



Province of the
EASTERN CAPE
EDUCATION



**NATIONAL
SENIOR CERTIFICATE/
NASIONALE
SENIOR SERTIFIKAAT**

GRADE/GRAAD 12

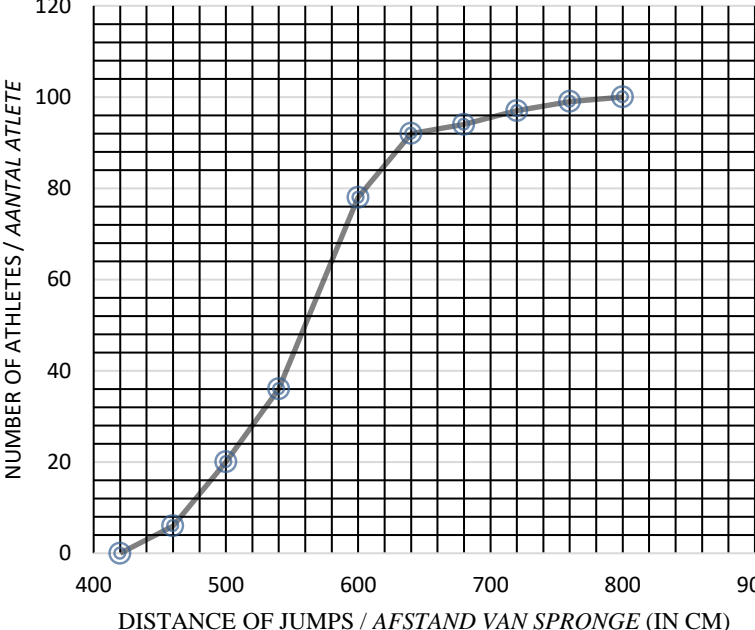
SEPTEMBER 2022

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

MARKS/PUNTE: 150

This marking guideline consists of 16 pages./
Hierdie nasienriglyn bestaan uit 16 bladsye.

QUESTION 1/VRAAG 1

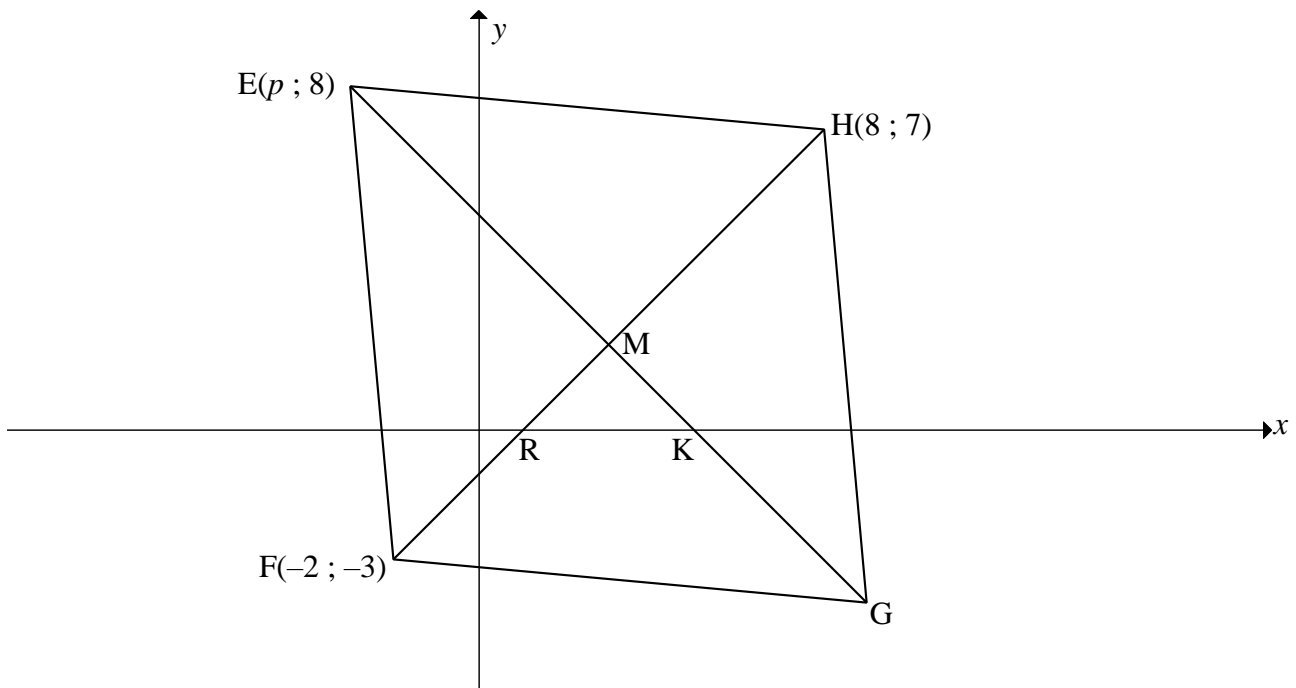
1.1	<table border="1"> <thead> <tr> <th>Distance of Jumps <i>Afstand van Spronge</i> (in cm)</th> <th>Number of athletes <i>Aantal atlete</i></th> <th>CF <i>KF</i></th> </tr> </thead> <tbody> <tr> <td>$420 < d \leq 460$</td> <td>6</td> <td>6</td> </tr> <tr> <td>$460 < d \leq 500$</td> <td>14</td> <td>20</td> </tr> <tr> <td>$500 < d \leq 540$</td> <td>16</td> <td>36</td> </tr> <tr> <td>$540 < d \leq 580$</td> <td>42</td> <td>78</td> </tr> <tr> <td>$580 < d \leq 620$</td> <td>14</td> <td>92</td> </tr> <tr> <td>$620 < d \leq 660$</td> <td>2</td> <td>94</td> </tr> <tr> <td>$660 < d \leq 700$</td> <td>3</td> <td>97</td> </tr> <tr> <td>$700 < d \leq 740$</td> <td>2</td> <td>99</td> </tr> <tr> <td>$740 < d \leq 780$</td> <td>1</td> <td>100</td> </tr> </tbody> </table>	Distance of Jumps <i>Afstand van Spronge</i> (in cm)	Number of athletes <i>Aantal atlete</i>	CF <i>KF</i>	$420 < d \leq 460$	6	6	$460 < d \leq 500$	14	20	$500 < d \leq 540$	16	36	$540 < d \leq 580$	42	78	$580 < d \leq 620$	14	92	$620 < d \leq 660$	2	94	$660 < d \leq 700$	3	97	$700 < d \leq 740$	2	99	$740 < d \leq 780$	1	100	<p>✓ for cf [6 to 92] <i>vir kf [6 tot 92]</i></p> <p>✓ for cf [94 to 100] <i>vir kf [94 tot 100]</i></p>	(2)
Distance of Jumps <i>Afstand van Spronge</i> (in cm)	Number of athletes <i>Aantal atlete</i>	CF <i>KF</i>																															
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1.2	<p style="text-align: center;">LONG JUMPERS' BEST JUMPS <i>VERSPRINGERS SE BESTE SPRONGE</i></p> 	<p>✓ anchor point <i>ankerpunt</i></p> <p>✓ upper limits <i>boonste limiete</i></p> <p>✓ sf /</p> <p>✓ smooth shape <i>egalige vorm</i></p>	(4)																														
1.3	<p>The median jump is 553. Accept between (551 – 555) <i>Die mediaan sprong is 553. Aanvaar tussen (551 – 555)</i></p>	<p>✓✓ for answer <i>vir antwoord</i></p>	(2)																														
1.4	<p>Number jumped over 560 cm = $100 - 57 = 43$ athletes Therefore, it is 43% of the athletes. <i>Aantal wat oor 560 cm gespring het = $100 - 57 = 43$ atlete</i> <i>Dit is daarom 43% van die atlete.</i></p>	<p>✓ for subtraction <i>vir aftrekking</i></p> <p>✓ for the answer <i>vir die antwoord</i></p>	(2)																														
			[10]																														

