



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYS
PROVINCIAL EXAMINATION / PROVINSIALE EKSAMEN**

JUNE / JUNIE 2019

GRADE / GRAAD 9

MATHEMATICS / WISKUNDE

MEMORANDUM

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GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYSPREPARATORY EXAMINATION /
VOORBEREIDENDE EKSAMENMATHEMATICS / WISKUNDE
(Paper / Vraestel 1)

SECTION A

QUESTION 1 / VRAAG 1

MARK ALLOCATION / PUNTETOEKENNING

1.1	B ✓	1 mark for each / <i>punt vir elkeen</i>
1.2	B ✓	
1.3	D ✓	
1.4	A ✓	
1.5	B ✓	
1.6	C ✓	
1.7	B ✓	
1.8	D ✓	
1.9	B ✓	
1.10	B ✓	

SECTION B

1.1	$(1,34 \times 2,3) \times (10^4 \times 10^3)$ $3,082 \times 10^7 \checkmark$	1 mark for answer / <i>punt vir antwoord</i>
1.2	$= (-1)^2 - (-\frac{1}{2})^2 + (4)^2 \checkmark$ $= 1 - \frac{1}{4} + 16$ $= \frac{4-1+64}{4} \checkmark$ $= \frac{67}{4} \checkmark$	1 mark for substitution / <i>punt vir vervanging</i> 1 mark for LCM=4 / <i>punt vir KGD=4</i> 1 mark for answer / <i>punt vir antwoord</i>
1.3.1	$= -2(x^2 + 5x + 6) \checkmark$ $= -2x^2 - 10x - 12 \checkmark$	1 mark for / <i>punt vir</i> $(x^2 + 5x + 6)$ 1 mark for answer / <i>punt vir antwoord</i>
1.3.2	$= \frac{3(3x+2)-2(10x-3)}{6} \checkmark$ $= \frac{9x+6-20x+6}{6} \checkmark$ $= \frac{-11x+12}{6} \checkmark$	1 mark for LCM / <i>punt vir KGD = 6</i> 1 mark for 1 for simplification / <i>vereenvoudiging</i> 1 mark for answer / <i>punt vir antwoord</i>
1.3.3	$= \frac{-6 \times 8x^{10}z^2}{6x^3y^2} \checkmark$ or/of $\frac{-48x^{10}z^2}{6x^3y^2} \checkmark$ $= \frac{-8x^{10}z^2}{x^3y^2} \checkmark$ $= \frac{-8x^7z^2}{y^2} \checkmark$	1 mark for / <i>punt vir</i> $-6 \times 8x^{10}z^2$ or/of $-48x^{10}z^2$ 1 mark for / <i>punt vir</i> $6x^3y^2$ 1 mark for / <i>punt vir</i> $\frac{-8x^{10}z^2}{x^3y^2}$ 1 mark for answer / <i>punt vir antwoord</i>

2.1	$2^x = 2^{-3}✓$ $x = -3✓$	1 mark for $2^x = 2^{-3}$ / punt vir $2^x = 2^{-3}$ 1 mark for answer / punt vir antwoord
2.2	$2x + \frac{x-6}{2} = -1$: LCM= 2 / KGD= 2 $\times 2: 4x + x - 6 = -2✓$ $5x = 4✓$ $x = \frac{4}{5}✓$	1 mark for multiplying with LCM / punt vir vermenigvuldig met KGD = 2 1 mark for simplification / punt vir vereenvoudiging 1 mark for answer / punt vir antwoord
2.3	$(x - 4) = 0$ $(x + 4) = 0$ $x = 4✓$ or / of $x = -4✓$	1 mark for $x = 4$ / punt vir $x = 4$ 1 mark for $x = -4$ / punt vir $x = -4$
2.4	$2(2x - 4) = 3(3x + 4)$ $4x - 8 = 9x + 12✓$ $4x - 9x = 12 + 8$ $-5x = 20✓$ $x = -\frac{20}{5}✓$ $x = -4✓$	1 mark for / punt vir $4x - 8 = 9x + 12$ 1 mark for / punt vir $-5x = 20$ 1 mark for division by / punt vir deling met -5 1 mark for answer / punt vir antwoord
3.1	$4m^2✓(2 - 3m^6 - 5m^2)✓$	1 mark for common factor $4m^2$ / punt vir gemene deler $4m^2$ 1 mark for $(2 - 3m^6 - 5m^2)$ / punt vir $(2 - 3m^6 - 5m^2)$
3.2	$= a^2(2x - y) - b^2(2x - y)$ $= (2x - y)✓(a^2 - b^2)✓$ $= (2x - y)(a + b)✓(a - b)✓$	1 mark for $(2x - y)$ / punt vir $(2x - y)$ 1 mark for common factor / punt vir gemene deler 1 mark for $a^2 - b^2$ / punt vir $a^2 - b^2$ 1 mark for $(a + b)$ / punt vir $(a + b)$ 1 mark for $(a - b)$ / punt vir $(a - b)$

