Province of the
EASTERN CAPE
EDUCATION

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ERRATA

TO: **PRINCIPALS OF SCHOOLS IN THE FET BAND**
DISTRICTS HEADS OF EXAMINATIONS

FROM: **MS N. MBELEKI**
CES: ASSESSMENT INSTRUMENTS DEVELOPMENT AND QUESTION PAPERS BANK MANAGEMENT

DATE: **22 SEPTEMBER 2020**

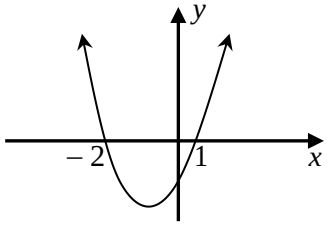
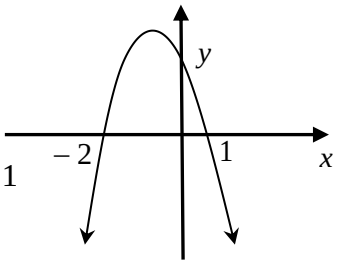
SUBJECT: **MATHEMATICS P1 GRADE 12 SEPTEMBER ERRATA**

The Mathematics P1 Grade 12 for the Preparatory September Examination 2020 was written on Friday, 18 September 2020. We were made aware of certain errors that were discovered during the writing and marking process.

The following amended guidelines with regard to marking was prepared in conjunction with the examiner and moderator. In order to address this and to ensure that learners are not disadvantaged, the following standardised approach to marking must be adopted across the Province.

ERRATA

QUESTION 1/*VRAAG 1*

1.1.3	$-x^2 - x + 2 \le 0$ $x^2 + x - 2 \ge 0$ $(x+2)(x-1) \ge 0$ $\therefore x \le -2 \quad \text{or / } of \quad x \ge 1$  **(If Learner treats inequality as and equal sign, i.e. $\therefore x \ge -2 \quad \text{or / } of \quad x \ge 1$) Max. (2/4)** **Solution as a whole is incorrect** **OR/OF** $-x^2 - x + 2 \le 0$ $(1-x)(x+2) \le 0$ $\therefore x \le -2 \quad or / \text{of} \quad x \ge 1$  	✓ $x^2 + x - 2 \ge 0$ ✓ factorisation / *faktorisering* ✓✓ $x \le -2$ or/*of* $x \ge 1$ (**ACCURACY AS COMBO – NOT MARKED IN PARTS**) (4) **OR/OF** ✓ $1 - x$ ✓ factorisation / *faktorisering* ✓✓ $x \le -2$ or/*of* ✓ $x \ge 1$ (4)

1.3

CORRECTION	$(x+m)(x+n) = 3p^2$ $x^2 + nx + mx + mn - 3p^2 = 0$ $x^2 + (m+n)x + (mn - 3p^2) = 0$ For real roots / *Vir reële wortels*: $b^2 - 4ac \ge 0$ $\Delta = b^2 - 4ac$ $= (m+n)^2 - 4(1)(mn - 3p^2)$ $= m^2 + 2mn + n^2 - 4mn + 12p^2$ $= m^2 - 2mn + n^2 + 12p^2$ $= (m-n)^2 + 12p^2$ But/*Maar*: $(m-n)^2 \ge 0$ and/*en* $12p^2 \ge 0$ $\therefore \Delta \ge 0 \Rightarrow$ *roots are real / wortels is reëel*	✓ $x^2 + (m+n)x + (mn - 3p^2) = 0$ ✓ $(m+n)^2 - 4(1)(mn - 3p^2)$ ✓ $(m-n)^2 + 12p^2$ ✓ explanation / *verduideliking* conclusion / *gevolgtrekking* (4)

QUESTION 2/*VRAAG 2*

2.1.4	$P_n = T_n + k = -n^2 + 36n + (51 + k)$	✓✓ answer / *antwoord* **(ANSWER ONLY – FULL MARKS)** (2)