QUESTION 2/VRAAG 2

Long jumper / Verspringer	1	2	3	4	5	6
x: Hours practised / Ure geoefen	4,5	2	3,5	4	8	3
y: Distance jumped / Afstand gespring (cm)	650	420	580	490	780	525

2.1	$a = 336,699$ $b = 56,992$ $\hat{y} = 336,699 + 56,992x$	✓ for/vir a ✓ for/vir b ✓ for/vir $a + bx$	(3)
2.2	$\hat{y} = 336,699 + 56,992(5.4) = 644,46$ cm	✓ for substitution vir <i>vervanging</i> ✓ for the answer vir <i>die antwoord</i>	(2)
2.3	The more they practiced, the further they jumped. Strong positive correlation. <i>Hoe meer hulle geoefen het, hoe verder het hulle gespring.</i> <i>Sterk positiewe korrelasie.</i>	✓✓ for the answer vir <i>die antwoord</i>	(2)
2.4.1	The mean will decrease by 13 cm. <i>Die gemiddelde sal met 13 cm verminder.</i>	✓ for the answer vir <i>die antwoord</i>	(1)
2.4.2	The range will remain the same / No influence on range. <i>Die omvang sal dieselfde bly / Geen invloed op die omvang.</i>	✓ for the answer vir <i>die antwoord</i>	(1)
2.4.3	The standard deviation remains the same. <i>Die standaardafwyking bly dieselfde.</i>	✓ for the answer vir <i>die antwoord</i>	(1)
			[10]

