



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

NOVEMBER 2023

GRADE/GRAAD 10

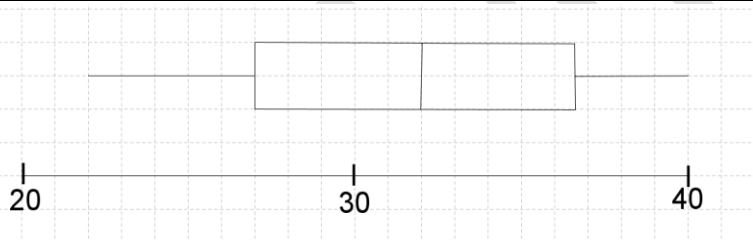
MARKING GUIDELINES

NASIENRIGLYNE

MATHEMATICS/WISKUNDE (PAPER/VRAESTEL 2)

8 pages/bladsye

QUESTION/VRAAG 1

1.1	32		✓ Answer/Antwoord	(1)
1.2	1.2.1	mean temperature/ <i>gemiddelde temperatuur</i> $\frac{\text{sum of values/som van waardes}}{\text{number of values/aantal waardes}}$ $\frac{500}{20}$ $= 25$	✓ Method/Metode ✓ Answer/Antwoord	(2)
	1.2.2	Range/ <i>omvang</i> = Max – Min/ <i>Maks. – Min</i> $= 40 - 22 = 18$	✓ Answer/Antwoord	(1)
	1.2.3	IQR/ <i>IKO</i> = $Q_3 - Q_1/K_3 - K_1$ $= 36,5 - 27$ $= 9,5$	Q_3/K_3 ✓ Q_1/K_1 ✓ ✓ Answer/Antwoord	(3)
1.3			✓ Shape/ <i>Vorm</i> ✓ Quartiles/ <i>Kwartiele</i>	(2)
1.4	$\frac{20}{100} \times 20 = 4$ $\therefore 37\text{ }^{\circ}\text{C}$		✓ Method/ <i>Metode</i> ✓ Answer/Antwoord	(2)
				[11]

QUESTION/VRAAG 2

2.1	77	✓ Answer/Antwoord	(1)
2.2	$110 \leq x < 125$	✓ Answer/Antwoord	(1)
2.3	$110 \leq x < 125$	✓✓ Answer/Antwoord	(2)
2.4	$\frac{31}{77} \times 100\%$ $= 41,33\%$	✓ Method/Metode ✓ Answer/Antwoord	(2)
2.5	$\bar{x} = \frac{\sum fx}{\sum f}$ $= \frac{9242,5}{77}$ $= 120,03$	✓ Method/Metode ✓ Substitution/Vervanging ✓ Answer/Antwoord	(3)
2.6	$\text{angle/hoek} = \frac{31}{77} \times 360^\circ$ $= 144,94$	✓ Method/Metode ✓ Answer/Antwoord	(2)
			[11]

QUESTION/VRAAG 3

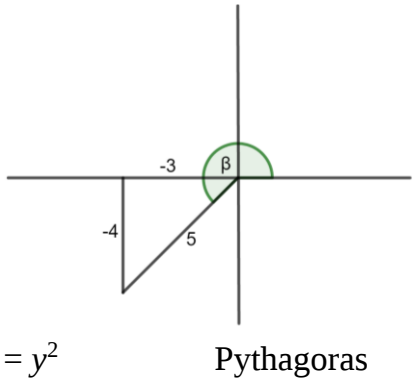
3.1	3.1.1	$PT = \sqrt{x_2 - x_1)^2 + (y_2 + y_1)^2}$ $= \sqrt{(2 - 10)^2 + (9 + 3)^2}$ $= \sqrt{(-8)^2 + (12)^2}$ $= \sqrt{64 + 144}$ $= \sqrt{208}$	✓ Correct substitution/ Korrekte vervanging ✓ Answer/Antwoord	(2)
	3.1.2	$m_{PT} = \frac{-3-9}{10-12}$ $m_{PT} = \frac{-12}{8}$ $m_{PT} = -\frac{3}{2}$	✓ Correct substitution/ Korrekte vervanging ✓ Answer/Antwoord	(2)

