PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

NOVEMBER 2022

GRADE/*GRAAD* 9

MARKING GUIDELINES

NASIENRIGLYNE

MATHEMATICS/*WISKUNDE*
(PAPER/*VRAESTEL* 2)

6 pages/*bladsye*

SECTION/*AFDELING* A

QUESTION/*VRAAG* 1

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

[5]

SECTION/*AFDELING* B

QUESTION/*VRAAG* 2

2.1		**STATEMENT /BEWERING**	**REASON/*REDE***	1 mark for each correct reason or statement/1 *punt vir elke regte rede of bewering*
	2.1.1	ABFI is a/'n parallelogram.	Both pairs opp. sides are $\parallel$ ./ *Beide pare teenoorstaande sye is* $\parallel$. ✓**M**	
	2.1.2	$\hat{A} + \hat{I} = 180°$	co-int. $\angle s$ and AB$\parallel$EI ✓**M** *ko-binne$\angle e$ en* AB$\parallel$EI	
	2.1.3	$\hat{H}_2 = \hat{H}_4$ ✓**A**	vert. opp. $\angle s$ *regoorst. $\angle e$*	
	2.1.4	$K\hat{F}E = \hat{I}$	corr. $\angle s$ and BG$\parallel$AI ✓**M** *ooreenkomstige $\angle e$ en* BG$\parallel$AI	
	2.1.5	$\hat{G} = \hat{A}_2$	alt. $\angle s$ and BG$\parallel$AI ✓**M** *verw. $\angle e$ en* BG$\parallel$AI	(5)

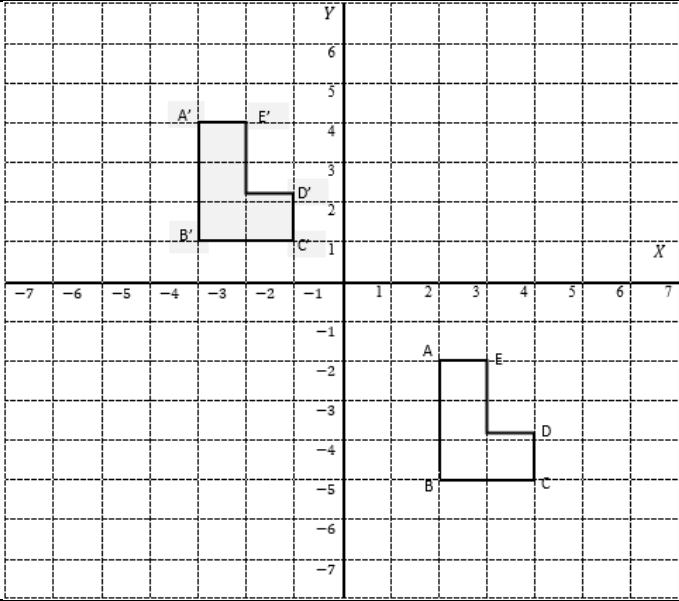| 2.2	**STATEMENT/ *BEWERING***	**REASON/*REDE***	1 mark for statement & reason/ *1 punt vir bewering en rede*
	$\hat{S}_1 + \hat{S}_2 + \hat{S}_3 = 180°$	$\angle s$ on a str. line ✓ **M** $\angle e$ op 'n reguit lyn	1 mark for reasoning $\hat{S}_2 = \frac{1}{2}x$/ *1 punt vir redenasie* $\hat{S}_2 = \frac{1}{2}x$
	$\hat{S}_2 = \frac{1}{2}\hat{S}_3, \ \hat{S}_3 = x$	Given/*Gegee*	1 mark for reasoning $\hat{S}_1 = \frac{3}{2}x$/ *1 punt vir redenasie* $\hat{S}_1 = \frac{3}{2}x$
	$\hat{S}_2 = \frac{1}{2}x$ and ✓**M**		1 mark for substitution/*1 punt vir vervanging*
	$\hat{S}_1 = 3\hat{S}_2 = 3\left(\frac{1}{2}x\right) = \frac{3}{2}x$ ✓**M**		1 mark for answer/*1 punt vir antwoord*
	$\frac{3}{2}x + \frac{1}{2}x + x = 180°$ ✓**M**	Substitute $\hat{S}_1, \hat{S}_2$ and $\hat{S}_3 = 180°$/ *Vervang* $\hat{S}_1, \hat{S}_2$ *en* $\hat{S}_3 = 180°$	
	$\frac{6}{2}x = 180°/3x = 180°$		
	$x = 60^0$ ✓**CA**		(5)