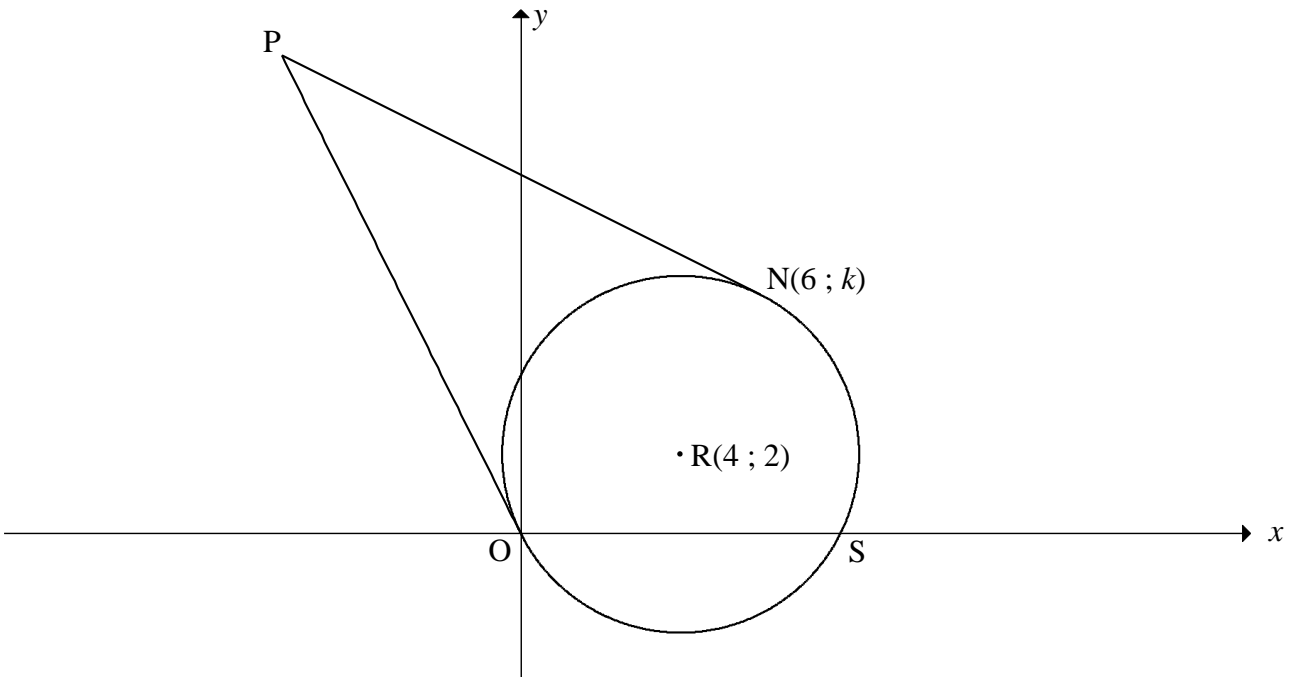
QUESTION 3/VRAAG 3



3.1.1	M (3; 2)	✓ for/vir x ✓ for/vir y	(2)
3.1.2	$m_{FH} = \frac{7 - (-3)}{8 - (-2)} = 1$	✓ for subst. / vir vervanging ✓ for answer / vir antwoord	(2)
3.1.3	$m_{EG} = -1$ (diagonals bisect at 90°) (hoeklyne halveer loodreg/by 90°) $\tan \widehat{MKX} = -1$ $\widehat{MKX} = 135^\circ$ $\therefore \widehat{MKR} = 45^\circ$	✓ S ✓ S ✓ $\widehat{MKX} = 135^\circ$ ✓ for answer / vir antwoord	(4)

<p>3.2</p>	<p>FE = EH (sides of a rhombus =) (sye van 'n rombus =) $FE^2 = EH^2$ $(p+2)^2 + (8+3)^2 = (p-8)^2 + (8-7)^2$ $p^2 + 4p + 4 + 121 = p^2 - 16p + 64 + 1$ $20p = -120$ $p = -3$</p> <p style="text-align: center;">OR/OF</p> <p>E(p; 8) and Midpoint of HF / en Middelpunt van HF = (3; 2) $m_{FH} = 1$ gradient from E to midpoint of FH / <i>gradiënt vanaf E na middelpunt van FH</i> $= \frac{8-2}{p-3} = \frac{6}{p-3}$ FH is perpendicular to EG / FH is loodreg op EG $\therefore \frac{6}{p-3} \times 1 = -1$ $\therefore p = -3$</p>	<p>✓ for equating / <i>gelykstel</i> $FE^2 = EH^2$ ✓ for squaring / <i>kwadrering</i> ✓ for simplification <i>vir vereenvoudiging</i> ✓ for the answer <i>vir die antwoord</i></p> <p style="text-align: center;">OR/OF</p> <p>✓ for gradient of E to FH <i>vir gradiënt van E na FH</i> ✓ statement / <i>stelling</i> ✓ for the product <i>vir die produk</i> ✓ for the answer <i>vir die antwoord</i></p>	<p>(4)</p>
<p>3.3</p>	<p>G(9; - 4)</p>	<p>✓ for/vir x ✓ for/vir y</p>	<p>(2)</p>
<p>3.4</p>	<p>M(3 ;2) N(-9 ;2) MN = 12 units/eenhede</p>	<p>✓ for coordinates of N <i>vir die koördinate van N</i> ✓✓ for answer / <i>vir antwoord</i></p>	<p>(3)</p>
			<p>[17]</p>

