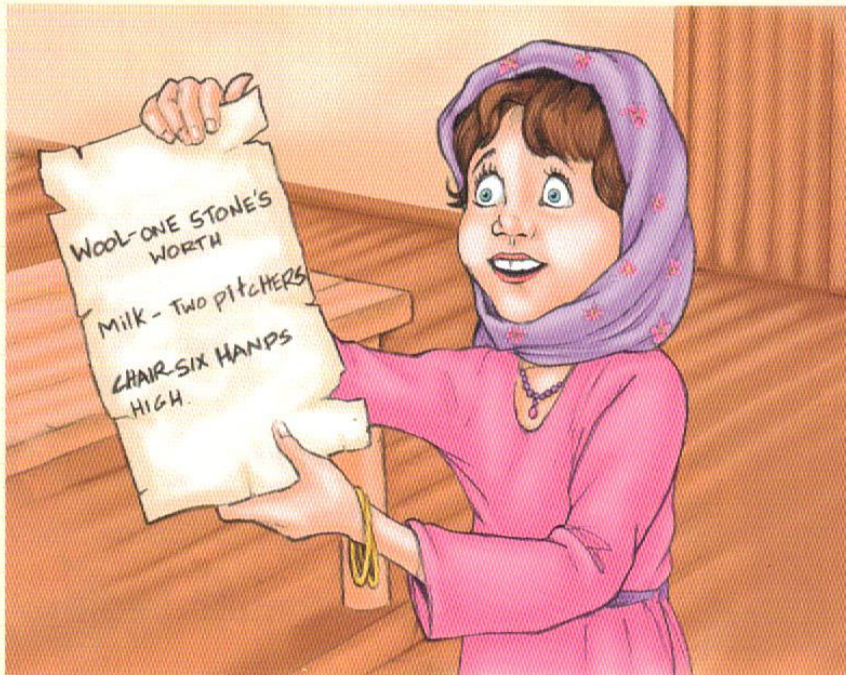


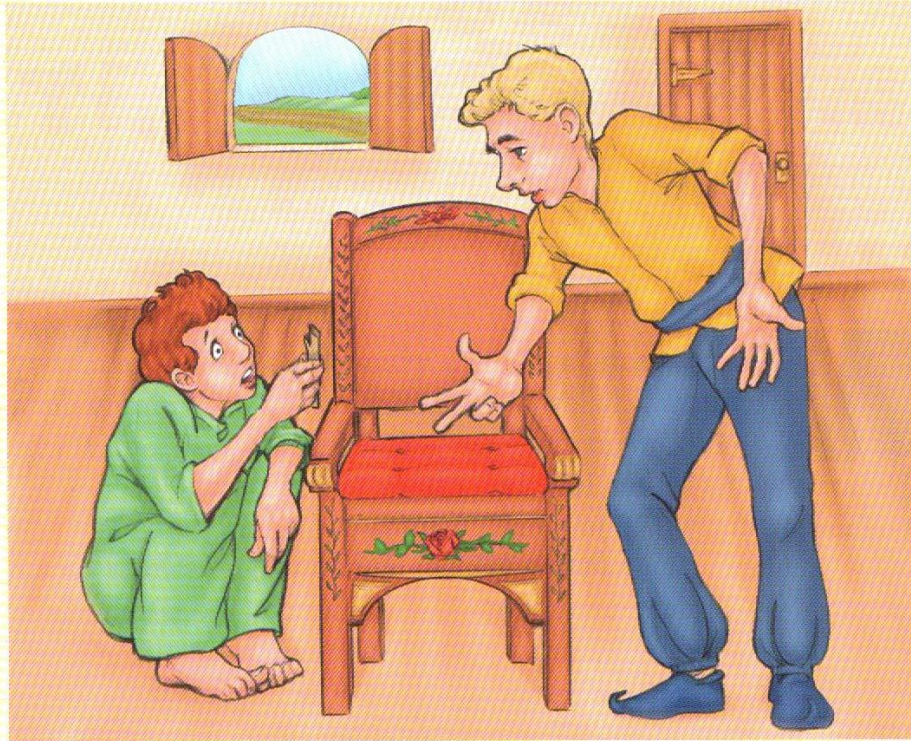
A ROYAL MEASUREMENT MESS

Many years ago, in a place far away, lived a boy named Rakim. Rakim lived with his family in a cottage on the edge of a pasture. Each morning, Rakim and his father left the cottage to tend the sheep in the pasture. Rakim's brother was a furniture maker. He made wood into beautiful chairs and tables. Rakim's sister delivered the villagers' milk. Each day, she milked and tended the family cows.

One afternoon, Rakim's sister returned from the village. She held up a piece of paper for the entire family to see.

"Agbar, our new king, demands that every family give gifts to him," she said. "Our family must give one stone's worth of wool, two pitchers of milk, and a chair that is six hands high. We have only a week to prepare these gifts."





Over the next few days, Rakim's family prepared their gifts. Rakim and his father sheared the sheep each morning and packed the wool into two big bags each evening.

"Father, how will we know when we have enough wool?" Rakim asked.

"I use the stone sitting in Mother's garden to estimate how much to give," his father replied. "That stone is about the same size as the king's royal measurement stone. I lift up the stone, then I lift the two bags. When they feel about the same heaviness, I know we have enough wool."

After the wool was ready, Rakim helped his brother measure the chair using a stick. "This stick is equal to the king's royal hand," Rakim's brother told him. Rakim held the stick against the chair. "It's just six hands!" his brother exclaimed.

The next day, Rakim and his family were to appear before the new king. Rakim's sister arose extra early to milk her cows. She came from the barn carrying two pitchers. They were equal to the royal pitchers the king had always used.

