



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION/ *PROVINSIALE EKSAMEN*

NOVEMBER 2021

GRADE 10/GRAAD 10

MARKING GUIDELINES/NASIENRIGLYNE

MATHEMATICS/WISKUNDE (PAPER/VRAESTEL 2)
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**MARKING GUIDELINES/
NASIENRIGLYNE**
**MATHEMATICS (PAPER 2)/
WISKUNDE (VRAESTEL 2)
GRADE/GRAAD 10**

1.	SUGGESTED SOLUTIONS/VOORGESTELDE OPLOSSINGS		EXPLANATION VERDUIDELIKING	MARKS PUNTE
1.1	30		✓ Answer/Antwoord	(1)
1.2	1.2.1	35	✓ Answer/Antwoord	(1)
	1.2.2	30	✓ Answer/Antwoord	(1)
	1.2.3	38,5	Answer/Antwoord ✓ Accept 38 or 39/Aanvaar 38 of 39	(1)
1.3	Range = Max. – Min./ <i>Omvang</i> = <i>Maks. – Min.</i> = 44 – 24 = 20		✓ Method/Metode ✓ Answer/Antwoord	(2)
1.4	No. of packets of sweets above upper quartile/ <i>Aantal pakkies lekkers bo die boonste kwartiel</i> $= \frac{6}{25} \times 100\%$ = 24%		✓ Method/Metode ✓ Answer/Antwoord	(2)
				[8]

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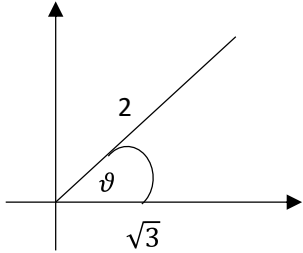
2.			
2.1	$200 < x \leq 250$	✓ Answer/ Antwoord	(1)
2.2	HISTOGRAM Amount spent by 120 motorists at KG petrol garage Bedrag gespandeer deur 120 motoriste by KG vulstasie Amount spent in Rands Bedrag gespandeer in Rand	✓ 1st & 2nd columns/ 1ste en 2de kolomme ✓ Last three columns/ Laaste drie kolomme	(2)
2.3	$\frac{30}{100} \times 120 = 36^{\text{th}} \text{ value}/36^{\text{ste}} \text{ waarde}$ $\therefore \text{interval is}/\text{interval is } 50 < x \leq 100$	✓ 36 ✓ Answer/ Antwoord	(2)
2.4	$\frac{42}{120} \times 360^\circ = 126^\circ$	✓ 42 ✓ Answer/ Antwoord	(2)
			[7]

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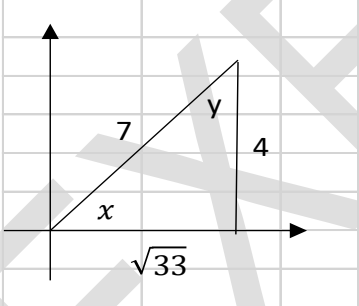
3.			
3.1	$\left(\frac{x_1+x_2}{2}; \frac{y_1+y_2}{2}\right)$ $S\left(\frac{-7+1}{2}; \frac{1+(-7)}{2}\right)$ $\therefore S(-3; -3)$	Wrong Formula NO Marks/ <i>Verkeerde Formule</i> GEEN punte nie ✓ Formula/Formule ✓ $x = -3$; ✓ $y = -3$	(3)
3.2	$m_{AC} = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{5 - (-7)}{1 - (-3)}$ $= 3$	Wrong Formula NO Marks/ <i>Verkeerde Formule</i> GEEN punte nie ✓ Formula/Formule ✓ Answer/Antwoord	(2)
3.3	$BC = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$ $BC = \sqrt{(-7 - 1)^2 + (1 - (-7))^2}$ $BC = 8\sqrt{2}$ $AS = \sqrt{(5 - (-3))^2 + (5 - (-3))^2}$ $AS = 8\sqrt{2}$	✓ Formula/Formule ✓ Correct substitution/Korrekte vervanging ✓ BC	(3)

