PROVINCIAL EXAMINATION/

PROVINSIALE EKSAMEN

NOVEMBER 2022

GRADE/*GRAAD* 9

MARKING GUIDELINES/

NASIENRIGLYNE

MATHEMATICS/*WISKUNDE*
(PAPER/*VRAESTEL* 1)

SECTION/*AFDELING A*

QUESTION/*VRAAG 1*

1.1	1.2	1.3	1.4	1.5
B✔A	B✔A	D✔ A	C✔A	D✔A
				[5]

SECTION/*AFDELING B*
QUESTION/*VRAAG 2*

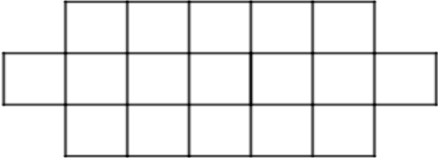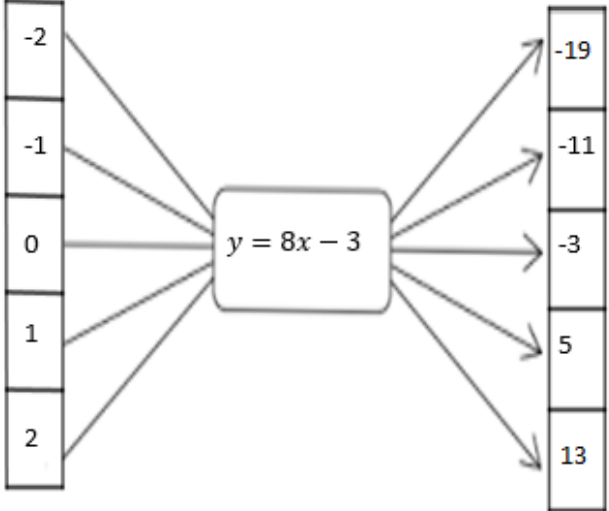| 2.1	$21 : 35 \; (\div 7)$ $= 3 : 5$ ✔✔ **A**	1 mark for 3./*1 punt vir 3.* 1 mark for 5./ *1 punt vir 5.*	(2)
	2.2.1	<table><tr><td>**36**</td><td>**2**</td></tr><tr><td>**18**</td><td>**2**</td></tr><tr><td>**9**</td><td>**3**</td></tr><tr><td>**3**</td><td>**3**</td></tr><tr><td></td><td>✔✔**M**</td></tr></table> $36 = 2^2 \times 3^2$ ✔ **CA**	2 marks for prime factorisation using ladder method./*2 punte vir fatorisering met die leertjie-metode.* 1 mark for each prime factor in exponential form./*1 punt vir elke priemfaktoor in eksponensiële vorm.* (3)
	2.2.2	$540 = 2^2 \times 3^3 \times 5$ $36 = 2^2 \times 3^2$ LCM/*KGV* $= 2^2 \times 3^3 \times 5 = 540$ ✔ **A** HCF/*GGF* $= 2^2 \times 3^2 = 36$ ✔ **A**	1 mark for the LCM./*1 punt vir die KGV.* 1 mark for the HCF./*1 punt vir die GGF.*	(2)
2.3	Indirect Proportion/ *Indirekte verhouding.* $4 \times x = 7 \times 12$ ✔ **M** $4x = 84$ ✔ **M** $x = 21$ ✔ **CA** 21 contractors will be needed to build the house in 4 days./*21 kontrakteurs word benodig om die huis in 4 dae te bou.*	1 mark for setting up indirect proportion equation./*1 punt vir opstel van indirekte verhouding vergelyking.* 1 mark for multiplication/*1 punt vir vermenigvuldiging.* 1 mark for answer./*1 punt vir antwoord.*	(3)
			[10]

