

ITEM FIVE

The A & B Manufacturing Company produces cylindrical containers with a height of 50 **cm** and a radius of 20 **cm**. To predict the plastic material requirements for producing 1500 containers, the CEO requests that the production manager provides a sketch of the net of one container, including all measurements and the total surface area of the 1500 containers in square meters.

Celine, a sales representative for the company, has secured a major contract to supply 1000 containers to a client at UGX 5000 each. She will earn a 10% commission on every container sold. Celine intends to deposit her commission into a savings account with a compound interest rate of 4% per month, planning to withdraw the funds after a year.

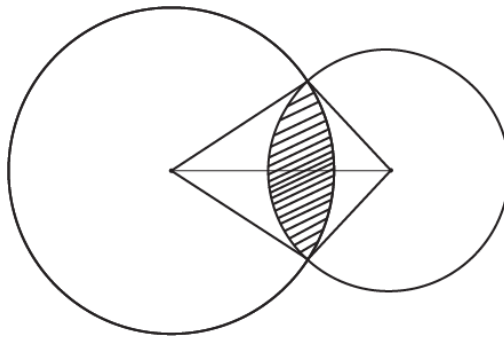
To celebrate her sales achievement, Celine took a trip to the nearby river, where she admired a tall palm tree on the opposite bank and she became curious about its height. From her initial position, the angle of elevation to the top of the palm tree was 45° . After walking 50 **m** closer to the tree, the angle of elevation increased to 60° .

Tasks:

- Help the production manager sketch the net of one container and calculate the total surface area of the 1500 cylindrical containers in square meters.
- Assist Celine in calculating the total amount she will withdraw from her savings account after 1 year.
- Help Celine determine the height of the palm tree.

ITEM SIX

Timothy works for a delivery company and is tasked with designing a hand-drawn logo for a billboard that will be placed on the roadside of the company's warehouse as an advert. The logo features a circular icon with two intersecting circles with a bigger circle of radius 1 **m** and a smaller circle of radius 75 **cm** such that their centers are 1.25 **m** apart as shown in his sketch below.



The shaded area between the two circular arcs will be painted red to match the company's delivery trucks colors and Timothy needs to calculate its area so as to determine the number of small tins of red paint required since each tin can only paint an area of 492 **cm²**.

The delivery company's program manager is tasked with scheduling the day's deliveries. The truck's journey will begin at the company's warehouse, from where it will travel 15 **km** on a bearing of 110° to deliver a package to the bookstore, and then proceed 8 **km** on a bearing of 230° to deliver another package to a gas station. After completing the deliveries, the truck will take the direct route back to the warehouse. To plan the journey efficiently, the manager needs to create a scale drawing that clearly shows the routes taken by the truck, which will enable them to determine the total fuel required for the whole journey and the direction the truck should take for the return journey, given that the truck uses 1 **liter** of fuel for every 6

km.

Tasks

- a) Help Timothy determine the number of small tins of red paint required.
- b) i) Assist the program manager in creating an accurate scale drawing of the delivery truck's routes and help determine the direction for the return journey from the gas station to the warehouse.
ii) Help the manager to determine the total amount of fuel needed for the entire journey.

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