GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

GAUTENGSE DEPARTEMENT VAN ONDERWYS

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

NOVEMBER / *NOVEMBER* 2017

GRADE / *GRAAD* 9

MATHEMATICS
WISKUNDE

MEMORANDUM

7 pages / *bladsye*

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

QUESTION / *VRAAG* 1

1.1	C
1.2	D
1.3	B
1.4	A
1.5	C
1.6	C
1.7	B
1.8	B
1.9	C
1.10	C

QUESTION / *VRAAG* 2

2.1.1	$\frac{1}{2}(a+b)-4a\left(\frac{1}{4}\right)-b$ $=\frac{a-2a+b-2b}{2}$ $=\frac{-a-b}{2}$	1 for / *vir* a-2a 1 for / *vir* b-2b 1 for answer / *vir antwoord*
2.1.2	$\frac{4}{x-5}+\frac{3}{x-2}$ $=\frac{4(x-2)+3(x-5)}{(x-2)(x-5)}$ $=\frac{7x-23}{(x-2)(x-5)}$	1 for / *vir* $4(x-2)$ 1 for/ *vir* $3(x-5)$ 1 for LCD /*vir* KGV 1 for answer / *vir antwoord*
2.1.3	$\frac{x^2+x-2}{x-1}\div\frac{x^2+2x}{4}$ $=\frac{(x+2)(x-1)}{x-1}\times\frac{4}{x(x+2)}$ $=\frac{4}{x}$	1 for / vir $(x+2)(x-1)$ 1 for multiply / *vir maal* 1 for / *vir* $x(x+2)$ 1 for answer / *vir antwoord*

2.2.1	$24xy - 16x^2y + 8xy^2$ $= 8xy(3 - 2x + y)$	1 for / *vir* $8xy$ 1 for / *vir* $(3 - 2x + y)$
2.2.2	$x^2(x - 3) - 4(x - 3)$ $= (x - 3)(x^2 - 4)$ $= (x - 3)(x - 2)(x + 2)$	1 for / *vir* $x - 3$ 1 for / *vir* $(x^2 - 4)$ 1 for / *vir* $= (3 - x)(x - 2)(x + 2)$
2.3.1	$4(x + 2) = 16 + 2(x - 1)$ $4x + 8 = 16 + 2x - 2$ $2x = 6$ $x = 3$	1 for / *vir* $4x + 8$ 1 for / *vir* $2x - 2$ 1 for / *vir* $x = 3$
2.3.2	$3^x = \frac{1}{27}$ $3^x = 3^{-3}$ $x = -3$	1 for / *vir* 3^{-3} 1 for / *vir* $x = -3$

QUESTION / *VRAAG* 3

3.1.1	$R799 - R79{,}90$ $= R719{,}10$	1 for / *vir* $R719{,}10$
3.1.2	$R719{,}10 \times 0{,}2 = R143{,}82$ $R143{,}82 \times 3 = R431{,}46$ OR $SI = Pni$ $= 719{,}10 \times 3 \times 20\%$ $= R431{,}46$	1 for / *vir* $\times 0{,}2$ 1 for / *vir* $\times 3$ 1 for / *vir* $R431{,}46$
3.1.3	$R719{,}10 + R431{,}46$ $= R1150{,}56$	1 for adding / *vir optel* 1 for / *vir* $R1150{,}56$
3.1.4	$\frac{R1150{,}56}{36}$ $= R31{,}96$	1 for / *vir* 36 1 for / *vir* $R31{,}96$
3.1.5	$R1150{,}56 + R79{,}90$ $= R1230{,}46$	1 for adding / *vir optel* 1 for / *vir* $R1230{,}46$
3.2	A: R40 – R18,50 = R21,50 …. 1kg B: (0,5 x R21,50)+R4,25 = R15,00 C: 3,5 x R21,50 = R75,25 R200 – R75,25 = R124,75	1 for / *vir* 1 kg 1 for / *vir* R15,00 1 for / vir R124,75

QUESTION / *VRAAG* 4

4.1.1	$m = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{5 - 1}{1 - 0}$ $= 4$	1 for substitution / *vir substitusie* 1 for / *vir* 4
4.1.2	y = mx+c y = 4x+1	1 for / *vir* m=4 1 for / *vir* 1