QUESTION 3/*VRAAG 3*

3.1	$1 + 4 + 4^2 + 4^3 + \ldots + 4^{n-1}$ $\therefore T_n = 4^{n-1}$ $\therefore \text{Sum/}Som: \sum_{n=1}^{7} 4^{n-1}$ **OR/OF** $\sum_{n=0}^{6} 4^n$ For original sequence:/*Vir oorspronklike ry:* Sum/*Som*: $\sum_{n=1}^{5000} n$ $S_n: \sum_{n=1}^{5000} n - \sum_{n=1}^{7} 4^{n-1}$ **OR/OF** $\sum_{n=1}^{5000} n - \sum_{n=0}^{6} 4^n$	✓ $T_n = 4^{n-1}$ ✓ $\sum_{n=1}^{7} 4^{n-1}$ **OR/OF** $\sum_{n=0}^{6} 4^n$ ✓ $\sum_{n=1}^{5000} n$ ✓ answer / *antwoord* (4)

3.2 ALTERNATIVE SOLUTION **Add the two series and get a new series:/** ***Tel die twee reeks bymekaar en kry 'n nuwe reeks:*** $2 + 2x^2 + 2x^4 + \ldots$ $a = 2$ and / *en* $r = x^2$ $\therefore \frac{2}{1 - x^2} = 8$ $8 - 8x^2 = 2$ $-8x^2 = -6$ $x^2 = \frac{3}{4}$ $x = \pm\frac{\sqrt{3}}{2}$	✓✓ for correct new series *vir korrekte nuwe reeks* ✓ $\frac{2}{1 - x^2}$ ✓ equating sum to 8 *stel som gelyk aan* 8 ✓ $x^2 = \frac{3}{4}$ ✓ answer / *antwoord* (6)

QUESTION 5/*VRAAG 5*

ALTERNATIVE SOLUTION 5.3	$g(x) = b^x - 8$ $-5 = b^1 - 8$ $\therefore b = 3$ $f(x) = ax^2 + 3x + c$ $f'(x) = 2ax + 3$ $2ax + 3 = 0$ (at turning point) $2a\left(-\frac{3}{4}\right) + 3 = 0$ $-\frac{3}{2}a = -3$ $a = 2$ $\therefore -5 = 2(1)^2 + 3(1) + c$ $c = -10$	✓ substituting $(1 ; -5)$ / *vervanging van* $(1;-5)$ ✓ $b = 3$ ✓ $2ax + 3 = 0$ ✓ $2a\left(-\frac{3}{4}\right) + 3 = 0$ ✓ simplifying / *vereenvoudiging* ✓ $f(1) = -5$ (6)

5.6	$y = 3^x$ *or / of* $y = b^x$ $y = \log_3 x$ or $y = \log_b x$	✓ finding $h(x)$ / bepaling van $h(x)$ ✓ answer / *antwoord* **Answer ONLY – Full Marks** (2)

QUESTION 6/*VRAAG 6*

6.1	$A = P(1-i)^n$ $\frac{1}{3}x = x(1-i)^4$ $\frac{1}{3} = (1-i)^4$ $3^{-\frac{1}{4}} - 1 = -i$ $-0,2401643143 = -i$ $\therefore i = 0,2401643143$ $\therefore r = 24,02\%$ p.a	✓ $\frac{1}{3}x = x(1-i)^4$ ✓ $i = 0,2401643143$ ✓ answer / *antwoord* (3)

ACCEPT/AANVAAR

6.2.1	$Monthly\ Instalment = \frac{R596\,458{,}10}{72}$ $= R8\,284{,}14$	✓ dividing by 72 / *deel deur* 72 ✓ answer / *antwoord* (2)
6.2.2	$P = \frac{8284{,}14\left(1-\left(1+\frac{9{,}5\%}{12}\right)^{-72}\right)}{\frac{9{,}5\%}{12}}$ $= R453312{,}18$ $A = P(1+i)^n$ $453312{,}18 = P\left(1+\frac{9{,}5\%}{12}\right)^5$ $P = R435786{,}98$	✓ $n = 72$ ✓ substitution into correct formula *vervanging in die korrekte formule* ✓ answer ✓ $A = R453312{,}18$ ✓ $n = 5$ ✓ substitution into correct formula *vervanging in die korrekte formule* ✓ answer / *antwoord* (6)

6.2.1 allocate 2 marks

6.2.2 stick to original mark allocation of 6 marks

Total of the paper reduced to 147 (convert to 150)

