GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

NOVEMBER 2023

GRADE/*GRAAD* 9

MARKING GUIDELINES/

NASIENRIGLYNE

MATHEMATICS/*WISKUNDE*

PAPER/*VRAESTEL 2*

EXEMPLAR

7 pages/*bladsye*

SECTION/*AFDELING* A

QUESTION/*VRAAG* 1

1.1	1.2	1.3	1.4	1.5
C ✓**A**	C ✓**A**	B ✓**A**	A ✓**A**	D ✓**A**

[5]

SECTION/*AFDELING* B

QUESTION/*VRAAG* 2

2.1	2.1.1	$\widehat{M}_1 = 90°$ ✓**A**	1 mark for correct answer *1 punt vir korrekte antwoord*	(1)
	2.1.2	Perpendicular/*Loodreg* ✓**CA**	1 mark for correct answer *1 punt vir korrekte antwoord*	(1)
2.2	2.2.1	**STATEMENT/ *BEWERING*** / **REASON/*REDE*** $a + 90° + 198° = 360°$ / ∠*s* around a pt/∠*e om 'n punt* ✓**SR** $\therefore a = 72°$ ✓**CA** / $b = 56°$ ✓**A** / Complementary ∠*s*/ *Komplementêre ∠e*	1 mark for the S and R/ *1 punt vir die S en R* 1 mark for $a = 72°$ *1 punt vir* $a = 72°$ 1 mark for $b = 56°$ *1 punt vir* $b = 56°$	(3)
	2.2.2	**STATEMENT/ *BEWERING*** / **REASON/*REDE*** $\hat{A}_1 + \hat{A}_2 = 180°$ / ∠*s on a str line /∠e op reguit lyn* ✓**SR** $\hat{A}_2 = 121°$ $\therefore \hat{A}_1 = 59°$ ✓**A** / Given/*Gegee* $\widehat{W}_3 = 59°$ ✓**A** / *alt* ∠*s*; $QR \parallel ST$ / verw. ∠*e*; $QR \parallel ST$ $\widehat{W}_1 + \hat{Z}_2 = 180°$ / Co-int ∠*s*/ *ko-binne* ∠*e*; $QR \parallel ST$ ✓ **SR** $\widehat{W}_1 = 65°$ $\therefore \hat{Z}_2 = 115°$ ✓**CA** / Given/*Gegee* $\hat{Z}_3 = 65°$ / Corresp ∠*s*/*ooreenk.* ∠*e*; $QR \parallel ST$ ✓**SR**	1 mark for the S and R *1 punt vir die B en R* 1 mark for $\hat{A}_1 = 59°$ *1 punt vir* $\hat{A}_1 = 59°$ 1 mark for $\widehat{W}_3 = 59°$ *1 punt vir* $\widehat{W}_3 = 59°$ 1 mark for the S and R *1 punt vir die B en R* 1 mark for $\hat{Z}_2 = 115°$ *1 punt vir* $\hat{Z}_2 = 115°$ 1 mark for the S and R *1 punt vir die S en R*	(6)
2.3	2.3.1	Parallel/*Ewewydig* ✓**A**	1 mark for correct answer/*1 punt vir korrekte antwoord*	(1)

