

12 | Bouncing Balls

The children raced out the door – it was break time. Some went off to sit and talk, others went to look at the pond. Emma joined the ‘sporty’ group – she wanted to talk them into playing hockey today. As she approached, she could hear them already arguing about which game to play.

“Why can’t we play hockey?” she demanded. “I’ve brought my hockey ball and stick and we haven’t played for ages.”

“You might have your stick,” said Tom, “but we haven’t all got one.”

“That’s a good reason,” Emma had to concede. “I know! Let’s play the game that we can think of the best reason for.”

But this didn’t seem to be much help. Those who had a ball – Andy had a soccer ball, Sarah, a netball, Alex, a cricket ball and bat and Jenny, a tennis ball to play handball – claimed their game was best and wouldn’t admit that anyone else had a better reason than theirs. “We’ll never agree,” wailed Luigi. “What other reason can we think of?”

“Well, let’s play the game that uses the best ball – that’s got to be the ball that bounces the highest,” said Emma. Alex looked disgusted and muttered something about not thinking that was a very good reason, but the others shouted their agreement.

“That’s easy,” said Sarah. “This will bounce highest,” and she demonstrated by flipping the netball up onto the grass so that it bounced back to her hand.

“Huh,” sneered Andy, showing that the soccer ball would also bounce back to his hand. Jenny did likewise with her tennis ball, adding that she didn’t see that Sarah’s bounce proved anything much about which ball was best, but at least it ruled out playing cricket.

“Oh, yeah?” Alex stepped onto the concrete path and hurled the cricket ball at the concrete – it bounced higher than any of the others had.

“I can make this bounce higher, though.” Sarah flung the netball at the soft grassy ground, and, sure enough, it bounced higher, “and that was on the grass, not on the concrete!”

"The soccer ball will bounce highest of all!" Andy ran into the classroom block and belted up the stairs.

"Let's get out of here," whispered Alex to Emma, "this is getting silly." As they walked away a figure appeared at the third-floor window and a soccer ball hurtled down, bounced on the concrete and high into the air. From around the corner, Mrs Sharkey appeared, shouting at Andy to come down at once, while the others scattered.

"There goes Andy's chance of playing soccer today," commented Alex. "I still wonder which ball would have bounced best, though. How could we have worked it out?"

"That's easy – we just needed to test them properly, without all that showing off. What I'm wondering is why *do* balls bounce at all?"

"It's because of the air in them," said Alex. He seemed pretty sure of himself.

"Well, what about the cricket ball? It doesn't bounce much, but it still bounces, especially when you smash it into the ground like you did. And it doesn't have air in it. Nor does one of those bouncy balls, you know, the little solid rubber ones."

Alex had to agree with Emma on this. "That's true. But I think you'd have to look very closely at what happens when the ball hits the ground, 'cos that's when it bounces."

"Yeah, but it all happens so fast – how could you see it?" Emma frowned.

"High-speed photography."

"OK, but that hasn't been around forever. I bet they knew how balls bounced before all that. But how did they work it out?" asked Emma.

"I guess they did ... and the explanation must work for all balls, I reckon. They all bounce pretty much the same, whether they're made of leather or rubber, whether they're full of air or solid. So what happens when they bounce must be pretty much the same too."