2.3	2.3.1	**STATEMENT/** **BEWERING**	**REASON/REDE**	1 mark for statement & reason/1 punt vir bewering & rede 1 mark for answer/ 1 punt vir antwoord
		$\hat{B}_3 = 110° - 35°$	ext. ∠ of Δ ✓**M** buite-hoek van Δ	
		$\hat{B}_3 = 75°$ ✓**A**		
				(2)

	2.3.2	**STATEMENT/** **BEWERING**	**REASON/REDE**	1 mark for statement & reason/1 punt vir bewering & rede 1 mark for answer/ 1 punt vir antwoord
		$F\hat{B}E = \hat{P}_2 = 110°$	corr. ∠s and FG∥JM ✓**M** ooreenkomstige ∠e en FG∥JM	
		$F\hat{B}E = \hat{B}_5 = 110°$	vert. opp. ∠s ✓**M** regoorst. ∠e	
				(2)

	2.3.2	**STATEMENT/** **BEWERING**	**REASON/REDE**	1 mark for statement & reason/1 punt vir bewering & rede 1 mark for $\hat{P}_1 = B\hat{L}H$/ 1 punt vir $\hat{P}_1 = B\hat{L}H$ 1 mark for correct conclusion & reason/ 1 punt vir korrekte afleiding & rede
		$\hat{P}_1 + \hat{P}_2 = 180°$	∠s on a str. line ✓**M** ∠e op 'n reguit lyn	
		$\hat{P}_1 = 180° - 110° = 70°$		
		$\hat{P}_1 = B\hat{L}H = 70°$ ✓**A** but they are corresponding/ maar hulle stem ooreen ∠s ∴ HL∥KM	Given $B\hat{L}H = 70°$ Gegee $B\hat{L}H = 70°$ corr. ∠s are equal ✓**M** ooreenkomstige ∠e is gelyk	
				(3)
				[17]

QUESTION/VRAAG 3

3.1	3.1.1	Trapezium/Trapesium ✓**A**	1 mark for answer/1 punt vir antwoord (1)
	3.1.2	Square/Vierkant ✓**A**	1 mark for answer/1 punt vir antwoord (1)
	3.1.3	Kite/Vlieër ✓**A**	1 mark for answer/1 punt vir antwoord (1)
	3.1.4	Equilateral triangle/Gelyksydige dreihoek ✓**A**	1 mark for answer/1 punt vir antwoord (1)
	3.1.5	Rectangle/reghoek ✓**A**	1 mark for answer/1 punt vir antwoord (1)

3.2	3.2.1	**STATEMENT/** **_BEWERING_**	**REASON/_REDE_**	1 mark for statement & reason/ *1 punt vir bewering & rede*
		$\hat{T}_1 = \hat{D}_2 = 90°$	given/*gegee* ✓**M**	1 mark for statement & reason/ *1 punt vir bewering & rede*
		$\hat{E}_1 = \hat{S}$	corr. ∠s and AS ‖ TE ✓**M** *ooreenkomstige ∠e en AS ‖ TE*	1 mark for statement & reason/ *1 punt vir bewering & rede*
		$\therefore \hat{W} = \hat{E}_2$	sum int. ∠s of Δ ✓**M** *som binne ∠e van* Δ	1 mark for correct conclusion & reason/*1 punt vir korrekte afleiding & rede*
		$\therefore \triangle WTE \;|||\; \triangle EDS$	∠∠∠ ✓**M**	(4)

