basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE/ *NASIONALE SENIOR SERTIFIKAAT*

GRADE/*GRAAD* 12

MATHEMATICS P2/*WISKUNDE V2*

FEBRUARY/MARCH/*FEBRUARIE/MAART* 2018

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

These marking guidelines consist of 22 pages./
Hierdie nasienriglyne bestaan uit 20 bladsye.

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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	
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 die 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.

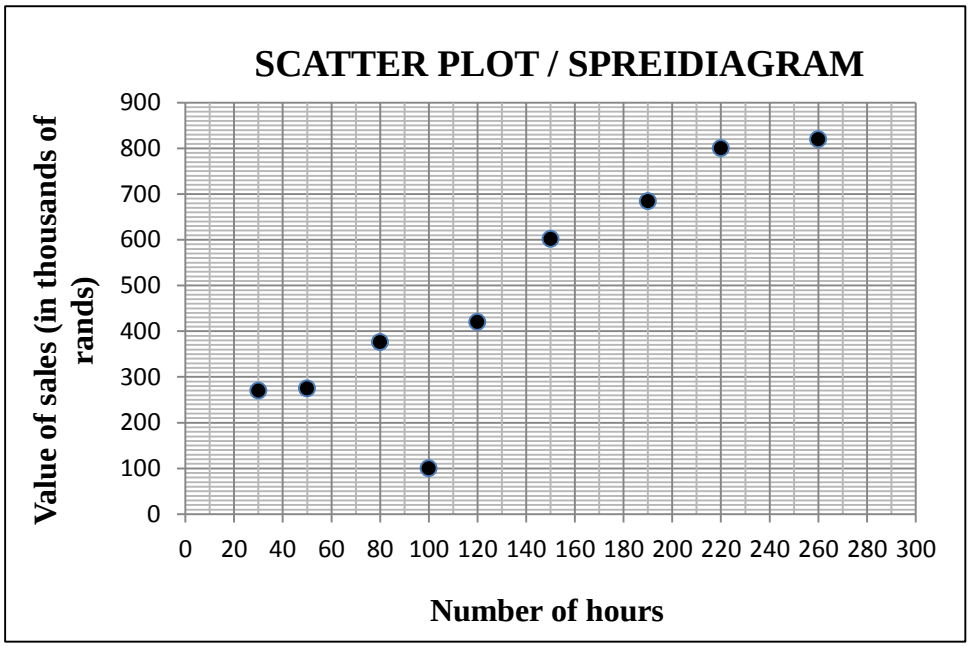
QUESTION/*VRAAG* 1

Days/*Dae*	1	2	3	4	5	6	7	8	9	10
Units of blood/ *Eenhede bloed*	45	59	65	73	79	82	91	99	101	106

1.1.1	$\bar{x} = \frac{800}{10}$ $= 80$ Answer only: full marks	✓ 800 (addition of units) ✓ answer (CA if ÷ 10) (2)
1.1.2	$\sigma = 18{,}83$ No penalty for rounding	✓✓ answer (A) (2)
1.1.3	$(61{,}17\,;\,98{,}83)$ Days 1, 2, 8, 9 and 10 lie outside 1 standard deviation from the mean $\therefore$ 5 days Correct answer only: full marks provided that 1.1.1. & 1.1.2 both correct	✓ mean – 1 SD ✓ mean + 1 SD ✓ answer (3)
1.2.1	Skewed to the left or negatively skewed/ *Skeef na links of negatief skeef*	✓ answer (1)
1.2.2	A = 65 B = 99 Answers without labelling: 1/2	✓ answer ✓ answer (2)
1.3	New total = 95 × 10 = 950 $\therefore$ Units not counted = 950 – 800 = 150	✓ answer (CA from 1.1.1) (1) **[11]**