4.1	$\frac{R74}{4} = 18,50✓$ $18,50 \times 6 = R111✓$	1 mark for $\div 4$ / punt vir $\div 4$ 1 mark for answer / punt vir antwoord
4.2.1	$A = P(1 + in)✓$ $A = 6000 \left(1 + \frac{12}{100} \times 3,5\right)✓$ $A = R8520,00✓$	1 mark for formula / punt vir formule 1 mark for substitution / punt vir vervanging 1 mark for answer / punt vir antwoord
4.2.2	$A = P(1 + i)^n✓$ $A = 6000(1 + 0,12)^{3,5}✓$ $A = R8921,02✓$	1 mark for formula / punt vir formule 1 mark for substitution / punt vir vervanging 1 mark for answer / punt vir antwoord
4.2.3	CI is a better option / SR is 'n beter opsie. ✓	1 mark for answer / punt vir antwoord
4.3.1	$d = s \times t✓$ $d = \frac{90 \text{ km}}{\text{h}} \times 3,5 \text{ h}✓$ $d = 315 \text{ km}✓$	1 mark for formula / punt vir formule 1 mark for substitution / punt vir vervanging 1 mark for answer / punt vir antwoord
4.3.2	$t = \frac{d}{s}$ $t = \frac{390 \text{ km}}{90 \text{ km/h}}✓$ $t = 4,3 \text{ hours/ ure}✓$	1 mark for substitution / punt vir vervanging 1 mark for answer / punt vir antwoord
5.1.1	$a = 6; ✓ \quad b = 51; ✓ \quad c = 45✓$	1 mark for each / punt vir elkeen
5.1.2	Son's age / Seun se ouderdom = $92 - 24$ = 68 years / jaar✓	1 mark for answer / punt vir antwoord
5.2.1	$T_n = 5n - 1✓✓$	1 mark for $-6n$ / punt vir $-6n$. 1 mark for $+13$ / punt vir $+13$
5.2.2	$T_n = 5n - 1$ $64 = 5n - 1✓$ $5n = 65 ✓$ $n = 13✓$	1 mark for substitution / punt vir vervanging 1 mark for simplification / punt vir vereenvoudiging 1 mark for answer / punt vir antwoord

6.1.1	rhombus / ruit square / vierkant✓	1 mark for correct answer / punt vir regte antwoord
6.1.2	kite / vliëer✓	1 mark for correct answer / 1 punt vir regte antwoord
6.2	sum of angles / som van hoeke $= (7 - 2) \times 180^\circ$ ✓ sum of angles / som van hoeke $= 900^\circ$ ✓	1 mark for substituting $n = 7$ 1 punt vir vervanging $n = 7$ 1 mark for answer / punt vir antwoord
6.3	$\hat{F} = 360^\circ$ ✓ $\hat{F}_1 = \hat{F}_2 = \hat{F}_3 = \hat{F}_4 = \hat{F}_5 = 360^\circ \div 5$ ✓ $n = 72^\circ$ ✓	1 mark for statement / punt vir bewering 1 mark for $\div 5$ / 1 punt vir $\div 5$ 1 mark for answer / 1 punt vir antwoord
7.1.1	$5x - 30^\circ + 90^\circ - x = 180^\circ$ Angles on straight line / Hoeke op reguit lyn. ✓ $4x = 120^\circ$ ✓ $x = 30^\circ$ ✓	1 mark for 180° and reason / 180° en rede 1 mark for calculation / punt vir bewerking 1 mark for answer / punt vir antwoord
7.1.2	$\hat{A}BE = 5x - 30^\circ$ $\hat{A}BE = 5(30^\circ) - 30^\circ$ ✓CA $\hat{A}BE = 120^\circ$ ✓	1 mark for substituting / punt vir vervanging 1 mark for answer / punt vir antwoord
7.2	$\hat{D}BC = 110^\circ$ Vert. opp. $\angle$ s / Regoorstaande $\angle$ e ✓ $\hat{B}DF = x^\circ$ Corr. $\angle$ s & DG $\parallel$ CE / Ooreenkomstige $\angle$ e & DG $\parallel$ CE ✓ $\hat{D}BC + \hat{B}DF = 180^\circ$ Co-int. $\angle$ s & AC $\parallel$ DF / Ko-binne $\angle$ e & AC $\parallel$ DF ✓ $110^\circ + x^\circ = 180^\circ$ $x^\circ = 70^\circ$ ✓	1 mark for 110° and reason / punt vir 110° en rede 1 mark for statement and reason / punt vir bewering en rede 1 mark for 180° and reason / punt vir 180° en rede 1 mark for answer / punt vir antwoord