	3.2.2	$\frac{4}{y} = \frac{x}{3}$ ✓**A** $\therefore xy = 4 \times 3 = 12$ ✓**A**	1 mark for 3 *and* y/1 punt vir 3 & y 1 mark for $xy = 12$/1 punt vir $xy = 12$ (2)

	3.2.3	Area/*Oppervlakte* = 1 × b = xy Area/*Oppervlakte* = 12 ✓**CA**	1 mark for answer/*1 punt vir antwoord* (1)

3.3	**STATEMENT**	**REASON**	1 mark for $G\hat{F}K = 47°$/ *1 punt vir $G\hat{F}K = 47°$*
	$G\hat{F}K = 180° - 133°$ $G\hat{F}K = 47°$ ✓**A**	∠s in a straight line *∠e op 'n reguit lyn*	1 mark for statement & reason/ *1 punt vir bewering & rede*
	$G\hat{H}F = 180° - 37° - 47°$ $G\hat{H}F = 96°$ ✓**CA**	sum int. ∠s of Δ ✓**M** *som binne ∠e van* Δ	1 mark for $G\hat{H}F = 96°$/ *1 punt vir $G\hat{H}F = 96°$*
	$G\hat{H}F = K\hat{H}A = 96°$	vert. opp. ∠s ✓**M** *regoorst. ∠e*	1 mark for statement & reason/ *1 punt vir bewering & rede*
	$\hat{a} + 96° = 117°$ $\hat{a} = 117° - 96°$ $\hat{a} = 21°$ ✓**CA**	ext ∠ of ΔKHM ✓**KM** *buite-∠ of* ΔKHM	1 mark for statement & reason/ *1 punt vir bewering & rede*
	or/_of_		1 mark for answer/*1 punt vir antwoord*
	$K\hat{A}H = 180° - 117°$ $K\hat{A}H = 63°$ ✓**A**	∠s in a straight line/ *∠e op 'n reguit lyn*	1 mark for $K\hat{A}H = 63°$/ *1 punt vir $K\hat{A}H = 63°$*
	$G\hat{F}K = 180° - 133°$ $G\hat{F}K = 47°$ ✓**CA**	∠s in a straight line/ *∠e op 'n reguit lyn*	1 mark for $G\hat{F}K = 47°$/ *1 punt vir $G\hat{F}K = 47°$*
	$G\hat{H}F = 180° - 37° - 47°$ $G\hat{H}F = 96°$ ✓**CA**	sum int. ∠s of Δ ✓**M** *som binne ∠e van* Δ	1 mark for statement & reason/ *1 punt vir bewering & rede*
	$G\hat{H}F = K\hat{H}A = 96°$	vert. opp. ∠s ✓**M** *regoorst. ∠e*	1 mark for $G\hat{H}F = 96°$/ *1 punt vir $G\hat{H}F = 96°$*
	$\hat{a} + 96° = 180° - 96° - 63°$ $\hat{a} = 21°$ ✓**CA**	sum int. ∠s of Δ *som binne ∠e van* Δ	1 mark for statement & reason/ *1 punt vir bewering & rede* 1 mark for answer/*1 punt vir antwoord* (6)

[18]

QUESTION/*VRAAG* 4

4.1	4.1.1		1 mark each for A', B' C', D' and E' correctly translated, 5 units left and 6 units up, same shape and size/ *1 punt vir A', B', C', D' & E' reg getransleer, 5 eenhede links en 6 eenhede op, behou vorm en grootte* (5)
	4.1.2	$A'(-1; 2)$ ✔**A** $B'(2; 3)$ ✔**A** $C'(4; -1)$ ✔**A**	1 mark each for coordinates of A', B' & C'/ *1 punt elk vir koördinate van A', B' & C'* (3)
			[8]