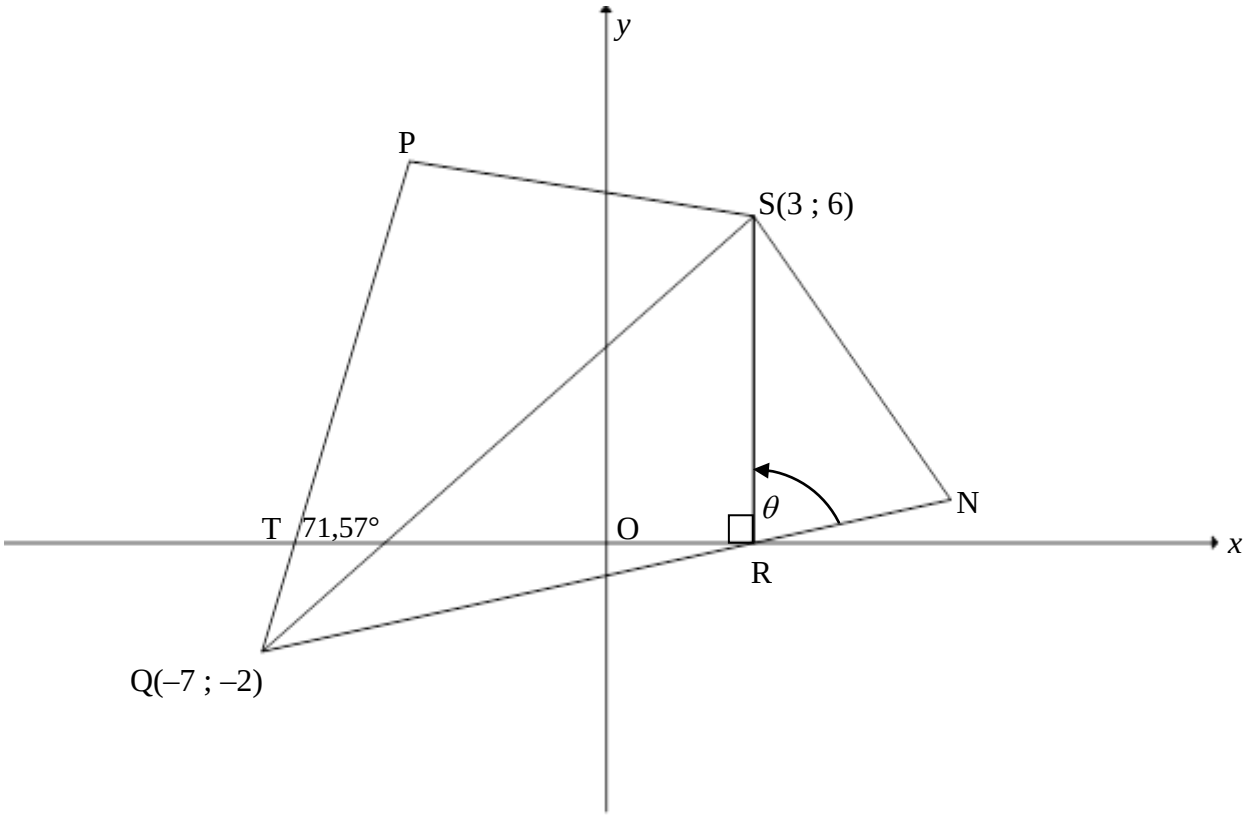
QUESTION/*VRAAG* 2

Number of hours Aantal uur	30	50	80	100	120	150	190	220	260
Value of sales (in thousands of rands) Waarde van verkope (in duisend rand)	270	275	376	100	420	602	684	800	820



2.1	Outlier/*Uitskieter*: (100 ; 100)	accept: 100 as answer	✓ answer (1)
2.2	$a = 94{,}50273\ldots$ $b = 2{,}913729\ldots$ $\hat{y} = 94{,}50 + 2{,}91x$	Integral values: max 2/3 Swopped *a* and *b*: 2/3	✓ value of *a* ✓ value of *b* ✓ equation (3)
2.3	$\hat{y} = 2{,}91(240) + 94{,}50$ (CA from 2.1) $= 792{,}90$ Value = R793 000 **OR/*OF*** $\hat{y} = 793{,}7978142$ (calculator) Value = R794 000	Penalise 1 mark if answer not in thousands of Rands	✓ substitution ✓ answer in thousands of Rands (2) ✓✓ answer in thousands of Rands (2)
2.4	$b = 2{,}913729\ldots$ ∴ R2 914 **OR/*OF*** R2 910 (calculator)	Answer only: full marks	✓ value of *b* ✓ answer (2) **[8]**

QUESTION/*VRAAG* 3



3.1	$x = 3$	✓ answer (1)
3.2	$m_{QP} = \tan 71{,}57°$ $= 3$ Answer only: full marks	✓ $m_{QP} = \tan 71{,}57°$ ✓ answer (2)
3.3	$y = mx + c$ $\quad$ $y - y_1 = m(x - x_1)$ $-2 = 3(-7) + c$ or $y + 2 = 3(x + 7)$ $y = 3x + 19$	(*m* CA from 3.2 if > 0) ✓ substitution of *m* & Q ✓ equation (2)
3.4	R(3 ; 0) $QR = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $= \sqrt{(-7 - 3)^2 + (-2 - 0)^2}$ $= \sqrt{104}$ or $2\sqrt{26}$	(wrong R: CA if $x > 0$) ✓ substitution ✓ answer (in surd form) (2)

3.5

$\tan(90° - \theta) = m_{QR}$

$= \frac{0-(-2)}{3-(-7)}$ Answer only: full

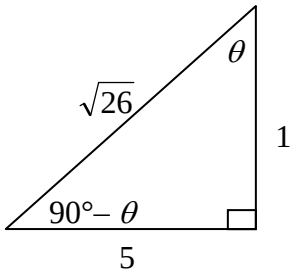
$= \frac{1}{5}$ $\tan\theta = \frac{1}{5}$: 1/3

(wrong R: CA if $x > 0$)
✓ gradient of QR/RN/QN
✓ substitution of Q & R
✓ answer
(3)

3.6

$RN = \frac{1}{2}.2\sqrt{26} = \sqrt{26}$

SR = 6



✓ RN
✓ SR
✓ diagram (5 & $\sqrt{26}$)

Area $\Delta RSN = \frac{1}{2}$ SR . RN. $\sin\theta$

$= \frac{1}{2} \times 6 \times \sqrt{26} \times \frac{5}{\sqrt{26}}$

= 15 square units

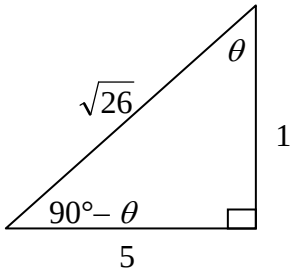
✓ use of correct area rule
✓ substitution of $\sin\theta$
✓ answer
(6)

using calculator: max 4 marks

OR/*OF*

$RN = \frac{1}{2}.2\sqrt{26} = \sqrt{26}$

SR = 6



✓ RN
✓ SR
✓ diagram

Area $\Delta RSN = \frac{1}{2}$ SR . RN. $\sin\theta$

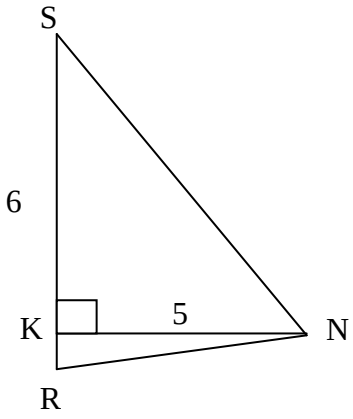
$= \frac{1}{2}(6)(\frac{1}{2}QP).\sin\theta$

