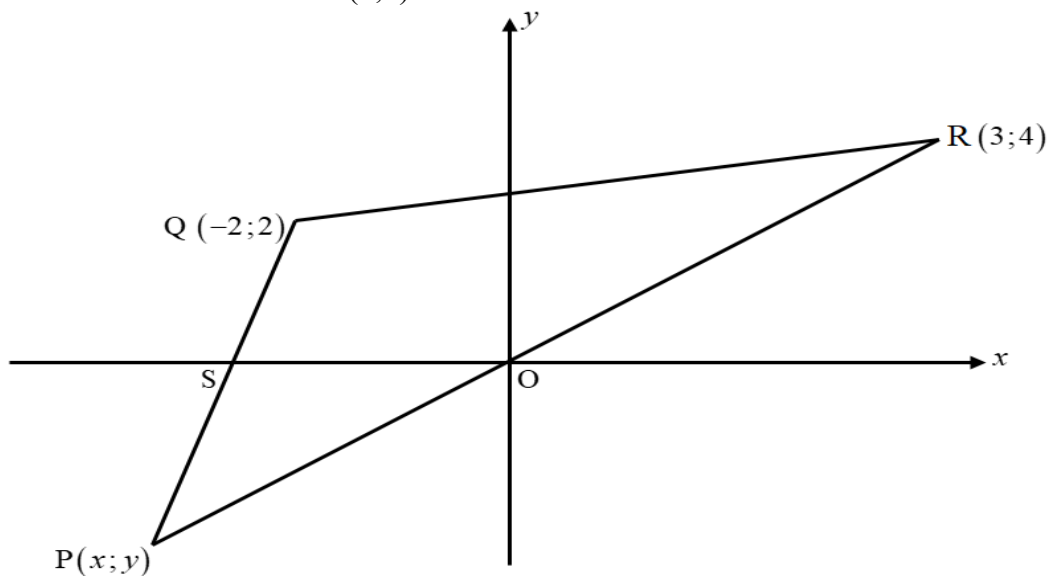
Data Set / <i>Datastel</i> :																	
<table><tr><td>16</td><td>28</td><td>41</td><td>41</td><td>42</td><td>52</td><td>54</td></tr><tr><td>55</td><td>58</td><td>59</td><td>60</td><td>62</td><td>64</td><td>99</td></tr></table>				16	28	41	41	42	52	54	55	58	59	60	62	64	99
16	28	41	41	42	52	54											
55	58	59	60	62	64	99											
1.1	Mode / <i>Modus</i> = 41	✓ mode / <i>modus</i>	(1)														
1.2	Outlier / <i>Uitskieter</i> = 99	✓ outlier / <i>uitskieter</i>	(1)														
1.3	$\text{Median} / \text{Mediaan} = \frac{54+55}{2}$ $\therefore \text{Median} / \text{Mediaan} = 54,5$ (Answer only full marks) (<i>Slegs antwoord – volpunte</i>)	✓ dividing a sum by 2 <i>deel 'n som deur 2</i> ✓ answer / <i>antwoord</i>	(2)														
1.4	$Q_1 = 41$ $Q_3 = 60$ $\text{IQR} / \text{IKW} = Q_3 - Q_1 = 60 - 41$ $= 19$	✓ Q_1 ✓ Q_3 ✓ answer / <i>antwoord</i>	(3)														
1.5		✓ correct min and max <i>korrekte min en maks</i> ✓ correct box and whisker diagram. <i>korrekte mond-en-snordigram</i>	(2)														
1.6	The data is skewed to the left or negatively skewed. <i>Die data is skeef na links of negatief skeef.</i>	✓ for the correct comment <i>vir korrekte opmerking</i>	(1)														
			[10]														

QUESTION 2 / VRAAG 2

2.1	<table><thead><tr><th>Weight of players <i>Gewig van bokkers</i></th><th>Frequency <i>Frekwensie</i></th><th>Cumulative frequency <i>Kumulatiewe frekwensie</i></th></tr></thead><tbody><tr><td>$35 \leq x < 55$</td><td>1</td><td>1</td></tr><tr><td>$55 \leq x < 75$</td><td>3</td><td>4</td></tr><tr><td>$75 \leq x < 95$</td><td>9</td><td>13</td></tr><tr><td>$95 \leq x < 115$</td><td>6</td><td>19</td></tr><tr><td>$115 \leq x < 135$</td><td>3</td><td>22</td></tr><tr><td>$135 \leq x < 155$</td><td>1</td><td>23</td></tr></tbody></table>	Weight of players <i>Gewig van bokkers</i>	Frequency <i>Frekwensie</i>	Cumulative frequency <i>Kumulatiewe frekwensie</i>	$35 \leq x < 55$	1	1	$55 \leq x < 75$	3	4	$75 \leq x < 95$	9	13	$95 \leq x < 115$	6	19	$115 \leq x < 135$	3	22	$135 \leq x < 155$	1	23	✓ 4 and/en 13 ✓ 19 and/en 22	(2)
Weight of players <i>Gewig van bokkers</i>	Frequency <i>Frekwensie</i>	Cumulative frequency <i>Kumulatiewe frekwensie</i>																						
$35 \leq x < 55$	1	1																						
$55 \leq x < 75$	3	4																						
$75 \leq x < 95$	9	13																						
$95 \leq x < 115$	6	19																						
$115 \leq x < 135$	3	22																						
$135 \leq x < 155$	1	23																						
2.2	The total number of boxers is 23 <i>Die totale aantal bokkers is 23</i>	✓ for answer/ <i>vir antwoord</i>	(1)																					
2.3	$\bar{x} = \frac{1 \times 45 + 3 \times 65 + 9 \times 85 + 6 \times 105 + 3 \times 125 + 1 \times 145}{23}$ $= \frac{2155}{23}$ $\bar{x} = 93,70$	✓ $f \times x_i$ ✓ 2 155 ✓ answer/ <i>antwoord</i>	(3)																					
2.4	Cumulative frequency graph (ogive) <i>Kumulatiewefrekwensiegrafiek (ogief)</i> 	✓ correct grounding/ <i>korrekte anker</i> ✓ plotting against the upper limits/ <i>afsteek by boonste limiete</i> ✓ correct shape/ <i>korrekte vorm</i>	(3)																					
2.5	No. of boxers in the interval of $75 \leq x < 100$ will be $15 - 4 = 11$ <i>Aantal bokkers in die interval $75 \leq x < 100$ sal $15 - 4 = 11$ wees</i>	✓ 15 or/of reading from the graph / <i>lees vanaf die grafiek</i> ✓ answer / <i>antwoord</i>	(2)																					
[11]																								

