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GAUTENG DEPARTMENT OF EDUCATION

GAUTENGSE DEPARTEMENT VAN ONDERWYS

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

JUNE / JUNIE 2017

GRADE / GRAAD 9

**MATHEMATICS
WISKUNDE**

MEMORANDUM

8 pages / bladsye

MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9**

**GAUTENG DEPARTMENT OF EDUCATION
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PROVINCIAL EXAMINATION
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MATHEMATICS / WISKUNDE**QUESTION 1 / VRAAG 1**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION / PUNTE- TOEKENNING
1.1.	B	1 mark / <i>punt</i>
1.2.	B	1 mark / <i>punt</i>
1.3.	B	1 mark / <i>punt</i>
1.4.	C	1 mark / <i>punt</i>
1.5.	D	1 mark / <i>punt</i>
1.6.	C	1 mark / <i>punt</i>
1.7.	C	1 mark / <i>punt</i>
1.8.	D	1 mark / <i>punt</i>
1.9.	D	1 mark / <i>punt</i>
1.10	A	1 mark / <i>punt</i>

MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9****QUESTION 2 / VRAAG 2**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION / PUNTETOEKENNING
2.1.1	$-a^2b + 3ab^2 + 2a^2b - 4ab^2$ $a^2b - ab^2$	1 mark for / punt vir 3,5 x
2.1.2	$2(x + y) + 4(3x - 2y) - 4(2x - 3y)$ $= 2x + 2y + 12x - 8y - 8x + 12y$ $= 6x + 6y$	1 mark for / punt vir $2x + 2y + 12x - 8y - 8x + 12y$ 1 mark for / 1 punt vir $6x + 6y$
2.1.3	$\frac{(2a^2b^3)^2(2a^{-2}b)^3}{4a^6b^{-1}}$ $= \frac{4a^4b^6 \times 8a^{-6}b^3}{4a^6b^{-1}} \quad \text{OR / OF} \quad = \frac{4a^4b^6 \times 8a^{-6}b^3}{4a^6b^{-1}}$ $= \frac{32a^{-2}b^9}{4a^6b^{-1}}$ $= \frac{8b^{10}}{a^8}$	1 mark for / punt vir $4a^2b^6 \times 8a^{-6}b^3$ 1 mark for / punt vir $32a^{-4}b^9$ 1 mark for / punt vir $8b^{10}$ 1 mark for / punt vir a^{10}
2.1.4	$\sqrt[3]{\frac{-27x^3}{64}}$ $= \frac{-3x}{4}$	1 mark for / punt vir $-3x$ 1 mark for / punt vir for 4
2.2.1	$5(x - 2) = 3x - 4$ $5x - 10 = 3x - 4$ $5x - 3x = -4 + 10$ $2x = 6$ $x = 3$	1 mark for / punt vir $5x - 10$ 1 mark for / punt vir for $2x$ $= 6$ 1 mark for / punt vir for x $= 3$
2.2.2	$3^{x-1} = 81$ $3^{x-1} = 3^4$ $x - 1 = 4$ $x = 5$	1 mark for / punt vir for 3^4 1 mark for / punt vir $x - 1 = 4$ 1 mark for / 1 punt vir $x = 5$
2.2.3	$\frac{x}{3} + \frac{x}{4} = 1$ $4x + 3x = 12$ $7x = 12$ $x = \frac{12}{7}$	1 mark for / punt vir $4x + 3x = 12$ 1 mark for / punt vir $7x = 12$ 1 mark for / punt vir $x = \frac{12}{7}$
2.3.	$x^2 - (2xy)^3$ $= (-1)^2 - (2(-1)(2))^3$ $= 1 - (-4)^3$ $= 1 - (-64)$ $= 65$	1 mark for substitution / punt vir vervanging 1 mark for / punt vir $1 - (-64)$ 1 mark for / punt vir 65

MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9****QUESTION 3 / VRAAG 3**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION/ PUNTETOEKENNING
3.1.1	$\frac{20}{100} \times 50\,000,00$ = R 10 000,00 Deposit / <i>Deposito</i>	1 mark for / <i>punt vir</i> $\frac{20}{100} \times 50\,000,00$ 1 mark for / <i>punt vir</i> R 10 000,00
3.1.2	$A = P(1 + i \times n)$ = R 40 000 (1 + 0,12 x 3) = R 54 400 Total amount = R 10 000 + R 54 400 <i>Totale bedrag</i> = R 64 400,00	1 mark formula / <i>punt vir formule</i> 1 mark for / <i>punt vir</i> R 54 400 1 mark for / <i>punt vir</i> R 10 000 + R 54 400 1 mark for / <i>punt vir</i> R 64 400
3.1.3	$A = P(1 + i)^n$ = 50 000 (1 + 0,09) ^{3,5} = R 67 602,50	1 mark formula correct / <i>punt vir korrekte formule</i> 1 mark for / <i>punt vir</i> 50 000(1 + 0,09) 1 mark for / <i>punt vir</i> 3,5 1 mark for / <i>punt vir</i> R 67 602,50
3.1.4	Option 1, it is a cheaper option than Option 2 / <i>Opsie 1, dit is 'n goedkoper opsie as opsie 2</i> (or any reasonable explanation)	1 mark for Option 1 / <i>punt vir Opsie 1</i> 1 mark for reason / <i>punt vir rede</i>
3.2.1	$1 \div 0,1923$ = R 5,20	1 mark for / <i>punt vir</i> R5,20
3.2.2 (a)	S\$ 1 = R 5,20 S\$ 550 = R 5,20 x 550 = R 2 860	1 mark for / <i>punt vir</i> R 5,20 x 550 1 mark for / <i>punt vir</i> R 2 860
(b)	Number of DVDs = R 2860 ÷ 100 <i>Aantal DVD's</i> = 28,6 ≈ 28	1 mark for / <i>punt vir</i> R 2860 ÷ 100 1 mark for / <i>punt vir</i> 28

MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9****QUESTION 4 / VRAAG 4**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION / PUNTETOEKENNING
4.1	$T_6 = 11,50$	2 marks for / punte vir 11,50
4.2	Add 0,25 to the previous term to get the next term / <i>plus 0,25 by vorige term om volgende term te kry</i>	2 marks for answer / 2 punte vir antwoord
4.3	$T_n = 25$ $25 = 0,25n + 10$ $15 = 0,25n$ $n = 60$	1 mark for / punt vir $25 = 0,25n + 10$ 1 mark for / punt vir $15 = 0,25n$ 1 mark for / punt vir $n = 60$

QUESTION 5 / VRAAG 5

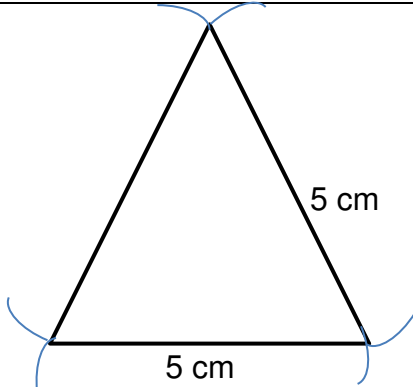
Q/V	ANSWER / ANTWOORD	MARK ALLOCATION / PUNTETOEKENNING
5.1.1	$C_1 = D_2 = 20^\circ$ Alt. $<$; DE//BC <i>Verwisselende hoeke DE//BC</i>	1 for / vir 20° 1 for reason / vir rede
5.1.2	$D_3 = 180^\circ - 68^\circ - 20^\circ$ Angles of triangle / <i>Hoeke van driehoek</i> = 180° $D_3 = 92^\circ$	1 mark for / punt vir 1 mark for / punt vir
5.1.3	$B_1 + B_2 = D_1 = 68^\circ$ Corresponding / <i>Ooreenstemmend</i> $<$; $\angle ADC = D_1 + D_2$ DE//BC $= 68^\circ + 20^\circ$ $= 88^\circ$ OR/OF $180^\circ - 20^\circ - 92^\circ = 88^\circ$ Angles on straight line / <i>Hoeke op reguit lyn</i>	1 mark for / punt vir $B_1 + B_2 = D_1 = 68^\circ$ Corresponding / <i>Ooreenstemmend</i> $<$; DE//BC 1 mark for / punt vir $ADC = 88^\circ$
5.1.4.	$A = C_2 = (180^\circ - 88) \div 2$ $A = 46^\circ$ $C_3 = B_1 + B_2 + A$ Exterior angle of triangle / <i>Buitehoek van 'n driehoek</i> $= 68^\circ + 46^\circ$ $= 114^\circ$ OR / OF $C_1 + C_2 + C_3 = 180^\circ$ Angles on a straight line / <i>Hoeke op reguitlyn</i> = 180° $C_3 = 180^\circ - 20^\circ - 46^\circ$ $= 114^\circ$	1 mark for / punt vir $A = 46^\circ$ 1 mark for / punt vir $C_3 = B_1 + B_2 + A$ and reason / <i>en rede</i> 1 mark for / punt vir $C_3 = 114^\circ$ OR / OF 1 mark for / punt vir $C_1 + C_2 + C_3 = 180^\circ$ Angles on a straight line / <i>Hoeke op 'n reguitlyn</i> = 180° 1 mark for / punt vir for $C_3 = 180^\circ - 20^\circ - 46^\circ$ 1 mark for / punt vir $C_3 = 114^\circ$

MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION / PUNTETOEKENNING
5.2.	In ΔMNO and ΔPNO : $MO = OP$ Radii of circle / <i>Radiusse van sirkel</i> $MN = PN$ Given / <i>Gegee</i> $ON = ON$ Common side / <i>Algemene newe</i> $\Delta MNO \equiv \Delta PNO$ S;S;S	1 mark for / <i>punt vir</i> $MO = OP$ Radius of circle / Radius van sirkel 1 mark for / <i>punt vir</i> $MN = PN$ Given / <i>Gegee</i> 1 mark for / <i>punt vir</i> $ON = ON$ Common side / <i>Algemene newe</i> 1 mark for / <i>punt vir</i> $\Delta MNO \equiv \Delta PNO$ S;S;S
5.3	In ΔOPQ and / <i>en</i> ΔOSR : $O_1 = O_2$ Vert. opp < $\angle P = \angle S$ Alt <°; PQ // RS $\angle Q = \angle R$ Alt <°; PQ // RS $\Delta OPQ \equiv \Delta OSR$ <;<;<	1 mark for / <i>1 punt vir</i> $O_1 = O_2$ Vert. opp < 1 mark for / <i>1 punt vir</i> $P = S$ Alt <°; PQ // RS 1 mark for / <i>1 punt vir</i> $Q = R$ Alt <°; PQ // RS 1 mark for / <i>punt vir</i> $\Delta OPQ \equiv \Delta OSR$ <;<;<
5.4.1	$8x + 4 + 4x + 4 + x - 4 + 5x - 4 = 360^\circ$ Angles of quad / <i>Hoeke van vierhoek</i> = 360° $18x = 360^\circ$ $x = 20^\circ$	1 mark for $8x + 4 + 4x + 4 + x - 4 + 5x - 4 = 360^\circ$ 1 mark for / <i>punt vir</i> Angles of quad / <i>Hoeke van vierhoek</i> = 360° 1 mark for / <i>punt vir</i> $18x = 360^\circ$ 1 mark for / <i>punt vir</i> $x = 20^\circ$



MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION / PUNTETOEKENNING
5.4.2	$4x + 4 + 5x - 4$ $= 4(20^\circ) + 4 + 5(20^\circ) - 4$ $= 80^\circ + 4 + 100^\circ - 4$ $= 180^\circ$ Therefore / Dus $ST \parallel UV$ Co-interior / Mede-binnehoek $< = 180^\circ$ OR / OF $8x + 4 + x - 4$ $= 8(20^\circ) + 4 + (20^\circ) - 4$ $= 160^\circ + 4 + 20^\circ - 4$ $= 180^\circ$ Therefore $ST \parallel UV$ Co-interior / Mede binnehoek $< = 180^\circ$	1 mark for / punt vir $4x + 4 + 5x - 4$ 1 mark for substitution / punt vir vervanging 1 mark for / punt vir for 180° 1 mark for / punt vir Therefore / Dus $ST \parallel UV$ Co-interior / Mede binnehoek $< = 180^\circ$ OR / OF 1 mark for / punt vir $8x + 4 + x - 4$ 1 mark for substitution / punt vir vervanging 1 mark for / punt vir 180° 1 mark for / punt vir Therefore / Dus $ST \parallel UV$ Co-interior / Mede binnehoek $< = 180^\circ$
5.5		1 mark answer / 1 punt vir antwoord For each side.

MEMORANDUM**Mathematics / Wiskunde****GRADE / GRAAD 9****QUESTION 6 / VRAAG 6**

Q/V	ANSWER / ANTWOORD	MARK ALLOCATION PUNTETOEKENNING
6.1	$4^2 - 2^2 = x^2$ $16 - 4 = x^2$ $x^2 = 12$ $x = \sqrt{12} = 3,46$	1 mark for/ <i>punt vir</i> $4^2 - 2^2 = x^2$ 1 mark for/ <i>punt vir</i> $x^2 = 12$ 1 mark for/ <i>punt vir</i> $x = \sqrt{12}$ or 3,46
6.2	$C = 2\pi r$ $= 2(3,14) 2 = 12,56 \text{ m} \div 2 = 6,28$ $P = 6,28 + 1 + 5 + 1 + 2 + 2 + 3,46 + 2 + 1 + 5 + 1$ $= 29,74 \text{ m}$	1 mark for/ <i>punt vir</i> $2(3,14)$ 1 mark for/ <i>punt vir</i> 6,28 1 mark for/ <i>punt vir</i> 3,46 1 mark for/ <i>punt vir</i> $20 + 3,46$ 1 mark for/ <i>punt vir</i> $23,46 + 6,28$ 1 mark for answer/ <i>punt vir</i> <i>antwoord</i>
6.3	$\text{Area} = (\frac{1}{2} \pi \times 2^2) + (5 \text{ m} \times 2 \text{ m}) + (4 \text{ m} \times 2 \text{ m}) + (\frac{1}{2} \times 3,46 \text{ m} \times 2 \text{ m})$ $= 6,28 + 10 + 8 + 3,46$ $= 27,74 \text{ m}^2$	1 mark for/ <i>punt vir</i> $(\frac{1}{2} \pi \times 2^2)$ 1 mark for/ <i>punt vir</i> $(5 \text{ m} \times 2 \text{ m})$ 1 mark for/ <i>punt vir</i> $(4 \text{ m} \times 2 \text{ m})$ 1 mark for/ <i>punt vir</i> $(\frac{1}{2} \times 3,46 \text{ m} \times 2 \text{ m})$ 1 mark for/ <i>punt vir</i> 6,28 1 mark for/ <i>punt vir</i> $10 + 8 + 3,46$ 2 marks for/ <i>punte vir</i> 27,74 m ²