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

8 pages / *bladsye*

GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYS

PREPARATORY EXAMINATION /
VOORBEREIDENDE EKSAMEN

MATHEMATICS / *WISKUNDE*
(Paper / *Vraestel 1*)

SECTION A

QUESTION 1 / *VRAAG 1* **MARK ALLOCATION / *PUNTETOEKENNING***

1.1	B ✓	1 mark for each / *punt vir elkeen*
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

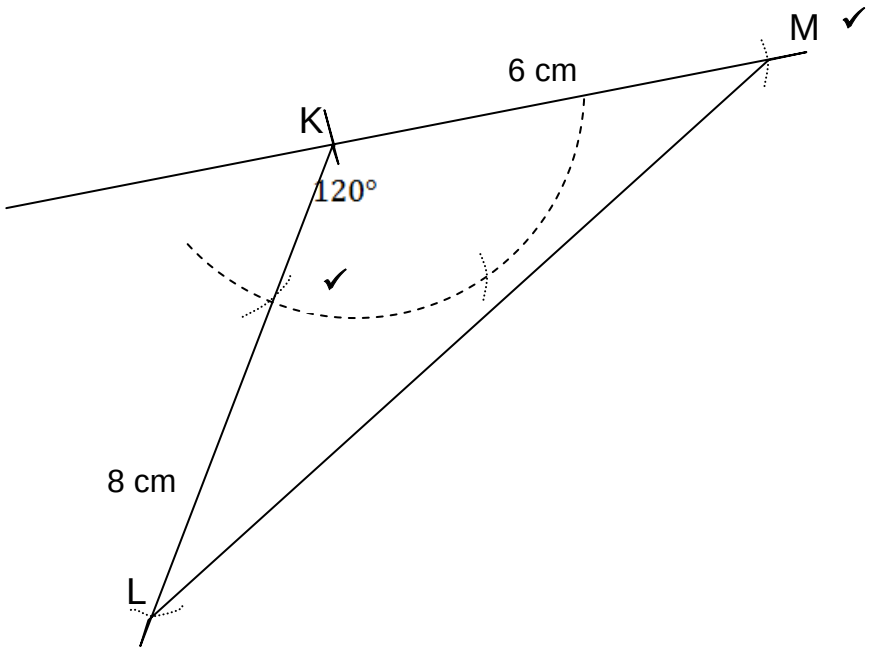
1.1	$(1,34 \times 2,3) \times (10^4 \times 10^3)$ $3,082 \times 10^7$ ✓	1 mark for answer / *punt vir antwoord*
1.2	$= (-1)^2 - (-\frac{1}{2})^2 + (4)^2$ ✓ $= 1 - \frac{1}{4} + 16$ $= \frac{4-1+64}{4}$ ✓ $= \frac{67}{4}$ ✓	1 mark for substitution / *punt vir vervanging* 1 mark for LCM=4 / *punt vir KGD=4* 1 mark for answer / *punt vir antwoord*
1.3.1	$= -2(x^2 + 5x + 6)$ ✓ $= -2x^2 - 10x - 12$ ✓	1 mark for / *punt vir* $(x^2 + 5x + 6)$ 1 mark for answer / *punt vir antwoord*
1.3.2	$= \frac{3(3x+2)-2(10x-3)}{6}$ ✓ $= \frac{9x+6-20x+6}{6}$ ✓ $= \frac{-11x+12}{6}$ ✓	1 mark for LCM / *punt vir KGD* $= 6$ 1 mark for 1 for simplification / *vereenvoudiging* 1 mark for answer / *punt vir antwoord*
1.3.3	$= \frac{-6\times8x^{10}z^2}{6x^3y^2}$ ✓ or/*of* $\frac{-48x^{10}z^2}{6x^3y^2}$ ✓ $= \frac{-8x^{10}z^2}{x^3y^2}$ ✓ $= \frac{-8x^7z^2}{y^2}$ ✓	1 mark for / *punt vir* $-6 \times 8x^{10}z^2$ or/*of* $-48x^{10}z^2$ 1 mark for / *punt vir* $6x^3y^2$ 1 mark for / *punt vir* $\frac{-8x^{10}z^2}{x^3y^2}$ 1 mark for answer / *punt vir* antwoord