EXEMPLAR

	2.3.2	Parallel/*Ewewydig* ✓**A**	1 mark for correct answer *1 punt vir korrekte antwoord*	(1)
				[13]

QUESTION/*VRAAG* 3

3.1	sum; opposite/ *som; teenoorstaande* ✓✓**A**	1 mark for sum/*1 punt vir som* 1 mark for opposite/*1 punt vir teenoorstaande*	(2)
3.2	$GD = DE$ and/*en* $GF = FE$ ✓**A** $G\hat{H}D = 90°$ or/*of* $DF \perp GE$ ✓**A** **OR/*OF*** $GH = HE$ ✓**A**	1 mark for showing both pairs of adjacent sides equal/*1 punt vir beide pare aangrensende sye gelyk* 1 mark showing diagonals intersect at 90° *1 punt vir hoeklyne loodreg (90°)* **or/*of*** 1 mark showing long diagonal bisects short diagonal/*1 punt vir die wys van lang hoeklyn halveer kort hoeklyn* (any 2 of the above/*enige 2 van bogenoemde)*	(2)
3.3	**STATEMENT/ *BEWERING*** / **REASON/*REDE*** $\hat{E} + \hat{F} + \hat{G} = 180°$ / *sum of ∠s in a Δ* *som ∠s in 'n Δ* ✓**SR** But/*Maar* $\hat{E} : \hat{F} : \hat{G} = 4 : 3 : 4$ / Given/*Gegee* $4 + 3 + 4 = 11$ $\therefore \hat{F} = \frac{3}{11} \times 180°$ ✓**M** $\hat{F} = 49°$ ✓**CA**	1 mark for the Statement and Reason *1 punt vir die Bewering & Rede* 1 mark for $\frac{3}{11}$/*1 punt vir* $\frac{3}{11}$ 1 mark for correct answer rounded-off correctly/ *1 punt vir regte antwoord en regte afronding*	(3)

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<table>
<tr><td>3.4</td><td>3.4.1</td><td>Parallelogram; ✓
One pair of opposite sides equal and parallel.
Een paar teenoorst. sye en parallel ✓A</td><td>1 mark for parallelogram
1 punt vir parallelogram
1 mark for correct reason
1 punt vir korrekte rede</td><td>(2)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>3.4.2</td><td>Trapezium; ✓
One pair of opposite sides parallel
Een paar teenoorst. sye parallel ✓✓A</td><td>1 mark for trapezium
1 punt vir trapesium
1 mark for correct reason
1 punt vir korrekte rede</td><td>(2)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3.5</td><td>3.5.1</td><td><table><tr><th>STATEMENT/ BEWERING</th><th>REASON/REDE</th></tr><tr><td>In ΔZET and/en ΔGEH
$Z\hat{E}T = G\hat{E}H$</td><td>$vert.opp.\angle s$
Vert. teenoorstaande $\angle e$ ✓SR</td></tr><tr><td>$\boldsymbol{ZE = GE}$,</td><td>Given/gegee ✓SR</td></tr><tr><td>$\boldsymbol{TE = HE}$</td><td>Given/gegee ✓SR</td></tr><tr><td>$\therefore \Delta ZET \equiv \Delta GEH$</td><td>SAS/$s\angle s$ ✓SR</td></tr><tr><td>$\therefore TZ = HG$</td><td>Corr. sides of $\equiv \Delta s$
Ooreenk sye $\equiv \Delta e$ ✓SR</td></tr></table></td><td>1 mark for $Z\hat{E}T = G\hat{E}H$ and reason
1 punt vir $Z\hat{E}T = G\hat{E}H$ en rede
1 mark for $ZE = GE$ and reason
1 punt vir $ZE = GE$ en rede
1 mark for $TE = HE$ and reason
1 punt vir $TE = HE$ en rede
1 mark for $\Delta ZET \equiv \Delta GEH$
1 punt vir $\Delta ZET \equiv \Delta GEH$
1 mark for conclusion and correct reason
1 punt vir gevolgtrekking en korrekte rede</td><td>(5)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>3.5.2</td><td><table><tr><th>STATEMENT/ BEWERING</th><th>REASON/REDE</th></tr><tr><td>$\frac{HE}{ZE} = \frac{HT}{ZG}$</td><td>Proportional sides of |||Δs.
Verwante sye van |||Δe ✓R</td></tr><tr><td>$\frac{6}{4} = \frac{x}{6}$ ✓A</td><td></td></tr><tr><td>$4x = 36$ ✓CA</td><td></td></tr><tr><td>$x = 9$ cm ✓CA</td><td></td></tr></table></td><td>1 mark for correct reason
1 punt vir korrekte rede
1 mark for correct substitution
1 punt vir korrekte vervanging
1 mark for simplification
1 punt vir vereenvoudiging
1 mark for correct answer
1 punt vir korrekte antwoord</td><td>(4)</td></tr>
<tr><td></td><td></td><td></td><td></td><td>[20]</td></tr>
</table>