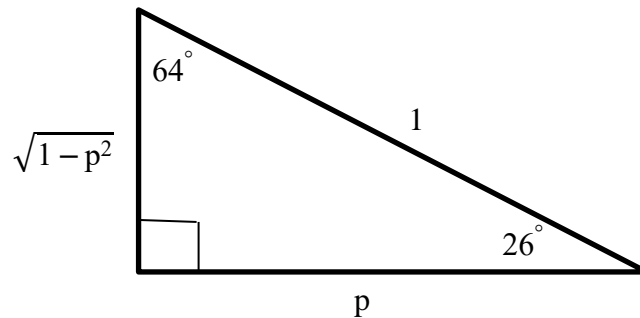
QUESTION/VRAAG 4



4.1	$r^2 = (4-0)^2 + (2-0)^2$ $r^2 = 20$ $\therefore (x-4)^2 + (y-2)^2 = 20$	✓ substitution / <i>vervanging</i> ✓ for/vir r^2 ✓ for the equation/vir <i>die vergelyking</i>	(3)
4.2	$(6-4)^2 + (k-2)^2 = 20$ $(k-2)^2 = 16$ $k-2 = \pm 4$ $k = 6$ or/of $k = -2$ $k = 6$ <p style="text-align: center;">OR/OF</p> Sub: $N(6; y)$ into the equation of the circle. Verv. $N(6; y)$ in <i>die vergelyking van die sirkel</i> . $(6-4)^2 + (y-2)^2 = 20$ $4 + y^2 - 4y + 4 - 20 = 0$ $y^2 - 4y - 12 = 0$ $(y-6)(y+2) = 0$ $y = 6$ or/of $y = -2$ $\therefore y = 6$	✓ substitution of / <i>vervanging van N</i> ✓ simplification / <i>vereenvoudiging</i> ✓ both answers for k / <i>beide antwoorde vir k</i> ✓ selection of $k = 6$ <i>keuse van $k = 6$</i> <p style="text-align: center;">OR/OF</p> ✓ for substitution / <i>vir vervanging</i> ✓ for standard form / <i>vir standaardvorm</i> ✓ for the factors / <i>vir die faktore</i> ✓ for the answer / <i>vir die antwoord</i>	(4)

4.3	$m_{RN} = \frac{6-2}{6-4} = 2$ $m_{NP} = -\frac{1}{2}$ <p>Equation of NP / <i>Vergelyking van NP:</i></p> $y - 6 = -\frac{1}{2}(x - 6)$ $y = -\frac{1}{2}x + 9$	✓ for gradient of RN <i>vir gradiënt van RN</i> ✓ for gradient of NP <i>vir gradiënt van NP</i> ✓ for substitution of N <i>vir vervanging van N</i> ✓ for/vir $c = 9$ ✓ for answer / <i>vir antwoord</i>	(5)
4.4.1	$-2x = -\frac{1}{2}x + 9$ $-\frac{3}{2}x = 9$ $-3x = 18$ $\therefore x = -6 \text{ and/en } y = 12$ $\therefore P(-6; 12)$	✓ for equating / <i>vir gelykstelling</i> ✓ for the simplification <i>vir die vereenvoudiging</i> ✓ for the answer / <i>vir die antwoord</i>	(3)
4.4.2	$RO = RN = \sqrt{4^2 + 2^2} = 2\sqrt{5} \text{ (radii/radiusse)}$ $PO = PN = \sqrt{(-6)^2 + 12^2} = 6\sqrt{5} \text{ (tangents from same pt)}$ <p style="text-align: center;"><i>(raaklyne vanaf dieselfde punt)</i></p> $\therefore \text{Perimeter of /Omtrek van PNRO} = 2(2\sqrt{5}) + 2(6\sqrt{5})$ $= 16\sqrt{5} \text{ or/of } 35,78 \text{ units/eenhede}$	✓ use of distance formula <i>gebruik van afstand formule</i> ✓ for RO / RN answer <i>vir RO / RN antwoord</i> ✓ for PO / PN answer <i>vir PO / PN antwoord</i> ✓ for final answer <i>vir finale antwoord</i>	(4)
4.5	<p>S(8 ;0)</p> <p>T(12 ; -2)</p>	✓✓ coordinates of S <i>koördinate van S</i> ✓✓ coordinates of T <i>koördinate van T</i>	(4)
			[23]