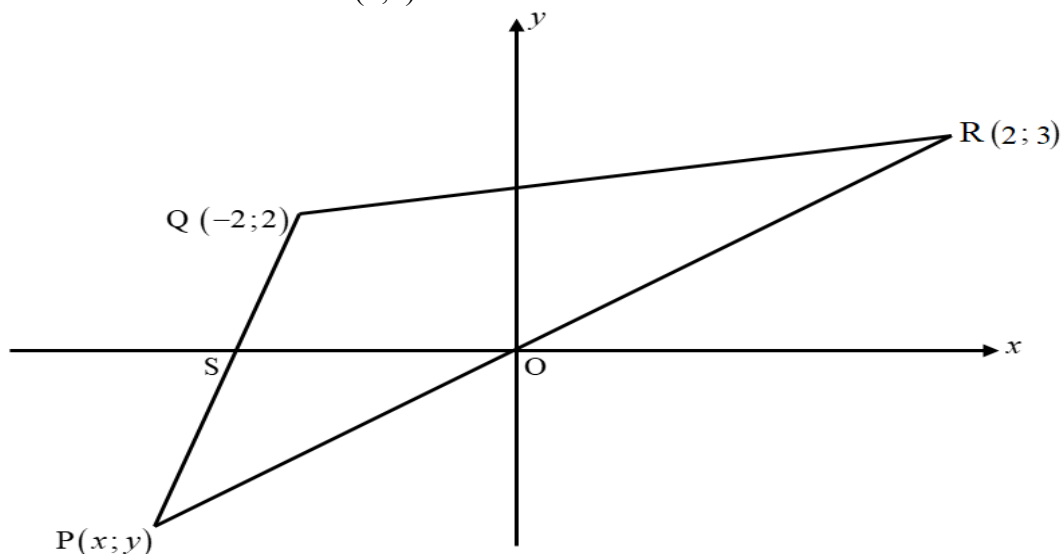
QUESTION 3 / VRAAG 3

MARKING GUIDELINE FOR: R(3;4)



