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OVERBERG EDUCATION DISTRICT/ ONDERWYSDISTRIK

**GEMEENSKAPLIKE VRAESTEL/
COMMON PAPER**

GRAAD/GRADE 12

**WISKUNDE V2 / MATHEMATICS P2
MEMORANDUM**

SEPTEMBER 2018

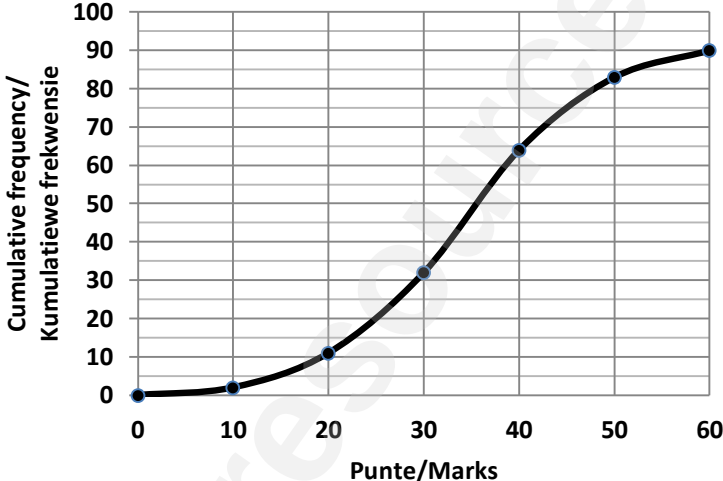
PUNTE/MARKS: 150

NOTE:

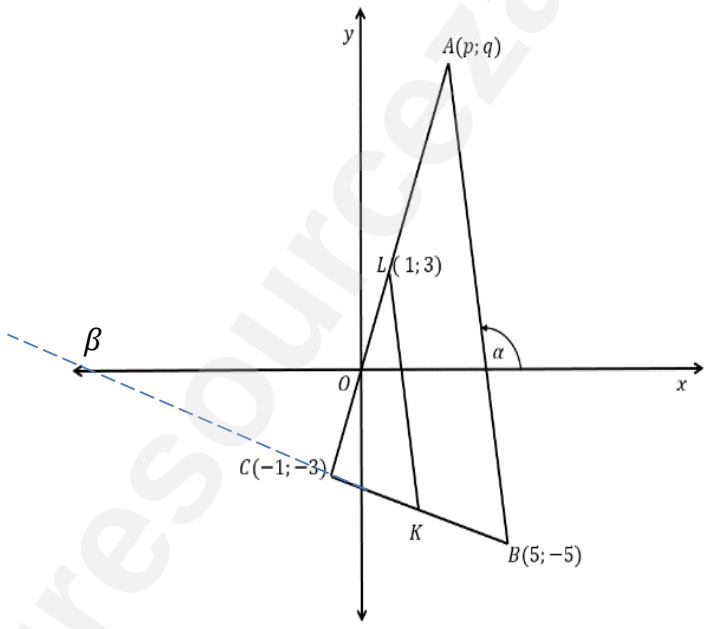
- If a candidate answers a question TWICE, mark only the first one.
- Consistent accuracy applies in ALL aspects of the marking memorandum.

LET WEL:

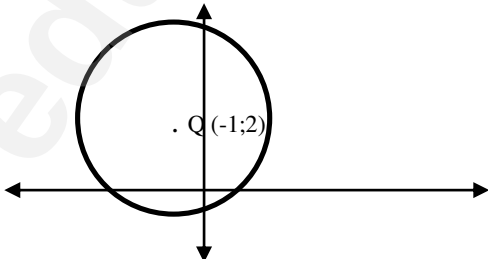
- Indien 'n kandidaat 'n vraag TWEE keer beantwoord, merk slegs die eerste poging.
- Volgehoue akkuraatheid is deurgaans op ALLE aspekte van die memorandum van toepassing.