QUESTION 5/VRAAG 5



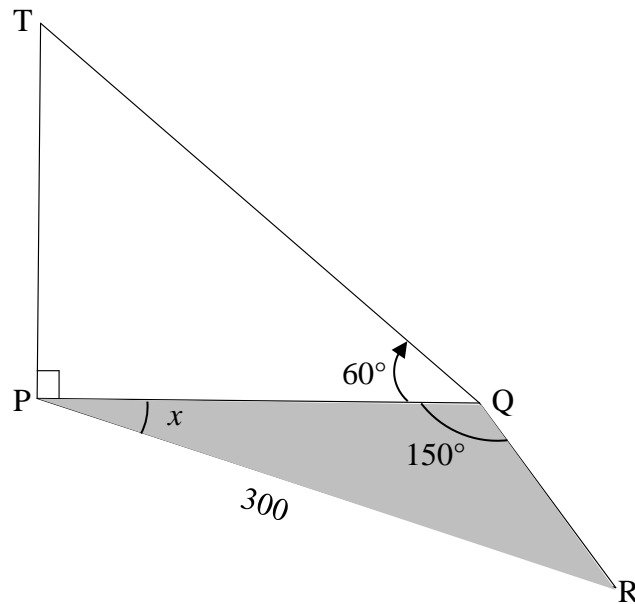
5.1.1	$\sin 26^\circ = \frac{\sqrt{1-p^2}}{1}$	✓✓ for the answer <i>vir die antwoord</i>	(2)
5.1.2	$\begin{aligned} \tan 154^\circ &= -\tan 26^\circ \\ &= -\frac{\sqrt{1-p^2}}{p} \end{aligned}$	✓✓ for the reduction <i>vir die reduksie</i> ✓ for the answer <i>vir die antwoord</i>	(3)
5.1.3	$\begin{aligned} \sin 13^\circ \cdot \cos 13^\circ &= \frac{\sin 26^\circ}{2} \\ \sin 13^\circ \cdot \cos 13^\circ &= \frac{\sqrt{1-p^2}}{2} \end{aligned}$	✓ for the reduction <i>vir die reduksie</i> ✓ for the answer <i>vir die antwoord</i>	(2)
5.2.1	$\begin{aligned} &\frac{\cos(-\theta) \cdot \tan(180^\circ + \theta)}{2 \cos(90^\circ + \theta)} \\ &= \frac{\cos \theta \cdot \tan \theta}{-2 \sin \theta} \\ &= \frac{\cos \theta \cdot \frac{\sin \theta}{\cos \theta}}{-2 \sin \theta} \\ &= -\frac{1}{2} \end{aligned}$	✓ $\cos \theta$ ✓ $\tan \theta$ ✓ $-2 \sin \theta$ ✓ $\frac{\sin \theta}{\cos \theta}$ ✓ for the answer <i>vir die antwoord</i>	(5)
5.2.2	$\begin{aligned} &1 + 2 \cos 105^\circ \sin 15^\circ \\ &= 1 + 2 \cos 75^\circ \sin 15^\circ \\ &= 1 + 2 \sin 15^\circ \sin 15^\circ \\ &= 1 - \sin 30^\circ \\ &= 1 - \frac{1}{2} \\ &= \frac{1}{2} \end{aligned}$	✓ for reduction of $\cos 105^\circ$ <i>vir reduksie van $\cos 105^\circ$</i> ✓ for reduction of $\cos 75^\circ$ <i>vir reduksie van $\cos 75^\circ$</i> ✓ for $\sin 30^\circ$ <i>vir $\sin 30^\circ$</i> ✓ for the answer <i>vir die antwoord</i>	(4)

<p>5.3.1</p>	$\frac{1 - \cos 2x - \sin x}{\sin 2x - \cos x} = \tan x$ <p>LHS:</p> $\frac{1 - (1 - 2\sin^2 x) - \sin x}{2\sin x \cos x - \cos x}$ $= \frac{2\sin^2 x - \sin x}{2\sin x \cos x - \cos x}$ $= \frac{\sin x(2\sin x - 1)}{\cos x(2\sin x - 1)}$ $= \tan x = \text{RHS}$	<ul style="list-style-type: none"> ✓ expansion of $\cos 2x$ <i>uitbreiding van $\cos 2x$</i> ✓ expansion of $\sin 2x$ <i>uitbreiding van $\sin 2x$</i> ✓ for the simplification <i>vir die vereenvoudiging</i> ✓ taking out HCF <i>uithaal van GGD</i> 	<p>(4)</p>
<p>5.3.2</p>	<p>$\sin 2x = \cos x$</p> <p>$x = -90^\circ ; 30^\circ ; 90^\circ$ and/en 150°</p>	<ul style="list-style-type: none"> ✓ for/vir $\sin 2x = \cos x$ ✓ for any 2 answers <i>vir enige 2 antwoorde</i> ✓ for any other 2 answers <i>vir enige 2 antwoorde</i> 	<p>(3)</p>
<p>5.4</p>	<p>$\sin^2 x + 2\sin x \cos x = 3\cos^2 x$</p> <p>$\sin^2 x + 2\sin x \cos x - 3\cos^2 x = 0$</p> <p>Divide every term by/<i>Deel elke term deur</i> $\cos^2 x$</p> <p>$\tan^2 x + 2\tan x - 3 = 0$</p> <p>$(\tan + 3)(\tan - 1) = 0$</p> <p>$\tan x = -3$ or/of $\tan x = 1$</p> <p>$x = 108,43^\circ + 180^\circ \cdot k$ or/of $x = 45^\circ + 180^\circ \cdot k$</p> <p>where/<i>waar</i> $k \in Z$</p> <p style="text-align: center;">OR/OF</p> <p>$\sin^2 x + 2\sin x \cos x = 3\cos^2 x$</p> <p>$\sin^2 x + 2\sin x \cos x - 3\cos^2 x = 0$</p> <p>$(\sin x + 3\cos x)(\sin x - \cos x) = 0$</p> <p>$\sin x = -3\cos x$ or/of $\sin x = \cos x$</p> <p>$\tan x = -3$ or/of $\tan x = 1$</p> <p>$x = 108,43^\circ + 180^\circ \cdot k$</p> <p>or/of $x = 45^\circ + 180^\circ \cdot k$</p> <p>where/<i>waar</i>, $k \in Z$</p>	<ul style="list-style-type: none"> ✓ for standard form <i>vir standaardvorm</i> ✓ for dividing by $\cos^2 x$ <i>vir deling deur $\cos^2 x$</i> ✓ for the factors <i>vir die faktore</i> ✓ for values of $\tan x$ <i>vir waardes van $\tan x$</i> ✓✓ for the answers <i>vir die antwoorde</i> <ul style="list-style-type: none"> ✓ for standard form <i>vir standaardvorm</i> ✓ for the factors <i>vir die faktore</i> ✓ for isolating $\sin x$ <i>vir isolering van $\sin x$</i> ✓ for values of $\tan x$ <i>vir waardes van $\tan x$</i> ✓✓ for the answers <i>vir die antwoorde</i> 	<p>(7)</p>
			<p>[30]</p>