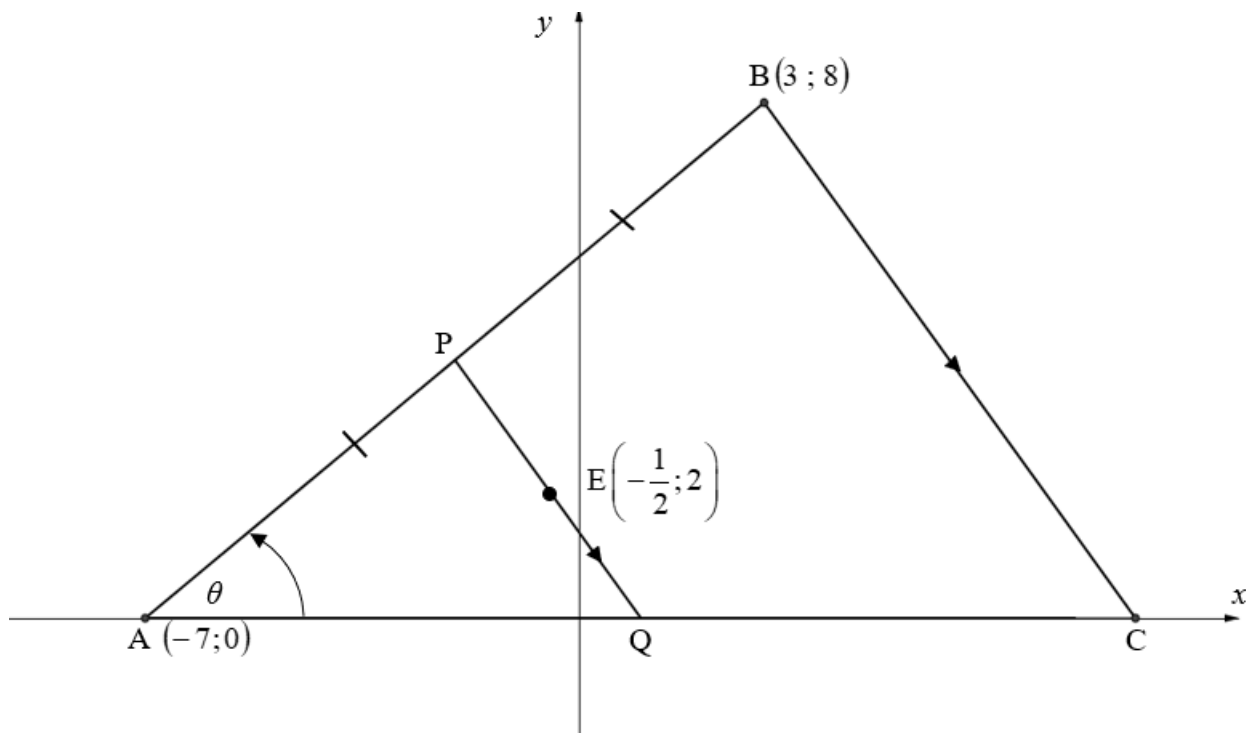
3.1	$m_{PR} = \frac{4-0}{3-0}$ $= \frac{4}{3}$	✓ correct substitution/ korrekte vervanging ✓ answer / antwoord	(2)
3.2	$m_{PR} = \frac{4}{3} \quad (\text{P, O and R are collinear points})$ $(P, O \text{ en } R \text{ is saamlynige punte})$ $y-4 = \frac{4}{3}(x-3)$ $= \frac{4}{3}x$	✓ gradient of/ gradiënt van PR ✓ substitution by R or O/ vervanging met R of O ✓ equation of PR/ vergelyking van PR	(3)
3.3	$6x+14 = \frac{4}{3}x$ $6x - \frac{4}{3}x = -14$ $\frac{14}{3}x = -14$ $x = -3$ $y = 6(-3)+14$ $y = -4$ $P(-3; -4)$	✓ for equating the equations/ vir gelykstelling van vergelykings ✓ simplification/ vereenvoudiging ✓ x-value/waarde ✓ y-value/waarde	(4)
3.4	$0 = 6(x) + 14$ $x = -\frac{7}{3}$ $\therefore S\left(-\frac{7}{3}; 0\right)$	✓ $y = 0$ ✓ x-coordinate/ x-koördinaat	(1)
			[10]

MARKING GUIDELINE FOR: R(2;3)



3.1	$m_{PR} = \frac{3-0}{2-0}$ $= \frac{3}{2}$	✓ correct substitution/ <i>korrekte vervanging</i> ✓ answer / <i>antwoord</i>	(2)
3.2	$m_{PR} = \frac{3}{2} \quad (\text{P, O and R are collinear points})$ $(P, O \text{ en } R \text{ is saamlynige punte})$ $y - 3 = \frac{3}{2} (x - 2)$ $= \frac{3}{2} x$	✓ gradient of/ <i>gradiënt van</i> PR ✓ substitution by R or O/ <i>vervanging met R of O</i> ✓ equation of PR/ <i>vergelyking van PR</i>	(3)
3.3	$6x + 14 = \frac{3}{2}x$ $6x - \frac{3}{2}x = -14$ $\frac{9}{2}x = -14$ $x = -\frac{28}{9}$ $y = 6\left(-\frac{28}{9}\right) + 14$ $y = -\frac{14}{3}$ $P\left(-\frac{28}{9}; -\frac{14}{3}\right)$	✓ for equating the equations/ <i>vir gelykstelling van</i> <i>vergelykings</i> ✓ simplification/ <i>vereenvoudiging</i> ✓ x-value/waarde ✓ y-value/waarde	(4)
3.4	$0 = 6(x) + 14$ $x = -\frac{7}{3}$ $\therefore S\left(-\frac{7}{3}; 0\right)$	✓ $y = 0$ ✓ x-coordinate/ <i>x-koördinaat</i>	(1)
			[10]

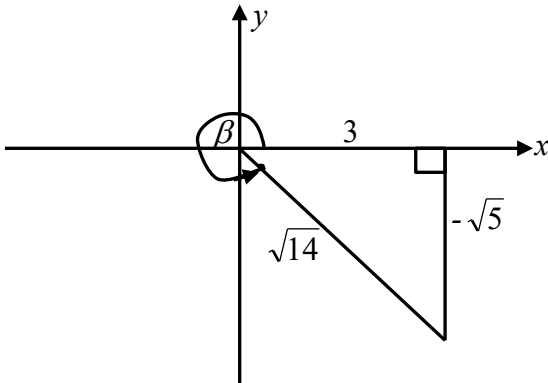
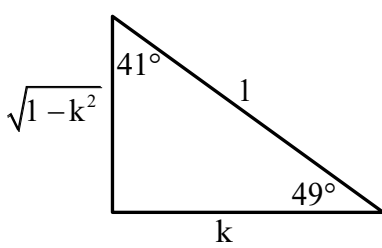
QUESTION 4 / VRAAG 4



