S1: INTEGRATION ACTIVITIES ACROSS ALL 14 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 1

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Number bases.

THEME: Numbers.

@africastruggle

SCENARIO.

The members of a village SACCO are in a dilemma. They need to withdraw money from their SACCO account for an important function. The SACCO chairman, trying to protect the four-digit PIN of the ATM card, converted each digit from base 10 into another base lower than base 5. The converted PIN is recorded as: 13, 20, 21, 12.

Unfortunately, the chairman cannot remember the exact base he used for the conversion, leaving the SACCO members unable to withdraw the funds.

TASK.

With a reason, help the SACCO members identify the base and the original pin so that they can withdraw the money.

ACTIVITY OF INTEGRATION TOPIC 2

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Working with integers.

THEME: Numbers.

@africastruggle

SCENARIO.

A Senior One classroom has been without tiles for the last two years, causing students to struggle with dust in the class. The school engineer is now tasked with tiling the classroom floor, which measures $\boldsymbol{540\ cm\ by\ 420\ cm}$, using square tiles of length $\boldsymbol{x\ cm}$. The challenge is to find the length of largest size of square tiles that can fit the classroom floor without needing to cut any tiles.

Additionally, the engineer needs help determining the number of tiles required and the total cost for purchasing the tiles. It is known that each tile of size $\boldsymbol{x\ cm}$ costs shillings five thousand two hundred fifty.

TASK:

Help the school engineer by calculating the largest size (x cm) of the square tiles that can be used, the number of tiles needed to cover the entire floor, and the total cost to purchase the tiles.

ACTIVITY OF INTEGRATION TOPIC 3
NAME: .....
STREAM: .....
TIME: 30 minutes.
TOPIC: Fractions, percentages and decimals.
THEME: Numbers.
@africastruggle

SCENARIO.

The school organized an interclass competition for non-candidate classes: S1, S2, S3, and S5. The prize money of shs. 4,000,000 is to be shared based on the classes' performance in four games. The scores for each class in the games are as follows:

SUPPORT

CLASS	FOOTBALL	NETBALL	VOLLEYBALL	ATHLETICS
S1	15	15	15	20
S2	15	25	20	10
S3	10	10	15	15
S5	5	25	20	10

Award basing on position.

POSITION	PERCENTAGE SHARE
1	40%
2	30%
3	20%
4	Remaining percentage

TASK.

Help games master identify the winner and how much each class will receive as prize money.

ACTIVITY OF INTEGRATION TOPIC 4

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Rectangular cartesian coordinates in 2D.

THEME: Numbers.

@africastruggle

SCENARIO.

The school administrators have asked an engineer to design a shape on the ceiling of the community school. They provided the engineer with a set of coordinates describing the shape as $(0,6)$, $(-2,3)$, $(2,3)$, $(5,3)$, $(-5,3)$, $(-2,0)$, $(2,0)$, $(-5,-4)$, $(5,-4)$, and $(0,-2)$. The points are scattered across the rectangular Cartesian coordinate system, and the engineer must plot these points accurately to visualize and design the shape on a cartesian plane. He wants you to help him with the task and tell him the shapes that's needed.

TASK:

Help the engineer by plotting the coordinates on the Cartesian plane and determining the overall shape.

ACTIVITY OF INTEGRATION TOPIC 5

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Geometric constructions skills.

THEME: Geometry and Measures.

@africastruggle

SCENARIO.

A landowner has a triangular plot of land with a base measuring 70 meters. The two sides of the triangle are inclined at angles of 75° and 60° to the base. The landowner wants to construct a circular well that will maximize the space available within the land, but he is unsure of the area it will cover.

TASK:

Advise the landowner about the maximum area the circular well will occupy.

ACTIVITY OF INTEGRATION TOPIC 6

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Sequence and Patterns.

THEME: Patterns and Algebra.

@africastruggle

SCENARIO.

The school canteen manager has noticed a consistent pattern in student attendance at the beginning of every term. Specifically, the number of students increases by 10 each day, starting with 200 students on the first day of June. The school manager wants to develop a mathematical formula to calculate the number of students on any given day, use it to calculate the total number of students by the end of June, and determine which day (nth day) the student population will reach 900. This information will help the manager stock up on supplies accordingly.

TASK.

Help the school manager develop a mathematical formula, calculate student by end of June and determine the specific day (nth day) when the student population will reach 900.

ACTIVITY OF INTEGRATION TOPIC 7

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Bearings.

THEME: Geometry and Measures.

@africastruggle

SCENARIO.

