What Is Your Corner?

A Game for Learning Place Value

Requirements:

Charts, Markers, Sellotape/Blutack. The number of participants varies at each level of the game.

Pre-requisite knowledge for players:

1. Addition: up to 4 digit numbers
2. The value of 10, 100, 1000 and the relationships between them (10×10=100, etc.)
3. Multiplication by 10, 100, 1000

In the mathematics class, place value is considered one of the 'hard spots' for the student as well as the teacher. I am glad you addressed this issue in the pullout of Issue II-1 of At Right Angles. Here is a simple game I have used to help children practise their understanding of place value up to four-digit numbers. The objectives of the game are not just to review place value but also to experience the learning of mathematics through physical movement and joint decision-making. Children move about within a room in which each corner has an associated place value, and learn how numbers are read aloud, how 'exchanges' are made between corners, and so on. The details are given below.
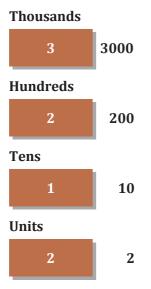
the Game

Level I

- Charts labeled 'Units', 'Tens', 'Hundreds' and 'Thousands' are pasted in the four corners of the room

- At this level, only 9 students should play to avoid having more than 10 students in a corner. This is preferable to informing students that there is a cap on the number of students in each corner.

- Students move about the room freely and when the facilitator claps, each chooses a corner to go to.

- After the students have chosen to stand in the four corners, the facilitator asks: 'What is the value of this corner now?' If there are 5 children in the units corner, their answer should be 5; if there are 5 children in the tens corner the answer should be 50; and so on. The children in each corner should focus on their corner. Of course the children will think about other corners, but the facilitator should ask them about their own corner. Answers given should be approved by the observers and the remaining groups and if the answer is unacceptable, the group which objects should explain their objection and arrive at the correct answer in discussion with the first group.

- At this level the facilitator should help students connect the value they arrive at, to simple multiplication with powers of ten; e.g., 2×10=20, 4×1000=4000, and so on

Level II

- At level II of the game too, only 9 or fewer students play.

- As before, the participants are in the centre of the room and when the facilitator claps they move to any of the four corners.

- After this we ask the students who are observing the game to record what they see in each corner and to use what they learned from level 1 to write on the black board, as shown in the example below:

Thousands

| 3 | 3000 |

Hundreds

| 2 | 200 |

Tens

| 1 | 10 |

Units

| 2 | 2 |

Next, the observers add the values from the four corners and get 3212. The facilitator should have students play the game several times, changing the roles of the participants and observers. If there are no cases where there are zero children in a particular corner, the facilitator should suggest that they create some such cases so that they can study the meaning of zero in a multiple-digit number.

For example, 4000 + 300 + 0 + 2 = 4302. It is important that the student verbalises this.

Level III

Once the students are familiar with how to 'read' the numbers they have created by standing in corners, they should then go the 'opposite' way. The facilitator calls out a number like 2313, 7486, 2117, 307, 29, etc., and students decide how and where to stand to 'create' that number. The entire class participates at this level.

Level IV

- This level is similar to level II, except that a larger number of students should play so that more than ten students could end up in a corner.

- Apart from the placard bearing the name of the corner, each corner can be provided with unit squares in the units corner, strips of 10 squares in the tens corner, shapes measuring 10×10 in the hundreds corner, and stacks of ten 10×10 squares (held by rubber bands) in the 1000s corner.

- Extra manipulatives are placed in the centre of the room and one student can play the role of an 'exchange centre' or a 'bank'.

- Students can move about anywhere in the room and when the facilitator claps they have to go to any one corner among the four in the room.

- If there are more than 10 students in any corner, 10 of these students will have to take their 10 manipulatives to the 'exchange centre' and exchange it for 1 manipulative of the next higher place. This is taken by one student to the corner marking the next higher place, and the remaining nine students go back to the centre of the room.

- For example, if there are 12 students in the tens corner, then 10 of them take their 10 strips and exchange it for a 10×10 square which one of them takes to the hundreds corner. The remaining 9 students stay at the exchange centre.

- Movement to the next higher corner could cause the number there to increase to more than 10 and this in turn would need a visit to the exchange centre.

- If there are more than 10 students in the thousands corner then the facilitator must explain that the number is referred to as … thousand; e.g., fifteen thousand, if there are 15 students in the thousands corner.

- Once this is understood, then the game proceeds as in Level I and Level II.

R U L E S

- The game should be cooperative and not competitive; if students in one corner do not know the answer, the facilitator should encourage students from other corners to help them.

- The facilitator should have an element of recording so that some (if not all) configurations are recorded (perhaps with stick figures) in the notebooks. Later this can be represented in terms of squares, strips and grids. It is useful to have a video recording or a series of photos of the exchange process.

- The game can be noisy! While rapid movement is to be encouraged, students should discuss ground rules about pushing each other, shouting too much, and a common signal to 'Freeze!'

Maran is a resource person with the Azim Premji Foundation (Puducherry Field Institute). He has conducted workshops on "how to learn and how to teach" using modules and materials developed by his mentor Fr. Eugine SJ. He has travelled to Sweden and Denmark to support human rights campaigns, and has led a youth team on this project. Maran may be contacted at maran.c@azimpremjifoundation.org