QUESTION/*VRAAG 3*

3.1	Ascending order: *Stygende volgorde:* –62; –55; –43; 0; 8; 25 ✔ **A**	1 mark for all numbers arranged correctly./*1 punt vir korrekte ranskikking van al die getalle.*	(1)
3.2	$\dfrac{\sqrt{49}-2}{3+(-2)^3} \times 5$ $\dfrac{7-2 \ ✔ \ \mathbf{M}}{3-8 \ ✔ \ \mathbf{M}} \times 5$ $\dfrac{5}{-5} \times 5$ ✔ **A** $= -5$ ✔ **CA**	1 mark for 7 in numerator./*1 punt vir 7 in die teller.* 1 mark for −8 in denominator./*1 punt vir −8 in die noemer.* 1 mark for correct subtraction in both numerator and denominator./*1 punt vir korrekte aftrekking in beide die teller en noemer.* 1 mark for answer./*1 punt vir antwoord.*	(4)
			[5]

QUESTION/*VRAAG 4*

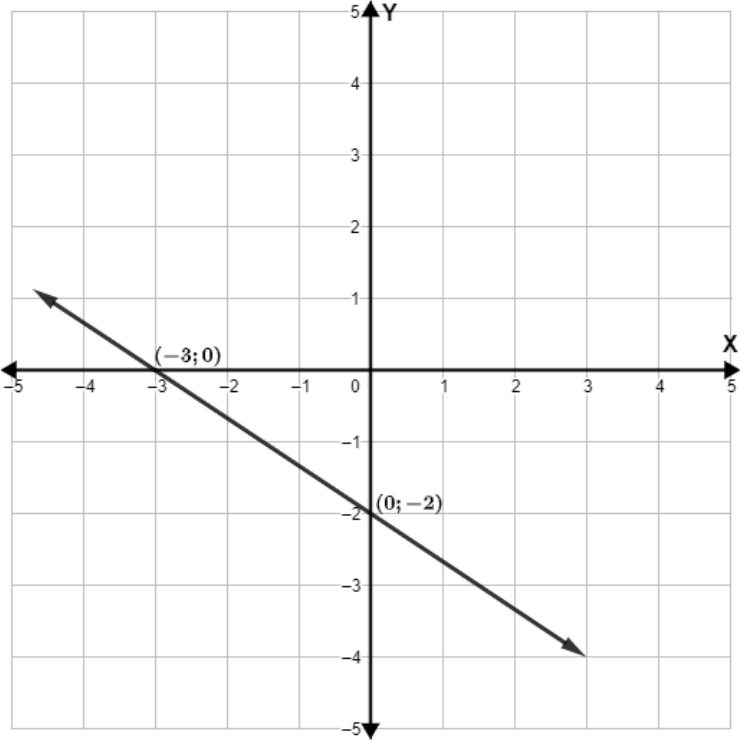| 4.1	a^{-m} ✔ **A**	1 mark for answer./ *1 punt vir antwoord.*	(1)
4.2	$\dfrac{p^{4x+4} \cdot p^{(-2x-2)}}{(p^2)^{x+1}}$ $= p^{4x+4+(-2x-2)-(2x+2)}$ ✔✔✔ **M** $= p^{4x-2x-2x+4-2-2}$ $= p^0$ ✔ **CA** $= 1$ ✔ **CA**	1 mark for product law application./*1 punt vir toepassing van die produkwet.* 1 mark for quotient law application./*1 punt vir toepassing van kwosiëntwet.* 1 mark for multiplying a power with a power in denominator./*1 punt vir vermenigvuldiging van magte in die noemer.* 1 mark for simplifying by adding like terms./*1 punt vir vereenvoudiging deur gelyksoortige terme bymekaar te tel.* 1 mark for answer./*1 punt vir antwoord.*	(5)
			[6]