4.1.1	$M = \frac{-7+3}{2}; \frac{0+8}{2}$ $= -2; 4$ $P(-2; 4)$	✓ x-value/waarde ✓ y-value/waarde	(2)
4.1.2	$m = \frac{8-0}{3+7}$ $= \frac{4}{5}$	✓ substitution / vervanging ✓ answer / antwoord	(2)
4.1.3	$\tan \theta = \frac{4}{5}$ $\theta = 38,66^\circ$	✓ $\tan \theta = \frac{4}{5}$ ✓ answer / antwoord	(2)
4.2	$m_{PQ} = \frac{4-2}{-2+\frac{1}{2}}$ $= -\frac{4}{3}$ $m_{BC} = m_{PQ} = -\frac{4}{3}$ $y - 8 = -\frac{4}{3}(x - 3)$ $y = -\frac{4}{3}x + 12$	✓ correct substitution/ korrekte vervanging ✓ answer / antwoord ✓ gradient of BC/ gradiënt van BC ✓ substitute B(3 ; 8) and m vervang B(3 ; 8) en m ✓ equation / vergelyking	(5)

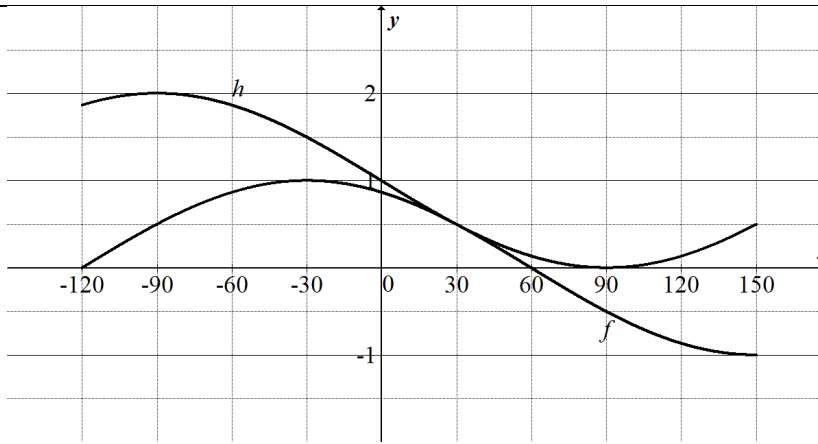
4.3.1	$-\frac{4}{3}x + 12 = 0$ $x = 9$ $AC = 16$	$\checkmark y = 0$ $\checkmark x = 9$ $\checkmark AC = 16$	(3)
4.3.2	$AB = \sqrt{(3+7)^2 + (8-0)^2}$ $= \sqrt{164}$ $A. \text{ of/van } \triangle ABC = \frac{1}{2} \times \sqrt{164} \times 16 \sin 38,65^\circ$ $= 63,99$ $A. \text{ of/van } \triangle APQ = \frac{1}{2} \times \frac{\sqrt{164}}{2} \times 8 \sin 38,65^\circ$ $= 16,00$ $A. \text{ of/van } PBCQ = 47,99$	$\checkmark AB = \sqrt{164}$ $\checkmark$ correct substitution in A of $\triangle ABC$ / <i>korrekte vervanging in A van $\triangle ABC$</i> $\checkmark 63,99$ $\checkmark$ correct substitution in A of $\triangle APQ$ <i>korrekte vervanging in A van $\triangle APQ$</i> $\checkmark 16,00$ $\checkmark$ answer / <i>antwoord</i>	(6)
			[20]

QUESTION 5 / VRAAG 5

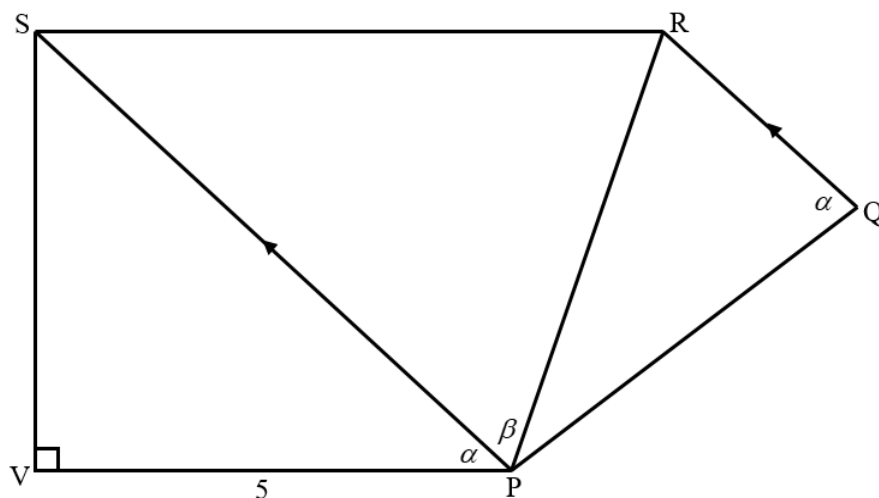
5.1	$-3 \tan \beta = 5$ $\tan \beta = \frac{-\sqrt{5}}{3}$  $r = \sqrt{(3)^2 + (-\sqrt{5})^2} \quad (\text{Pyth})$ $= \sqrt{14}$ $\sin^2 \beta - \cos^2 \beta$ $= \left(\frac{-\sqrt{5}}{\sqrt{14}} \right)^2 - \left(\frac{3}{\sqrt{14}} \right)^2$ $= -\frac{2}{7}$	$\checkmark \tan \beta = \frac{-\sqrt{5}}{3}$ $\checkmark$ diagram in the correct quadrant <i>diagram in die korrekte kwadrant</i> $\checkmark$ for / vir $r = \sqrt{14}$ $\checkmark$ substitution / vervanging $\checkmark$ answer / antwoord	(5)
5.2	$r^2 = x^2 + y^2 \quad (\text{Pyth})$ $(1)^2 = (k)^2 + (y)^2$ $y^2 = 1 - k^2$ $y = \sqrt{1 - k^2}$ 		
5.2.1	$\sin 131^\circ = \sin (180^\circ - 49^\circ)$ $= \sin 49^\circ$ $= \sqrt{1 - k^2}$	$\checkmark \sin 49^\circ$ $\checkmark$ answer / antwoord	(2)