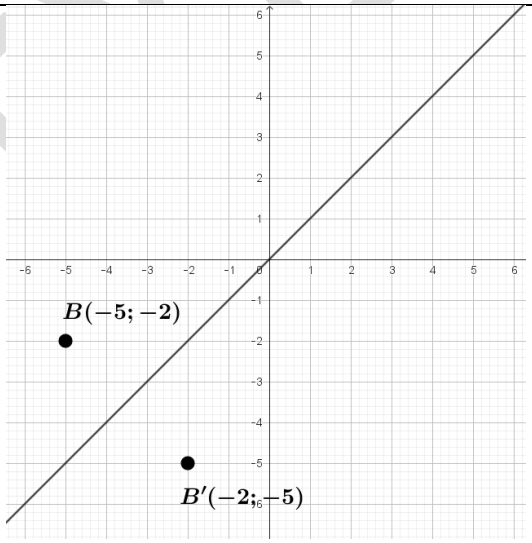
EXEMPLAR

QUESTION/*VRAAG* 4

<table>
<tr><td>4.1</td><td>4.1.1</td><td>D – Flip ✓A</td><td>1 mark for answer
1 punt vir antwoord</td><td>(1)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>4.1.2</td><td>A – Slide/Gly ✓A</td><td>1 mark for answer
1 punt vir antwoord</td><td>(1)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4.2</td><td colspan="2">Translation/Translasie ✓A
All the vertices in shape A slid/moved/translated four units upward and 2 units to the left
Al die hoekpunte van vorm A skuif/gly 4 eenhede op en 2 eenhede na links ✓✓CA
Or/of
$(x-2;\ y+4)$. ✓✓CA</td><td>1 mark for translation
1 punt vir translasie
1 mark for 4 units upward or $y+4$
1 punt vir 4 eenhede op of $y+4$
1 mark for 2 units left or $x-2$
1 punt vir 2 eenhede na links of $x-2$</td><td>(3)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4.3</td><td colspan="2"><table><tr><th>ORIGINAL SHAPE VERTEX
OORSPRONKLIKE VORM HOEKPUNT</th><th>REFLECTED SHAPE VERTEX
GEREFLEKTEERDE VORM HOEKPUNT</th></tr><tr><td>$Q(5;4)$</td><td>$Q'(5;-4)$ ✓A</td></tr><tr><td>$R(-2;1)$ ✓A</td><td>$R'(-2;-1)$</td></tr><tr><td>$S(5;0)$ ✓A</td><td>$S'(5;0)$</td></tr><tr><td>$T(7;2)$</td><td>$T'(7;-2)$ ✓A</td></tr></table></td><td>1 mark for $Q'(5;-4)$
1 punt vir $Q'(5;-4)$

1 mark for $R(-2;1)$
1 punt vir $R(-2;1)$

1 mark for $S(5;0)$
1 punt vir $S(5;0)$

1 mark for T$'(7;-2)$
1 punt vir $T'(7;-2)$</td><td>(4)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4.4</td><td colspan="2">

$B'(-2,-5)$ ✓✓A</td><td>1 mark for correct plotting on the graph
1 punt vir korrekte aanstipping op grafiek
1 mark for correct labelling and coordinates
1 punt vir korrekte benoeming en koördinate</td><td>(2)</td></tr>
<tr><td></td><td></td><td></td><td></td><td>[11]</td></tr>
</table>