"Those should please the king well," Rakim's mother told her. "Now let's be off."

Soon they arrived at the palace. They were led to a large room where the young king sat accepting his gifts.

Rakim's father did not look happy. He was looking at the king's sour-faced gift collector. The gift collector was known as a dishonest fellow. However, the old king had made sure the gift collector had treated the people fairly.

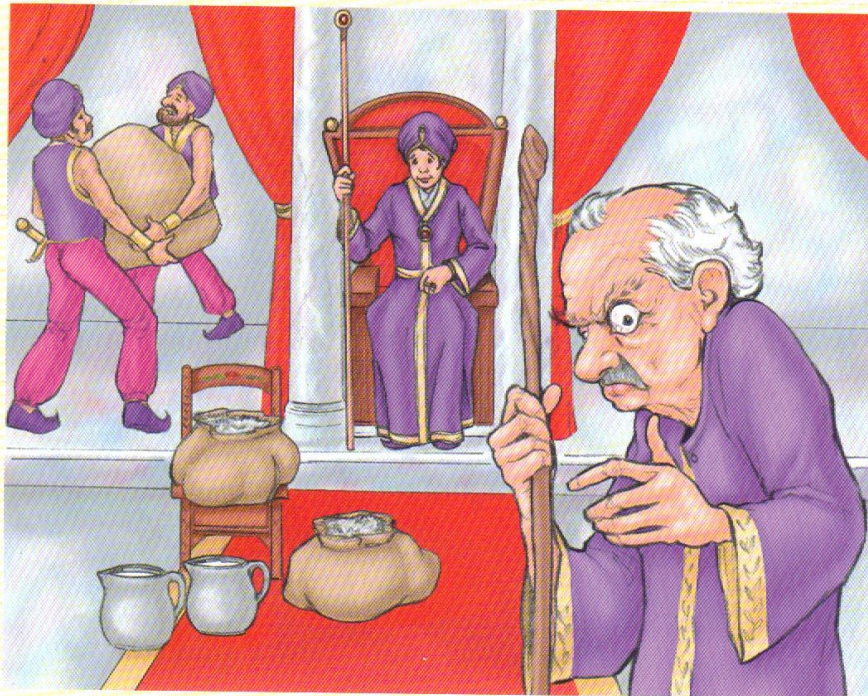
Rakim's brother and sister placed their gifts in front of the king. Finally Rakim's father set down the bags of wool.

The king looked at the gifts. "These gifts are—" he began.

"Small, indeed!" cut in the gift collector. "Are you trying to cheat your new king?" He turned to a nearby soldier. "Bring out the king's measures!" he demanded.

Shortly two soldiers staggered in carrying a large boulder between them. Another followed with a stick. One more man came in holding a colossal container.

"Here is the measure for the new king's hand," the gift collector barked, pointing at the stick. "And here are his stone and his pitcher." He pointed at the huge rock and the enormous jug. "Take the head of this family to the dungeon," he ordered.



INVESTIGATION 1

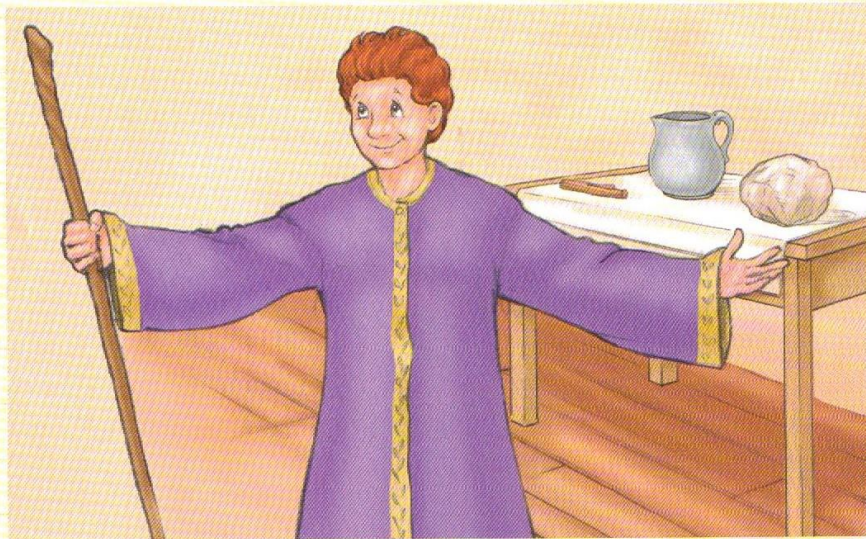
Rakim became very angry. "Wait! This is *not fair!*" he shouted.

"Your gifts are too small!" said the gift collector. "The new king uses new measurements."

"These new measurements are much bigger than the last king's!" Rakim said. "None of the people in the village will be able to give the king his gifts using these measurements!"

"Enough!" shouted Agbar. He turned to Rakim and stared at him. Finally he spoke.

"Rakim is right. These measurements are unfair." The gift collector's jaw dropped. "From now on, Rakim will be my new gift collector." He looked at the amazed boy. "You will create standard measures that will be used in this kingdom for all time. We will need a standard stone for weighing, a standard hand for measuring length, and a standard pitcher for measuring volume. Place copies of these measurements in the center of the village for all people to use. From now on, all measurements will be fair and unchanging."



So Rakim, the new Royal Gift Collector, found a stone that was heavy, yet not too heavy for one man to lift alone. Next he cut a stick that was exactly the length of Agbar's hand. Then Rakim used his sister's largest pitcher to measure liquids.

And that is how many years ago, in a place far away, standard measurements came to be created.