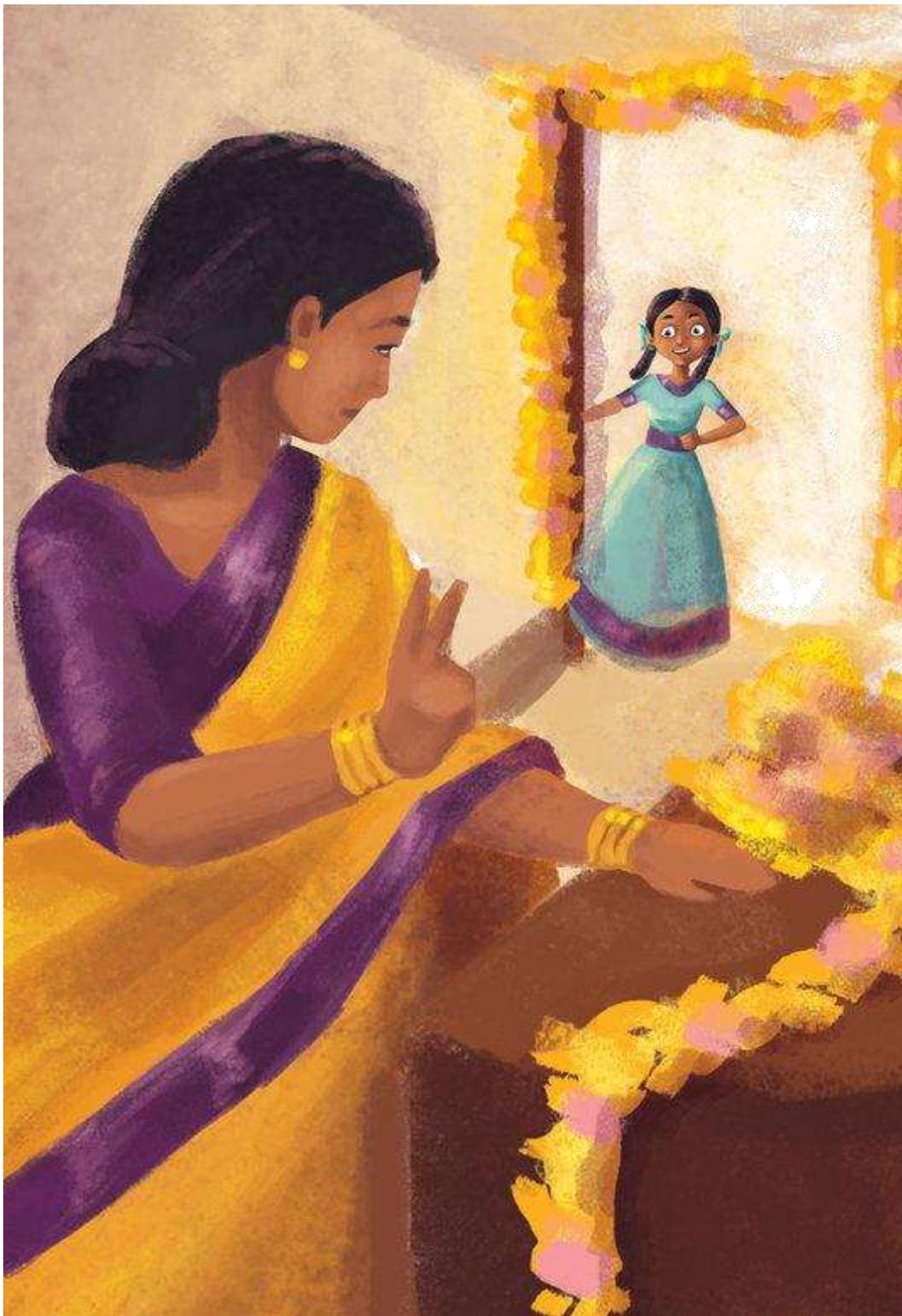




# More or Less A Guessing Game



"Ranju, can you get me two coconuts from that basket?"

Ranjita raced to the other side of the room. She returned in an instant with the two coconuts.

Amma was pleased. "Thank you, darling! You are such a help."