5.2.2	$1 - \cos^2 41^\circ = \sin^2 41^\circ$ $= k^2$ OR/OF $1 - \cos^2 41^\circ = 1 - (\sqrt{1 - k^2})^2$ $= 1 - 1 + k^2$ $= k^2$	✓ for $\sin^2 41^\circ$ ✓ answer / <i>antwoord</i> OR/OF ✓ substitution in terms of k / <i>vervangende in terme van k</i> ✓ answer / <i>antwoord</i>	(2)
5.3	$\frac{\tan(180^\circ - x) \cdot \cos(-x) + \sin^2(360^\circ - x) \cos(90^\circ - x)}{\sin(180^\circ - x)}$ $= \frac{-\tan x \cdot \cos x + \sin^2 x \cdot \sin x}{\sin x}$ $= \frac{-\frac{\sin x}{\cos x} \cdot \cos x + \sin^3 x}{\sin x}$ $= \frac{-\sin x + \sin^3 x}{\sin x}$ $= \frac{-\sin x(1 - \sin^2 x)}{\sin x}$ $= -\cos^2 x$	✓ $-\tan x$ ✓ $\cos x$ ✓ $\sin^2 x$ ✓ $\sin x$ ✓ $\frac{\sin x}{\cos x}$ ✓ simplification/ <i>vereenvoudiging</i> ✓ answer / <i>antwoord</i>	(7)
5.4	$\sin(-15^\circ) \cos 75^\circ + \tan 75^\circ \cdot \cos 75^\circ \cdot \cos 165^\circ$ $= (-\cos 75^\circ) \cos 75^\circ + \frac{\sin 75^\circ}{\cos 75^\circ} \cdot \cos 75^\circ (-\sin 75^\circ)$ $= -\cos^2 75^\circ - \sin^2 75^\circ$ $= -(\cos^2 75^\circ + \sin^2 75^\circ)$ $= -1$ OR/OF $\sin(-15^\circ) \cos 75^\circ + \tan 75^\circ \cdot \cos 75^\circ \cdot \cos 165^\circ$ $= (-\sin 15^\circ) \sin 15^\circ + \frac{\cos 15^\circ}{\sin 15^\circ} \cdot \sin 15^\circ (-\cos 15^\circ)$ $= -\sin^2 15^\circ - \cos^2 15^\circ$ $= -(\sin^2 15^\circ + \cos^2 15^\circ)$ $= -1$	✓ $-\cos 75^\circ$ ✓ $\frac{\sin 75^\circ}{\cos 75^\circ}$ ✓ $-\sin 75^\circ$ ✓ common factor/ <i>gemene faktor</i> ✓ identity / <i>identiteit</i> $\cos^2 75^\circ + \sin^2 75^\circ = 1$ OR/OF ✓ $-\sin 15^\circ$ and/en $\sin 15^\circ$ ✓ $\frac{\cos 15^\circ}{\sin 15^\circ}$, [$\sin 15^\circ$ and/ $\cos 15^\circ$] ✓ ✓ common factor/ <i>gemene faktor</i> ✓ identity / <i>identiteit</i> $\cos^2 15^\circ + \sin^2 15^\circ = 1$	(5)