QUESTION/ VRAAG 1						
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD			DESCRIPTORS/ BESKRYWERS	Marks	
1.1		Punte / Marks	Frekwensie / Frequency	Kumulatiewe Frekwensie/ Cumulative Frequency	✓ first 3 values / eerste 3 waardes ✓ second 3 values / tweede 3 waardes	(2)
		$0 < x \leq 10$	2	2		
		$10 < x \leq 20$	9	11		
		$20 < x \leq 30$	21	32		
		$30 < x \leq 40$	32	64		
		$40 < x \leq 50$	19	83		
		$50 < x \leq 60$	7	90		
1.2					✓ upper boundaries / boonste grense ✓ cumulative frequency / kumulaiewe frekwensie ✓ anchor / anker	(3)
	1.3	$90 - 74 = 16$			✓ $90 - 74$ ✓ 16 Answer only: full marks Accept from 14 to 18 / Aanvaar: vanaf 14 tot 18	
						[7]

QUESTION/VRAAG 2			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
2.1.1	$a = 122,67$ $b = -10,74$ $y = 122,67 - 10,74x$	✓ $a = 122,67$ ✓ $b = -10,74$ ✓ $y = 122,67 - 0,74x$	(3)
2.1.2	$y = 122,67 - 10,74(2,5)$ $= 95,82$ $= 96$	✓ substitution / substitusie ✓ answer / <i>antwoord</i>	(2)
2.1.3	Dalvon. The gradient is steeper. <i>Dalvon. Die gradient is steiler.</i>	✓ Dalvon ✓ reason / <i>rede</i>	(2)
2.2.1	1,50 kg since the standard deviation is 0	✓ 1,50 kg ✓ reason / <i>rede</i>	(2)
2.2.2	Andrew: $1,06 \times 11 = 11,66$ kg Bongi: $0,77 \times 16 = 12,32$ kg $\therefore$ Bongi won the award	✓ 11,66 kg ✓ 12,32 kg ✓ Bongi	(3)
			[12]

QUESTION/ VRAAG 3			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
3.1.1	$K\left(\frac{-1+5}{2}; \frac{-3-5}{2}\right)$ $\therefore K(2; -4)$	✓ substitution / <i>substitusie</i> ✓ answer / <i>antwoord</i>	(2)
3.1.2	$\frac{-1+p}{2} = 1$ and $\frac{-3+q}{2} = 3$ $\therefore p = 3$ and $q = 9$	✓ $\frac{-1+p}{2} = 1$ ✓ $\frac{-3+q}{2} = 3$	(2)
3.1.3	$m_{AB} = \frac{9+5}{3-5} = -7$ $\tan \alpha = -7$ $\therefore \alpha = 98,13^\circ$	✓ $\tan \beta = -7$ ✓ $\beta = 98,13^\circ$ CA 3.1.2	(2)
3.1.4			
	$m_{BC} = \frac{-3+5}{-1-5}$ $= \frac{-1}{-6}$ $= \frac{1}{6}$ $\tan \beta = -\frac{1}{6}$ $\therefore \beta = 180^\circ - 18,43^\circ$ $= 161,57^\circ$ $\therefore \hat{ABC} = 63,44^\circ$	✓ substitution / <i>substitusie</i> ✓ $\tan \beta = -\frac{1}{6}$ ✓ $\beta = 161,57^\circ$ ✓ $\hat{ABC} = 63,44^\circ$ CA 3.1.3	(4)

	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/BESKRYWERS	Marks
3.1.5	$KL = \sqrt{(1-2)^2 + (3+4)^2}$ $KL = \sqrt{50}$ or $5\sqrt{2}$	✓ correct substitution / <i>korrekte substitusie</i> ✓ answer CA 3.1.1	(2)
3.1.6	$AB = 2\sqrt{50}$ or $10\sqrt{2}$ midpoint theorem / <i>middelpuntstelling</i>	✓ $AB = 2\sqrt{50}$ or $10\sqrt{2}$ ✓ midpoint theorem / <i>Middelpuntstelling</i> CA 3.1.5	(2)
3.2	Area = $\frac{1}{2} \times 5 \times h = 10$ $\therefore h = 4$ $\therefore y_P = -4$ $\sqrt{(x-5)^2 + (y-0)^2} = \sqrt{(x-7)^2 + (y-6)^2}$ $x^2 - 10x + 25 + y^2 = x^2 - 14x + 49 + y^2 - 12y + 36$ $4x + 12y = 60$ $x + 3y = 15$ $x + 3(-4) = 15$ $x = 27$ P(27; -4)	✓ $\frac{1}{2} \times 5 \times h = 10$ ✓ $h = 4$ ✓ $y_P = -4$ ✓ PA = PB; equating distance formules/ <i>gelyk stel van</i> <i>afstand formules</i> ✓ expansion / <i>uitbreiding</i> ✓ simplify / <i>vereenvoudig</i> ✓ $x = 27$	(7)
			[21]