EYEWITNESS

QUESTION/*VRAAG* 5

5.1	5.1.1	$A = \frac{1}{2}bh$ $A = \frac{1}{2} \times 12\ cm \times 8\ cm$ ✓**M** $A = 48\ cm^2$ ✓**CA**	1 mark for correct substitution. *1 punt vir korrekte vervanging* 1 mark for correct answer and unit *1 punt vir korrekte antwoord en eenheid*	(2)
	5.1.2	DA = AR (given/*gegee*) DR = 12 cm (given/*gegee*) DR = DA + AR ∴ AR = 6 cm ✓**A** $GR^2 = (6\ cm)^2 + (8\ cm)^2$ (Pythagoras) ✓**M (SR)** $GR^2 = 100\ cm^2$ GR = 10 cm ✓**CA** Perimeter = 6 cm + 8 cm + 10 cm Omtrek = 6 cm + 8 cm + 10 cm ✓**CA** Perimeter = 24 cm Omtrek = 24 cm ✓**CA**	1 mark for 6 cm *1 punt vir 6 cm* 1 mark for substitution into Pythagoras theorem *1 punt vir vervanging in Pythagoras se stelling* 1 mark for length of GR *1 punt vir lengte GR* 1 mark for adding all sides *1 punt vir som van alle sye* 1 mark for correct answer *1 punt vir korrekte antwoord*	(5)
5.2	125 ÷ 5 = 25 mm ✓**A** Breadth/*Breedte* = $\frac{3}{5} \times 125$ = 75 mm ✓**M** Circumference (small semicircle) = (3,14)(12,5) = 39,25 mm *Omtrek (klein halfsirkel)* = (3,14)(12,5) = 39,25 mm ✓**A** Circumference (big semicircle) = (3,14)(25) = 78,5 mm *Omtrek (groot halfsirkel)* = (3,14)(25) = 78,5 mm ✓**A** P(shaded part)/*Omtrek(geskakeerde deel)* = 125 + 2(75) + 25 + 39,25 + 78,5 + 25 ✓**M** = 442,75 mm ✓**CA**	1 mark for 25 *mm* *1 punt vir 25 mm* 1 mark for 75 *mm* *1 punt vir 75 mm* 1 mark for 39,25 *mm* *1 punt vir 39,25 mm* 1 mark for 78,5 *mm* *1 punt vir 78,5 mm* 1 mark for addition *1 punt vir som* 1 mark for answer *1 punt vir antwoord*	(6)
				[13]

EXEMPLAR

QUESTION/*VRAAG* 6

6.1	6.1.1	Triangular prism/ *Driehoekige prisma* ✓**A**	1 mark for answer *1 punt vir antwoord*	(1)
	6.1.2	Cylinder *Sillinder* ✓	l mark for answer *1 punt vir antwoord*	(1)
6.2	$1\,000\ cm = 10\ m$ ✓**A** $TSA = 2(10)(15) + 2(10)(8) + 2(8)(15)$ $= 300\ m^2 + 160\ m^2 + 240\ m^2$ ✓✓✓**M** $= 700\ m^2$ ✓**CA**		1 mark for 10 m *1 punt vir 10 m* 1 mark for 300 m^2 *1 punt vir 300 m²* 1 mark for 160 m^2 *1 punt vir 160 m²* 1 mark for 240 m^2 *1 punt vir 240 m²* 1 mark for answer *1 punt vir antwoord*	(5)
6.3	$Volume = (\pi {r_1}^2 - \pi {r_2}^2) \times H$ ✓✓ $= [(3{,}14(0{,}175)^2) - (3{,}14(0{,}1)^2)] \times 15$ ✓✓ $= [0{,}0961625 - 0{,}0314] \times 15$ $= 0{,}0647625 \times 15$ ✓ $= 0{,}9714375$ $= 0{,}97\ m^3$ ✓		1 mark for area of base × height *1 punt vir oppv. basis × hoogte* 1 mark for subtracting area of small circle from area of big circle *1 punt vir die aftrek van die area van die klein sirkel van die area van die groot sirkel.* 1 mark for 0,175 *1 punt vir 1,175* 1 mark for 0,1 *1 punt vir 0,1* 1 mark for 0,0647625 *1 punt vir 0,0647625* 1 mark for correct answer rounded-off correctly with correct unit *1 punt vir korrekte antwoord, korrek afgerond met korrekte eenheid.*	(6)
				[13]
			TOTAL/*TOTAAL*:	**75**

EXEMPLAR