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4.				
4.1	4.1.1	$y^2 = (2)^2 - (\sqrt{3})^2$ $= 4 - 3$ $\therefore y = 1$ $\therefore \sin \theta = \frac{1}{2}$ 	✓ sub in Pythagoras/ vervang in Pythagoras ✓ $y = 1$ ✓ $1/2$ ✓ diagram/diagram	(3)
	4.1.2	$\sin \theta \cdot \cos \theta$ $= \left(\frac{1}{2}\right) \left(\frac{\sqrt{3}}{2}\right)$ $= \frac{\sqrt{3}}{4}$	✓ Sub.into $\cos \theta$ / Vervang in $\cos \theta$ ✓ $\frac{\sqrt{3}}{4}$	(2)
4.2		$\frac{1}{2} \sin 2y - [2 \tan^2 \left(\frac{x}{2}\right)] \cos x$ $\frac{1}{2} \sin 2(45^\circ) - [2 \tan^2 \left(\frac{60^\circ}{2}\right)] \cos 60^\circ$ $= \frac{1}{2} (1) - [2 \left(\frac{\sqrt{3}}{2}\right)^2] \left(\frac{1}{2}\right)$ $= \frac{3-2\sqrt{3}}{6}$	✓ Correct substitution/ Korrekte vervanging ✓ $\frac{1}{2} (1)$ ✓ $2 \left(\frac{\sqrt{3}}{2}\right)^2$ ✓ $\frac{1}{2}$ ✓ $\frac{3-2\sqrt{3}}{6}$	(6)

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4.3	4.3.1	$\sin(\beta - 17.8^\circ) = 0.215$ $\beta - 17.8^\circ = 12.4155^\circ$ $\beta = 12.4155^\circ + 17.8^\circ$ $\beta = 30.22^\circ$	$\checkmark 12,4155^\circ$ $\checkmark +17,8^\circ$ $\checkmark$ Answer/Antwoord	(3)
	4.3.2	$\tan 3\beta = \sqrt{3}$ $3\beta = 60^\circ$ $\beta = 20^\circ$	$\checkmark 60^\circ$ $\checkmark$ Answer/Antwoord	(2)
	4.3.3	$3\sin \frac{\beta}{2} = 2.012$ $\sin \frac{\beta}{2} = 0.670666$ $\frac{\beta}{2} = 41.11848^\circ$ $\beta = 84.24^\circ$	$\checkmark \sin \frac{\beta}{2} = 0,670666$ $\checkmark \frac{\beta}{2} = 41,11848^\circ$ $\checkmark$ Answer/Antwoord	(3)
4.4		$\frac{\tan 30^\circ \csc 60^\circ}{\cot 45^\circ \sin 45^\circ}$ $= \frac{\frac{\sqrt{3}}{3} \cdot \frac{2}{\sqrt{3}}}{1 \cdot \frac{\sqrt{2}}{2}}$ $= \frac{4}{3}$	$\checkmark \frac{\sqrt{3}}{3}$ $\checkmark \frac{2}{\sqrt{3}}$ $\checkmark 1$ $\checkmark$ Answer/Antwoord	(4)
				[23]
5.				
5.1		 $\sin x = \frac{4}{7}$ $\tan y = \frac{\sqrt{33}}{4}$ But/Maar: $\tan y = t$ $\therefore t^2 = \left(\frac{\sqrt{33}}{4}\right)^2$ $t = \frac{33}{16}$	$\checkmark$ diagram/diagram $\checkmark \sin x = \frac{4}{7}$ $\checkmark \tan y = \frac{\sqrt{33}}{4}$ $\checkmark \tan y = t$ $\checkmark t^2 = \left(\frac{\sqrt{33}}{4}\right)^2$ $\checkmark$ Answer/Antwoord	(6)