QUESTION /VRAAG 4			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
4.1.1	$C(0; -4)$ $m_{AC} = \frac{-4-0}{0+2} = -2$ $m_{AC} \times m_{BC} = -2 \times \frac{1}{2} = -1$ $\therefore BC \perp AC$	$\checkmark m_{AC} = \frac{-4-0}{0+2} = -2$ $\checkmark m_{AC} \times m_{BC} = -1$	(2)
4.1.2	AB is a diameter / <i>(converse of angle in semi-circle)</i> <i>AB is 'n middellyn (omgekeerde van hoek in halfsirkel)</i> $0 = \frac{1}{2}x - 4$ $x = 8$ $B(8; 0)$ $\therefore$ center of circle $(3; 0)$; $r = 5$ $\therefore (x - 3)^2 + y^2 = 25$	$\checkmark$ AB is a diameter / <i>AB is 'n middellyn</i> $\checkmark x = 8$ $\checkmark (x - 3)^2 + y^2$ $\checkmark 25$	(4)
4.1.3	$m_{\text{radius}} = \frac{0+4}{3-0} = \frac{4}{3}$ $\therefore m_{\text{tangent}} = -\frac{3}{4}$ Equation of tangent: $y = -\frac{3}{4}x - 4$	$\checkmark m_{\text{radius}} = \frac{4}{3}$ $\checkmark m_{\text{tangent}} = -\frac{3}{4}$ $\checkmark y = -\frac{3}{4}x - 4$	(3)
4.2	$x^2 + 8x + (4)^2 + y^2 + 10y + (5)^2 = -k + (4)^2 + (5)^2$ $\therefore (x + 4)^2 + (y + 5)^2 = -k + 41$ $-k + 41 = 49$ $k = -8$	$\checkmark$ completing square / <i>vierkantsvoltooing</i> $\checkmark$ equation into k / <i>vergelyking i.t.v k</i> $\checkmark \checkmark -k + 41 = 49$ $\checkmark k = -8$	(5)
4.3.1		$\checkmark$ circle / <i>sirkel</i> $\checkmark$ intersecting all 4 quadrants / <i>sny al 4 kwadrante</i>	(2)
4.3.2	$(x + 1)^2 + (y - 2)^2 = 9$	$\checkmark (x + 1)^2 + (y - 2)^2$ $\checkmark 9$	(2)
			[18]