$= \frac{3}{2}(\sqrt{104}).\sin\theta$

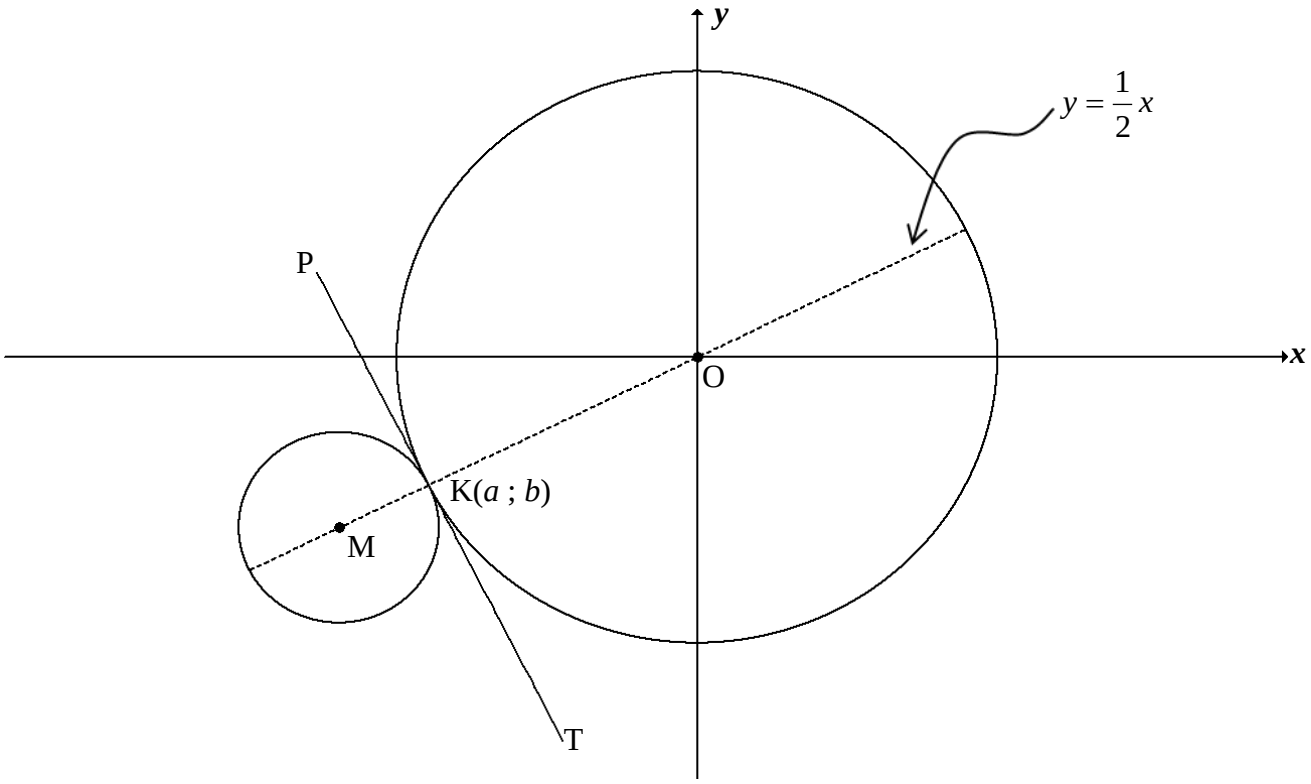
$= \frac{3}{2}(\sqrt{104})\left(\frac{5}{\sqrt{26}}\right)$

$= 15$ square units

✓ use of correct area rule
✓ substitution of $\sin\theta$
✓ answer
(6)

	OR/*OF*	
	SR = 6 ⊥height = 5	✓ SR ✓✓ ⊥ height
		
	$A = \frac{1}{2}SR \times \perp h$ $= \frac{1}{2}(6)(5)$ = 30 square units	✓ use of correct area formula ✓ substitution of $\sin\theta$ ✓ answer (6)
	Using $A = \frac{1}{2}b \times \perp h$ incorrectly: max 1/6	
		[16]

QUESTION/*VRAAG* 4



4.1	$OK = \sqrt{180}$ or $6\sqrt{5}$	✓ answer (1)
4.2	$a^2 + b^2 = 180$ $b = \frac{1}{2}a$ $a^2 + \left(\frac{1}{2}a\right)^2 = 180$ $a^2 + \frac{1}{4}a^2 = 180$ $a^2 = 144 \quad \therefore a = -12$ $b = \frac{1}{2}(-12)$ K (–12 ; – 6) (given) **OR/*OF*** $a^2 + b^2 = 180$ $a = 2b$ $(2b)^2 + b^2 = 180$ $5b^2 = 180$ $b^2 = 36 \quad \therefore b = -6$ $a = 2(-6)$ K (–12 ; – 6) (given)	No penalty if *x* and *y* are not converted to *a* and *b* Error in simplification: max 2/4	✓ *b* in terms of *a* ✓ substitution ✓ $a^2 = 144$ ✓ substitution (4) ✓ *a* in terms of *b* ✓ substitution ✓ $b^2 = 36$ ✓ substitution (4)

4.3.1

$m_{OK} = \frac{1}{2}$ $[y = \frac{1}{2}x]$

$m_{PT} = -2$ [radius ⊥ tangent/*raaklyn*]

$y = mx + c$ **OR/*OF*** $y - y_1 = m(x - x_1)$

$-6 = -2(-12) + c$ $y - (-6) = -2(x - (-12))$

$c = -30$ $c = -30$

$y = -2x - 30$

Using $m = \frac{1}{2}$: 0/3

Using $m = -\frac{1}{2}$ *or* 2: 2/3

✓ $m_{PT} = -2$

✓ substitution of m & K(–12 ; – 6)

✓ equation

(3)

4.3.2

3MK = OK

$\Rightarrow$OM = $\frac{4}{3}$OK

$M = \frac{4}{3}(-12;-6)$

$\therefore$M(–16 ; –8)

Answer only: 0/6

✓ 3MK = OK

✓ OM = $\frac{4}{3}$OK

✓✓ $M = \frac{4}{3}(-12;-6)$

✓ *x*-coordinate

✓ *y*-coordinate

(6)

