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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 <i>antwoord</i>
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 <i>antwoord</i>
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 <i>antwoord</i>

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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 <i>optel</i> 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 <i>optel</i> 1 for / vir $R1230,46$
3.2	A: $R40 - R18,50 = R21,50$ 1kg B: $(0,5 \times R21,50) + R4,25 = R15,00$ C: $3,5 \times R21,50 = R75,25$ $R200 - R75,25 = R124,75$	1 for / vir 1 kg 1 for / vir $R15,00$ 1 for / vir $R124,75$

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

QUESTION / VRAAG 5

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

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

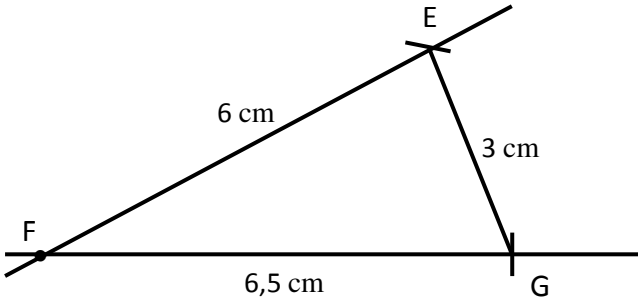


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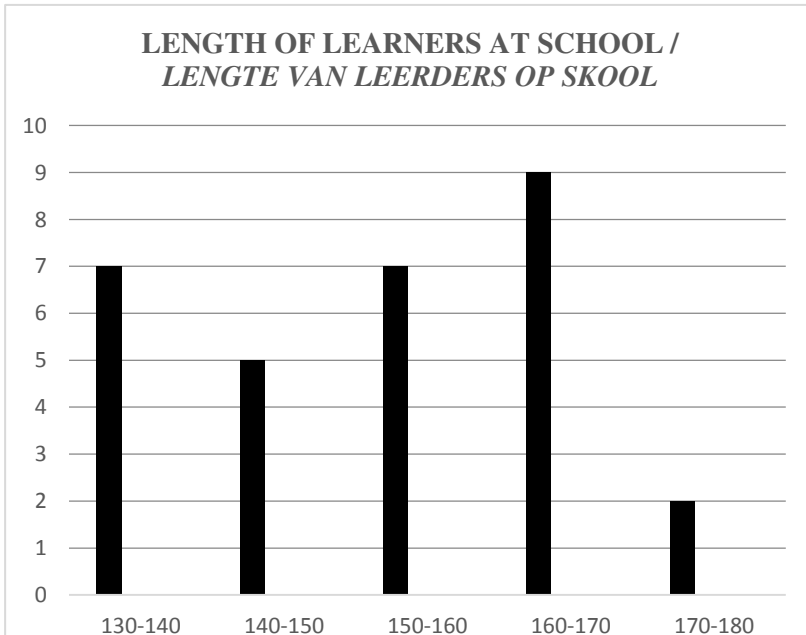
QUESTION / VRAAG 7

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 ; $\angle$'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	$D_1 + D_2 = 50^\circ$ $D_2 = 25^\circ$ $\angle$'s of $\Delta = 180^\circ$ / Binnehoeke van $\Delta = 180^\circ$	1 for answer / antwoord 1 for reason / rede
7.3.2	$C_1 = 70^\circ$ (E) Corr. angles / Ooreenk hoeke $C_2 = D_2$ Alt. angles / Verwiss hoeke $C_2 = 25^\circ$ $C_1 + C_2 + C_3 = 180^\circ$ Angles on straight line / Hoeke op reguit lyn $C_3 = 85^\circ$	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 $B_1 = 50^\circ$ $B_2 = 180^\circ - 50^\circ = 130^\circ$ Angles on straight lines / Hoeke op reguit lyne Or / of $B_2 = 180^\circ - D_1 - C_2$ $= 180^\circ - 25^\circ - 25^\circ$ $= 130^\circ$ 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

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7.4	$\frac{DF}{KF} = \frac{DE}{KL} = \frac{EF}{LF}$ $\frac{y}{15} = \frac{10}{3\frac{1}{3}} = \frac{12}{x}$ $y = 45 \quad x = 4$	1 for substitution / <i>substitusie</i> 1 for / vir 45 1 for / vir 4
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QUESTION / VRAAG 8

8.1	132 132 141 142 155 156 161 162 163 169 170 172	1 all correct / <i>almal reg</i>												
8.2.1	$\frac{1855}{12} = 154,58$	1 for / <i>vir</i> 1855 1 for answer / <i>vir antwoord</i>												
8.2.2	$\frac{156 + 161}{2} = 158,5$	1 for / <i>vir</i> 156 + 161 1 for answer / <i>vir antwoord</i>												
8.2.3	132	1 for answer / <i>vir antwoord</i>												
8.3	LENGTH OF LEARNERS AT SCHOOL / <i>LENGTE VAN LEERDERS OP SKOOL</i> <table><caption>Data for Length of Learners at School</caption><thead><tr><th>Height Range (cm)</th><th>Number of Learners</th></tr></thead><tbody><tr><td>130-140</td><td>7</td></tr><tr><td>140-150</td><td>5</td></tr><tr><td>150-160</td><td>7</td></tr><tr><td>160-170</td><td>9</td></tr><tr><td>170-180</td><td>2</td></tr></tbody></table>	Height Range (cm)	Number of Learners	130-140	7	140-150	5	150-160	7	160-170	9	170-180	2	1 for / <i>vir</i> 2 1 for / <i>vir</i> 4 1 for / <i>vir</i> 1
Height Range (cm)	Number of Learners													
130-140	7													
140-150	5													
150-160	7													
160-170	9													
170-180	2													
8.4	BGB BGG	1 for / <i>vir</i> BGB 1 for / <i>vir</i> BGG												