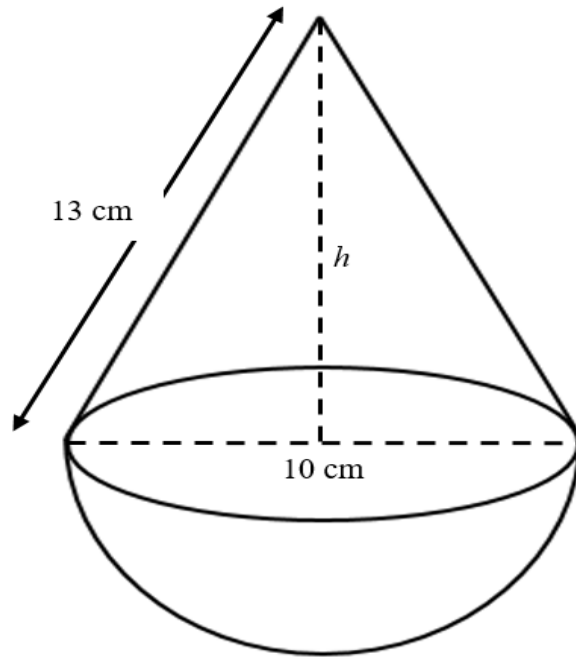
5.5	$\frac{3 \cos x}{1 + \sin x} + 3 \tan x = \frac{3}{\cos x}$ $\begin{aligned} \text{LHS} / \text{LK} &= \frac{3 \cos x}{1 + \sin x} + 3 \tan x \\ &= \frac{3 \cos x}{1 + \sin x} + \frac{3 \sin x}{\cos x} \\ &= \frac{3 \cos^2 x + 3 \sin x + 3 \sin^2 x}{\cos x(1 + \sin x)} \\ &= \frac{3(\cos^2 x + \sin^2 x) + 3 \sin x}{\cos x(1 + \sin x)} \\ &= \frac{3(1 + \sin x)}{\cos x(1 + \sin x)} \\ &= \frac{3}{\cos x} \end{aligned}$	✓ identity / <i>identiteit</i> $\frac{\sin x}{\cos x}$ ✓ simplification / <i>vereenvoudiging</i> ✓ square identity / <i>vierkantsidentiteit</i> ✓ common factor / <i>gemene faktor</i>	(4)
5.6	$\begin{aligned} \sin^2 x - 3 \cos^2 x &= 0 \\ \sin^2 x &= 3 \cos^2 x \\ \frac{\sin^2 x}{\cos^2 x} &= 3 \\ \tan^2 x &= 3 \\ \tan x &= \pm \sqrt{3} \\ x &= \pm 60^\circ \\ x &= 60^\circ + k \cdot 180 \text{ or/of } x = -60^\circ + k \cdot 180^\circ, k \in \mathbb{Z} \\ \text{or/of } x &= 120^\circ + 180^\circ k, k \in \mathbb{Z} \end{aligned}$ OR/OF $\begin{aligned} \sin^2 x - 3 \cos^2 x &= 0 \\ \sin^2 x - 3(1 - \sin^2 x) &= 0 \\ \sin^2 x - 3 + 3 \sin^2 x &= 0 \\ 4 \sin^2 x - 3 &= 0 \\ \sin^2 x &= \frac{3}{4} \\ \sin x &= \pm \frac{\sqrt{3}}{2} \\ x &= 60^\circ + 360^\circ \cdot k \text{ or/of } 120^\circ + 360^\circ \cdot k, k \in \mathbb{Z} \\ \text{or/of } x &= 240^\circ + k \cdot 360^\circ \text{ or/of } x = 300^\circ + k \cdot 360^\circ \end{aligned}$	✓ isolating trig ratios / <i>isoleer trig. verhoudings</i> ✓ $\tan^2 x = 3$ ✓ correct equations / <i>korrekte vergelykings</i> ✓ $x = 60^\circ + 180^\circ \cdot k$ ✓ $x = -60^\circ + 180^\circ \cdot k, k \in \mathbb{Z}$ or /of $x = 120^\circ + 180^\circ \cdot k, k \in \mathbb{Z}$ OR/OF ✓ $\cos^2 x = 1 - \sin^2 x$ ✓ standard form / <i>standaardvorm</i> ✓ correct equations / <i>korrekte vergelykings</i> ✓ $x = 60^\circ + 360^\circ \cdot k$ $x = 120^\circ + 360^\circ \cdot k$ both quads / <i>beide kwadrante</i> ✓ $x = 240^\circ + k \cdot 360^\circ$ $x = 300^\circ + k \cdot 360^\circ, k \in \mathbb{Z}$ both quads / <i>beide kwadrante</i>	(5)
			[30]

QUESTION 6 / VRAAG 6			
6.1	Period is / Periode is 360°	✓ answer/ antwoord	(1)
6.2	$y \in [0 ; 2]$ or/of $0 \leq y \leq 2$	✓ correct interval/ korrekte interval ✓ correct notation/ korrekte notasie	(2)
6.3	$h(x) = \cos(60^\circ + x + 30^\circ) + 1$ $= \cos(90^\circ + x) + 1$ $= -\sin x + 1$	✓ $\cos(90^\circ + x)$ ✓ $-\sin x$	(2)
6.4		$h(x)$ ✓ x-intercept/ afsnit ✓ y-intercept/ y-afsnit ✓ correct shape/ korrekte vorm	(3)
6.5.1	$x = 150^\circ$	✓ answer/ antwoord	(1)
6.5.2	$60^\circ \leq x \leq 150^\circ$	✓ correct interval/ korrekte interval ✓ correct notation/ korrekte notasie	(2)
6.5.3	$x = 30^\circ$	✓ answer/ antwoord	(1)
			[12]