OR/*OF*

3MK = OK

$9MK^2 = OK^2 = 180$

$\therefore MK^2 = 20$

Let M(x ; y), then :

$(x+12)^2 + (y+6)^2 = 20$

$(x+12)^2 + \left(\frac{1}{2}x + 6\right)^2 = 20$

$x^2 + 24x + 144 + \frac{1}{4}x^2 + 6x + 36 = 20$

$\frac{5}{4}x^2 + 30x + 160 = 0$

$x^2 + 24x + 128 = 0$

$(x+16)(x+8) = 0$

$x = -16$ $x \neq -8$ [since M is outside the large circle]

$y = -8$

M(–16; – 8)

✓ 3MK = OK

✓ $MK^2 = 20$

✓ equation

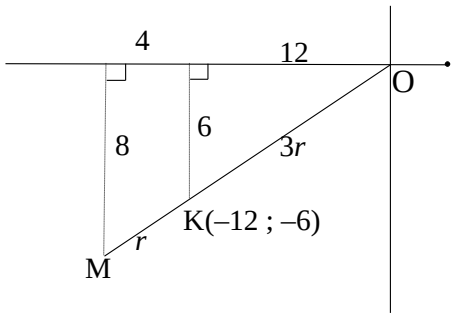
✓ substitution

✓ *x*-coordinate

✓ *y*-coordinate

(6)

OR/*OF*



$\therefore$M(–16 ; –8)

✓ 3MK = OK

✓✓ diagram with values **OR** valid explanation

✓ *x*-coordinate

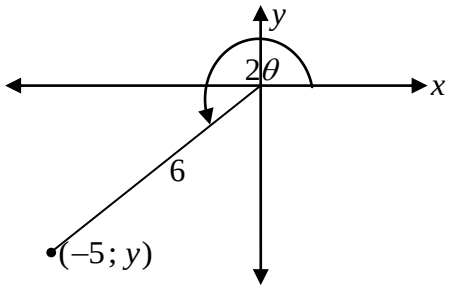
✓ *y*-coordinate

(6)

OR/*OF*

	3MK = OK $9MK^2 = OK^2 = 180$ $\therefore MK^2 = 20$ Let M(x ; y), then $y = \frac{1}{2}x$: $(x+12)^2 + (y+6)^2 = 20$ $(x+12)^2 + \left(\frac{1}{2}x+6\right)^2 = 20$ $4(x+12)^2 + (x+12)^2 = 80$ $(x+12)^2 = 16$ $x+12 = \pm 4$ $x = -16 \quad x \neq -8$ [since M is outside the large circle] $y = -8$ M$(-16;-8)$	✓ 3MK = OK ✓ $MK^2 = 20$ ✓ equation ✓ substitution ✓ x-coordinate ✓ y-coordinate (6)
4.3.3	$(x-(-16))^2 + (y-(-8))^2 = \left(\frac{1}{3}\sqrt{180}\right)^2$ $(x+16)^2 + (y+8)^2 = 20$	✓ LHS (CA from 4.3.2) ✓ RHS (CA from 4.1) (2)
4.4	$OK < r < OK + 2KM$ $\sqrt{180} < r < \sqrt{180} + \frac{2}{3}\sqrt{180}$ Answer only: full marks (No need to simplify) $6\sqrt{5} < r < 10\sqrt{5}$	✓✓ values ✓ inequality (3)
4.5	$x^2 + 32x + (16)^2 + y^2 + 16y + (8)^2 = 256 + 64 - 240$ $(x+16)^2 + (y+8)^2 = 80$ New circle/*nuwe sirkel*: Centre/*middelpt* $(-16;-8)$ & $r = 4\sqrt{5}$ Original circle/*oorspronklike sirkel*: M$(-16;-8)$ & $r = 2\sqrt{5}$ This circle will never cut the circle with centre M as they have the **same centre (concentric circles) but unequal radii**/*Hierdie sirkel sal nooit die sirkel met middelpt M sny nie, want hulle is* ***konsentries, want het dieselfde middelpunt met verskillende radii***.	✓ equation in centre, radius form ✓ Centre: $(-16;-8)$ ✓ $r = 4\sqrt{5}$ (new) ✓ $r = 2\sqrt{5}$ (original) ✓ conclusion ("concentric" must be stated) (5) **[24]**