A tourist group in Uganda is visiting three sites, A, B, and C, by helicopter. They began their journey at point S, traveling 300 km on a bearing of 315^0 to reach site A. Afterward, they changed course to a bearing of 250^0, flying 350 km to site B. From site B, they flew directly south for 400 km to site C. Unfortunately, one of the tourists fell ill at site C, and they now need to return to the starting point, S, as quickly as possible for medical attention. The group seeks help to find a shorter, direct route from site C back to the starting point S, optimizing their flight path for a faster return.

TASK

help the tourist determine the bearing and distance on the direct route they should take to reach the starting point from site C in the shortest time possible.

ACTIVITY OF INTEGRATION TOPIC 8

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: General and angle properties of geometric figures.

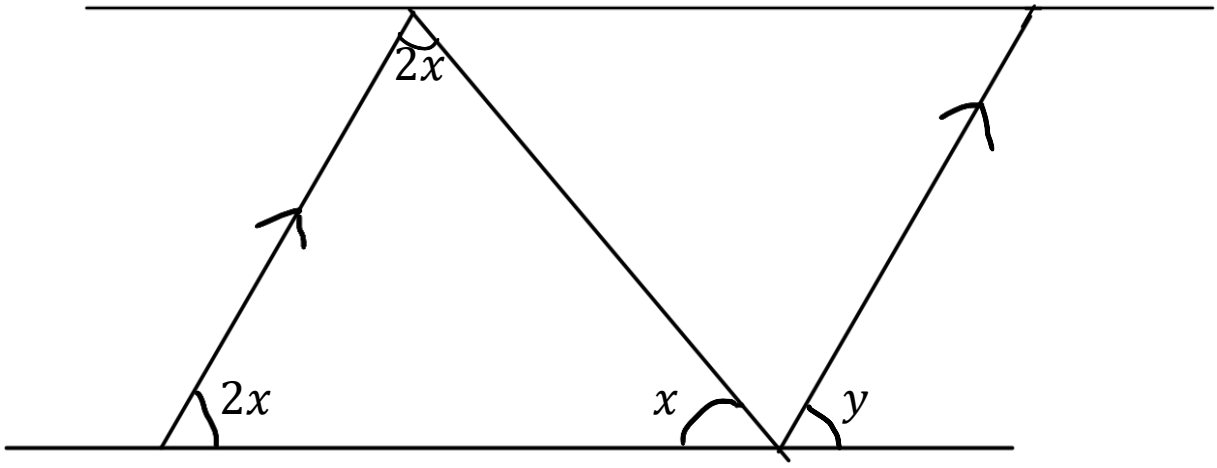
THEME: Geometry and Measures.

@africastruggle

SCENARIO.

The builder has received a sketch of the foundation's design, but the diagram does not provide specifications for some of the angles between the walls. However, the builder has been given a detailed plan of the building. He seeks clear instructions on how to calculate the unknown angles to ensure the foundation is constructed accurately.

SUPPORT. (design)



TASK:

Help the builder by providing a step-by-step method to calculate the unknown angles, using the available building plan, to ensure the foundation meets the required specifications.

ACTIVITY OF INTEGRATION TOPIC 9

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Data collection and presentation.

THEME: Data and Probability.

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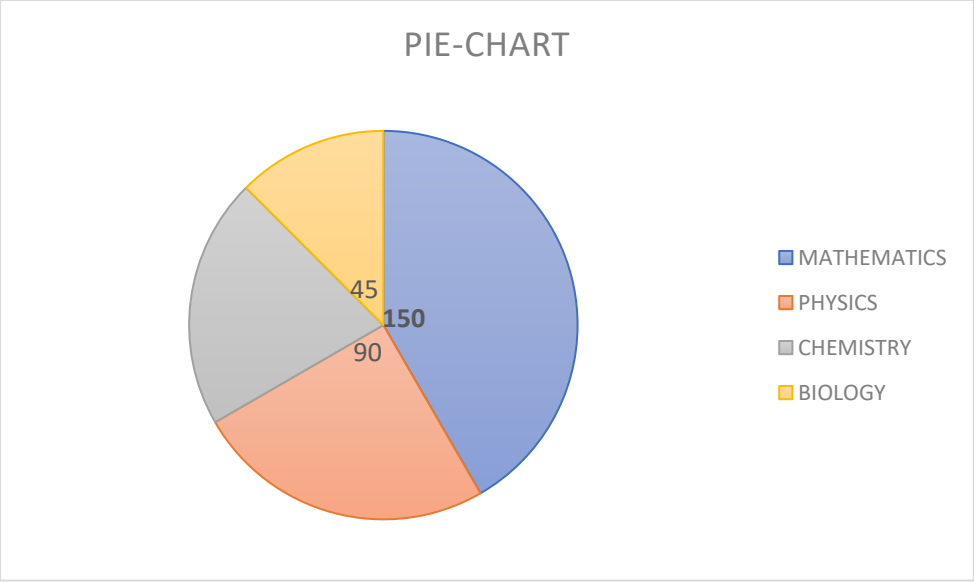
SCENARIO.