QUESTION /VRAAG 5				
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks	
5.1.1	$\sin(90^\circ - \theta)$ $= \cos \theta$ $= \frac{5}{\sqrt{41}}$	✓ length of OP = $\sqrt{41}$ ✓ $\cos \theta$ ✓ $\frac{5}{\sqrt{41}}$	(3)	
5.1.2	In $\triangle OPR$; $\tan \theta = \frac{4}{5}$ In $\triangle OQT$; $\tan \theta = \frac{5}{a}$ $\therefore \frac{4}{5} = \frac{5}{a}$ $4a = 25$ $a = -\frac{25}{4} = -6\frac{1}{4}$ OR $\tan(180^\circ - \theta) = \frac{5}{a}$ $-\tan \theta = \frac{5}{a}$ $-\frac{4}{5} = \frac{5}{a}$ $\therefore 4a = -25$ $a = -\frac{25}{4} = -6\frac{1}{4}$	✓ equate $\frac{4}{5} = \frac{5}{a}$ ✓ answer / antwoord	(2)	
5.2.1	$\frac{\cos(\theta - 180^\circ) \cdot \cos(90^\circ + \theta)}{2 \tan(180^\circ - \theta)}$ $= \frac{-\cos \theta \cdot -\sin \theta}{-2 \tan \theta}$ $= \frac{\sin \theta \cos \theta}{-2 \tan \theta}$ $= \frac{\sin \theta \cos \theta}{-2} \times \frac{\cos \theta}{\sin \theta}$ $= \frac{\cos^2 \theta}{-2}$	✓ $-\cos \theta$ ✓ $-\sin \theta$ ✓ $-2 \tan \theta$ ✓ $\times \frac{\sin \theta}{\cos \theta}$ or $\div \frac{\cos \theta}{\sin \theta}$ ✓ answer / antwoord	(5)	
5.2.2	$\tan \theta = 0$ or / of $\tan \theta$ undefined $\therefore \theta = 0^\circ$ or / of $\theta = 180^\circ$ or / of $\theta = 90^\circ$	✓ $\theta = 0^\circ$ ✓ $\theta = 180^\circ$ ✓ $\theta = 90^\circ$	(3)	

	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
5.3	$\text{LHS} = \frac{\sin 2\theta}{\sin \theta}$ $= \frac{2\sin \theta \cdot \cos \theta}{\sin \theta}$ $= 2\cos \theta$ $\text{RHS} = 4\cos \theta - \frac{\cos 2\theta + 1}{\cos \theta}$ $= 4\cos \theta - \frac{2\cos^2 \theta - 1 + 1}{\cos \theta}$ $= 4\cos \theta - 2\cos \theta = 2\cos \theta$ $\therefore \text{LHS} = \text{RHS}$ OR $\text{RHS} = \frac{4\cos^2 \theta - [(2\cos^2 \theta - 1) + 1]}{\cos \theta}$ $= \frac{4\cos^2 \theta - 2\cos^2 \theta + 1 - 1}{\cos \theta}$ $= \frac{2\cos^2 \theta}{\cos \theta} = 2\cos \theta$	✓ $2\cos \theta \sin \theta$ ✓ $2\cos \theta$ ✓ $2\cos^2 \theta - 1$ ✓ $2\cos \theta$	(4)
5.4.1	$5 \sin(A - B) = 3 \sin(A + B)$ $5 (\sin A \cos B - \cos A \sin B) = 3(\sin A \cos B + \cos A \sin B)$ $5 \sin A \cos B - 5 \cos A \sin B = 3 \sin A \cos B + 3 \cos A \sin B$ $2 \sin A \cos B = 8 \cos A \sin B$ $\therefore \sin A \cos B = 4 \cos A \sin B$	✓ expand $\sin(A - B)$ ✓ expand $\sin(A + B)$ ✓ simplify / vereenvoudig	(3)
5.4.2	$\sin A \cos B = 4 \cos A \sin B$ $\sin A = 4 \cos A \tan B$ $\tan A = 4 \tan B$ but $\tan B = \frac{1}{2} \therefore \tan A = 4\left(\frac{1}{2}\right) = 2$	✓ $\sin A = 4 \cos A \tan B$ ✓ $\tan A = 4 \tan B$ ✓ 2	(3)
			[23]