QUESTION 6/VRAAG 6

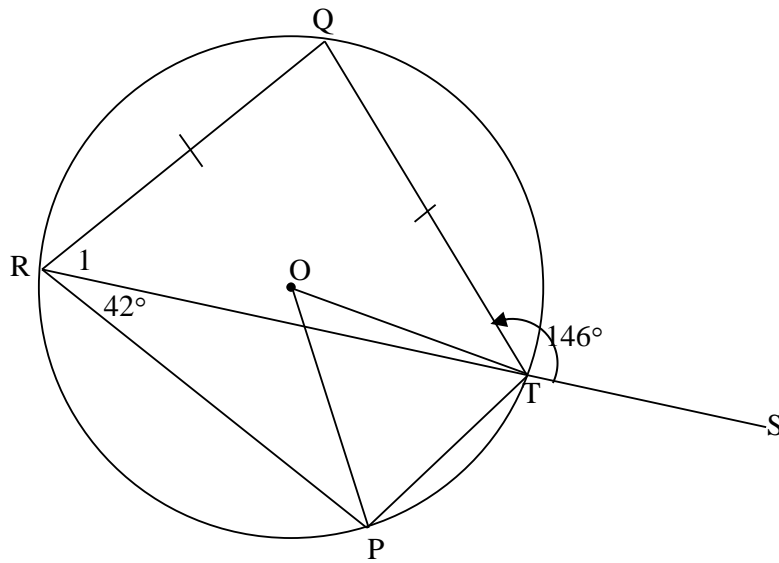
6.1		<ul style="list-style-type: none"> ✓ shape vorm ✓ start / end points begin / eind punte ✓ TP at / DP by 90° 	(3)	
6.2.1	Period / Periode = 180°		✓ answer	(1)
6.2.2	$-3 \leq y \leq -1$ <p style="text-align: center;">OR/OF</p> $y \in [-3 ; -1]$	<ul style="list-style-type: none"> ✓ for/vir -3 and/en -1 ✓ for the answer in correct notation vir die antwoord in korrekte notasie 	(2)	
6.3	$h(x) = -\sin x - 1$ Maximum distance/Maksimum afstand = 2 units/eenhede	<ul style="list-style-type: none"> ✓ for/vir $h(x)$ ✓ answer / antwoord 	(2)	
6.4	$f(x) \cdot g'(x) > 0$ $-90^\circ < x < 90^\circ$	✓✓ answer / antwoord	(2)	
6.5	Graph shifted 1 unit down and 15° to the right. Grafiek het 1 eenheid af en 15° na regs geskuif.	<ul style="list-style-type: none"> ✓ for 1 unit down / vir 1 eenheid af ✓ for 15° to the right / vir 15° na regs 	(2)	
			[12]	

QUESTION 7/VRAAG 7



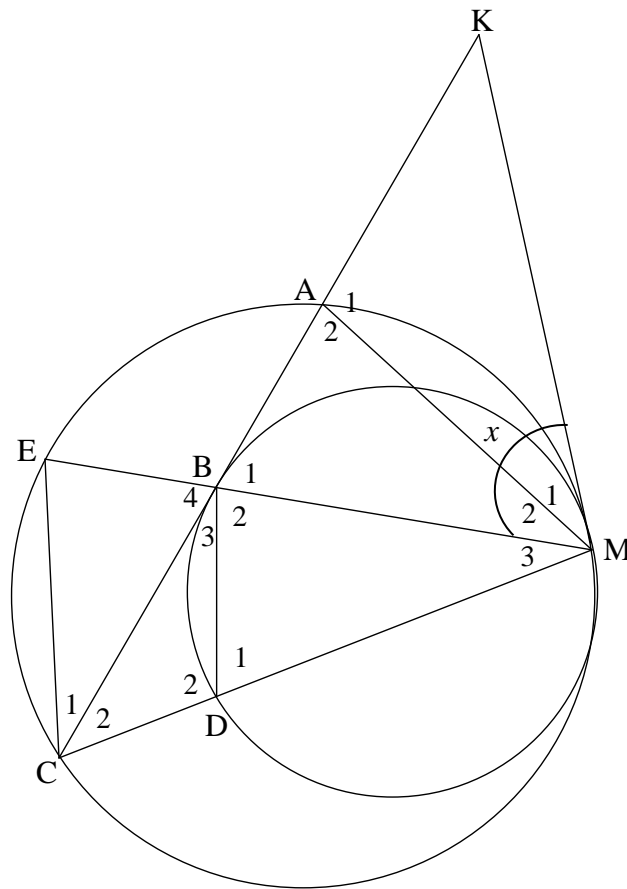
7.1	$\widehat{R}(30^\circ - x)$	✓ for answer / <i>vir antwoord</i>	(1)
7.2	$\frac{PQ}{\sin(30^\circ - x)} = \frac{300}{\sin 150^\circ}$ $\frac{PQ}{\sin(30^\circ - x)} = 600$ $PQ = 600 \sin(30^\circ - x)$	✓ for sine-rule <i>vir sinusreël</i> ✓ for/vir 600 ✓ for the answer <i>vir die antwoord</i>	(3)
7.3	$\tan 60^\circ = \frac{TP}{PQ}$ $TP = PQ \tan 60^\circ$ $TP = \sqrt{3} \cdot 600 \sin(30^\circ - x)$ $TP = \sqrt{3} \cdot 600 \cdot (\sin 30^\circ \cos x - \cos 30^\circ \sin x)$ $TP = \sqrt{3} \cdot 600 \left(\frac{1}{2} \cos x - \frac{\sqrt{3}}{2} \sin x \right)$ $TP = \sqrt{3} \cdot 300 (\cos x - \sin x)$	✓ for/vir $\tan 60^\circ$ ✓ for/vir $\sqrt{3} \cdot 600 \sin(30^\circ - x)$ ✓ for expansion <i>vir uitbreiding</i> ✓ for taking out common factor / <i>vir uithaal van</i> <i>gemene faktor</i>	(4)
			[8]

