S4: INTEGRATION ACTIVITIES ACROSS ALL 5 TOPICS.

Tr. Kabuzi maths.

NOTE: In some chapters or topics, a single Activity Of Integration (AOI) may be insufficient to cover all the learning outcomes. Therefore, it is necessary to provide more than one AOI to comprehensively address all the desired learning outcomes.

ACTIVITY OF INTEGRATION TOPIC 41

NAME: **.....**

STREAM: **.....**

TIME: 30 minutes**.**

TOPIC: Composite functions.

THEME: Patterns and Algebra**.**

@africastruggle

SCENARIO.

A business is planning its monthly sales and expenses. The company tracks its expenses using the function $f(x) = x + 3$, where x is the number of units sold, and the total expenses increase as the number of units increases. The sales revenue is tracked by another function $g(x) = x^2 - 3x + 2000$, where x is the number of units sold. The company wants to know how much revenue will be earned after accounting for the expenses for a specific number of units sold.

The business is trying to plan for 50 units sold and needs help in determining the total revenue after expenses.

TASK:

Help the business by finding the composite function $g(f(x))$and determine the total revenue after expenses when 50 units are sold.

ACTIVITY OF INTEGRATION TOPIC 42

NAME: **.....**

STREAM: **.....**

TIME: 30 minutes**.**

TOPIC: Equations and Inequalities.

THEME: Patterns and Algebra**.**

@africastruggle

SCENARIO.

A farmer in your village uses the formular below to calculate the amount of fertilizer required for planting crops. The formula used is

$F = \frac{1}{2}\sqrt{\frac{R+A}{R-A}}$

Where F is the amount of fertilizer in kilograms, A is the area of land in square meters, and R is the recommended amount of fertilizer per square meter in kilograms.

Additionally, the farmer wants to know how much area can be covered with a given amount of fertilizer and needs to rearrange the formula to make AAA the subject, then solve for the area when $R = 4$ and $F = 10kgs$

TASK

Help the farmer by rearranging the formula and calculating the area that can be covered for the given fertilizer amount.

ACTIVITY OF INTEGRATION TOPIC 43

NAME: **.....**

STREAM: **.....**

TIME: 30 minutes**.**

TOPIC: Linear programming.

THEME: Patterns and Algebra**.**

@africastruggle

SCENARIO.

In your community, the local sugar factory is a critical source of jobs and economic stability. The factory uses two types of machines to pack sugar: electrical packing machines and manual packing machines. Each electrical machine can pack 300 bags of sugar per day and requires 3 workers to operate, while each manual machine can pack 250 bags per day but requires 9 workers. To ensure smooth operations, at least 36 workers must be employed daily, and the total number of bags packed per day should not exceed 3000.

The factory is also focused on minimizing costs. Running an electrical machine costs Shs 6000 per day, and running a manual machine costs Shs 8000 per day. The management is looking for the optimal combination of machines to meet these requirements while keeping costs as low as possible.

TASK

Help the community determine the best combination of machines to minimize costs while meeting the factory's constraints.

ACTIVITY OF INTEGRATION TOPIC 44

NAME: **.....**

STREAM: **.....**

TIME: 30 minutes**.**

TOPIC: Loci.

THEME: Geometry and Measures**.**

@africastruggle

SCENARIO.

In your village, a local farming project aims to help farmers increase crop yields by providing efficient sprinkler systems. One farmer has a rectangular garden, measuring 60 meters by 45 meters, within a larger plot. The council has pledged to provide a sprinkler that can cover the entire garden, but the farmer needs to determine the minimum radius of the sprinkler required to irrigate the whole garden while ensuring it stays within the boundaries of the larger plot.

The farmer is unsure how to calculate the radius for complete coverage and how to position the sprinkler to ensure the entire garden is watered.

TASK:

Help the farmer by calculating the minimum radius of the sprinkler needed to cover the entire garden and advise on the optimal positioning to ensure full irrigation.

ACTIVITY OF INTEGRATION TOPIC 45

NAME: **.....**

STREAM: **.....**

TIME: 30 minutes**.**

TOPIC: Lines and Planes in 3D.

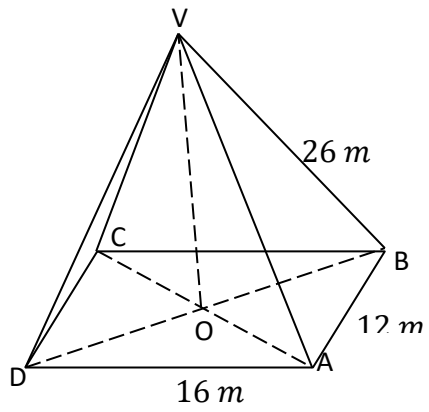
THEME: Geometry and Measures**.**

@africastruggle

SCENARIO.

In your community, there are plans to construct a rectangular pyramid for a new monument. The pyramid will have a rectangular base with dimensions $16\ m\ by\ 12\ m$, and the slant edges will each be $26m$ long. The community needs help in determining the height of the pyramid, the length of the diagonal of the base, and the angle between the base and the slanting surface AVB.

SUPPORT:



TASK:

Help the community by determining the measurements needed.

For inquiries or suggestions, please contact**: 0701335517 / 0775901133**
Find all **solutions**, Mathematics **AOI**s, and **items** for all classes on my YouTube channel and website in the name of
Tr. Kabuzi Maths.
Channel is strictly for Mathematics.