QUESTION /VRAAG 6			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
6.1	$a = 2$	✓ 2	(1)
6.2	Mark f only / Merk slegs vir f	✓ shape / vorm ✓ turning points / draaipunte ✓ x & y intercepts / x & y afsnitte	(3)
6.3	$2 \cos(x - 30^\circ) = 2 \sin x$ $\cos(x - 30^\circ) = \sin x$ $\sin [90 - (x - 30^\circ)] = \sin x$ $(-x + 120^\circ) = x$ $120^\circ - x = x \quad \text{of/or} \quad 120^\circ - x = 180^\circ - x$ $2x = 120^\circ + k360^\circ$ $x = 60^\circ + k180^\circ$ $\therefore x = -120^\circ; 60^\circ$ OR $\cos(x - 30^\circ) = \sin x$ $\cos(x - 30^\circ) = \cos(90^\circ - x)$ $x - 30^\circ = 90^\circ - x$ $2x = 120^\circ + k360^\circ$ $x = 60^\circ + k180^\circ$ $\therefore x = -120^\circ; 60^\circ$	✓ co-function ✓ $x = (-x + 120^\circ)$ ✓ $2x = 120^\circ + k360^\circ$ or/of $x = 60^\circ + k180^\circ$ ✓✓ $x = -120^\circ; 60^\circ$ OR ✓ co-function ✓ $x - 30^\circ = 90^\circ - x$ ✓ $2x = 120^\circ + k360^\circ$ or/of $x = 60^\circ + k180^\circ$ ✓✓ $x = -120^\circ; 60^\circ$	(5)
6.4	$k = 3$	✓ 3	(1)
6.5	f shifted 60° to the right	✓ 60° ✓ to the right	(2)
			[12]

QUESTION /VRAAG 7			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
7.1	AC: $\sin 43^{\circ} = \frac{45}{AC}$ $AC \sin 43^{\circ} = 45$ $AC = \frac{45}{\sin 43^{\circ}}$ $AC = 65,98 \text{ m}$ AD: $\sin 50^{\circ} = \frac{45}{AD}$ $AD \sin 50^{\circ} = 45$ $AD = \frac{45}{\sin 50^{\circ}}$ $AD = 58,74 \text{ m}$	✓ $\sin 43^{\circ} = \frac{45}{AC}$ ✓ Answer ✓ $\sin 50^{\circ} = \frac{45}{AD}$ ✓ Answer	(4)
7.2	$CD^2 = AC^2 + AD^2 - 2(AC)(AD)\cos A$ $CD^2 = 65,98^2 + 58,74^2 - 2(65,98)(58,74)\cos 69^{\circ}$ $CD = \sqrt{5025,919618}$ $CD = 70,89 \text{ units}$	✓ using cos rule / gebruik van <i>cos-reël</i> ✓ substitution / <i>substitusie</i> ✓ Answer	(3)
			[7]

GEOMETRY/ MEETKUNDE

S: Statement/ *Bewering*

R: Reason/ *Rede*

S/R: Both Statement and Reason/ *Beide Bewering en Rede*

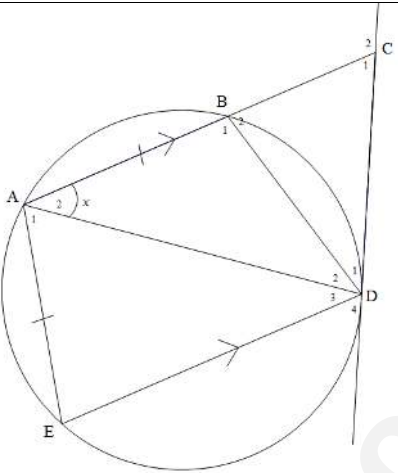
Allow for alternative methods/ *Maak voorsiening vir alternatiewe metodes*

QUESTION /VRAAG 8			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
8.1.1	$\hat{CAB} = x$ [$\angle$ s opp = sides / $\angle$ e teenoor = sye.]	✓ S / R	(1)
8.1.2	$\hat{AOB} = 2x$ [$\angle$ at centre = 2 $\angle$ at circumf / midpts $\angle$ = 2 omtreks $\angle$]	✓ S ✓ R	(2)
8.2	$\hat{B}_1 = \frac{180^\circ - 2x}{2}$ [sum $\angle$ s $\triangle AOB$ & $\angle$ s opp = sides / som $\angle$ e $\triangle AOB$ & $\angle$ e teenoor = sye.] $\hat{B}_1 = 90^\circ - x$ $\hat{AMB} = 90^\circ$ [sum $\angle$ s $\triangle AMB$ / som $\angle$ e $\triangle AMB$]	✓ R ✓ $90^\circ - x$ ✓ R	(3)
8.3	AM = 6 units [line from centre $\perp$ chord/ lyn vanaf midpt $\perp$ koord]	✓ S ✓ R	(2)
			[8]