QUESTION/*VRAAG* 5

5.1	5.1.1	$P = 4 \times 1$ ✔**M** $\quad = 4 \times 7$ $P = 28$ cm ✔**A** $P = \frac{28}{100} = 0,28$ m ✔**CA**	1 mark for formula and multiplication/ *1 punt vir formule en vermenigvuldiging* 1 mark for answer/*1 punt vir antwoord* 1 mark for converting to m ($\div 100$) *1 punt vir omskakeling na m ($\div 100$)* (3)
	5.1.2	$A = 1^2$ ✔**M** $\quad = (7$ cm$)^2$ $A = 49$ cm^2 ✔**CA**	1 mark for formula/*1 punt vir formule* 1 mark for answer/*1 punt vir antwoord* (2)
	5.1.3	$V = 1^3$ ✔**M** $\quad = (7$ cm$)^3$ $\quad = 343$ cm^3 ✔**CA**	1 mark for formula/*1 punt vir formule* 1 mark for answer/*1 punt vir antwoord* 1 mark for converting (2)
	5.1.4	$SA = 6 \times 1^2$ ✔**M** $\quad = 6 \times (7$ cm$)^2$ ✔**M** $\quad = 294$ cm^2 ✔**CA** $= \frac{294}{100} \approx 3$ m^2 ✔**CA**	1 mark for formula/*1 punt vir formule* 1 mark for substitution/*1 punt vir vervanging* 1 mark for converted answer in m²/*1 punt vir omgeskakelde antwoord in m²* (4)

5.2	5.2.1	$V = \pi r^2 \times H$ ✓**M** $r = \frac{1}{2} \times 28$ mm $= 14$ mm ✓**M** $V = \frac{22}{7}(14)^2 \times 35$ ✓**M** $V = 21\ 560$ mm³ ✓**CA**	1 mark for formula/_1 punt vir formule_ 1 mark for radius = 14 m/_1 punt vir straal = 14 m_ 1 mark for substitution/_1 punt vir vervanging_ 1 mark for answer/_1 punt vir antwoord_ (4)

	5.2.2	Area of the square $= l^2$
		 Oppervlakte van vierkant $= (28$ mm$)^2$
		                    $= 784$ mm² ✓**A**
		 Area of the top of cylinder $= \pi r^2$
		 Oppv. bo-aansig sil. $= 3,14 \times (14$ mm$)^2$
		                    $= 615,44$ mm² ✓**A**
		 Shaded area = Area of square – Area of circle/ ✓**M**
		 Skadu streek = oppv vierkant – oppv sirkel
		 $= 784$ mm² $- 615,44$ mm²
		 $= 168,56$ mm² ✓**CA**
			1 mark for area of the square/
			 1 punt vir oppervlakte van vierkant
			 1 mark for area of the circle/_1 punt vir oppervlakte van die sirkel_
			 1 mark for reasoning/_1 punt vir redenasie_
			 1 mark for answer/_1 punt vir antwoord_
			
			 (4)

			[19]

QUESTION/_VRAAG_ 6

6.1	6.1.1	$C = 2\pi r$ $r = OR = OT$ ✓**M** $= 2(3,14)(5)$ ✓**M** $= 31,4$ cm ✓**CA**	1 mark for formula and r = 5/_1 punt vir formule en r = 5_ 1 mark for substitution/_1 punt vir vervanging_ 1 mark for answer/_1 punt vir antwoord_ (3)

	6.1.2	$OY = 12$ cm and/_en_ $RK = \frac{1}{2}RT = 4$ ✓**M**
		 $OK^2 = OR^2 - RK^2$ ✓**M** Pythagoras
		       $= (5)^2 - (4)^2$ ✓**M**
		       $= 25 - 16 = 9$
		 OK $= 3$ cm ✓**CA**
		 KY $= OY - OK$
		 $= 12 - 3 = 9$ cm ✓**CA**
			1 mark for RK $= \frac{1}{2}RT$/_1 punt vir RK = $\frac{1}{2}RT$_
			 1 mark for Pythagoras/_1 punt vir Pythagoras_
			 1 mark for substitution/_1 punt vir vervanging_
			 1 mark for OK = 3 cm/_1 punt vir OK = 3 cm_
			 1 mark for answer/1 _punt vir antwoord_
			 (5)

			[8]
			TOTAL/_TOTAAL_ : 75