QUESTION 7 / VRAAG 7



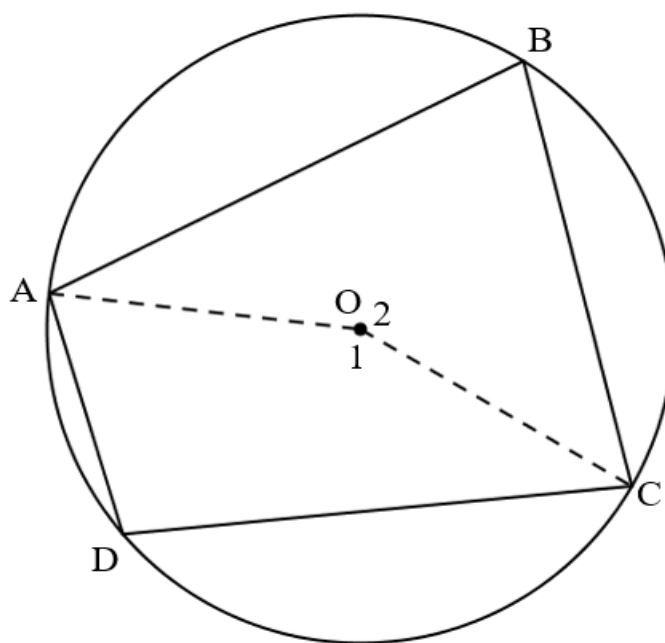
7.1	$\cos \alpha = \frac{5}{SP}$ $SP = \frac{5}{\cos \alpha}$	$\checkmark \quad SP = \frac{5}{\cos \alpha}$	(1)
7.2	$\hat{P}RQ = \beta \quad (\text{alt } \angle s; RQ \parallel SP)$ $\frac{\sin \alpha}{RP} = \frac{\sin \beta}{5}$ $RP = \frac{5 \sin \alpha}{\sin \beta}$	$\checkmark \quad \hat{P}RQ = \beta$ $\checkmark \quad \text{application of sine rule/}$ $\text{toepassing van sinusreël}$ $\checkmark \quad \text{answer / antwoord}$	(3)
7.3	$\text{area of/van } \Delta RPS = \frac{1}{2} (RP)(PS) \sin \beta$ $= \frac{1}{2} \left(\frac{5 \sin \alpha}{\sin \beta} \right) \left(\frac{5}{\cos \alpha} \right) \sin \beta$ $= \frac{25 \sin \alpha}{2 \cos \alpha}$ $\therefore \text{area of/van } \Delta RPS = \frac{25 \tan \alpha}{2}$	$\checkmark \quad \text{correct formula for area rule/}$ $\text{korrekte formule vir oppervlaktereël}$ $\checkmark \quad \text{substitution / vervanging}$ $\checkmark \quad \text{simplification / vereenvoudiging}$	(3)
			[7]

QUESTION 8 / VRAAG 8

8.1	$(h_s)^2 = r^2 + h^2$ $(13)^2 = (5)^2 + h^2$ $h^2 = 169 - 25$ $h^2 = 144$ $h = 12 \text{ cm}$	✓ correct formula/ <i>korrekte formule</i> ✓ substitution/ <i>vervang</i> ✓ answer / <i>antwoord</i>	(3)
8.2	height of the whole shape / <i>hoogte van die hele vorm</i> $= r + h$ $= 5 + 12$ $= 17 \text{ cm}$	✓ answer / <i>antwoord</i>	(1)
8.3	volume of the whole shape / <i>volume van die hele vorm</i> $= \frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h$ $= \frac{2}{3}\pi (5)^3 + \frac{1}{3}\pi (5)^2 (12)$ $= \frac{550}{3}\pi$ $= 575,96 \text{ cm}^3$	✓ correct formula/ <i>korrekte formule</i> ✓ substitution/ <i>vervang</i> ✓ answer / <i>antwoord</i>	(3)
8.4	outer surface area of the whole shape/ <i>buite – oppervlakte van die hele vorm</i> $= 2\pi r^2 + \pi r h_s$ $= 2\pi (5)^2 + \pi (5)(13)$ $= 115\pi$ $= 361,28 \text{ cm}^2$	✓ correct formula/ <i>korrekte formule</i> ✓ substitution/ <i>vervang</i> ✓ answer / <i>antwoord</i>	(3)
			[10]

QUESTION 9 / VRAAG 9

9.1.1



Construction: Draw AO and OC

$$\begin{aligned}\hat{O}_1 &= 2\hat{B} [\angle \text{at centre} = 2 \times \angle \text{at circumf}] \\ \hat{O}_2 &= 2\hat{D} [\angle \text{at centre} = 2 \times \angle \text{at circumf}] \\ \therefore \hat{O}_1 + \hat{O}_2 &= 360^\circ [\angle \text{s around a point}] \\ \therefore 2\hat{B} + 2\hat{D} &= 360^\circ \\ \therefore \hat{B} + \hat{D} &= 180^\circ\end{aligned}$$

✓ constructions

✓ S/R

✓ S

✓ S/R

✓ S

Konstruksie: Teken AO en OC

$$\begin{aligned}\hat{O}_1 &= 2\hat{B} [\text{Middelpunts}\angle = 2 \times \text{Omtreks}\angle] \\ \hat{O}_2 &= 2\hat{D} [\text{Middelpunts}\angle = 2 \times \text{Omtreks}\angle] \\ \therefore \hat{O}_1 + \hat{O}_2 &= 360^\circ [\angle \text{e rondom 'n punt}] \\ \therefore 2\hat{B} + 2\hat{D} &= 360^\circ \\ \therefore \hat{B} + \hat{D} &= 180^\circ\end{aligned}$$

✓ konstruksies

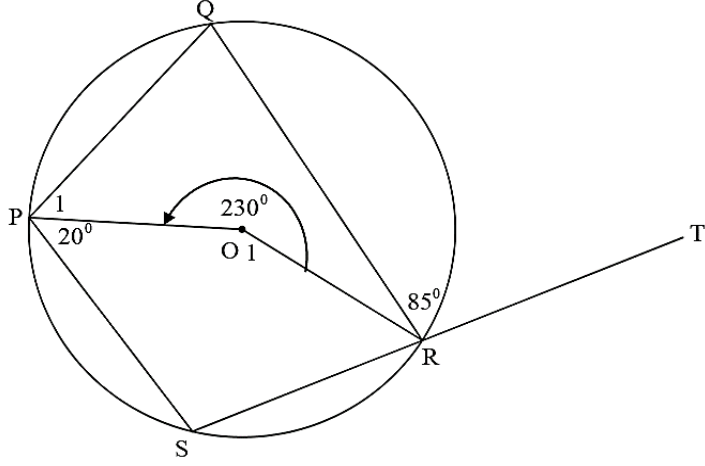
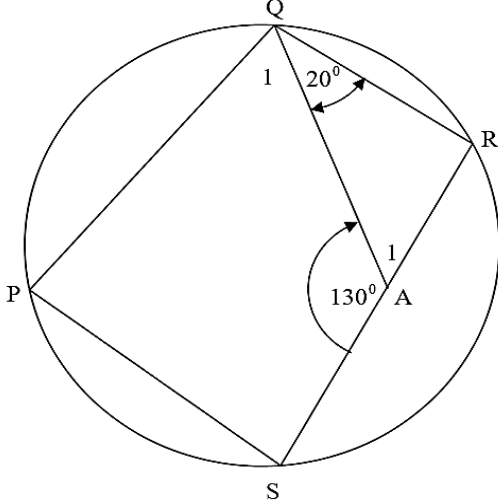
✓ S/R