QUESTION/*VRAAG 5*

5.1	5.1.1	**Sixth/Sesde** ✓✓**A**	2 marks for correct sixth arrangement./*2 punte vir die korrekte sesde ranskikking*	(2)
	5.1.2	$T_1 : 3(1) + $ _____ $ = 2$ $T_1 : 3(1) + (-1) = 2$ $T_2 : 3(2) + $ _____ $ = 5$ $T_2 : 3(2) + (-1) = 5$ $T_3 : 3(3) + $ _____ $ = 8$ $T_3 : 3(3) + (-1) = 8$ $\therefore T_n = 3n - 1$ ✓✓ **A**	1 mark for $3n$./*1 punt vir 3n.* 1 mark for -1./*1 punt vir -1.*	(2)
	5.1.3	$T_n = 3n - 1$ $101 = 3n - 1$ ✓ **CA** $102 = 3n$ $34 = n$ ✓ **CA**	1 mark for correct substitution./ *1 punt vir korrekte vervanging.* 1 mark for correct answer./*1 punt vir korrekte antwoord.*	(2)
5.2		✓✓✓✓✓**A**	1 mark for each output value in the correct spot corresponding to the input value./*1 punt vir elke uitvoergetal in die korrekte posisie in ooreenstemming met die invoergetal.*	(5)
				[11]

QUESTION/*VRAAG 6*

6.1	6.1.1	$3y^3$ ✔ **A**	1 mark for answer./*1 punt vir antwoord.*	(1)
	6.1.2	$2x^3y + 5x^2 + 3xy^3$ ✔ **A**	1 mark for answer./*1 punt vir antwoord.*	(1)
6.2	6.2.1	$(x + y)^2$ $= x^2 + xy + xy + y^2$ $= x^2 + 2xy + y^2$ ✔✔✔ **CA**	1 mark for x^2./*1 punt vir x^2.* 1 mark for $2xy$./*1 punt vir $2xy$.* 1 mark for y^2./*1 punt vir y^2.*	(3)
	6.2.2	$\dfrac{(x^3 + x^2 - 2x)}{x^2 - 1}$ $= \dfrac{x(x^2 + x - 2)}{(x^2 - 1)}$ ✔ **A** $= \dfrac{x(x + 2(x-1)}{(x+1)(x-1)}$ ✔✔ **A** ✔✔ **A** $= \dfrac{x(x+2)}{x+1}$ ✔ **CA**	1 mark taking x out as common factor./*1 punt vir uithaal van x as gemene faktor* 1 mark for each factor in numerator/*1 punt vir elke faktor in die teller.* $(x + 2)(x - 1)$. 1 mark for each factor in denominator/*1 punt vir elke faktor in die noemer.* $(x + 1)(x - 1)$. 1 mark for answer./ *1 punt vir antwoord.*	(6)
				[11]

QUESTION/*VRAAG 7*

7.1		Gradient: 2 ✔ **A** *y*-intercept/*y-afsnit*: –5 ✔ **A**	1 mark for correct gradient./*1 punt vir korrekte gradient of helling.* 1 mark for correct y-intercept./ *1 punt vir regte y-afsnit.*	(2)
7.2	7.2.1	$3y + 2x = -6$ $3(0) + 2x = -6$ ✔ **M** $2x = -6$ $x = -3$ ✔ **CA**	1 mark for substituting zero in the place of y./ *1 punt vir vervanging van y met nul.* 1 mark for answer./*1 punt vir antwoord.*	(2)

7.2.2		
	✓✓✓**CA**	1 mark for plotting the x-intercept correctly./*1 punt vir korrekte aanstip van x-afsnit.* 1 mark for plotting the y-intercept correctly./*1 punt vir korrekte aanstip van y-afsnit.* 1 mark for correct shape./*1 punt vir korrekte vorm.*	(3)

