GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

JUNE/*JUNIE* 2024

GRADE/*GRAAD* 9

MARKING GUIDELINES

NASIENRIGLYNE

MATHEMATICS
WISKUNDE
(PAPER/*VRAESTEL 1*

9 pages/*bladsye*

SECTION/*AFDELING* A

QUESTION/*VRAAG* 1

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

[5]

SECTION/*AFDELING* B

QUESTION/*VRAAG* 2

2.1	2.1.1	63 ✓**A**	1 mark for the HCF *1 punt vir die GGF*	(1)
	2.1.2	756 ✓**A**	1 mark for the LCM *1 punt vir die KGV*	(1)
2.2	$\frac{20}{100} \times 599{,}79$ **OR/*OF*** $\frac{80}{100} \times 599{,}79$ $= 119{,}96$ $= R479{,}83$ ✓**M** $= 599{,}79 - 119{,}96$ $= \text{R}479{,}83$ ✓**M** **AND/*EN*** $0{,}75 \times 599{,}79$ **OR/*OF*** $= \frac{599{,}79}{4}$ $= \text{R}449{,}84$ $= 149{,}95 \times 3$ $= R449{,}84$ ✓**M** Any other alternative and mathematically correct method. *Enige ander alternatiewe en wiskundig korrekte metode.* Themba paid less./*Themba het minder betaal* ✓**CA**	1 mark for *R*479,83 *1 punt vir R479,83* 1 mark for *R*449.84 *1 punt vir R*449.84 1 mark for the answer *1 punt vir antwoord*	(3)

2.3	Distance = Speed × Time = s × t *Afstand = Spoed × Tyd* = s × t Uncle's distance: $88 \times 5 = 440\ km$ *Oom se afstand* : $88 \times 5 = 440\ km$ ✓**M** Uncle's distance = Young couple's distance *Oom se afstand : = Jong paartjie se afstand* $440 = 80\ t$ ✓**M** $\frac{440}{80} = t$ t = 5,5 hours/*uur*. Driving time of young couple*/Rytyd van jong paartjie* 5 + 0,5 = 5,5 hours/*uur* ✓**CA** **OR/*OF*** Young couple's distance: 80 × 5 = 400 ✓**M** *Jong paartjie se afstand*: *80 × 5 = 400* Uncle's distance: 88 × 5 = 440 ✓**M** *Oom se afstand* : *88 × 5 = 440* 440 – 400 = 40 $\frac{40}{80} = 0{,}5hrs$ Driving time of young couple*/Rytyd van jong paartjie* 5 + 0,5 = 5,5 hours/*uur* ✓ **CA** Uncle left 0,5 hrs or 30 min after the young couple left. *Oom verlaat die huis 0,5 uur of 30 min na die jong paartjie.* **OR/*OF*** $80(t + 5) = 440$ ✓**M** $80t + 400 = 440$ $80t = 40$ ✓**M** $t = \frac{40}{80}$ or/*of* $\frac{1}{2}$ *h* or/*of 0,5 h* or/*of 30 minutes* Time taken by young couple:/*Rytyd vir jong paartjie:* 5 + 0,5 = 5,5 hours/*uur* ✓**CA**	1 correct substitution/calculation/ *1 punt vir korrekte vervanging/bewerking* 1 mark for simplification/ *1 punt vir vereenvoudiging* 1 mark for answer/*1 punt vir antwoord.*	(3)

2.4	$A = P(1+i)^n$ ✓**A** $670\,000 = P(1 + 0{,}115)^6$ ✓**M** $\frac{670000}{(1{,}115)^6} = P$ $R348\,678{,}84 = P$ ✓**M** $\approx R348\,680{,}00$ ✓**CA**	1 mark for correct formula/ *1 punt vir korrekte formule* 1 mark correct substitution / *1 punt vir korrekte vervanging* 1 mark for P/*1 punt vir P* 1 mark for answer rounded-off correctly/*1 punt vir antwoord korrek afgerond*	(4)
			[12]

QUESTION/*VRAAG* 3

3.1	negative/*negatief* ✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
3.2	$-(2)^2 = -4$ ✓**A**	1 mark for the correct answer/*1 punt vir korrekte antwoord* OR/*OF* 1 mark for answer only/ *1 punt vir slegs antwoord*	(1)
3.3	$-1^{2022} + (-1)^{2024}$ $= -1 + 1$ ✓M $= 0$ ✓**CA**	1 mark for $-1+1$/*1 punt vir* $-1+1$ 1 mark for answer/*1 punt vir antwoord* **0 mark for answer only/** ***0 punte vir slegs antwoord***	(2)
3.4	3.4.1 $2 - 4^3 + (-12) + \sqrt{144}$ $= 2 - 64 - 12 + 12$ ✓M $= -62$ ✓**CA**	1 mark for simplifying/ *1 punt vir vereenvoudiging* 1 mark for answer/*1 punt vir antwoord* **0 mark for answer only/** ***0 punte vir slegs antwoord***	(2)