8.1	$BC^2 = AC^2 - AB^2$ ✓ Pythagoras $BC^2 = (12 \text{ cm})^2 - (5 \text{ cm})^2$ $BC^2 = 144 \text{ cm}^2 - 25 \text{ cm}^2$ ✓ $BC = \sqrt{119} \text{ cm}$ $BC = 10,91 \text{ cm}$ ✓	1 mark for statement / <i>punt vir bewering</i> 1 mark for substituting & calculation / 1 <i>punt vir vervanging & bewerking</i> 1 mark for answer / <i>punt vir antwoord</i>
8.2	In $\triangle PQR$: $PQ^2 + QR^2 = (32 \text{ cm})^2 + (24 \text{ cm})^2$ $= 1024 \text{ cm}^2 + 576 \text{ cm}^2$ $= 1600 \text{ cm}^2$ ✓ and / <i>en</i> $PR^2 = (40 \text{ cm})^2$ $= 1600 \text{ cm}^2$ ✓ $\therefore PR^2 = PQ^2 + QR^2$ $\therefore \triangle PQR$ is a right-angled triangle / <i>is 'n reghoekige $\triangle$</i> ✓	1 mark for $PQ^2 + QR^2$ and answer / <i>punt vir $PQ^2 + QR^2$ en antwoord</i> 1 mark for $PR^2 = 1600 \text{ cm}^2$ / <i>punt vir $PR^2 = 1600 \text{ cm}^2$</i> 1 mark for conclusion / <i>punt vir afsluiting</i>
9.1	In $\triangle PQR \equiv \triangle PSR$. $\hat{P}_1 = \hat{R}_1$ ✓ ... Alt $\angle$ s / <i>verw. hoeke</i> , $PQ \parallel SR$ ✓ $\hat{Q} = \hat{S}$... given / <i>gegee</i> ✓ $PR = PR$ common / <i>gemene</i> ✓ $\therefore \triangle PQR \equiv \triangle PSR$... $\angle$ s ✓	1 mark for statement / <i>punt vir bewering</i> 1 mark for reason / <i>punt vir rede</i> 1 mark for statement and reason / <i>punt vir bewering en rede</i> 1 mark for statement and reason / <i>punt vir bewering en rede</i> 1 mark for conclusion and reason / <i>punt vir afsluiting en rede</i>

9.2	$\frac{1}{2}$ C of large circle / $\frac{1}{2}$ omtrek van groot sirkel $= \frac{1}{2} \times \pi \times d$ ✓ $= \frac{1}{2} \times 3,14 \times 24$ ✓ $= 37,68$ ✓ $2 \times \frac{1}{2}$ C of smaller circles / $2 \times \frac{1}{2}$ omtrek kleiner sirkels ✓ $= 2 \times \frac{1}{2} \times 3,14 \times 12$ $= 37,68$ ✓ Perimeter / Omtrek $= 37,68 + 37,68$ $= 75,36$ ✓	1 mark for formula / <i>punt vir formule</i> 1 mark for substitution / <i>punt vir vervaging</i> 1 mark for answer / <i>punt vir antwoord</i> 1 mark for formula / <i>punt vir formule</i> 1 mark for circumference of smaller circles / <i>punt vir omtrek van kleiner sirkels</i> 1 mark for answer / <i>punt vir antwoord</i>
10		1 mark for construction marks / <i>punt vir konstruksielyste</i> 1 mark for labels / <i>punt vir benoeming van punte</i>
	TOTAL / TOTAAL	100