7.3	$A(-\frac{2}{3}; 1); B\left(-2; \frac{1}{2}\right)$		
	Gradient $= \dfrac{\text{vertical change}}{\text{horizontal change}}$ /*Gradient* $= \dfrac{vertikale\ verandering}{horisontale\ verandering}$	1 mark for vertical change./*1 punt vir vertikale verandering.* 1 mark for horizontal change./*1 punt vir horisontale verandering.*	

$$m = \frac{\frac{1}{2} - (1) \ \checkmark\mathbf{M}}{-2 - (-\frac{2}{3}) \ \checkmark\mathbf{M}}$$

$$m = \frac{-\frac{1}{2}}{-\frac{4}{3}}$$

$$m = \frac{3}{8} \ \checkmark\mathbf{CA}$$

Learner may use any two of the three points given. Award full marks for the usage of any two of the three points correctly./ *Leerder mag enige twee van gegewe drie punte gebruik. Ken volpunte toe vir die korrekte gebruik van enige twee punte.*

1 mark for correct gradient/slope./ *1 punt vir korrekte gradient of helling.*

$y = mx + c$

$3 = \dfrac{3}{8}(0) + c$

$3 = c$

1 mark for answer./ *1 punt vir antwoord.*

Learner may use any of the three points given. Award full marks for the usage of any of the three points correctly. *Leerder mag enige van die drie gegewe punte gebruik. Ken volpunte toe vir die korrekte gebruik van enige van die drie punte.*

y-intercept $= 3$/*y-afsnit = 3*

$\therefore y = \dfrac{3}{8}x + 3 \ \checkmark \mathbf{CA}$

(4)

[11]

QUESTION 8/ *VRAAG 8*

8.1	$a = 2$ ✔ **A**		1 mark for answer./*1 punt vir antwoord.*	(1)
8.2	8.2.1	$\dfrac{-8}{y} + 2y = -6$; y ≠ 0 $-8 + 2y^2 = -6y$ ✔ **M** $2y^2 + 6y - 8 = 0$ ✔ **M** $2(y^2 + 3y - 4) = 0$ ✔ **M** $2(y - 1)(y + 4) = 0$ ✔✔ **M** $y = 1$ **or** $y = -4$ ✔ **CA**	1 mark for multiplying all terms by y./ *1 punt vir vermenigvuldiging van alle terme met y*. 1 mark for the standard form./*1 punt vir standaardvorm.* 1 mark for factoring out 2./*1 punt vir gemene faktor 2.* 1 mark for each factor./*1 punt vir elke faktor.* 1 mark for both answers./*1 punt vir beide antwoorde.*	(6)
	8.2.2	$\dfrac{4y + 3}{5} = 5y - 12$ $\frac{4y+3}{5} = \frac{5y-12}{1}$ $4y + 3 = 5(5y - 12)$ ✔ **M** $4y + 3 = 25y - 60$ $4y - 25y = -60 - 3$ ✔ **M** $-21y = -63$ ✔ **M** $y = 3$ ✔ **CA**	1 mark for multiplying all terms by 5./ *1 punt vir vermenigvuldiging van elke term met 5.* 1 mark for simplification./*1 punt vir vereenvoudiging.* 1 mark for subtracting like terms./ *1 punt vir aftrekking van gelyksoortige terme.* 1 mark for answer./*1 punt vir antwoord.*	(4)
8.3	If/ *as* **s ■ t** equals/ *gelyk is aan* **t² + st,** and/*en* **4 ■ x = −3**, then/*dan is* $x^2 + 4x = -3$ ✔ **M** $x^2 + 4x + 3 = 0$ ✔ **CA** $(x + 1)(x + 3) = 0$ ✔✔ **CA** $x = -1$ **or/of** $x = -3$ ✔ **CA**		1 mark for substituting./*1 punt vir vervanging.* 1 mark for quadratic trinomial form./ *1 punt vir kwadratiese drieterm.* 1 mark for each factor./*1 punt vir elke faktor.* 1 mark for both answers./*1 punt vir beide antwoorde.*	(5)
				[16]
			TOTAL/ *TOTAAL*:	**75**