	3.4.2	$\frac{\left(-\sqrt{25}\right)^3 \times \left(\sqrt[3]{-8}\right)^2}{-3(-3)^2 + 2\times 2+3}$ $= \frac{(-5)^3 \times (-2)^2}{-3(9)+4+3}$ ✓✓**M** $= \frac{-125\times 4}{-27+4+3}$ ✓**M** $= \frac{-500}{-20}$ $= 25$ ✓**CA**	1 mark for $(-5)^3$/*1 punt vir* $(-5)^3$ 1 mark for $(-2)^2$/*1 punt vir* $(-2)^2$ 1 mark for simplifying/ *1 punt vir vereenvoudiging* 1 mark for answer/*1 punt vir antwoord*	(4)
				[10]

QUESTION/*VRAAG* 4

4.1	4.1.1	C: $3p \times 3p = 3^2p^2$ ✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
	4.1.2	A: $\frac{3}{p} \times \frac{3}{p} = 3^2p^{-2}$ ✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
	4.1.3	D: $\frac{1}{p^{-2}} \times \frac{1}{p^{-2}} \times \frac{1}{p^{-2}} \times \frac{1}{p^{-2}} = (p^2)^4$ ✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
4.2	$pq = \frac{q}{p^{-1}}$ $= \frac{q}{\frac{1}{p}}$ ✓M $= q \times \frac{p}{1}$ $= pq$ ✓**CA**		1 mark for/*1 punt vir*: $\frac{q}{\frac{1}{p}}$ 1 mark for answer/ *1 punt vir antwoord*	(2)

4.3	4.3.1	$\frac{r^{-2}\,s^{-5}\times r^{4}s^{-2}}{r^{2}s^{6}}$ $=\frac{r^{-2+4}\times s^{-5-2}}{r^{2}s^{6}}$ ✓M $=r^{2-2}\,s^{-7-6}$ ✓M $=r^{0}s^{-13}$ ✓CA $=s^{-13}$ OR/*OF* $\frac{1}{s^{13}}$ ✓**CA**	1 mark for multiplication (law of exponents) *1 punt vir vemenigvuldiging (eksponensiële wet)* 1 mark for division (law of exponents)/ *1 punt vir deling (eksponensiële wet)* 1 mark for the answer/*1 punt vir antwoord*	(3)
	4.3.2	$\frac{5p^{0}p+(5q)^{0}p}{-(2p)^{2}}$ $=\frac{5p+p}{-4p^{2}}$ ✓**M** $=\frac{6p}{-4p^{2}}$ ✓**M** $=\frac{-3}{2p}$ ✓**CA**	1 mark for applying laws of exponents/ *1 punt vir toepassing van* e*ksponensiële wette* 1 mark for/*1 punt vir* $-4p^{2}$ 1 mark for answer/ *1 punt vir antwoord*	(3)
				[11]

QUESTION/*VRAAG* 5

5.1	5.1.1	7; 11; ✓✓A	1 mark for each term/ *1 punt vir elke term*	(2)
	5.1.2	$T_n = 4n + 3$ $867 = 4n + 3$ ✓M $867 - 3 = 4n$ $n = 216$✓CA	1 mark for substitution/ *1 punt vir korrekte vervanging* 1 mark for answer/*1 punt vir antwoord*	(2)
5.2	5.2.1	16; 32; ✓ ✓A	1 mark for each term/ *1 punt vir elke term*	(2)

	5.2.2	Start with 1 and multiply the previous term by 2 ✓CA. *Begin met 1 en maal die vorige term met 2.* **OR/*OF*** Start with 1 and multiply by 2 repeatedly. ✓CA *Begin met 1 en maal herhaadelik met 2.* **OR/OF** Term value is 2 to the power term number minus/subtract 1. ✓CA. *Term waarde is 2 tot die mag van die term posisie minus 1.* **OR/*OF*** Multiply each term by 2 to get the next term. ✓CA *Maal elke term met 2 om die volgende term te kry.*	1 mark for correct answer/*1 punt vir korrekte antwoord*	(1)
				[7]