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 vermeningvuldig 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	$4\,\mathrm{m}^2$✓$(2 - 3\,\mathrm{m}^6 - 5\,\mathrm{m}^2)$✓	1 mark for common factor $4m^2$/ *punt vir gemene deler* $4m^2$ 1 mark for $(2 - 3\mathrm{m}^6 - 5\mathrm{m}^2)$ / *punt vir* $(2 - 3\mathrm{m}^6 - 5\mathrm{m}^2)$
3.2	$= a^2(2x-y) - \mathrm{b}^2(2x-y)$ $= (2x-y)$✓$(a^2 - b^2)$✓ $= (2x-y)(a+b)$✓$(a-b)$✓	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	$d = s \times t$✓ $d = \frac{90\text{ km}}{\text{h}} \times 3,5\text{ h}$✓ $d = 315\ km$✓	1 mark for formula / *punt vir formule* 1 mark for substitution / *punt vir vervanging* 1 mark for answer / *punt vir antwoord*
4.3.2	$t = \frac{d}{s}$ $t = \frac{390\ km}{90\ km/h}$✓ $t = 4,3\ hours/\ ure$✓	1 mark for substitution / *punt vir vervanging* 1 mark for answer / *punt vir antwoord*
5.1.1	a= 6; ✓ $b = 51$; ✓ $c = 45$✓	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* $= (7 - 2) \times 180°$✓ sum of angles / *som van hoeke* $= 900°$✓	1 mark for substituting $n = 7$ *1 punt vir* vervanging $n = 7$ 1 mark for answer / *punt vir antwoord*
6.3	$\hat{F} = 360°$✓ $\hat{F}_1 = \hat{F}_2 = \hat{F}_3 = \hat{F}_4 = \hat{F}_5 = 360° \div 5$✓ n $= 72°$✓	1 mark for statement / *punt vir bewering* 1 mark for ÷5 / *1 punt vir* ÷5 1 mark for answer / *1 punt vir antwoord*
7.1.1	$5x - 30° + 90° - x = 180°$ Angles on straight line / *Hoeke op reguit lyn.* ✓ $4x = 120°$✓ $x = 30°$ ✓	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	$A\hat{B}E = 5x - 30°$ $A\hat{B}E = 5(30°) - 30°$ ✓CA $A\hat{B}E = 120°$✓	1 mark for substituting / *punt vir* vervanging 1 mark for answer / *punt vir antwoord*
7.2	$D\hat{B}C = 110°$ Vert. opp. ∠s / *Regoorstaande* $\angle e$ ✓ $B\hat{D}F = x°$ Corr. ∠s & DG ∥ CE / *Oorenkomstige* $\angle e$ & DG ∥ CE ✓ $D\hat{B}C + B\hat{D}F = 180°$ Co-int. ∠s & AC ∥ DF / *Ko-binne* $\angle e$ *&* $AC \parallel DF$ ✓ $110° + x° = 180°$ $x° = 70°$ ✓	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 $BC^2 = (12\text{ cm})^2 - (5\text{ cm})^2$ $BC^2 = 144\text{ cm}^2 - 25\text{ cm}^2$✓ $BC = \sqrt{\mathbf{119}}\ \mathbf{cm}$ $BC = 10{,}91\text{ cm}$✓	1 mark for statement / *punt vir bewering* 1 mark for substituting & calculation / *1 punt vir vervanging & bewerking* 1 mark for answer / *punt vir antwoord*
8.2	In ΔPQR: $PQ^2 + QR^2 = (32\text{ cm})^2 + (24\text{ cm})^2$ $= 1024\text{ cm}^2 + 576\text{ cm}^2$ $= 1600\text{ cm}^2$✓ and / *en* $PR^2 = (40\text{ cm})^2$ $= 1600\text{ cm}^2$✓ $\therefore PR^2 = PQ^2 + QR^2$ ∴ ΔPQR is a right-angled triangle / *is 'n reghoekige* Δ✓	1 mark for $PQ^2 + QR^2$ and answer / *punt vir* $PQ^2 + QR^2$ *en antwoord* 1 mark for $PR^2 = 1600\text{ cm}^2$ / *punt vir* $PR^2 = 1600\text{ cm}^2$ 1 mark for conclusion / *punt vir afsluiting*
9.1	In $\Delta\mathbf{PQR} \equiv \Delta\mathbf{PSR}$. $\widehat{P}_1 = \widehat{R}_1$✓… Alt ∠s / *verw. hoeke*, PQ∥SR✓ $\widehat{Q} = \widehat{S}$ … given /*gegee* ✓ PR= $\boldsymbol{PR}$ common / *gemene*✓ $\therefore \Delta\mathbf{PQR} \equiv \Delta\mathbf{PSR}$…∠∠s ✓	1 mark for statement / *punt vir bewering* 1 mark for reason / *punt vir rede* 1 mark for statement and reason / *punt vir bewering en rede* 1 mark for statement and reason / *punt vir bewering en rede* 1 mark for conclusion and reason / *punt vir afsluiting en rede*

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 / *punt vir formule* 1 mark for substitution / *punt vir vervaging* 1 mark for answer / *punt vir antwoord* 1 mark for formula / *punt vir formule* 1 mark for circumference of smaller circles / *punt vir omtrek van kleiner sirkels* 1 mark for answer / *punt vir antwoord*
10	 	1 mark for construction marks / *punt vir konstruksielyne* 1 mark for labels / *punt vir benoeming van punte*
	TOTAL / *TOTAAL*	**100**