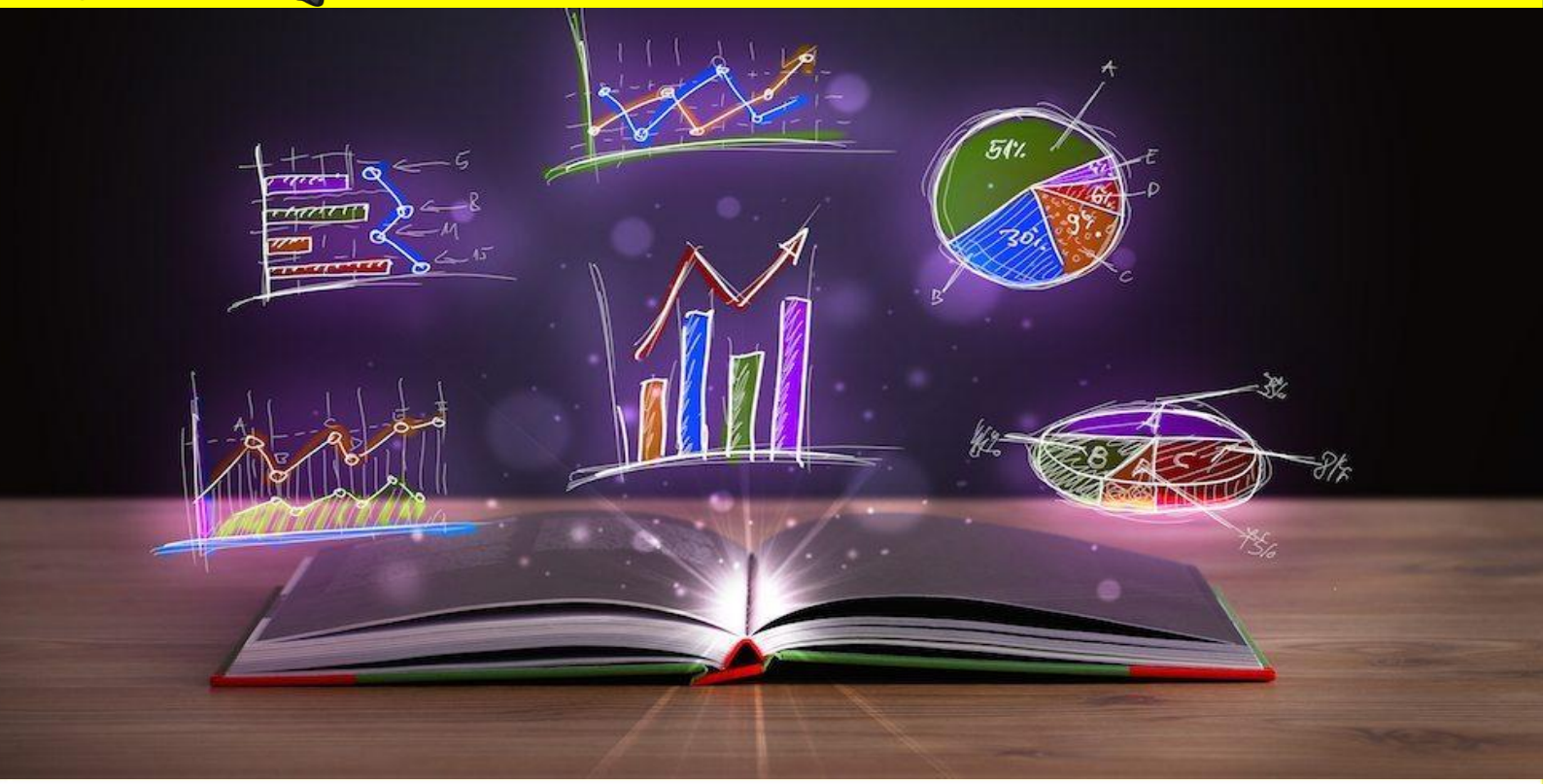
MATHLETE

(अक्सर पूछा करते हैं.....)

