ACADEMIC CURRICULUM ACHIEVERS

08th/12/2025

Discussion Questions

Time: 5:00 pm

Facilitator: Ug Math Tutor (Youtube)

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What to discuss?

SURDS

Scenario 1

Mr. Brian is renovating his house and wants to tile the floor of his rectangular room. The room measures $(20 + 5\sqrt{2})$ meters in length and $(18 - \sqrt{2})$ meters in width. He plans to use square tiles, each with a side length of $(2 + \sqrt{5})$ meters.

The cost of one box of tiles (containing 6 tiles) is UGX 200,000.

Mr. Brian isn't sure how to calculate the exact amount of tiles he needs and the total cost. He calls you for assistance.

Task:

(a) Help Mr. Brian calculate the exact number of tiles needed to cover the entire floor.

(b) Determine how many boxes of tiles he must buy to ensure full coverage.

(c) Calculate the total cost of the tiles.

Scenario 2

Ms. Namuganza is designing her new kitchen floor. The rectangular kitchen measures $(8 + 7\sqrt{3})$ meters in length and $(12 + \sqrt{3})$ meters in width. She plans to use square tiles with a side length of $(1 + \sqrt{3})$ meters.

The cost of one box of tiles (containing 8 tiles) is UGX 180,000.

Ms. Namuganza isn't sure how to calculate the exact amount of tiles she needs or the total cost. She reaches out to you for guidance.

Task:

(a) Help Ms. Namuganza calculate the exact number of tiles needed to cover the entire kitchen floor.
(b) Determine how many boxes of tiles she must buy to ensure full coverage.
(c) Calculate the total cost of the tiles.

Scenario 3

Mr. Katamba is constructing an outdoor patio. The patio measures $(7 - \sqrt{5})$ meters in length and $(5 + \sqrt{7})$ meters in width. He wants to use square tiles, each with a side length of $(3 - \sqrt{2})$ meters.

The cost of one box of tiles (containing 5 tiles) is UGX 250,000.

Mr. Katamba is unsure how to find the exact number of tiles required and the total cost. He asks for your help.

Task:

(a) Help Mr. Katamba calculate the exact number of tiles needed to cover the entire patio floor.
(b) Determine how many boxes of tiles he must buy to ensure full coverage.
(c) Calculate the total cost of the tiles.

PATTERNS AND ALGEBRA

Item 1

A delivery company charges based on the distance traveled from the warehouse to the customer's location. They charge UGX 5,000 for deliveries 10 km away and UGX 20,000 for deliveries 25 km away. Tom wants to transport his sack of bananas from Kampala to Mpigi, which is approximately 37 km away, but he is unsure about the exact cost.

Additionally, Tom plans to construct a rectangular kiosk with an area of 9 square feet to store his commodities. He wants the length of the kiosk to be 3 feet less than twice its width, but he is unsure of the exact dimensions.

Tasks:

Help Tom to;

(a) Calculate the delivery cost for his sack of bananas.

(b) Determine the actual dimensions of the kiosk.

Item 2

You are planning to prepare a special flower arrangement for a local event. The arrangement must include roses and lilies. The total number of flowers should not exceed 25.
For visually pleasing purposes, the difference between the number of roses and lilies must be at least 4. Additionally, the number of lilies should not be less than 5.
Each rose costs Ugx 300, and each lily costs Ugx 200.

Task:

(a) Express the conditions for making the flower arrangement as inequalities.

(b) (i) Show the feasible region of the conditions on a Cartesian plane.

(ii) Determine the number of roses and lilies you should use to minimize the cost of the arrangement

DATA AND PROBABILITY

Item

You are hosting 20 friends for a movie night and are allowed to watch one movie and in the categories of A = Adventure, C = comedy or N = Animation. You decide to ask for their preferences. Some liked one type, others two, others all and others none as seen in their responses below:

A	NONE	A, C	A, N	C
A, C	A, N	N	C	A
C, N	NONE	A	A, N	N, C
N	C, N, A	NONE	C	A

TASK:

a) Organize your data above.

b) Which movie are you to select and what are the chances that your friends will enjoy that movie?

c) Which group of your friends is unlikely to enjoy the movie night?