A group of primary school students have been assigned to create a bar graph using the pie chart below, which shows the subjects offered by students. Since they haven't covered bar graphs in class, they're struggling. The teacher provided one additional clue: 60 students are enrolled in Biology.

SUPPORT.



TASK.

Create a bar graph representing the number of students enrolled in each subject.

ACTIVITY OF INTEGRATION TOPIC 10

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Reflection.

THEME: Geometry and Measures.

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SCENARIO.

A man owns a house located on one side of a road, which follows the line $y = x$. The corners of his house are scaled in meters are at points $A\ (10, 30)$, $B\ (40, 60)$, $C\ (20, 80)$, and $D\ (-10, 50)$. The government plans to extend the road, which will pass through the area where his house currently stands. To resolve this, the road engineer proposes demolishing the house and rebuilding it on the opposite side of the road, maintaining the same size and shape. The engineer suggests using the road as the line of reflection to find the new location of the house, but they need assistance in determining the exact coordinates for the new house.

TASK.

Help the engineer by finding the new coordinates for the house after reflecting each of the four corners.

ACTIVITY OF INTEGRATION TOPIC 11

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Equations of lines.

THEME: Patterns and Algebra.

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SCENARIO.

A tourist is planning to visit a game park where the entry fee is UGX 60,000, and for every day spent inside the park, an additional UGX 30,000 per day is charged. The tourist wants to know the cost of staying for only 4 days and also plans to spend a total of UGX 420,000 but is unsure how many days he can afford to stay. He wants to develop a mathematical relationship between the number of days spent in the park and the total cost to help him predict future costs.

TASK:

Help the tourist by deriving a formula to calculate the total cost of 4 days and determining how many days he can afford to stay with a total budget of UGX 420,000.

ACTIVITY OF INTEGRATION TOPIC 12

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Algebra 1.

THEME: Patterns and Algebra.

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SCENARIO.

Jimmy and Peter do not know their exact ages. However, they have the following information: Jimmy is the older brother, and in 2002, Jimmy was five years older than Peter. In 2005, Jimmy was twice as old as Peter. They are seeking your help to find their exact ages.

TASK:

Use the information provided to find the exact ages of Jimmy and Peter.

ACTIVITY OF INTEGRATION TOPIC 13

NAME: .....

STREAM: .....

TIME: 30 minutes.

TOPIC: Business Arithmetic.

THEME: Geometry and Measures.

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SCENARIO.

A company's sales agent is selling phones priced at UGX 200,000 each, earning a 2% commission per sale. Customers are eligible for discounts based on the number of phones purchased. Under Offer A, a 5% discount is given for 70 or more phones, while Offer B provides a UGX 350,000 discount for purchases of 55 to 69 phones. Your friend is considering buying either 60 or 75 phones and seeks advice on the better offer for their purchase while also determining the commission the agent would earn.

TASK.

With a reason, advise your friend if she should take 60 or 75 phones and the necessary commission to the agent.

ACTIVITY OF INTEGRATION TOPIC 14
NAME: .....
STREAM: .....
TIME: 30 minutes.
TOPIC: Time and Timetables.
THEME: Geometry and Measures.
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SCENARIO.

The company has planned five sessions for the day, starting at 8:00 AM. The first session begins at 8:00 AM and lasts for 3 hours. After this session, there will be a 45-minute break before the next session. The second session runs for 2 hours, followed by a 30-minute break. The third session starts and lasts for 2 hours, after which a 15-minute break will take place. The fourth session begins and runs for 2 hours, followed by another 30-minute break. The fifth and final session of the day will run for 1 hour. However, the original timetable has been lost, and the manager urgently needs a new one created in a 12-hour format. The new timetable should clearly indicate all the sessions, breaks, and start/end times to ensure employees can easily refer to it for the day's schedule.

TASK:

Create a new timetable in 12-hour format with all the sessions and breaks, ensuring it's simple and clear for employee reference.

For inquiries or suggestions, please contact:

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Tr. Kabuzi Maths.

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