GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

JUNE/*JUNIE* 2023

GRADE/*GRAAD* 9

MARKING GUIDELINES/

NASIENRIGLYNE

MATHEMATICS/
WISKUNDE

Keywords to consider/*Sleutelwoorde om in ag te neem*:

M = **Method/*Metode***

CA = **Consistent accuracy/*Aaneenlopende akkuraatheid***

A = **Answer/*Antwoord***

8 pages/*bladsye*

SECTION/*AFDELING* A

QUESTION/*VRAAG* 1

1.1	1.2	1.3	1.4	1.5
B✓	B✓	D✓	D✓	C✓

[5]

SECTION/*AFDELING* B

QUESTION/*VRAAG* 2

2.1	2.1.1	20✓**A**	1 mark for the HCF. *1 punt vir GGF.*	(1)
	2.1.2	2 100✓**A**	1 mark for the LCM. *1 punt vir KGV.*	(1)
2.2	A rational number✓**A** *'n Rasionale getal*✓**A**		1 mark for correct answer. *1 punt vir regte antwoord.*	(1)
2.3	2.3.1	73,33% ✓**A** **OR/*OF*** $73\frac{1}{3}\%$ ✓**A**	1 mark for correct answer. *1 punt vir regte antwoord.*	(1)
	2.3.2	27 ✓**A** **OR/*OF*** $\frac{27}{30}$ ✓**A**	1 mark for the answer. *1 punt vir die antwoord.*	(1)
2.4	2.4.1	$\frac{60}{3} = \frac{480}{x}$ ✓**M** $60x = 480 \times 3$ $x = \frac{1440}{60}$ $x = 24$ ✓C**A** **OR/*OF*** 0 | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24✓✓**A**	1 mark for ratio/proportion. *1 punt vir verhouding/ eweredigheid* 1 mark for the final answer *1 punt vir finale antwoord.* **OR/*OF*** 2 marks if table or number line is used. *2 punte as tabel of getallyn gebruik is* **OR/*OF*** **Consider alternative mathematically correct responses which lead to the correct answer.** ***Oorweeg alternatiewe wiskundig korrekte redenasies wat na die regte antwoord lei.***	(2)

	2.4.2	Direct proportion ✓C**A** *Direkte eweredigheid*✓C**A**	1 mark for correct answer. *1 punt vir regte antwoord.*	(1)
2.5		$A = P\left(1+\frac{r}{100}\right)^n$ $A = 3\ 030{,}05\ \left(1+\frac{4{,}5}{100}\right)^5$ ✓**A** $A = 3\ 030{,}05\ \left(\frac{104{,}5}{100}\right)^5$ ✓**M** A = R3 775,993 … ✓**CA** $A \approx$ R3 776 ✓**CA** **OR/*OF*** $A = P(1+i)^n$ where $i = \frac{4{,}5}{100} = 0{,}045$ A = R3 030,05(1 + 0,045)^5 ✓**A** A = R3 775,993 … ✓**CA** $A \approx$ R3 776 ✓**CA**	1 mark for correct substitution of p, r and n. *1 punt vir korrekte substitusie van p, r en n.* 1 mark for simplifying. *1 punt vir vereenvoudiging.* 1 mark for correct answer. *1 punt vir regte antwoord.* 1 mark for rounding-off correctly. *1 punt vir korrekte afronding.*	(4)
				[12]

QUESTION/*VRAAG* 3

3.1		–13 ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)
3.2		2 – (–1) ✓A = 2 + 1 = 3 ✓**A**	1 mark for the expression./ *1 punt vir uitdrukking* 1 mark for the correct answer./ *1 punt vir regte antwoord.* **OR/*OF*** 1 mark for answer only. *1 punt vir slegs antwoord.*	(2)
3.3	3.3.1	$\frac{-\sqrt{36}}{(-1)^3-2^3}$ $= \frac{-6}{-1-8}$ ✓✓M $= \frac{-6}{-9}$ $= \frac{2}{3}$ ✓C**A**	1 mark for -6 *1 punt vir* -6 1 mark for -1 *1 punt vir* -1 1 mark for answer. *1 punt vir antwoord.* **0 mark for answer only./** ***0 punt vir slegs antwoord.***	(3)

	3.3.2	$3 + 6 \times (6 + 4) \div 5 - 7$ $= 3 + 6 \times 10 \div 5 - 7$ ✓M $= 3 + 12 - 7$ ✓M $= 15 - 7$ $= 8$ ✓**CA**	1 mark for simplifying/ *1 punt vir vereenvoudiging.* 1 mark for dividing $\frac{60}{5}$. *1 punt vir deling* $\frac{60}{5}$. 1 mark for answer. *1 punt vir antwoord.* **0 mark for answer only.** ***0 punte vir slegs antwoord.***	(3)
				[9]