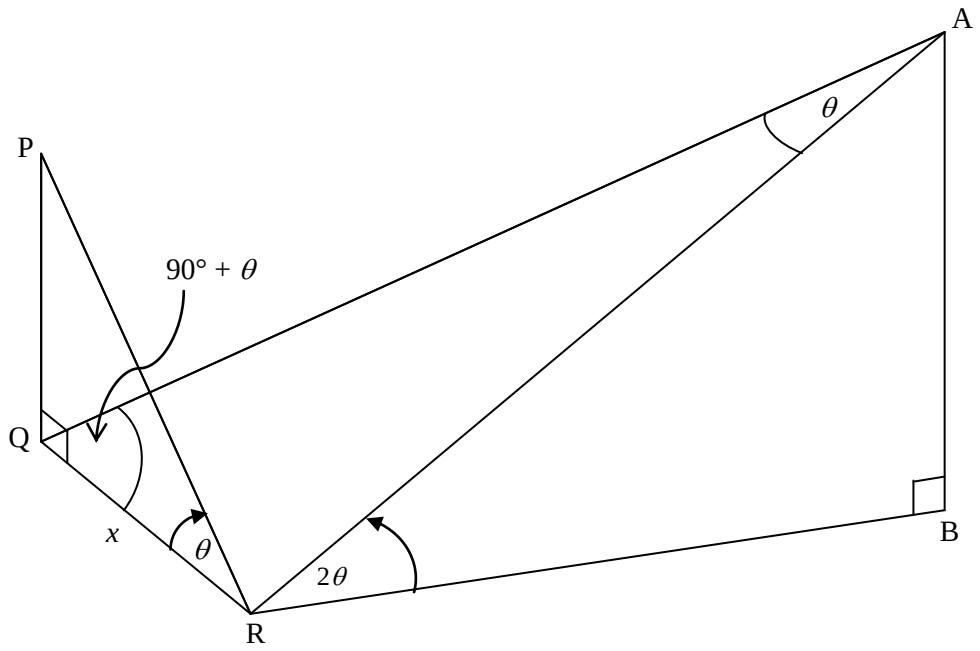
QUESTION/*VRAAG* 5

5.1.1	$\cos 2\theta = -\frac{5}{6}$, where $2\theta \in [180°; 270°]$  	✓ diagram (3rd quadrant only)
	$y^2 = 6^2 - (-5)^2$ [Pythagoras] $y = \pm\sqrt{11}$ (5 ; *y*) is in 3rd quadrant: $\therefore y = -\sqrt{11}$	✓ using Pythagoras ✓ *y* – value
no calculator in 5.1	$\sin 2\theta = -\frac{\sqrt{11}}{6}$	✓ answer (4)
	OR/*OF* Getting to $\sin 2\theta = \frac{\sqrt{11}}{6}$: 3/4	
	$\sin^2 2\theta = 1 - \cos^2 2\theta$ $= 1 - \left(-\frac{5}{6}\right)^2$ $= 1 - \frac{25}{36}$ $= \frac{11}{36}$ $\sin 2\theta = -\frac{\sqrt{11}}{6}$	.✓ $\sin^2 2\theta = 1 - \cos^2 2\theta$ ✓ substitution ✓ value of $\sin^2 2\theta$ ✓ answer (4)
5.1.2	$\cos 2\theta = 1 - 2\sin^2\theta$ $2\sin^2\theta = 1 - \cos 2\theta$ $\sin^2\theta = \frac{1 - \left(-\frac{5}{6}\right)}{2}$ $= \frac{11}{6} \times \frac{1}{2}$ $= \frac{11}{12}$	✓ $\cos 2\theta = 1 - 2\sin^2\theta$ ✓ substitution ✓ answer (3)

5.2	$\sin(180°-x).\cos(-x)+\cos(90°+x).\cos(x-180°)$ $=\sin x.\cos x-\sin x(-c$ $=2\sin x.\cos x$ $=\sin 2x$ Second line written as sin*x* cos *x* + sin*x* cos *x*: max 5/6	✓ $\sin x$ ✓ $\cos x$ ✓ $-\sin x$ ✓ $-\cos x$ ✓ simplification ✓ answer (6)
5.3	$\sin 3x.\cos y+\cos 3x.\sin y$ $\sin(3x+y)$ $=\sin 270°$ $=-1$	✓ compound angle ✓ answer (2)
5.4.1	$2\cos x=3\tan x$ $2\cos x=\dfrac{3\sin x}{\cos x}$ $2\cos^2 x=3\sin x$ $2(1-\sin^2 x)=3\sin x$ $2-2\sin^2 x=3\sin x$ $2\sin^2 x+3\sin x-2=0$	✓ $\tan x=\dfrac{\sin x}{\cos x}$ ✓ multiplying by $\cos\theta$ ✓ $\cos^2 x=1-\sin^2 x$ (3)
5.4.2	$2\sin^2 x+3\sin x-2=0$ $(2\sin x-1)(\sin x+2)=0$ $\sin x=\dfrac{1}{2}$ or $\sin x=-2$ (no solution) $x=30°+k.360°$ or $x=150°+k.360°$; $k\in Z$	✓ factors ✓ both values of $\sin x$ ✓ no solution ✓ $30°+k.360°$ ✓ $150°+k.360°$; $k\in Z$ (5)
5.4.3	$5y=30°+k.360°$ or $5y=150°+k.360°$ $y=6°+k.72°$ or $y=30°+k.72°$ $\therefore y=144°+6°$ or $y=144°+30°$ $y=150°$ or $y=174°$ **OR/*OF*** $144°\le y\le 216°$ $720°\le 5y\le 1080°$ $5y=750°$ or $5y=870°$ $y=150°$ or $y=174°$	✓ $y=6°+k.72°$ ✓ $y=30°+k.72°$ ✓ 150° ✓ 174° (4) ✓ $5y=750°$ ✓ $5y=870°$ ✓ 150° ✓ 174° (4)
5.5.1	$g(x)=-4\cos(x+30°)$ maximum value = 4	✓ answer (1)

5.5.2	range of/*waardeversameling van* $g(x)$: $-4 \le y \le 4$ **OR/*OF*** $y \in [-4\ ;\ 4]$ $\therefore$ range of/*waardeversameling van* $g(x) + 1$: $-3 \le y \le 5$ **OR/*OF*** $y \in [-3\ ;\ 5]$ Answer only: full marks	✓ range of $g(x)$ ✓ answer (2)
5.5.3	$y = -4\cos(x + 30°)$ shifted to the left/*skuif na links*: $y = -4\cos(x + 30° + 60°)$ $= -4\cos(x + 90°)$ $= 4\sin x$ $\therefore\ h(x) = -4\sin x$ Answer only: full marks	✓ shift of 60° to the left ✓ reduction ✓ equation of h (3) **[33]**