NB – Learners that answered according the original memo – mark out of 150

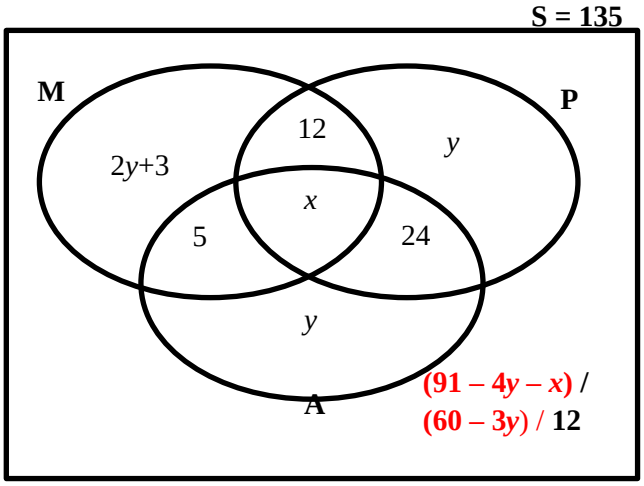
QUESTION 7/*VRAAG 7*

IN THIS QUESTION WE PENALISE ONCE FOR INCORRECT NOTATION

QUESTION 8/*VRAAG 8*

8.3	For concave down / *Vir konkaaf afwaarts* $f''(x) < 0$ $f'(x) = 6x^2 + 2x - 12$ $f''(x) = 12x + 2$ $\therefore 12x + 2 < 0$ $x < -\frac{1}{6}$ **IF LEARNER WORKS WITH EQUALITY SIGN AND CONCLUDES CORRECTLY. (4/4)** **IF LEARNER WORKS WITH EQUALITY SIGN BUT DOES NOT CONCLUDE CORRECTLY. (3/4)**	✓ $f''(x) < 0$ ✓ $f'(x) = 6x^2 + 2x - 12$ ✓ $f''(x) = 12x + 2$ ✓ $x < -\frac{1}{6}$ (4)
ALTERNATIVE SOLUTION	Point of inflection (*x*-coordinate) $f(x) = 2x^3 + x^2 - 12x + 9$ $x = -\frac{b}{3a}$ $= -\frac{1}{3(2)}$ $= -\frac{1}{6}$ $\therefore x < -\frac{1}{6}$	✓ formula / *formule* ✓ substitution / *vervanging* ✓ answer / *antwoord* ✓ conclusion / *gevolgtrekking*
8.4	$6x^2 + 2x - 12 \leq 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-2 \pm \sqrt{2^2 - 4(6)(-12)}}{2.6}$ $= \frac{-2 \pm \sqrt{292}}{12}$ $= -1,59$ or / *of* $1,26$ $\therefore -1,59 \leq x \leq 1,26$	✓ substitution into correct formula *vervanging in die korrekte formule* **(BOTH MARKS CAN BE AWARDED FOR THE CORRECT *X*-VALUES IF LEARNER USED CALCULATOR)** ✓ *x*-values / *x-waardes* ✓✓ answer / *antwoord* (**accuracy / *akkuraatheid***) (4)

QUESTION 10/*VRAAG 10*

10.1		Correct entries of: *Korrekte waarde van*: ✓ 5 ; 12 ; 24 ✓ $2y + 3$; y ; y ✓ x ✓ **12** / **(91 – 4*y* – *x*)** / **(60 – 3*y*)** (4)
10.3	P(M or/*of* (P and/*en* A))$= \frac{2y+3+5+12+x+24}{135}$ $= \frac{35+5+12+15+24}{135}$ $= \frac{91}{135}$ *or/of* 0,67	✓ $2y+3+5+12$ ✓ **$x + 24$** ✓ answer / *antwoord* (3)
ALTERNATIVE SOLUTION		
$P(M \cup (P \cap A)) = P(M) + P(P \cap A) - P(M \cap P \cap A)$ $= \frac{67}{135} + \frac{39}{135} - \frac{15}{135}$ $= \frac{91}{135}$		✓ formula / *formule* ✓ substitution / *vervanging* ✓ answer / *antwoord* (3)

QUESTION 11/*VRAAG 11*

ALTERNATIVE SOLUTION/ALTERNATIEWE OPLOSSING

11.2	$\text{Probability} = \frac{3 \times 2 \times 3!}{5!}$ $= \frac{3}{10}$	✓ 3 x 2 ✓ 3! ✓ 5! ✓ answer / *antwoord* (4)

We request that this must be brought to the attention of all educators marking these papers and sincerely apologise for the inconvenience.

Yours in quality education.

MS N. MBELEKI
CES: ASSESSMENT INSTRUMENTS
DEVELOPMENT AND QUESTION PAPERS
BANK MANAGEMENT

22 September 2020
DATE