QUESTION/*VRAAG* 6

6.1	6.1.1	4✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
	6.1.2	75y ✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
	6.1.3	4^{th} degree ✓**A** 4^{de} *graad*	1 mark for answer/*1 punt vir antwoord*	(1)
6.2	$-a + (2b - 2a)^3$ $= -(-1) + [2(2) - 2(-1)]^3$ ✓**M** $= 1 + 6^3$ $= 217$ ✓**CA**		1 mark for correct substitution/ *1 punt vir korrekte vervanging* 1 mark for answer/*1 punt vir antwoord*	(2)
6.3	6.3.1	$-3a(a + b)(2a - b^2)$ $= -3a(2a^2 - ab^2 + 2ab - b^3)$ $= -6a^3 + 3a^2b^2 - 6a^2b + 3ab^3$ ✓✓✓**CA**	1 mark for/*1 punt vir* $3a^2b^2$ 1 mark for/*1 punt vir* $-6a^2b$ 1 mark for/*1 punt vir* $3ab^3$	(3)
	6.3.2	$(2x^2)^3 + \sqrt[3]{27x^{12}} - 8x^4$ $= 8x^6 + 3x^4 - 8x^4$ ✓**A** $= 8x^6 - 5x^4$ ✓✓**A**	1 mark for/*1 punt vir* $3x^4$ 1 mark for/*1 punt vir* $8x^6$ 1 mark for/*1 punt vir* $-5x^4$	(3)
6.4	6.4.1	$p^2 - 25$ $= (p - 5)(p + 5)$✓ ✓**A**	1 mark for each factor./*1 punt vir elke faktoor.*	(2)
	6.4.2	$3x^2 - 21x + 30$ $= 3(x^2 - 7x + 10)$ ✓**M** $= 3(x - 2)(x - 5)$ ✓✓**CA**	1 mark for/*1 punt vir* 3 1 mark for/*1 punt vir* $(x - 2)$ 1 mark for/*1 punt vir* $(x - 5)$	(3)
				[16]

QUESTION/*VRAAG* 7

7.1		$x + 5x + (5x + 2) = 123$ ✓**A** **OR/*OF*** $x + 5x + 5x + 2 = 123$ ✓**A** **OR/*OF*** $11x + 2 = 123$ ✓**A**	1 mark for answer/*1 punt vir antwoord*	(1)
7.2	7.2.1	$4a - 3a(a - 2) + 3a^2 = 10$ $4a - 3a^2 + 6a + 3a^2 = 10$ ✓**M** $10a = 10$ ✓**M** $a = 1$ ✓C**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 answer/*1 punt vir antwoord*	(3)
	7.2.2	$\frac{2x - 3}{2} = \frac{5x}{3}$ $3(2x - 3) = 2(5x)$ ✓**M** $6x - 9 = 10x$ $-4x = 9$ ✓**M** $x = \frac{-9}{4}$ ✓C**A**	1 mark for multiplying all terms by the LCD/ *1 punt vir vermenigvuldiging met die KGV.* 1 mark for simplification/*1 punt vir korrekte vervanging* 1 mark for answer/*1 punt vir antwoord*	(3)
	7.2.3	$3^{x-2} = 81$ $3^{x-2} = 3^4$ ✓**M** $\therefore x - 2 = 4$ $x = 6$ ✓C**A**	1 mark for/*1 punt vir* 3^4 1 mark for answer/*1 punt vir antwoord*	(2)

7.3

Softener/ *Versagter*	1	2	3	4	5	**6 ✓M**
Amount/*Bedrag*	120	240	360	480	600	**720 ✓M**
Dishwashing liquid/*Skottel-goedseep*	2	4	6	8	10	**12 ✓M**
Amount/*Bedrag*	300	600	900	1 200	1 500	**1 800 ✓A**
Total/*Totaal*	420	840	1 260	1 680	2 100	**2 520 ✓M**

OR/*OF*

Let k equal the number of 5 ℓ bought.
Laat k gelyk wees aan die hoeveelheid 5 ℓ gekoop.
$120k + 300k = 2\,520$ ✓**M**
$420k = 2\,520$
$k = 6$ ✓**M**
Softener/*Versagter :* $120 \times 6 = 720$ ✓**M**
Dishwashing liquid/*skottelgoedseep*:
$= 150 \times 2 \times 6 = 1\,800$ ✓**M**
He bought/*Hy koop* 12× 5 ℓ dishwashing liquid/ *skottelgoedseep* ✓C**A**

OR/*OF*

Let/*Laat* $x = 1 \times 5$ ℓ fabric softener/*versagter*.
then/*dan* $2x = 1 \times 5$ ℓ dishwashing liquid/skottelgoed-seep ✓**M**
Cost of softener/ *Koste van versagmiddel* $= 120x$ and/*en*
Dishwashing liquid/*skottelgoedseep* $= 150 \times 2x = 300x$ ✓**M**
$\therefore 120x + 300x = 2\,520$ ✓**M**
$420x = 2520$
$x = 6$ ✓**M**
$\therefore 2x = 12 \times 5l$ dishwashing liquid/ *skottelgoedseep* ✓**CA**
Any other alternative and mathematically correct method.
Enige ander alternatiewe en wiskundig korrekte metode.

1 mark for/*1 punt vir* 6
1 mark for/*1 punt vir* 720
1 mark for/*1 punt vir* 12
1 mark for/*1 punt vir* 1800
1 mark for adding/ *1 punt vir bymekaartel van:* $720 + 1800 = 2520$
1 mark for the equation/*1 punt vir vergelyking*

1 mark for/*1 punt vir* $k = 6$

1 mark for/*1 punt vir* 720

1 mark for/*1 punt vir* 1800

1 mark for/*1 punt vir* 12

(5)

[14]

TOTAL/*TOTAAL*: 75