QUESTION 8/VRAAG 8



8.1	$\widehat{POT} = 84^\circ$ (\angle at centre) / (<i>Middelpunts \angle</i>)	✓ S ✓ R	(2)
8.2	$\widehat{QTR} = 34^\circ$ (\angle s on a straight line) (<i>\angle op 'n reguitlyn</i>) $\widehat{R_1} = 34^\circ$ (\angle s opp. = sides) / (<i>\angle teenoor = sye</i>)	✓ S and/en R ✓ S and/en R	(2)
8.3	$\widehat{RQT} = 112^\circ$ $\widehat{RPT} = 68^\circ$ (opp. \angle s of cq) / (<i>teenoorst. \angle e van kv</i>)	✓ S and/en R ✓ S ✓ R	(3)
			[7]

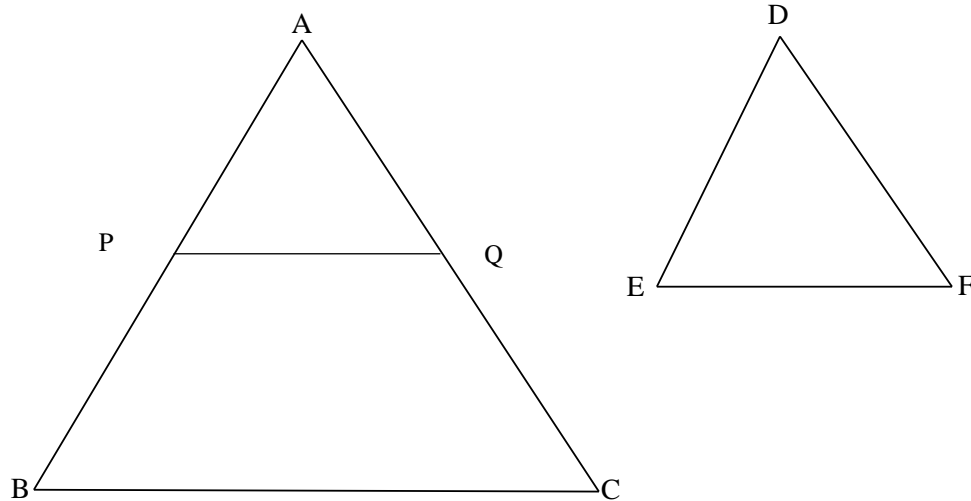
QUESTION 9/VRAAG 9



9.1	$\hat{B}_1 = x$ (tangents from common point) (raaklyne van gemene punt) $\hat{B}_4 = x$ (vertically opposite angles) (regeoorstaande hoeke) $\hat{D}_1 = x$ (tan/chord theorem) (raaklyn/koord stelling) $E\hat{C}M = x$ (tan/chord theorem) (raaklyn/koord stelling)	✓ S and/en R ✓ S and/en R ✓ S ✓ R ✓ S and/en R	(5)
9.2.1	$B\hat{D}M = E\hat{C}D = x$ (proven / bewys) $\therefore BD \parallel EC$ (corresponding angles =) (ooreenkomstige hoeke =)	✓ S ✓ R	(2)
9.2.2	$\hat{A}_2 = \hat{E}$ (angles in the same segment) (hoeke in dieselfde segment) $\hat{B}_2 = \hat{E}$ (corresponding angles = , $BD \parallel EC$) (ooreenkomstige hoeke = , $BD \parallel EC$) $\hat{A}_2 = \hat{B}_2$	✓ S ✓ R ✓ S and/en R	(3)

