

Calculating square area





AIM: To stimulate children's imagination and help them to grasp concepts of time and space and extrapolate them to our dwindling natural resources.

OBJECTIVE: To calculate the area of regular and irregular objects and relate this to the battle for space we are fighting on behalf of wild tigers.

INTRO: Teachers are always looking for ways to make maths and numbers exciting. This can be done through flash cards, maths games and simulations to help children understand the concept of square area.

CONTENT: Map and total land area of Panna Tiger Reserve.

METHODOLOGY:

-  Team One counts tiles along the length of the room. Team Two counts tiles along the breadth. Team Three counts *every single* tile in the room. The teams write their respective figures on the blackboard. When Team One's figure is **multiplied** by Team Two's does it equal Team Three's figure? Make a floor plan on the blackboard, marking the total number of tiles. Explain how length x breadth provides the same answer. You can also use graph paper.
-  Draw a largish square on the blackboard. Divide this square into a 4x4 grid, comprising 16 smaller squares. Draw a rough map of the Panna Tiger Reserve on the grid. Count the squares on which the tiger reserve occupies more than half the square and ignore the squares on which it occupies less than half. Explain how more-than-half roughly compensates for less-than-half for irregular shapes.
-  Now introduce the idea of Project Tiger parks explaining the scale. Ask kids to calculate the total area of a park protected for tigers from the scale map.
-  If a female tiger requires a minimum of 10 sq. km. of territory, how many female tigers can be accommodated in this park? Explain how more square area is required to be added to the park for cubs that grow up and need territories of their own. Protection of tiger habitats is vital to the survival of the species.

AIDS: Measuring tapes, floor tiles, Project Tiger maps, graph paper.

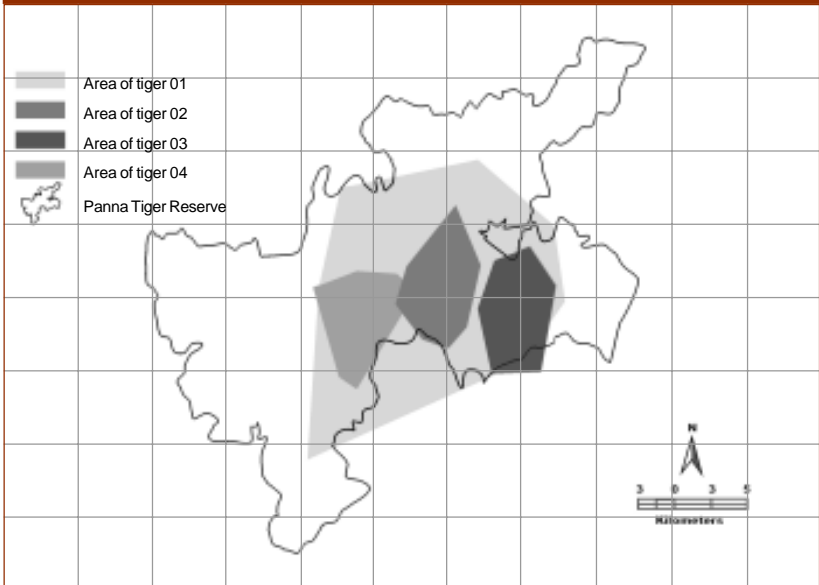
BLACKBOARD: ○ Diagram of class with length and breadth in tiles.
○ Grid-marked unit of 4x4, showing the 16 smaller squares. ○ Panna Tiger Reserve map on grid.

EVALUATION: ○ Do students understand that for more tigers to survive, they must have larger forests in which to live? ○ Are we at a juncture in history when we hold the future of the tiger in our hands?

ACTIVITY:


- 🐾 Distribute flash cards (four tigers, all the rest deer and wildboar). Tell the children to imagine that their classroom is the Panna Tiger Reserve. Their desks are green plants (producers). The four tigers (secondary consumers) sit at desks — one in each of the four corners of the class. All the other students are deer and wildboar (primary consumers).
- 🐾 Now tell them that one-quarter, or 25 per cent of the tiger reserve is required for a dam reservoir. All the deer and wildboar must

Home Ranges of Radio-Collared Tigers



move out of this area to the rest of the room, where they must stand because there are no desks (food) for them. The tiger cannot move (he symbolically leaves the class for one minute) because no other tiger will let him near. Vary the percentage of the 'forest' to be drowned. Explain that tigers cannot adjust to smaller and smaller forests because humans want dams, mines and roads. Tigers need space to survive.


Note: The number of tigers that can be supported by a forest depends on both square area (size) and prey density (number of deer per sq. km.).


 Ask the children to work out the following sums in their books.

i) If one tiger eats 75 deer in a year, how many deer will 32 tigers living in Panna eat in a year? Emphasise the fact that the actual number of deer living in the forest would need to be much larger as deer must reproduce to replace the ones that are preyed upon. We must increase the square area of protected areas (sanctuaries and national parks) to protect tigers.

ii) Find out the total area of your state. Find out the total land area protected by sanctuaries and national parks. What is the percentage of protected areas to the total land area?

iii) If a fig tree feeds 50 parakeets, 12 monkeys and 15 squirrels during the day, plus 20 bats, four owls and four civet cats at night, how many animals does it feed in all?

 In all forests some animals are active during the day (diurnal) and others at night (nocturnal). If your school were to be open day and night how many students would be able to study on the premises?

 Put the nozzle of an empty one-litre bottle of water under a leaking tap. Find out exactly how long the bottle takes to fill up. Now calculate how much water is wasted in: *i)* one hour *ii)* one day *iii)* one week *iv)* one month *v)* one year.

(Hint: if the bottle takes 60 minutes to fill that means one litre per hour. If it takes 23 minutes to fill it works out to 2.60 litres per hour (60/23).