QUESTION /VRAAG 9			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
9.1.1	tan-chord theorem/ raaklyn-koordstelling	✓ R	(1)
9.1.2	angles opposite equal radii/sides / hoeke teenoor gelyke radii/ sye	✓ R	(1)
9.2	$\hat{ACB} = 90^\circ$ [$\angle$ in semi-circle/ $\angle$ in halwe sirkel] $\therefore \hat{ACB} = \hat{TOA}$ $\therefore$ CTOB is a cyclic quad/ is 'n koordevierhoek [ext $\angle$ = opp int $\angle$ / buite $\angle$ = teenoorst. binne $\angle$] OR/ OF $\hat{ACB} = 90^\circ$ [$\angle$ in semi-circle/ $\angle$ in halwe sirkel] $\therefore \hat{ACB} = \hat{TOB}$ $\therefore$ CTOB is a cyclic quad/ is 'n koordevierhoek [opp $\angle$ s supplementary/ teenoorst. $\angle$ e supplementêr] OR/ OF $\hat{ACB} = 90^\circ$ [$\angle$ in semi-circle/ $\angle$ in halwe sirkel] $\hat{OTA} = 65^\circ$ and/ en $\hat{OBC} = 65^\circ$ [$\angle$ s in $\triangle ABC$] } $\therefore$ CTOB is a cyclic quad/ is 'n koordevierhoek [opp $\angle$ s supplementary/ teenoorst. $\angle$ e supplementêr] OR/ OF $\hat{ACB} = 90^\circ$ [$\angle$ in semi-circle/ $\angle$ in halwe sirkel] $\hat{OTC} = 115^\circ$ [ext $\angle$ of $\triangle$ / $\angle$ buite van $\triangle$] } and/ en $\hat{OBC} = 65^\circ$ [$\angle$ s in $\triangle ABC$] } $\therefore$ CTOB is a cyclic quad/ is 'n koordevierhoek [ext $\angle$ = opp int $\angle$ / buite $\angle$ = teenoorst. binne $\angle$] Can also use $\hat{CBK}$ as ext $\angle$ / Kan ook $\hat{CBK}$ as buite $\angle$ gebruik	✓ S/R ✓ S ✓ R ✓ S/R ✓ S ✓ R ✓ S/R ✓ S ✓ R ✓ S/R ✓ S ✓ R	(3)
9.3	$\hat{COB} = 50^\circ$ [$\angle$ at centre = $2 \times \angle$ at circumf./ middelpnts $\angle$ = $2 \times$ omtr. $\angle$] OR [exterior $\angle$ of $\triangle$ / buite $\angle$ van $\triangle$]	✓ S ✓ R	(2)
9.4	$\hat{K} = 40^\circ$ [$\angle$ s in $\triangle ACK$] $\therefore \hat{S} = 50^\circ$ [$\angle$ s in $\triangle SOK$] $\therefore \hat{S} = \hat{COB}$ $\therefore$ OK is a tangent / is 'n raaklyn [conv. tan-chord thm/ omg. raakl- koordst]	✓ S ✓ S ✓ S ✓ R	(4)
			[11]

QUESTION /VRAAG 10			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
10.1	Constr/ Konstr: Draw SR and TQ/ Trek SR en TQ Proof/ Bewys: $\frac{\text{Area } \Delta PST}{\text{Area } \Delta QST} = \frac{\frac{1}{2} PS \times h}{\frac{1}{2} SQ \times h} = \frac{PS}{SQ} \text{ [equal altitudes ; gelyke hoogtes]}$ $\frac{\text{Area } \Delta PST}{\text{Area } \Delta STR} = \frac{\frac{1}{2} PT \times k}{\frac{1}{2} TR \times k} = \frac{PT}{TR} \text{ [equal altitudes ; gelyke hoogtes]}$ Area ΔQST = Area ΔSTR [same base, height; / dieselfde basis, hoogte; ST QR] $\therefore \frac{\text{Area } \Delta PST}{\text{Area } \Delta QST} = \frac{\text{Area } \Delta PST}{\text{Area } \Delta STR}$ $\therefore \frac{PS}{SQ} = \frac{PT}{TR}$	✓ Constr/ Konstr $\frac{\text{Area } \Delta PST}{\text{Area } \Delta QST} = \frac{\frac{1}{2} PS \times h}{\frac{1}{2} SQ \times h}$ $\frac{\text{Area } \Delta PST}{\text{Area } \Delta STR} = \frac{PS}{SQ}$ ✓ S ✓ R ✓ S	(6)