QUESTION/*VRAAG* 4

4.1		$9; \sqrt{25}; \frac{9}{2}; \sqrt[3]{64}; 1; 0{,}8$ ✓✓**A**	1 mark for 1st 3 correct numbers. *1 punt vir 1ste 3 korrekte getalle.* 1 mark for last 3 correct numbers./*1 punt vir laaste 3 korrekte getalle.*	(2)
4.2		$\sqrt[3]{64} < \sqrt{64}$ ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)
4.3	4.3.1	$5^{-1} = \frac{1}{5^1}$ ✓**A** **OR/OF** $5^{-1} = \frac{1}{5}$ ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)
	4.3.2	$(pq)^0 = 1$ ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)

4.4	$\frac{16a^2b}{3a^{-3}b^2} \div \frac{8a^3b}{9a^4b}$ $\frac{16a^2b}{3a^{-3}b^2} \times \frac{9a^4b}{8a^3b}$ ✓M $= \frac{(16\times 9)a^6b^2}{(3\times 8)b^3}$ ✓ ✓M $= \frac{6a^6}{b}$ ✓CA **OR/*OF*** $\frac{16a^2b}{3a^{-3}b^2} \div \frac{8a^3b}{9a^4b}$ $\frac{2}{16a^2b} \times \frac{3}{9a^4b}$ ✓M $3a^{-3}b^2 \quad 8a^3b$ 1 1 $= (2 \times 3)a^{2+4-(-3)-3}b^{1+1-2-1}$ ✓M $= 6a^6b^{-1}$ ✓M $= \frac{6a^6}{b}$ ✓CA	1 mark for multiplying by the multiplicative inverse of the divisor./*1 punt vir vermenigvuldiging met die vermenigvuldigingsinverse van die deler.* 1 mark for product law application./*1 punt vir toepassing van die produk-wet.* 1 mark for quotient law application./*1 punt vir toepassing van die kwosient-wet.* 1 mark for the answer *1 punt vir antwoord.*	(4)
			[9]

QUESTION/*VRAAG* 5

5.1	216 ✓**A**		1 mark for 216./*1 punt vir 216.*	(1)
	5.2.1	2; 6; 10 ……✓A	1 mark for all 3 terms. *1 punt vir al 3 terme.*	(1)
	5.2.2	$T_n = 4n - 2$ ✓✓CA	1 mark for $4n$./*1 punt vir 4n.* 1 mark for -2./*1 punt vir –2.*	(2)
	5.2.3	$T_n = 4n - 2$ $T_{15} = 4(15) - 2$ ✓M T_{15} = 58 hearts/*harte* ✓CA	1 mark for substitution./ *1 punt vir vervanging.* 1 mark for answer. *1 punt vir antwoord.*	(2)

	5.2.4	39 × 2 = 78 hearts/*harte* ✓A $T_n = 4n - 2$ $78 = 4n - 2$ ✓M $80 = 4n$ $\therefore\ n = 20$ ✓CA **OR/*OF*** $T_n = 2n - 1$ ✓M $39 = 2n - 1$ ✓M $40 = 2n$ $n = 20$ ✓CA	1 mark for 78./*1 punt vir 78.* 1 mark substitution./ *1 punt vir vervanging.* 1 mark for answer. *1 punt vir antwoord.* 1 mark for formula./ *1 punt vir formule.* 1 mark substitution./ *1 punt vir vervanging.* 1 mark for answer. *1 punt vir antwoord.*	(3)
5.3	12 cm ✓✓A		2 marks for the answer. *2 punte vir antwoord.*	(2)
				[11]

QUESTION/*VRAAG* 6

6.1	Variable/*Veranderlike* ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)
6.2	False/*Vals* ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)
6.3	$(-12p + 12pq) - (2p + pq)$ $= -12p + 12pq - 2p - pq$ ✓**M** $= -14p + 11pq$ ✓**CA**	1 mark for $-pq$./*1 punt vir* $-pq$ 1 mark for answer. *1 punt vir antwoord.*	(2)
6.4	$(ab^2 + b)^2$ $= (ab^2 + b)(ab^2 + b)$ $= a^2b^4 + 2ab^3 + b^2$ ✓✓**A**	1 mark for a^2b^4./*1 punt vir* a^2b^4. 1 mark for $2ab^3$./*1 punt vir* $2ab^3$.	(2)
6.5	$3x^2 + 9 - 12x$ $= 3x^2 - 12x + 9$ ✓**M** $= 3(x^2 - 4x + 3)$ ✓**M** $= 3(x - 3)(x - 1)$ ✓✓**A**	1 mark for standardisation of the expression./*1 punt vir standaardvorm van uitdrukking.* 1 mark for taking out the common factor./*1 punt vir uithaal van gemene factor.* 1 mark for each factor./*1 punt vir elke faktor* $(x - 3)(x - 1)$.	(4)