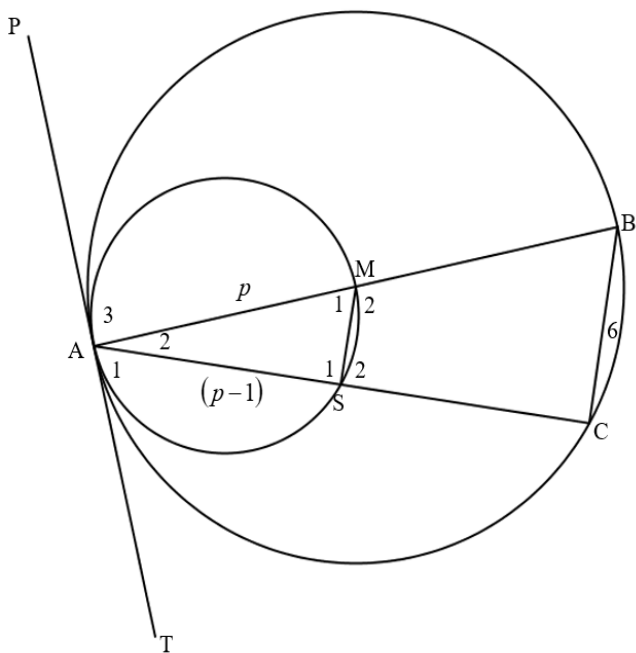
✓ S

✓ S/R

✓ S

(5)

9.2			
9.2.1	$\hat{S} = 115^\circ$ [$\angle$ at the centre = $2 \times \angle$ at the circumference] [Middelpunts $\angle = 2 \times$ Omtreks $\angle$]	✓ S ✓ R	(2)
9.2.2	$\hat{Q} = 65^\circ$ [opposite $\angle$ s of cyclic quad] [teenoorst. $\angle$ e van 'n koordevierhoek]	✓ S ✓ R	(2)
9.2.3	$\hat{P}_1 + 20^\circ = 85^\circ$ [ext. $\angle$ of cyclic quad] [buite. $\angle$ van 'n koordevierhoek] $\hat{P}_1 = 65^\circ$	✓ S ✓ R	(2)
9.3			
9.3.1	$\hat{A}_1 = 50^\circ$ [$\angle$ s in a str. line] / [$\angle$ op 'n reguitlyn] $\hat{R} = 110^\circ$ [$\angle$ s in a Δ] / [$\angle$ in 'n driehoek] $\hat{P} = 70^\circ$ [opp $\angle$ s of a cyclic quad] [teenoorst. $\angle$ e van 'n koordevierhoek] OR/OF $\hat{R} = 130^\circ - 20^\circ = 110^\circ$ [ext $\angle$ of a Δ] / [buite $\angle$ van Δ] $\hat{P} = 70^\circ$ [opp. $\angle$ s of a cyclic quad] / [teenoorst. $\angle$ e van 'n kv]	✓ S ✓ S ✓ S ✓ R OR/OF ✓ S ✓ R ✓ S ✓ R	(4)
			[15]

10.2			
10.2.1	$\hat{A}_3 = 90^\circ$ [tan $\perp$ rad]/[raaklyn $\perp$ radius] $\hat{S}_1 = 90^\circ$ [tan -chord theorem]/[raaklyn – koord stelling] $\hat{C} = 90^\circ$ [$\angle$ in semi-circle]/[$\angle$ in 'n semi – sirkel]	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R	(6)
10.2.2	$\hat{S}_1 = \hat{C}$ [both / beide = 90°] $\therefore MS \parallel BC$ [correspo. $\angle$ s = / ooreenkomst. $\angle$ e =]	$\checkmark$ R	(1)
10.2.3	$AS:SC = 1:1$ [line drawn from the centre] [lyn getrek vanaf middelpunt]	$\checkmark$ S $\checkmark$ R	(2)
10.2.4	$MS = 3$ [midpoint theorem]/[middelpunt stelling]	$\checkmark$ S $\checkmark$ R	(2)
10.2.5	$p^2 = (p-1)^2 + 3^2$ Pyth. theorem / stelling $p^2 = p^2 - 2p + 1 + 9$ $2p = 10$ $p = 5$	$\checkmark$ apply Pyth theo toepassing van Pyth stelling $\checkmark$ simplification/ vereenvoudiging $\checkmark$ answer / antwoord	(3)
			[25]

TOTAL / TOTAAL: 150