Ranjita glowed with pride. It was a BIG day today - her uncle Mahesh Chikkappa's wedding! And she had a **BIG** responsibility - to hand over mithai boxes to the 100 guests after lunch.



But where were the mithai boxes?

"Oh no!" cried Amma. "The boxes are still in the room upstairs! Run and bring them down quickly, Ranju. The guests have almost finished their lunch."

"Amma, you never ask ME for help!" said a small, whiny voice. "And I'm hungry."

"You can help Akka, Vikky," said Amma soothingly. "Ranju, take him with you, please?"

Ranjita frowned. Why did Amma always do this? Her little brother Vikram was SO annoying! But there was no time to argue.



"You have to listen to me and do exactly as I say, Vikky!" she warned him, making her eyes big and stern.

Vikram nodded. "I will, Akka! Promise!"





Upstairs, in a corner, were a pile of cloth bags. Ranjita pulled open a bag. There were several small mithai boxes inside.

"It will take too long to empty all the bags and count out 100 boxes, Akka!" Vikram was very worried. "And I'm very hungry."

"Shhhh!" said Ranjita fiercely.

"Let me think!"



Ranjita thought hard. Vikram was right. It would take too long to actually count out 100 boxes. They couldn't take all the bags down either. There were too many of them.

Vikram looked longingly at the mithai boxes. "Can I open one? I'm VERY hungry."



"NO!" said Ranjita.

Then she smiled. "Idea! We don't need to take EXACTLY 100 mithai boxes! We can take APPROXIMATELY 100. That will be much quicker."

"Approximately?" Vikram looked puzzled. "What does that mean, Akka?"

"It means a few MORE than, or a few LESS than, the exact number," said Ranjita.

"Bu- ut," Vikram said slowly, "If we take less than 100, there won't be enough for everyone."



"So we take more!" said Ranjita.

"Ok, let's do it!" Vikram grabbed a few bags.

"Quick! I'm very, VERY hungry!"

"Wait, silly! Let me tell you HOW to approximate first!" said Ranjita.

She poured out all the boxes from one bag onto the floor and counted them. "See, Vikky," she said. "There are 10 mithai boxes in this bag." Vikram nodded.





Ranjita pointed to the other bags.  
"All the bags are approximately,  
more or less, the same size. What  
does that tell you?"

Vikram shrugged.

"It tells you that each bag has  
approximately, more or less, 10  
mithai boxes!" said Ranjita.

"Oh THAT!" said Vikram airily. "I  
knew THAT."

Ranjita hid her grin. "Tell me this, then. How many mithai boxes in two bags?"

"Approximately-more-or-less 20\*," said Vikram instantly.

"And in three bags?"

"Approximately-more-or-less 30\*\*!" Vikram began to smile. He was getting the hang of this.

"And in five?"

"Approximately-more-or-less 50\*\*\*!" yelled Vikram. "And 50 is half\*\*\*\* of all the mithai boxes we need!"

*\*(10 x 2 = 20),*

*\*\* (10 x 3 = 30)*

*\*\*\* (10 x 5 = 50)*

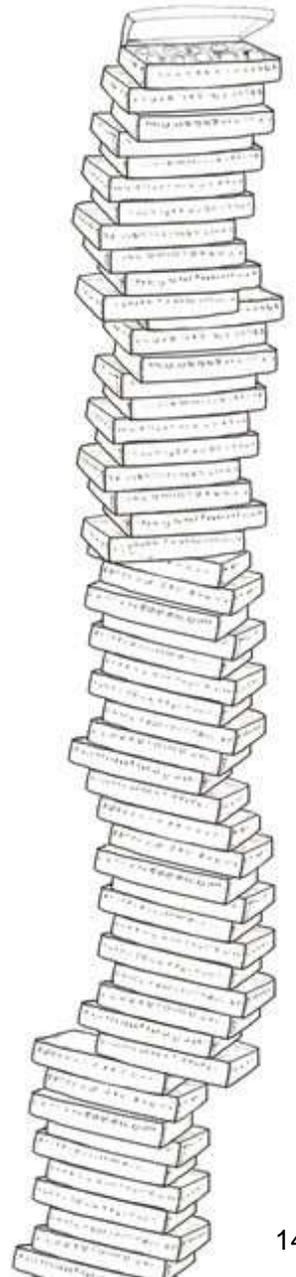
*\*\*\*\* (Half of 100 = 100 / 2 = 50)*



"That's very good, Vikky!" said Ranju admiringly.