3.1.3	$m_{PT} = m_{AR}$ $= -\frac{3}{2}$	✓ Answer/Antwoord	(1)
3.1.4	$M = (\frac{x_p + x_T}{2}; \frac{y_p + y_T}{2})$ $M = (\frac{2+10}{2}; \frac{9-3}{2})$ $M(6; 3)$	✓ Substitute/Vervang ✓ $x = 6$ and/en ✓ $y = 3$	(3)
3.2	$y = mx + c$ Sub/verv.: $(2;9): \dots 9 = -\frac{3}{2}(2) + c$ $c = 12$	✓ Correct substitution/ Korrekte vervanging ✓ Value/Waarde ✓ Answer/Antwoord	(3)
3.3	$m_{PT} \times m_{AR} = -1$ $-\frac{2}{3} = \frac{-13 - (-3)}{10 + n}$ $-2(10 + n) = -30$ $-20 - 2n = -30$ $2n = 10$ $n = 5$	✓ Gradient of/Gradiënt van $AR = -\frac{3}{2}$ ✓ Correct substitution/ Korrekte vervanging ✓ Answer/Antwoord	(3)
3.4	$RT = \sqrt{x_2 - x_1)^2 + (y_2 + y_1)^2}$ $= \sqrt{(10 - 5)^2 + (-3 + 13)^2}$ $= \sqrt{(5)^2 + (10)^2}$ $= \sqrt{25 + 100}$ $= \sqrt{125}$ $\therefore \text{Area of RMT} = \frac{1}{2}bh$ $= \frac{1}{2}(2\sqrt{13})(5\sqrt{5})$ $= 40,31 \text{ units}^2/\text{eenhede}^2$	✓ Correct substitution/ Korrekte vervanging ✓ $\sqrt{125}$ ✓ Correct substitution/ Korrekte vervanging ✓ Answer/Antwoord	(4)
			[18]

QUESTION/VRAAG 4

4.1	4.1.1	$4\sin 65^\circ$ $= 3,63$	✓ Answer/Antwoord	(1)
	4.1.2	$\frac{\cos^2(32^\circ - 10^\circ)}{\tan 22^\circ}$ $\frac{\cos^2 22^\circ}{\tan 22^\circ}$ $0,859669 \dots$ $0,40402 \dots$ $= 2,13$	✓ Simplification to ratios/ Vereenvoudiging na verhoudings ✓ Answer/Antwoord	(2)
4.2		$3\sin(\frac{\theta}{2} - 20^\circ) = 0,85$ $\sin(\frac{\theta}{2} - 20^\circ) = 0,283333 \dots$ $\frac{\theta}{2} - 20^\circ = 16,459 \dots^\circ$ $\frac{\theta}{2} = 36,459 \dots^\circ$ $\theta = 72,92^\circ$	✓ 0,283333 ✓ $\frac{\theta}{2} - 20^\circ = 16,459 \dots^\circ$ ✓ $\frac{\theta}{2} = 36,459 \dots^\circ$ ✓ Answer/Antwoord	(4)
4.3		$\frac{\cos 45^\circ}{\sin 45^\circ} + 5\operatorname{cosec}$ $90^\circ \times 3\tan^2 30^\circ$ $\frac{\sqrt{2}}{\frac{2}{\sqrt{2}}} + \frac{5}{1} \times 3(\frac{1}{\sqrt{3}})^2$ $\frac{2}{2} + 5 \times 1 = 6$	✓ $\frac{\sqrt{2}}{2}$ ✓ $\frac{5}{1}$ ✓ $3(\frac{1}{\sqrt{3}})^2$ ✓ Answer/Antwoord	(4)
				[11]

QUESTION/VRAAG 5

5.1.	$5\cos\beta = -3$ $\cos\beta = -\frac{3}{5}$  $(5)^2 - 3^2 = y^2$ $y = -4$ $\sin\beta = -\frac{4}{5}$	✓ Correct diagram and quadrant/Korrekte diagram en kwadrant $y = -4$ ✓ Answer/Antwoord	(3)
5.2	$\tan^2\beta - \cot^2\beta$ $= \left(\frac{-4}{-3}\right)^2 - \left(\frac{-3}{-4}\right)^2$ $= \frac{16}{9} - \frac{9}{16}$ $= \frac{175}{144}$	✓ Correct substitution/Korrekte vervanging ✓ Answer/Antwoord	(2)
			[5]