Classes – 9th to 10th

Series 3



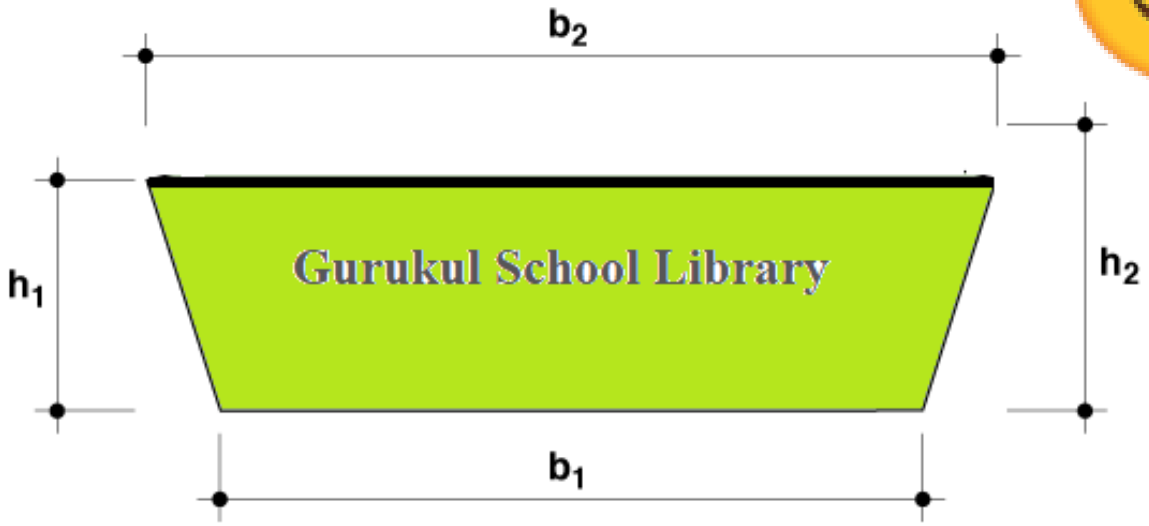
MATHEMATICAL LITERACY GROUP- CHANDIGARH

GURUKUL SCHOOL

Geometry is one of the most important math skills used by architects, engineers, and landscape architects when designing a new building or landscape. Being able to think critically about shapes and forms plays a role in such tasks as calculating the area and perimeter of a structure or determining how many plants will fit on a green roof. This set of math questions investigates the "Gurukul School" buildings and the nearby athletic field (seen below).

HOW?

The approximate shape of the Gurukul School library building is a **trapezium**.



The formula for the area of a trapezium is:

$$A_{trap} = \frac{1}{2} h\,(b_1 + b_2)$$

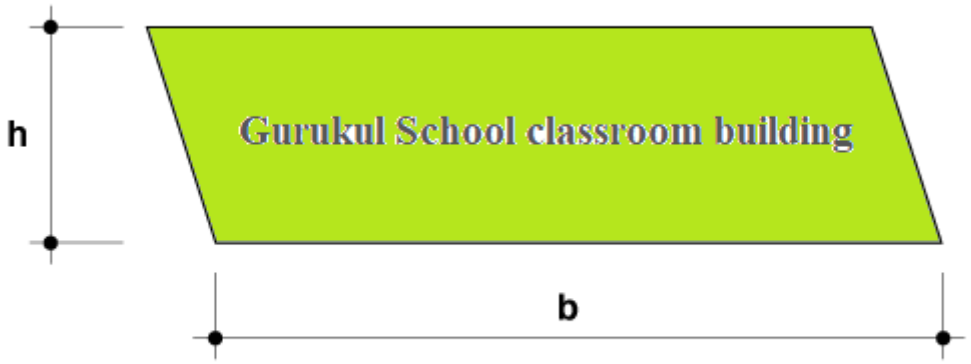
1) Calculate the area of the library building, if:

h_1 = 33 feet
h_2 = 10 feet
b_1 = 135 feet
b_2 = 163 feet

2) **When calculating the area of the roof, would you use the value of h_1 or h_2 as the correct height? Why?**

3) If the approximate shape of the Gurukul School classroom building is a parallelogram and the formula for the area of a parallelogram is:

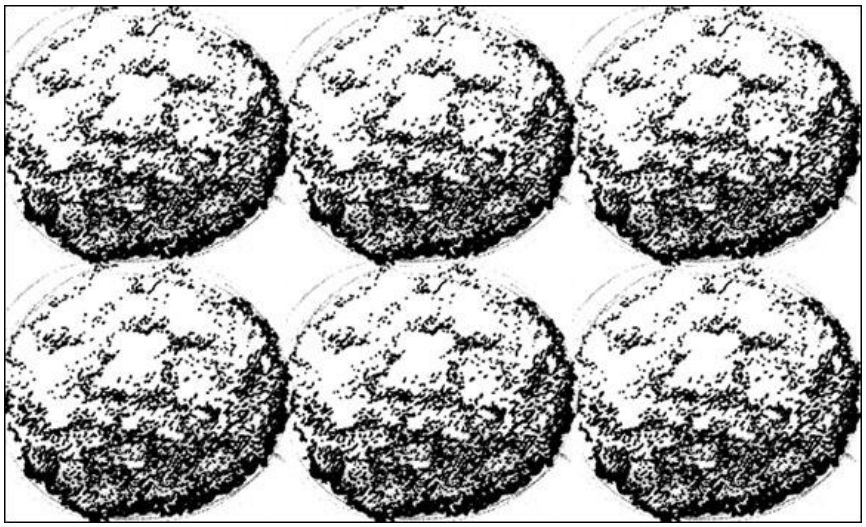
Area of parellogram = Base X height



Calculate the area of the classroom building, if

b = 190 feet
h = 40 feet

4) Suppose that the Gurukul School is hoping to acquire a new rectangular piece of property measuring 60 feet x 40 feet as an addition to the school campus. The diagram below represents a birds-eye view of that plot of land which currently contains 6 trees as shown as circles with their centers spaced 20 feet apart. What percent of the rectangle has been covered by the circles?



5) Given the same plot of land, suppose smaller trees were planted such that their centers were spaced 5 feet apart? Find the percentage of the rectangle covered by these trees in this case. Compare your results with your answer in question 4.