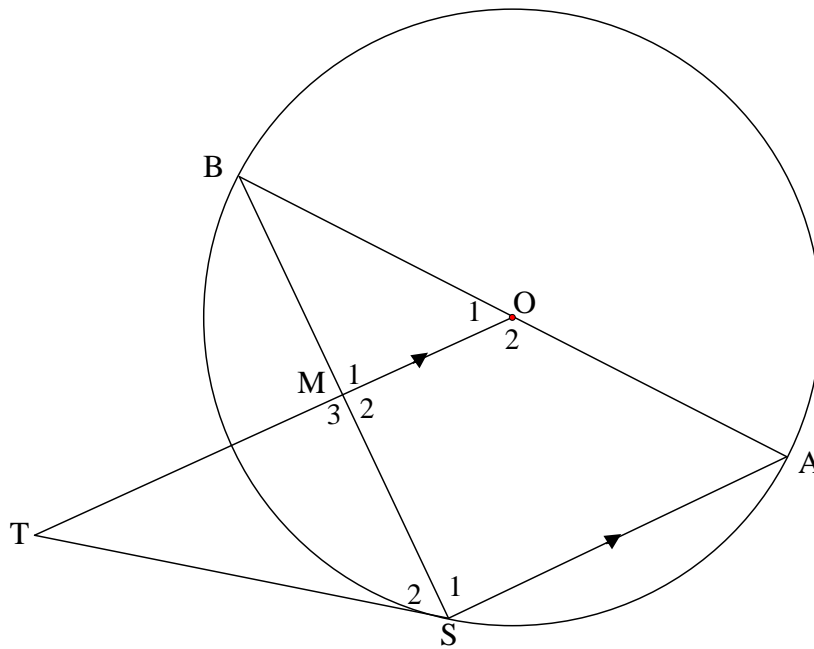
9.2.3	<p>In $\triangle MEC$:</p> <p>$CE \parallel DB$ (proven / bewys)</p> $\frac{ME}{MB} = \frac{MC}{MD}$ <p>(prop. int. Thm, $CE \parallel DB$) (eweredigheid st, $CE \parallel DB$)</p> $\therefore \frac{ME}{MC} = \frac{MB}{MD}$ $\therefore ME \times MD = MC \times MB$	<p>✓ S and/en R</p> <p>✓ S</p>	<p>(2)</p>
			[12]

QUESTION 10/VRAAG 10



<p>10.1</p>	<p>Construction: Mark off, on AB and AC, P and Q respectively such that $AP = DE$ and $AQ = DF$. <i>Konstruksie: Merk P en Q onderskeidelik op AB en AC af sodat $AP = DE$ en $AQ = DF$.</i></p> <p>In $\triangle PAQ$ and/en $\triangle EDF$:</p> <p>(1) $PA = ED$ (construction / <i>konstruksie</i>) (2) $\hat{A} = \hat{D}$ (given / <i>gegee</i>) (3) $QA = FD$ (construction / <i>konstruksie</i>) $\therefore \triangle PAQ \equiv \triangle EDF$ (SAS) $\therefore \hat{A}PQ = \hat{E}$ (congruency / <i>kongruensie</i>) But/Maar $\hat{B} = \hat{E}$ (given/<i>gegee</i>) $\therefore \hat{A}PQ = \hat{E}$ $\therefore PQ \parallel BC$ (corresponding \angles = / <i>ooreenkomstige. \angle e =</i>) $\therefore \frac{AP}{AB} = \frac{AQ}{AC}$ (prop. int. thm / <i>eweredigheid stelling</i>) But/Maar : $AP = DE$ and/en $AQ = DF$ (construction/<i>konstruksie</i>) $\therefore \frac{DE}{AB} = \frac{DF}{AC}$</p>	<p>✓ construction <i>konstruksie</i></p> <p>✓ S and/en R</p> <p>✓ S ✓ S ✓ R</p> <p>✓ S</p>	<p>(6)</p>
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10.2



10.2.1	$\hat{B}OM = \hat{S}_3$ (\angle s in the same segment) / (\angle e in dies. segment) $\hat{B}OM = \hat{A}$ (corresponding \angle s, $AS \parallel OM$) (ooreenkomstige \angle e, $AS \parallel OM$) $\therefore \hat{S}_3 = \hat{A}$ $\therefore TS$ is a tangent (conv. tan - chord thrm) TS is 'n raaklyn (omgekeerde raaklyn-koord stelling)	\checkmark S \checkmark R \checkmark S and/en R \checkmark R	(4)
10.2.2	$\hat{S}_2 = 90^\circ$ (\angle s in a semi - circle) / (\angle in semi - sirkel) $\hat{M}_3 = 90^\circ$ (corr. \angle s / ooreenk. \angle e, $AS \parallel OM$) $\therefore TS$ is diameter (conv. \angle s in a semi - circle) TS is 'n middellyn (omgek. \angle e in semi - sirkel)	\checkmark S \checkmark R \checkmark S \checkmark R \checkmark R	(5)
10.2.3	In $\triangle ABS$ and/en $\triangle STM$ (1) $\hat{A} = \hat{S}_3$ (proven / bewys) (2) $\hat{B} = \hat{S}TM$ (\angle s in the same segment) / (\angle e in dies. segment) (3) $\hat{S}_2 = \hat{M}_3$ (proven / bewys) $\triangle ABS \parallel \triangle STM$ ($\angle \angle \angle$)	\checkmark S \checkmark S \checkmark R or/of 3 rd angle/ 3 ^{de} hoek	(3)
10.2.4	$\therefore \frac{AS}{SM} = \frac{SB}{MT}$ (similarity / gelykvormigheid) $AS \cdot MT = SM \cdot SB$ But/Maar : $SB = 2SM$ (Midpoint thrm / prop.int. , $OM \perp AS$) (Middelpunt stelling / Ewer., $OM \perp AS$) $\therefore 2SM^2 = AS \cdot MT$	\checkmark S \checkmark S \checkmark R	(3)
			[21]
TOTAL/TOTAAL:			150