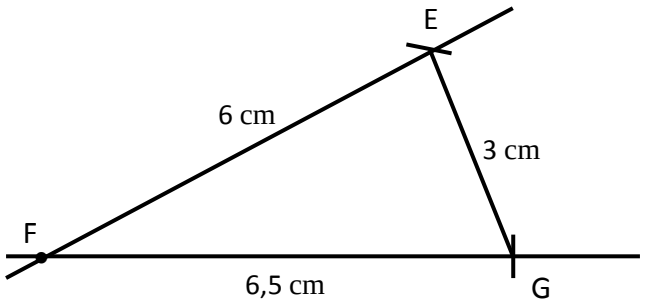
QUESTION / *VRAAG* 5

5.1	22; 28	1 for / *vir* 22 and 1 for / *vir* 28
5.2	Add 6 to the previous term to get the next term. / *Die verskil van 6 is by die vorige termyn bygevoeg om die volgende termyn te verkry.*	1 for answer / *vir antwoord*
5.3	$T_n = 6n - 2$	1 for substitution and 1 for the answer / *1 vir substitusie en 1 vir die antwoord*
5.4	$T_{10} = 6(10) - 2$ $= 58$	1 for substitution and 1 for the answer / *1 vir substitusie en 1 vir die antwoord*
5.5	$T = 6n - 2$ $76 = 6n - 2$ $\frac{78}{6} = \frac{6n}{6}$ $13 = n$	1 for substitution / *vir substitusie* 1 for / *vir* 78 1 for the answer / *vir die antwoord.*

QUESTION / *VRAAG* 6

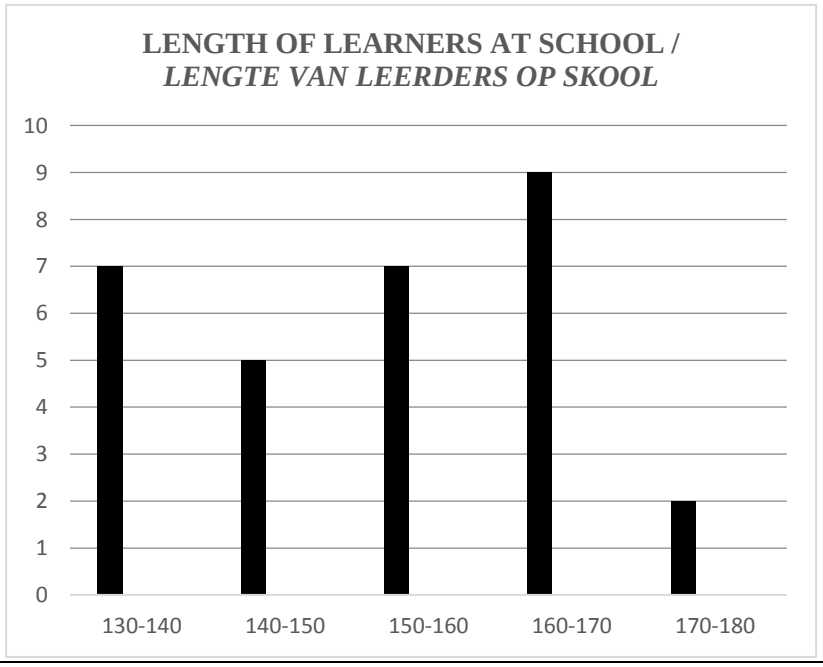
6.1	$V = \frac{1}{2}$ b x h x H $= \frac{1}{2}$ x 48 cm x 20 cm x 72 cm $= 34\,560\ cm^3$	1 for substitution / *vir substitusie* 1 for answer / *vir antwoord*
6.2	$SA = 2(\frac{1}{2}\text{ b x h}) + (\text{b} + \text{s} + \text{s})\text{ x H}$ $= 2(\frac{1}{2}\text{ x 48 cm x 20 cm}) + (48\text{ cm} + 25\text{ cm} + 25\text{ cm})\text{ x 72 cm}$ $= 960 + 7\,056$ $= 8\,016\ cm^2$	1 for substitution / *vir substitusie* (48 cm x 20 cm) 1 for substitution / *vir substitusie* (48 cm + 50 cm) x 72 cm 1 for answer / *vir antwoord*
6.3	In Δ ABD $(AD)^2 = (AB)^2 - (BD)^2$ Pythagoras theorem / *teorie* $= (25\text{ cm})^2 - (24\text{ cm})^2$ $= 625\ cm^2 - 576\ cm^2$ $= 49\ cm^2$ $\therefore$ AD = 7 cm OR / *OF* $(AC)^2 = (AD)^2 + (DC)^2$ (Pythagoras) $(AD)^2 = (AC) - (DC)^2$ $= (25\text{ cm})^2 - (24\text{ cm})^2$ $= 625\ cm^2 - 576\ cm^2$ $= 49\ cm^2$ $\therefore$ AD = 7 cm	1 for Pythagoras theorem / *vir Pythagoras teorie* 1 for substitution / *vir substitusie* 1 for / *vir* 49 cm^2 1 for answer / *vir antwoord* 1 for Pythagoros theorem / *vir Pythagoras teorie* 1 for substitution / *vir substitusie* 1 for / *vir* 49 cm^2 1 for answer / *vir antwoord*

