

OUR LADY OF GOOD COUNSEL SSS GAYAZA
S3 MATHEMATICS
TERM 1 2020 HOME WORK

Answer *all* questions in section A and any *two* in section B

SECTION A

- Simplify the following expressions:
 - $\sqrt{12} + \sqrt{128} - \sqrt{98} + \sqrt{27} - \sqrt{36}$
 - $\sqrt{5} \times \sqrt{a}$
- Solve the following simultaneous equations using matrix methods:
$$\begin{aligned} 2x + 3y &= 7 \\ x + 2y &= 3 \end{aligned}$$
- A farmer has enough feed for 18 cows for 30 days. For how long will it last if she buys 2 more cows?
- A point T on a line segment AB is such that $2TB = AT$. If $AT = \begin{pmatrix} 4 \\ -2 \end{pmatrix}$, Find:
 - column vector $\mathbf{AB}$.
 - the length of $\mathbf{AB}$.
- Given the mapping $x \rightarrow 4x + 5$, find the domain when the range is $\{-3, 27\}$
- Two sets A and B in the universal set $\mathcal{E}$, are such that $n(A \cap B) = 3$, $n(B) = 5$ and $n(A^1) = 7$. Use a Venn diagram to find $n(A \cup B)^1$.
- The lengths of 6 trousers in centimeters are 90, 115, 98, 103, 105 and 98. Find the:
 - modal length.
 - Median length.
- Ann plays two games of table-tennis against Betty. If the probability of Ann beating Betty in any one game of table tennis is $\frac{4}{5}$, what is the probability of Betty:
 - winning both the games
 - winning the first game and losing the second one?
- Calculate by how much the compound interest exceeds the simple interest on Ugx. 700000 for 2 years at 12% p.a.
- Given that $\frac{\sqrt{2}}{\sqrt{3}+\sqrt{2}} = a + \sqrt{b}$, find the values of a and b.

SECTION B

*Answer only **two** questions from this section.*

11. Awino has 3 blue sweets and 2 pink sweets in her pocket. She takes one sweet at random and eats it. She takes another sweet and eats it too. What is the probability that:
- (a) the first sweet is blue?
 - (b) The first sweet is blue and the second sweet is pink?
 - (c) The second sweet is pink?
12. The table below represents the times (in seconds) recorded by students in the heats of 100m race during inter- house athletics competition.

14.7	13.8	14.6	15.2	15.0
11.8	14.0	12.7	13.2	15.0
14.5	15.5	11.9	12.5	15.1
14.8	14.9	15.6	15.0	13.2
12.0	14.7	12.4	13.4	13.6
14.5	15.0	14.9	14.7	12.2
15.0	15.2	15.7	14.7	15.2
15.2	15.4	12.1	11.9	14.7
13.4	14.5	15.0	15.1	15.4
2.8	13.3	11.8	11.5	12.0

- (a) Draw a frequency distribution table for the data starting with the class 11.0 - 11.4.
 - (b) State the; (i) class- interval. (ii) Modal- class.
 - (c) Using 13.3 as the working mean , estimate the mean time.
 - (d) Construct the cumulative frequency curve and use it to estimate the median mark.
- 13.(a) Given the matrices :

$\mathbf{B} = \begin{pmatrix} 2 & 8 \\ 16 & -4 \end{pmatrix}$ and $\mathbf{C} = \begin{pmatrix} 6 & -4 \\ -12 & 8 \end{pmatrix}$ find the inverse of the matrix $(\mathbf{B} - \mathbf{C})$

- (b) Nakuya sells dresses of sizes Small (S), Medium(M) and Extra Large(XL). The table below shows her sales for 3 days.

SIZE	Day		
	Mon	Tue	Wed
S	2	2	1
M	7	4	1
XL	3	5	3

She sells each dress at Shs.40000 for Small, Shs.50000 for Medium and Shs 60000 for Extra Large.

- (i) Write down a:
 - 3×3 matrix for the sales.
 - 1×3 matrix for the prices of the dresses
- (ii) Use the matrices to calculate her total income from the dresses.
 - (a) Per day.
 - (b) For the three days.

THE END