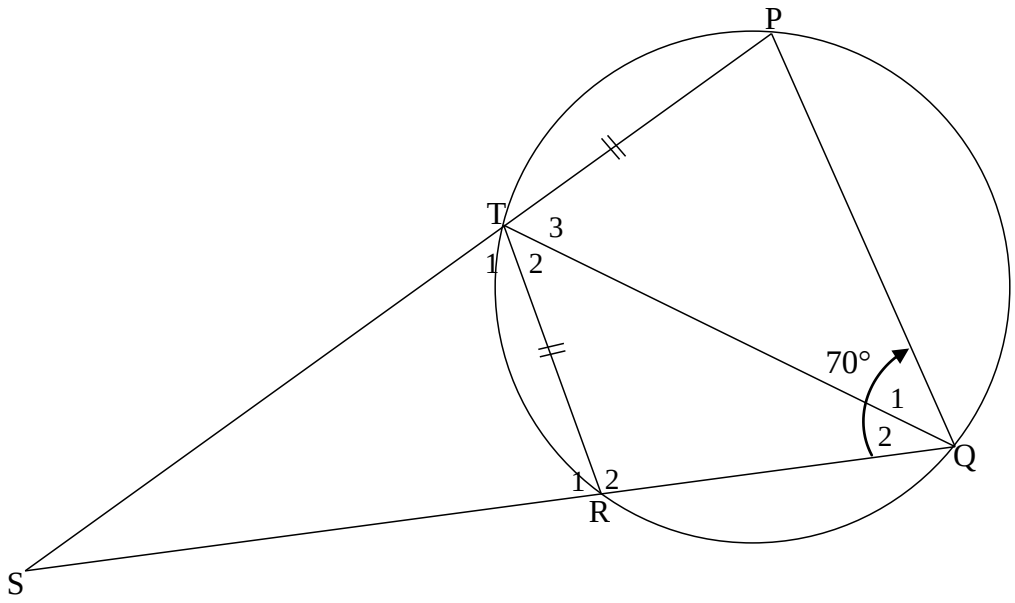
QUESTION/*VRAAG* 6



6.1.1	$\tan\theta = \frac{PQ}{QR} = \frac{PQ}{x}$ $\therefore PQ = x\tan\theta$	Answer only: full marks	✓ trig ratio ✓ answer (2)
	OR/*OF*		
	$\frac{QR}{\sin P} = \frac{PQ}{\sin P\hat{R}Q}$ $\therefore PQ = \frac{x.\sin\theta}{\sin(90° - \theta)}$		✓ trig ratio ✓ answer (2)
6.1.2	$\frac{AR}{\sin A\hat{Q}R} = \frac{QR}{\sin Q\hat{A}R}$ $AR = \frac{x\sin(90° + \theta)}{\sin\theta}$	Answer only: full marks	✓ use of sine rule ✓ substitution into sine rule correctly (2)

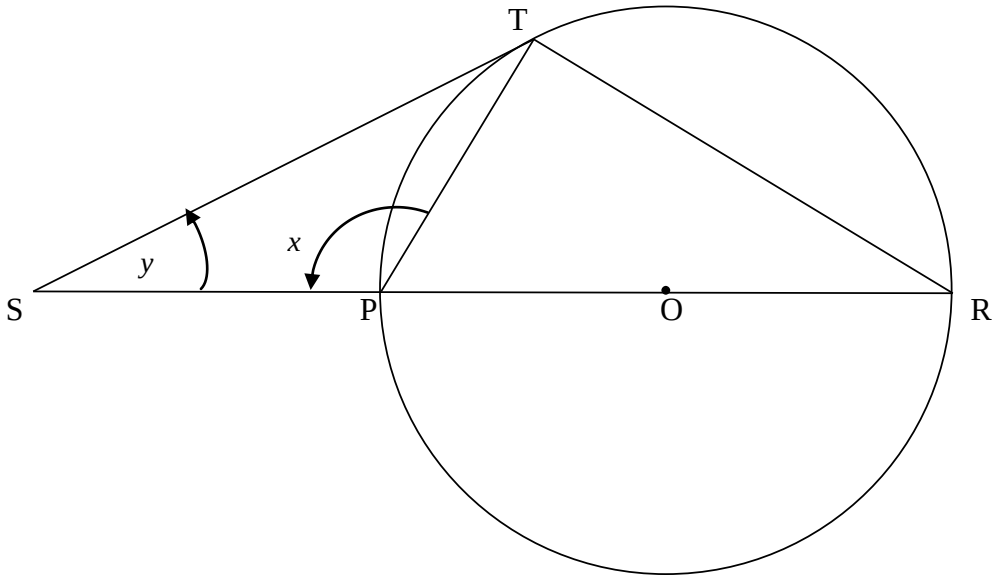
6.2	$\sin 2\theta = \frac{AB}{AR}$ $AB = AR\sin 2\theta$ $= \frac{x\sin(90° + \theta).\sin 2\theta}{\sin\theta}$ $= \frac{x\cos\theta.\sin 2\theta}{\sin\theta}$ $= \frac{x\cos\theta.2\sin\theta\cos\theta}{\sin\theta}$ $= 2x\cos^2\theta$	✓ substitution into trig ratio and AB as subject ✓ substitution of AR ✓ co-ratio ✓ $\sin 2\theta = 2\sin\theta\cos\theta$ (4)
6.3	$\frac{AB}{QP} = \frac{2x\cos^2 12°}{x\tan 12°}$ $= 9$	✓ substitution CA from 6.1.1) ✓ answer (2) **[10]**