QUESTION / *VRAAG* 7

7.1.1	Vertically Opposite angles / *Vertikale teenoorgestelde hoeke*	1 for reason / *rede*
7.1.2	$B_1 = F_4$	1 for answer / *antwoord*
7.1.3	180°	1 for answer / *antwoord*
7.1.4	CF or FC ; $<'s$ opposite the equal sides / *teenoorgestelde van die ewewydige sy*	1 for CF / *vir CF* 1 for reason / *vir rede*
7.2		2 Construct / *konstrueer* Δ correctly / *korrek* 1 Correct length, sizes / *korrekte lengte, groottes* 1 Labelling / *etikettering* FG, EF & EG.
7.3.1	$D_1 + D_2 = 50°$ $D_2 = 25°$ $<'s\ of\ \Delta = 180°$ / *Binnehoeke van* $\Delta = 180°$	1 for answer / *antwoord* 1 for reason / *rede*
7.3.2	$C_1 = 70°$ (E) Corr. angles / *Ooreenk hoeke* $C_2 = D_2$ Alt. angles / *Verwiss hoeke* $C_2 = 25°$ $C_1 + C_2 + C_3 = 180°$ Angles on straight line / *Hoeke op reguit lyn* $C_3 = 85°$	1 for answer / *antwoord* 1 for reason / *rede* 1 for answer / *antwoord* 1 for reason / *rede* 1 for answer / *antwoord* 1 for reason / *rede*
7.3.3	$B_1 = D$ (50°) Corr. angles / *Ooreenkomstige hoeke* $B_1 = 50°$ $B_2 = 180° - 50° = 130°$ Angles on straight lines / *Hoeke op reguit lyne* Or / of $B_2 = 180° - D_1 - C_2$ $= 180° - 25° - 25°$ $= 130°$ Sum of angles of triangle. / *Som van hoeke op driehoek.*	1 for answer / *antwoord* 1 for reason / *rede* 1 for answer / *antwoord* 1 for reason / *rede*

7.4	$\frac{DF}{KF} = \frac{DE}{KL} = \frac{EF}{LF}$ $\frac{y}{15} = \frac{10}{3\frac{1}{3}} = \frac{12}{x}$ y = 45 x = 4	1 for substitution / *substitusie* 1 for / *vir* 45 1 for / *vir* 4

QUESTION / *VRAAG* 8

8.1	132 132 141 142 155 156 161 162 163 169 170 172	1 all correct / *almal reg*
8.2.1	$\frac{1855}{12} = 154{,}58$	1 for / *vir* 1855 1 for answer / *vir antwoord*
8.2.2	$\frac{156 + 161}{2} = 158{,}5$	1 for / *vir* $156 + 161$ 1 for answer / *vir antwoord*
8.2.3	132	1 for answer / *vir antwoord*
8.3		1 for / *vir* 2 1 for / *vir* 4 1 for / *vir* 1
8.4	BGB BGG	1 for / *vir* BGB 1 for / *vir* BGG