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5.2	5.2.1	$1 - \cos^2 x - \sin^2 x$ $1 - (\sin^2 x + \cos^2 x)$ $= 1 - 1$ $= 0$	✓ $-(\sin^2 x + \cos^2 x)$ ✓ Simplification/ Vereenvoudiging ✓ Answer/Antwoord	(3)
	5.2.2	$\cos^2 x + \tan x \cdot \cot x + \sin^2 x$ $\cos^2 + \sin^2 x + \frac{\sin x}{\cos x} \cdot \frac{\cos x}{\sin x}$ $= 1 + 1$ $= 2$	✓ rearrangement and identity/ herrangskikking en identiteit ✓ Simplification/ Vereenvoudig ✓ Answer/Antwoord	(3)
5.3		$\angle SME = 34.4^\circ$ (alt./verw. binne $\angle s$) $\angle SHE = 26.2^\circ$ (alt./verw. binne $\angle s$) Distance/Afstand SM: $\tan 34.4^\circ = \frac{55}{SM}$ $SM = 80.3254 \text{ m}$ Distance/Afstand SH: $\tan 26.2^\circ = \frac{55}{SH}$ $SH = 111.77 \text{ m}$ $\therefore 80.3254 \text{ m} + 111.77 \text{ m} - 80.3254 \text{ m}$ $= 31.45 \text{ m}$	✓ Deductions/ Aftrekkings ✓ $\tan 34.4^\circ = \frac{55}{SM}$ ✓ $SM = 80.3254 \text{ m}$ ✓ $SH = 111.77 \text{ m}$ ✓ Answer/Antwoord	(5)
				[17]
6.				
6.1		$a = -2$ $b = 1$	✓ $a = -2$ ✓ $b = 1$	(2)
6.2		$0^\circ < x < 180^\circ$ OR/OF $x \in (0^\circ; 180^\circ)$	✓ Inequality signs/ Ongelykheidstekens ✓ Critical points/Kritieke punte	(2)
6.3	2		✓ 2	(1)

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6.4	$-1 \leq y \leq 1$ OR/OF $y \in [-1;1]$	✓ Inequality signs/ Ongelykheidstekens ✓ Critical points/ Kritieke punte	(2)
6.5	$x = 270^\circ$	✓ Inequality signs/ Ongelykheidstekens ✓ Critical points/ Kritieke punte	(2)
			[9]
7.			
7.1	$R\hat{Q}T + Q\hat{T}S = 180^\circ$ [Co-interior $\angle$ s ; $RQ \parallel ST$]/ [ko-binnenhoekes ; $RQ \parallel ST$] $2x + 2y = 180^\circ$ $x + y = 90^\circ$ $\hat{V}_2 + \hat{Q}_2 + \hat{T}_1 = 180^\circ$ [sum of int/som van binne $\angle^e$ van Δ]/ $x + y + \hat{V}_2 = 180^\circ$ $90^\circ + \hat{V}_2 = 180^\circ$ $\hat{V}_2 = 90^\circ$	✓✓ S/R ✓ S ✓ S/R ✓ S	(5)
7.2	$\hat{V}_1 = x$ [Alt $\angle$ s ; $RS \parallel QT$ /Verw binne $\angle^e$ $RS \parallel QT$] $RQ = RV$ [sides opp equal angles/sye teenoor gelyke hoeke] $RQ = ST$ [opp sides of a parallelogram/teenoorst. sye van $ ^m$] $\hat{V}_3 = \hat{T}_1$ [Alt $\angle$ s ; $RS \parallel QT$ / Verw binne $\angle^e$ $RS \parallel QT$] $VS = ST$ [sides opp equal angles/sye teenoor gelyke hoeke] $RQ = RV$ [sides opp equal angles/sye teenoor gelyke hoeke] $VS = RQ = RV$ $RS = 2RQ$	✓ S ✓ S/R ✓ S/R ✓ S ✓ S ✓ S	(6)
			[11]

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