QUESTION/*VRAAG* 7



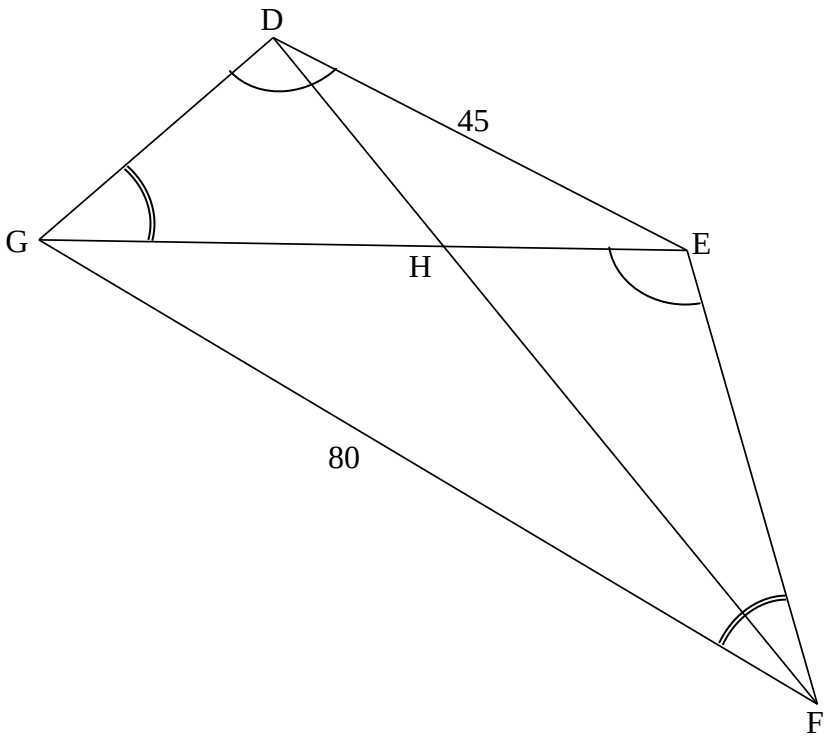
7.1.1	$\hat{T}_1 = 70°$	[ext ∠ of cyclic quad/*buite ∠ van koordevh*]	✓ S ✓ R (2)
7.1.2	$\hat{Q}_1 = \hat{Q}_2 = 35°$	[equal chords;equal∠s/*gelyke koorde; gelyke∠e*]	✓ S ✓ R (2)
7.2.1	$\hat{T}_2 = \hat{Q}_1 = 35°$	[alt ∠s/*verwiss ∠e*; PQ || TR]	✓ S ✓ R (2)
7.2.2	$\frac{PT}{TS} = \frac{QR}{RS}$ $\therefore \frac{TR}{TS} = \frac{QR}{RS}$	[prop theorem/*eweredighst*; PQ || TR] [PT = TR]	✓ S ✓ R (2) **[8]**

QUESTION/*VRAAG* 8



	$P\hat{T}R = 90°$ [$\angle$ in semi-circle/*halfsirkel*] $x = 90° + \hat{R}$ [ext/*buite* $\angle$ of/*van* Δ] $\therefore \hat{R} = x - 90°$ $S\hat{T}P = x - 90°$ [tan chord theorem/*raakl koordstelling*] $x + x - 90° + y = 180°$ [sum of/*som van* $\angle$s/*e* in Δ] $\therefore y = 270° - 2x$	✓ S/R ✓ S/R ✓ S ✓R ✓ S ✓ answer **[6]**

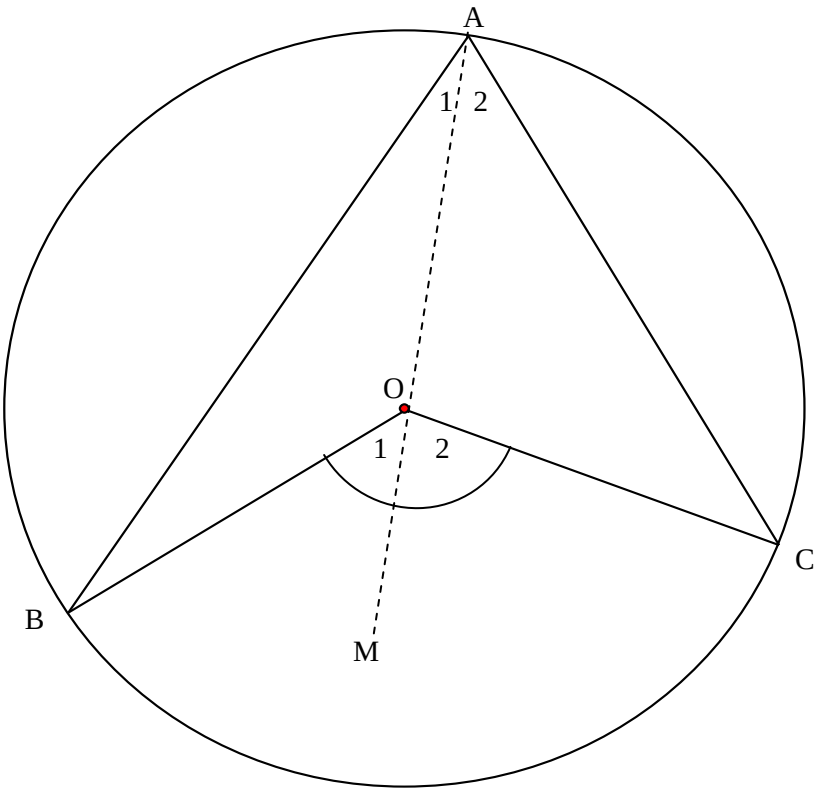
QUESTION/*VRAAG* 9



9.1	equiangular Δs/*gelykhoekige Δe* **OR/*OF*** (∠∠∠)		✓ answer (1)
9.2	$\therefore \frac{GE}{GF} = \frac{DE}{GE}$ $GE^2 = 45 \times 80$ $GE = 60$	[||| Δs]	✓ proportion ✓ substitution ✓ answer (3)
9.3	In ΔDEH and ΔFGH: $D\hat{H}E = F\hat{H}G$ $D\hat{E}H = F\hat{G}H$ $E\hat{D}H = G\hat{F}H$ $\therefore \Delta DEH \text{ ||| } \Delta FGH$ **OR/*OF*** In ΔDEH and ΔFGH: $D\hat{H}E = F\hat{H}G$ $D\hat{E}H = F\hat{G}H$ $\therefore \Delta DEH \text{ ||| } \Delta FGH$	 [vert opp ∠s =/*regoorst ∠e* =] [||| Δs] [sum of/*som van* ∠s/*e* in Δ] [vert opp ∠s =/*regoorst ∠e* =] [||| Δs] [∠∠∠]	 ✓ S/R ✓ S/R ✓ S (3) ✓ S/R ✓ S/R ✓ R (3)