	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
10.2			
10.2.1	$\hat{C}_2 = x$ [alternate/ verw. $\angle$ s; $EC \parallel AD$] $\hat{E}_1 = x$ [corresp./ ooreenk. $\angle$ s; $EC \parallel AD$]	$\checkmark$ S $\checkmark$ S $\checkmark$ any 1 correct R	(3)
10.2.2	$\frac{BD}{DC} = \frac{BA}{AE}$ [line $\parallel$ to 1 side of Δ / lyn $\parallel$ aan 1 sy van Δ] OR/ OF [Proportional Theorem/ Eweredigheidstelling; $EC \parallel AD$] $\therefore \frac{BD}{DC} = \frac{BA}{AC}$ [$EA = AC$; sides opp. equal $\angle$ s/ sye teenoor gelyke $\angle$ e]	$\checkmark$ S $\checkmark$ R $\checkmark$ $EA = AC$ $\checkmark$ R	(4)
			[13]

QUESTION /VRAAG 11			
	SUGGESTED ANSWER/ VOORGESTELDE ANTWOORD	DESCRIPTORS/ BESKRYWERS	Marks
			
11.1	$\hat{D}_1 = x$ [tan-chord theorem/ raakl-koord stelling] $\hat{D}_3 = x$ [alt. $\angle$ s; $AB \parallel ED$ / verwis. $\angle$ e ; $AB \parallel ED$] $\hat{D}_2 = x$ [equal chords, equal angles / gelyke koorde, gelyke hoeke.]	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R	(6)
11.2	In $\triangle DEA$ and $\triangle DBC$ 1) $\hat{D}_1 = \hat{D}_3 = x$ [proven / reeds bewys] 2) $B_2 = \hat{E}$ [ext. $\angle$ of cycl.quad / buitehoek v kvh.] 3) $\hat{C}_1 = \hat{A}_1$ [$\angle$ s of Δ / $\angle$ e van Δ] $\therefore \triangle DEA \parallel \triangle DBC$ [$\angle, \angle, \angle$] OR In $\triangle DEA$ and $\triangle DBC$ 1) $\hat{D}_1 = \hat{D}_3 = x$ [proven / reeds bewys] 2) $B_2 = \hat{E}$ [ext. $\angle$ of cycl.quad / buitehoek v kvh.] $\therefore \triangle DEA \parallel \triangle DBC$ [$\angle, \angle, \angle$]	$\checkmark$ S $\checkmark$ S $\checkmark$ R $\checkmark$ S & R $\checkmark$ S $\checkmark$ S $\checkmark$ R $\checkmark$ S & R	(4)
11.3	$\frac{DE}{DB} = \frac{EA}{BC}$ [$\triangle DEA \parallel \triangle DBC$] $\therefore DE \cdot BC = EA \cdot DB$ $AB = BD$ [equal sides opp equal $\angle$ s ; / gelyke sye teenoor gelyke $\angle$ e] $AB = AE$ [given / gegee] $\therefore BD = AE$ $\therefore DE \cdot BC = EA \cdot EA$	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R $\checkmark$ S	(5)
11.4	$\hat{A}_1 + 3x = 180^\circ$ [opp $\angle$ s of cycl quad. / teenoorst. $\angle$ e van kvh] $75^\circ + 3x = 180^\circ$ $3x = 105^\circ$ $x = 35^\circ$	$\checkmark$ S $\checkmark$ R $\checkmark$ Answer/ Antw	(3)
			[18]

Total/Totaal: 150