6.6	6.6.1	$6p - 4 + 2(2p + 3)$ $= 6p - 4 + 4p + 6$ ✓**M** $= 10p + 2$ ✓**CA**	1 mark for removing the brackets./*1 punt vir verwydering van hakies.* 1 mark for the answer. *1 punt vir antwoord.*	(2)
	6.6.2	$\frac{b^2+5b}{b^2-25} \times \frac{3b^2-15b}{b^2}$ $= \frac{b(b+5)}{(b+5)(b-5)} \times \frac{3b(b-5)}{6b}$ ✓✓✓**M** $= \frac{3b^2}{6b}$ $= \frac{b}{2}$ ✓**CA**	1 mark for $(b + 5)(b - 5)$./*1 punt vir* $(b + 5)(b - 5)$. 1 mark for $b(b + 5)$./*1 punt vir* $b(b - 5)$. 1 mark for $3b(b - 5)$./*1 punt vir* $3b(b - 5)$. 1 mark for the answer. *1 punt vir antwoord.*	(4)
				[16]

QUESTION/*VRAAG* 7

7.1	$4(2d + 6) = 32$ ✓**A**	1 mark for answer. *1 punt vir antwoord.*	(1)
7.2	$d(d - 2) = (d + 4)(d - 3)$ $d^2 - 2d = d^2 + d - 12$ ✓**M** $-3d = -12$ ✓M $d = 4$ ✓**A** Mary is correct/*Mary is reg* ✓**A**	1 mark for removing the brackets./*1 punt vir verwydering van hakies.* 1 mark for adding like terms. *1 punt vir bymekaartel van gelyksoortige terme.* 1 mark for the value of d. *1 punt vir waarde van d.* 1 mark for the final judgement. *1 punt vir finale slotsom.* **NB. correct judgement without calculations, NO Marks/ LW. *korrekte slotsom sonder berekening verdien GEEN punte.***	(4)

7.3	$x-\frac{x-2}{3}=2$ $3x - (x - 2) = 6$ ✓**M** $3x - x + 2 = 6$ ✓**M** $2x = 4$ $x = 2$ ✓**CA**	1 mark for multiplying all terms by the LCD./*1 punt vir vermenigvuldiging met KGV.* 1 mark simplification./*1 punt vir vereenvoudiging.* 1 mark for answer. *1 punt vir antwoord.*	(3)
7.4	Let the number of first type of chocolate equal x./ *Stel die 1ste soort sjokolade gelyk aan x.* Number of first type of chocolate = x Number of second type of chocolate $= 22 - x$. *Aantal 1ste soort sjokolade* $= x$ *Aantal 2de soort sjokolade* $= 22 - x$ First kind is R8: Total amount for 1st kind = R8 × x. 2nd kind is R6: Total amount for 2nd kind is R6 $(22 - x)$. *1ste soort kos R8: Totale bedrag vir 1ste soort = R8 × x.* *2de soort kos R6: Totale bedrag vir 2de soort = R6 (22 – x)* The total amount spent for both types of chocolates is R150. *Die totale bedrag gespandeer op beide soorte is R150.* $\therefore 8x + 6(22 - x) = 150$ ✓✓**M** $8x + 132 - 6x = 150$ ✓**M** $2x = 18$ $x = 9$ ✓**M** ∴ there were 9 chocolates that cost R8/daar was *9 sjokolade vir R8* and there were/*en daar was* $22 - 9 = 13$ ✓***CA*** chocolates that cost R6/ *sjokolades vir R6.*	2 marks for setting up the equation correctly./*2 punte vir korrekte opstel van vergelyking.* 1 mark for simplification./*1 punt vir vereenvoudiging.* 1 mark for answer. *1 punt vir antwoord.* 1 mark for 13./*1 punt vir 13.* **NB:** **Accept any variable (does not have to be x)./*Aanvaar enige veranderlike (hoef nie x te wees nie).*** **Accept any reasonable and logical method to arrive at the answer as correct./*Aanvaar enige redelike en logiese metode om die regte antwoord te verkry, as korrek.*** (5)
			[13]
			TOTAL/*TOTAAL*: 75 MARKS/*PUNTE*