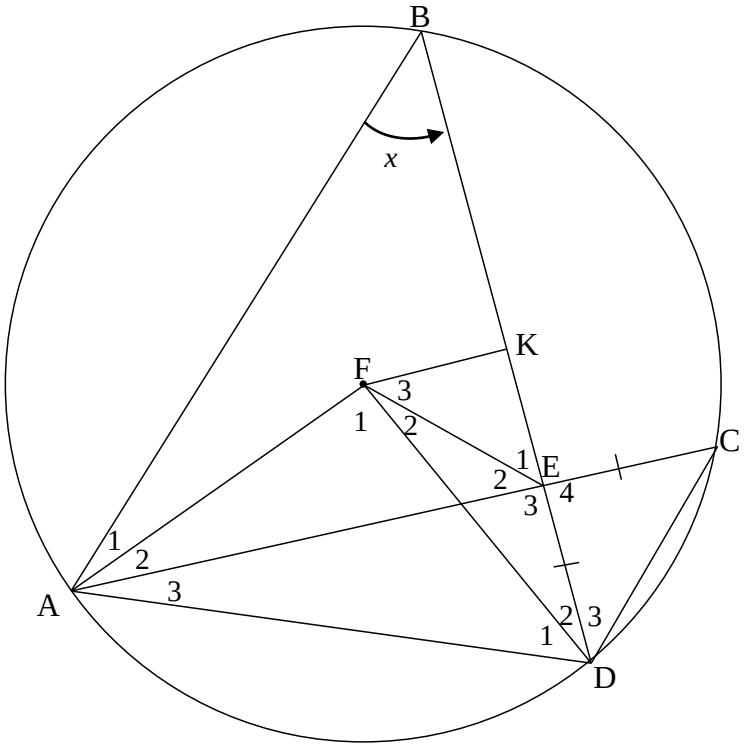
9.4	$\frac{GH}{EH} = \frac{FG}{DE}$ $\frac{GH}{60 - GH} = \frac{80}{45}$ $45\ GH = 80(60 - GH)$ $45\ GH = 4800 - 80\ GH$ $125\ GH = 4800$ $GH = 38{,}4$	[||| Δs] [EH = 60 – GH]	✓S ✓ substitution ✓ answer (3) **[10]**

QUESTION/*VRAAG* 10



10.1	Construction: AO is drawn and produced to M $\hat{O}_1 = \hat{A}_1 + \hat{B}$ [ext $\angle$ of Δ/*buite* $\angle$ *van* Δ] But $\hat{A}_1 = \hat{B}$ [$\angle$s opp = radii/$\angle$*e teenoor* =*radii*] $\therefore \hat{O}_1 = 2\hat{A}_1$ Similarly/*Netso*: $\hat{O}_2 = 2\hat{A}_2$ $\therefore \hat{O}_1 + \hat{O}_2 = 2\hat{A}_1 + 2\hat{A}_2$ $= 2(\hat{A}_1 + \hat{A}_2)$ $B\hat{O}C = 2B\hat{A}C$	✓ Constr ✓ S/R ✓ S/R ✓ S ✓ S (5)

10.2



10.2.1(a)	$\hat{F}_1 = 2x$ [∠ centre = 2∠ at circum/*midpts∠ =2omtreks∠*]	✓ S ✓ R (2)
10.2.1(b)	$\hat{C} = x$ [∠s in the same seg/*∠e in dieselfde segment*] **OR/*OF*** $\hat{C} = x$ [∠ centre = 2∠ at circum/*midpts∠ =2omtreks∠*]	✓ S ✓ R (2) ✓ S ✓ R (2)
10.2.2	$\hat{D}_3 = x$ [∠s opp equal sides/*∠e teenoor = sye*] $\hat{E}_3 = 2x$ [ext ∠ of Δ/*buite ∠ van Δ*] $\therefore \hat{F}_1 = \hat{E}_3 = 2x$ ∴ AFED is a cyclic quadrilateral [converse ∠s in the same seg]/ *Is 'n koordevierhoek* [*omgekeerde ∠e in dieselfde segm*]	✓ S/R ✓ S/R ✓ S ✓ R (4)

10.2.3	$\hat{A}_2 + \hat{A}_3 + \hat{D}_1 + \hat{F}_1 = 180°$ [sum of ∠s in Δ/*som van ∠e in Δ*] $\hat{A}_2 + \hat{A}_3 = D_1$ [∠s opp = sides/*∠e teenoor = sye*] $\therefore \hat{A}_2 + \hat{A}_3 = 90° - x$ $\hat{E}_1 = \hat{A}_2 + \hat{A}_3$ [ext∠of cyclic quad/*buite∠ v koordevh*] $= 90° - x$ $F\hat{K}E = 90°$ [line from centre bisects chord]/ [*lyn van midpt halveer koord*] $\hat{F}_3 = x$ [sum of ∠s in Δ/*som van ∠e in Δ*]	✓ S ✓ S ✓ R ✓ S ✓ S ✓ R (6)
10.2.4	$B\hat{A}C = \hat{D}_3$ [∠s in the same seg/*∠e in dieselfde segm*] $AE = BE$ [sides opp equal ∠s/*sye teenoor =∠e*] $\frac{\text{area } \Delta AEB}{\text{area } \Delta DEC} = \frac{\frac{1}{2}(BE)(AE).\sin A\hat{E}B}{\frac{1}{2}(EC)(ED).\sin D\hat{E}C}$ $6,25 = \frac{AE^2}{ED^2}$ $\therefore \frac{AE}{ED} = 2,5$	✓ S ✓ S ✓ substitution into area rule ✓ simplification of RHS ✓ answer (5) **[24]**

TOTAL/*TOTAAL*: 150

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