Vikram turned red with delight. He loved it when his Akka praised him.  
"Now can I open a mithai..." Ranjita glared.

"I mean," Vikram said quickly, "I will take 5 bags with approximately-  
more-or-less 50 boxes, and you take 5. Okay?"





"Not so fast!" said Ranjita. "We haven't counted the boxes in every bag. What if one or two bags have only 8 boxes? We won't have enough for everyone then."

Vikram paused. As usual, Akka was right.

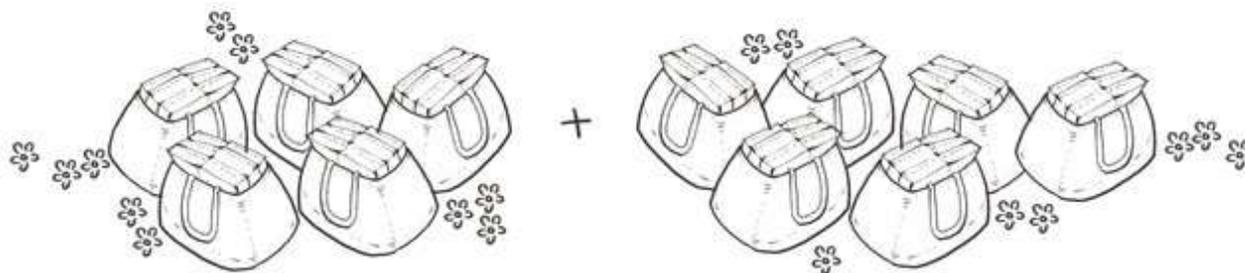
"So we take 11 bags, then?" he asked slowly. "With approximately-more-or-less 110 mithai boxes?"

"Exactly!" said Ranjita. "You take 5 bags, and I will take 6. Come on!"

The children ran down the stairs with the bags. Amma was waiting anxiously. She was very relieved to see them.

"That was quick!" said Amma. "Are you sure we have enough for everyone?"

"Yes, Amma," said Vikky. "I am very, very sure. AND... I'm very, very, VERY hungry."





When all the guests had left, Amma hugged Ranjita and Vikram. "You both saved the day!" she said.

Then she narrowed her eyes. "I've never seen you both work so well together," she said. "Does that mean you finally like each other?"

Ranjita and Vikram laughed. "Approximately-more-or-less!" they said, as they ran to lunch.



## THE GUESSING GAME

Ranjita and Vikram used a clever mathematical trick to get their job done quickly. They called it 'Approximately More or Less'; mathematicians call it 'Estimation'.

So what is Estimation? Is it like guessing? Sort of, but estimation is 'intelligent' guessing. Why is estimation important?

**Estimation helps you identify wrong answers quickly.**

For instance, let's say you have just 30 seconds to answer this question:

1. What is  $17 \times 9$ ?

- a. 172
- b. 153
- c. 186
- d. 89

You know that  $17 \times 10 = 170$  (anything into ten is the same number with a zero at the end). So  $17 \times 9$  should be LESS than that. That means Options (a) and (c) are wrong. Option (d) seems too small to be the right answer -  $17 \times 9$  should be closer to 170. So you pick Option (b). See how estimation has helped you pick the right option, simply by identifying the wrong ones?

**Estimation helps alert you to real-life errors.** When the shopkeeper totals your bill, you can tell instantly if it is wrong because you have estimated approximately how much it should be.

**Estimation helps you calculate distances.** If you know that you cover 30 cm with each step, and that you take 1800 steps to walk from home to the library, you can estimate the distance between the two ( $1800 \times 30 \text{ cm} = 54000 \text{ cms} = 540 \text{ m}$ , which is about half a kilometre).

**Estimation is fun.** How many peas inside half a kilo of unshelled pods? How many elephants should you stand on top of each other to make the height of your flagpole? You can find out answers to all kinds of wacky questions using estimation!



