

ELISHA FOUNDATION HIGH SCHOOL

END OF TERM TWO EXAMS 2019

S.3 MATHEMATICS

2 Hours 30 Mathematics

INSTRUCTIONS:

Answer all questions.

Silent non-programmable calculators may be used

SECTION A

1. (a). Expand $(2x-5)^2$
(b). Factorize completely $9x^2-4y^2$
2. Given that $a*b = ab^2 + a^2b$. Find $4*(-2*3)$
3. At lunch time, a certain hotel received 80 customers. Of these, 45 had a posho meal (P) and 50 had matooke (M).
(a). Represent this information on a Venn diagram
(b). Find the number of customers who had a meal of both P and M
4. Given that $f(x) = x^2 + 4$, find the value of x if $f(x) = 13$
5. Simplify without using mathematical tables or a calculator.
$$\frac{7.86^2 - 6.80^2}{1.06}$$
6. The price of an article is shs. 24000. If a discount of 12% is given, calculate the selling price of the article.
7. Make b the subject of the equation $t = 20 + \sqrt{a - b^2}$
8. Given that $\begin{pmatrix} a & 4 \\ 2 & b \end{pmatrix} + \begin{pmatrix} 3 & 1 \\ c & 0 \end{pmatrix} = \begin{pmatrix} 6 & d \\ 1 & -1 \end{pmatrix}$ find the values of a, b, c and d.
9. If the determinant of matrix $\begin{pmatrix} 2 & 1 \\ 3 & x \end{pmatrix}$ is 5, find x.
10. Given that $\begin{pmatrix} x & 3 \\ 4 & 6 \end{pmatrix}$ is a singular matrix, find the value of x

SECTION B

11. (a). Given that $x - y$ and $x^2 - y^2 = 88$ Find the value of x and y

(b). Kato went to Rwamwanja market with shs 21,000 and bought 2 mathematical sets and 3 counter books. Kakuru went to the same market with shs. 37,000 and bought 4 mathematical sets and 5 counter books. How much did Nyakato pay for a dozen of pens and 6 counter books if she got the items from the same market?

12. (a). Nine students took a test in English and their mean mark was 65. Eight of the students got the following marks.

80, 72, 63, 52, 45, 85, 58, 75.

Determine the mark the 9th student got

(b). The following data represents the height in centimeters of 20 P.6 pupils at Bihanga primary school.

150	155	157	160
153	150	157	150
153	155	160	153
160	157	153	155
157	160	155	160

(i). Construct a frequency table for the data

(ii). Draw a histogram to represent the data.

13. Given that $A = \begin{pmatrix} 2 & 3 \\ 5 & 8 \end{pmatrix}$, find

(i). A^T

(ii). A^{-1}

(iii). AA^{-1}

(iv). $A^{-1}A$

(v). Comment on your answers in (iii) and (iv) above

14. (a). Find the values of x for which $gf(x) = fg(x)$ If $f(x) = 3x$ and $g(x) = x^2 + 3$

(b). Use matrix method to solve the following pair of simultaneous equations.

$$2x + 5y = 19$$

$$y = x +$$

15. (a). Express $\frac{1 - \sqrt{3}}{2 + \sqrt{3}}$ in the form $a + b\sqrt{3}$, hence evaluate $\frac{1 - \sqrt{3}}{2 + \sqrt{3}}$ If $\sqrt{3} = 1.17$ (correct your answer to 3 significant figures).

- (b). In a certain country, income tax is levied as follows;

Taxable income (shs)	Rate (%)
0 – 100,000	10
100,001 – 200,000	20
200,001 – 300,000	30
300,001 – 400,000	45
400,001 – and above	50

A person's monthly gross income has certain allowances deducted from it before it is subjected to taxation.

Each child below ten years - shs. 5000

Each child above ten years but less than 18 years - shs. 7000

Married man - shs. 18000

Transport allowance - shs. 17000

David earns shs. 450000 per month. He is married with 3 children of ages between 2 and 10 years, and 2 children above 12 years but less than 18 years.

Calculate:

- The taxable income of David
- The income tax paid.

END

WISHING YOU SUCCESS

Tr. Ean Nasasira

(Subject teacher)