QUESTION/VRAAG 6

6.1	$a = -1$ $p = 2$ $q = 2$	✓ $a = -1$ ✓ $p = 2$ ✓ $q = 2$	(3)
6.2	$90^\circ \leq x \leq 270^\circ$ OR/OF $\in \mathbb{R} [90^\circ ; 270^\circ]$	✓ Values/Waardes ✓ Inequalities/Ongelykhede	(2)
6.3	$x = 0^\circ$ or/of $x = 45^\circ$ or/of $x = 360^\circ$	✓✓ each x -value/elke x -waarde	(3)
6.4	$1 \leq y \leq 3 ; y \in \mathbb{R}$	✓ Values/Waardes ✓ Inequalities/Ongelykhede	(2)
			[10]

QUESTION/VRAAG 7

7.1	$\tan 44,3^\circ = \frac{DC}{12 \text{ m}}$ $DC = 12 \tan 44,3^\circ$ $DC = 11,71 \text{ m}$	✓ Tan ratio/Tan-verhouding ✓ Simplification/ Vereenvoudiging ✓ Answer/Antwoord	(3)
7.2	$AC = 2 \times DC = 23,42 \text{ m}$ $\tan \hat{ABC} = \frac{23,42}{12}$ $\hat{ABC} = 62,87^\circ$ $\therefore \theta = 62,87^\circ - 44,3^\circ = 18,57^\circ$ The spotlight will need to swing $18,57^\circ$. / Die kollig sal $18,57^\circ$ moet swaai.	✓ CA from 7.1/CA van 7.1 ✓ $\tan \hat{ABC}$ ✓ Answer/Antwoord	(3)
			[6]

QUESTION/VRAAG 8

8.1	8.1.1	$3x + 2x + x = 180^\circ$ sum of $\angle$ s of a triangle/ som $\angle$ e van Δ $x = 30^\circ$	✓ S ✓ R	(2)
	8.1.2	- Scalene triangle/Ongelyksydige driehoek - three different angles/drie verskillende hoeke	✓ S ✓ R	(2)
8.2		$\hat{B}_1 = \hat{B}_3$ given/gegee $\hat{A} = \hat{C}$ angles opp equal sides/ $\angle$ e teenoor gelyke sye $\hat{E}_1 = \hat{A} + \hat{B}_1$ ext $\angle$ of a Δ /buitehoek van 'n Δ $\hat{D}_2 = \hat{C} + \hat{B}_3$ ext $\angle$ of a Δ /buitehoek van 'n Δ $\therefore \hat{E}_1 = \hat{D}_2$	✓ S ✓ S ✓ R ✓ S/R ✓ S	(5)
				[9]

QUESTION/VRAAG 9

[19]

9.1	$\hat{D}_1 = \hat{B}_2$ Alt $\angle$ s $AD \parallel BC$ /verw. binne $\angle^e$; $AD \parallel BC$ $\hat{O}_1 = \hat{O}_3$ vertically opp $\angle$ s/regoorsaande $\angle^e$ $AD = BC$ opp sides of a parm/teenoorst sye van 'n parm $\therefore \triangle AOD \equiv \triangle COB$ AAS/ $\angle \angle$ s $\therefore \triangle DO = OB$ and/en $AO = OC$	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R	(6)
9.2	9.2.1 $SP = SR$ sides of square/sye van vierkant $\hat{P} = \hat{S}$ $\angle$ s of square = 90° / $\angle^e$ van vierkant = 90° $PY = SX$ $\therefore \triangle SPY \equiv \triangle RSX$ SAS/ $S \angle S$	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R	(6)
9.2.2	$\hat{S}_1 \equiv x$ $\Delta s \equiv$	$\checkmark$ S $\checkmark$ R	(2)
9.2.3	$\hat{S}_1 + \hat{S}_2 = 90^\circ$ $\angle$ s of square = 90° / $\angle^e$ van vierkant = 90° $\hat{S}_2 = 90^\circ - x$ $\hat{O}_2 + \hat{S}_2 + \hat{R}_2 = 180^\circ$ sum of int $\angle$ s of Δ /som $\angle^e$ van Δ $\hat{O}_2 + 90 + -x + x = 180^\circ$ $\hat{O}_2 = 90^\circ$ $\therefore SY \perp RX$	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ R $\checkmark$ S	(5)
			[19]
TOTAL/TOTAAL:			100