ADVENTURE GEOMETRY

WRITTEN BY
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ILLUSTRATED BY
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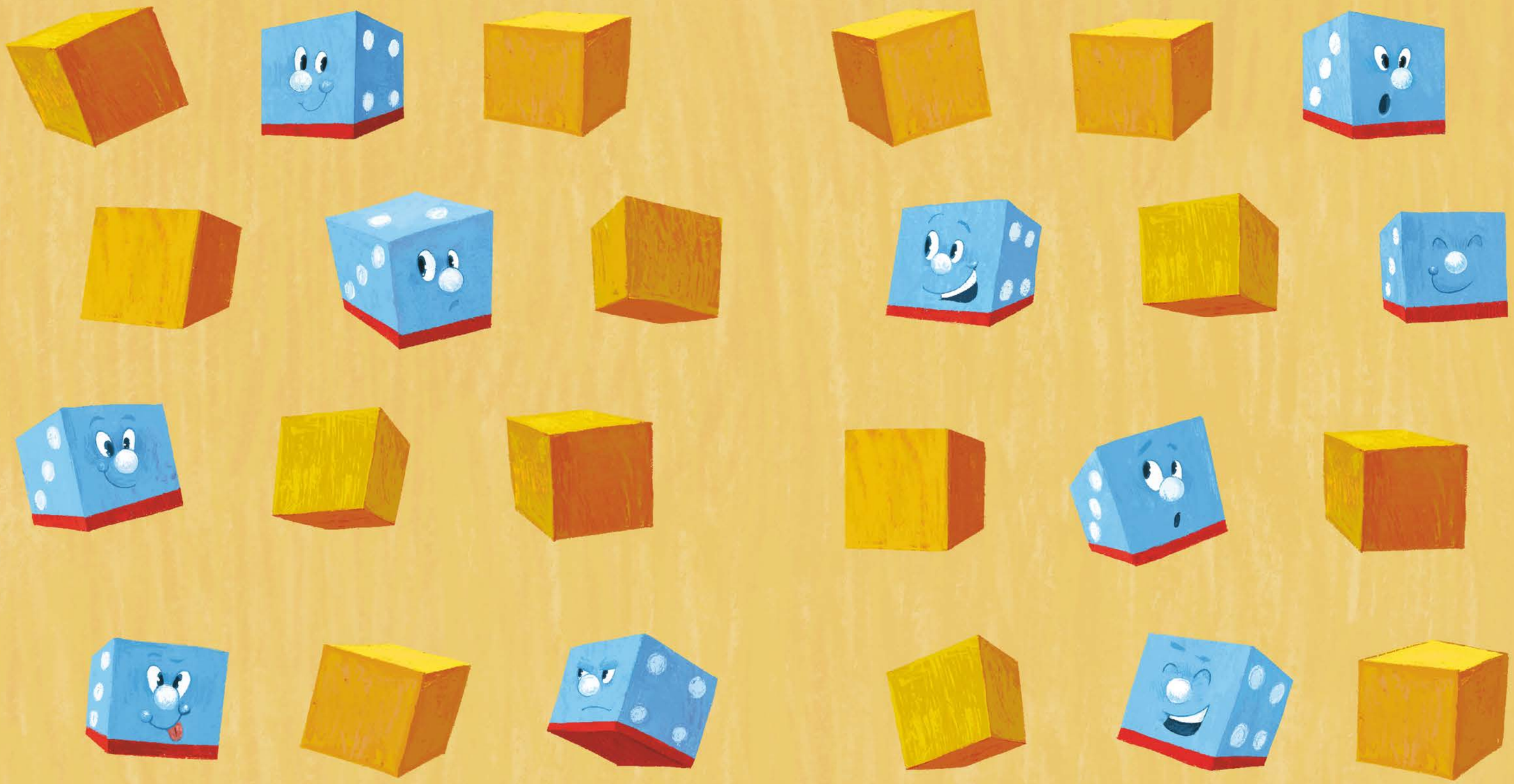
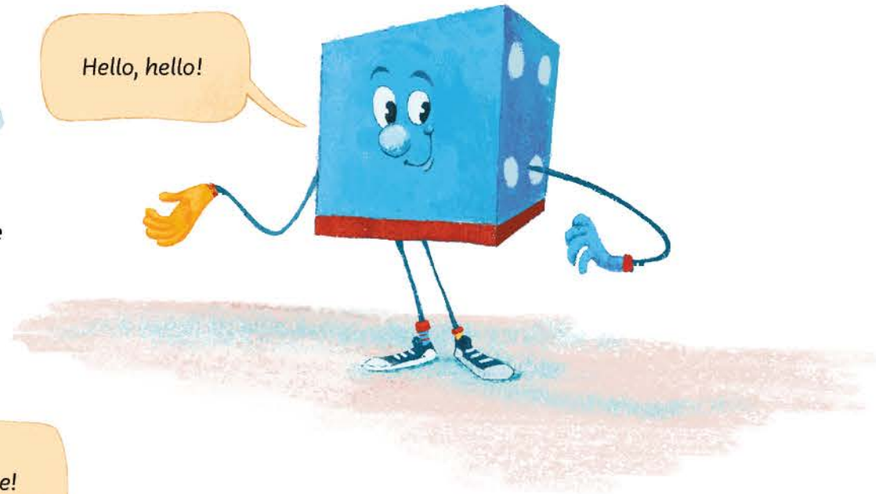
B4U PUBLISHING

ADVENTURE GEOMETRY: THE CUBE BOHDANA JAROŠOVÁ & MARTIN HANSCHILD



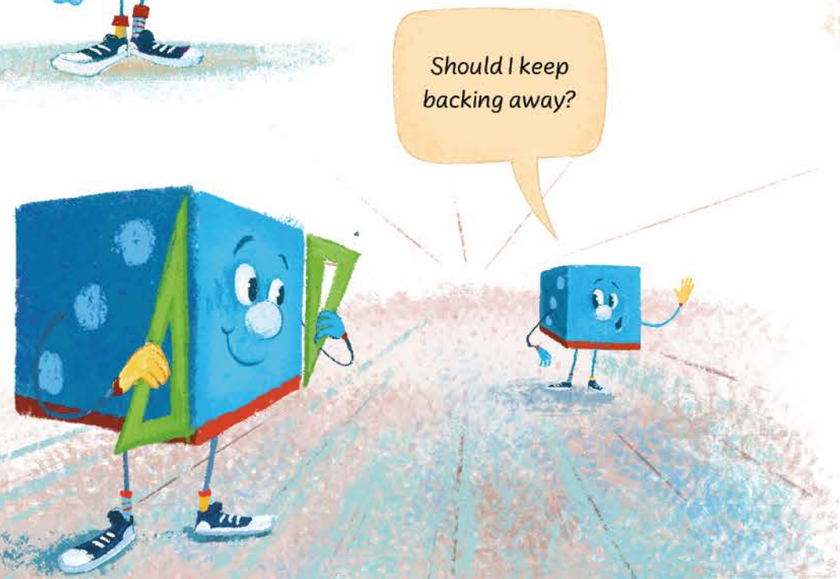
INTRODUCTION

Hi there! I'm a cube. And I'm unique—all my sides measure the same. Really. Height, width, length: all the same. None of them measures the tiniest bit more or less than the others. Why would I need the curves of a model when I'm so beautifully symmetrical?

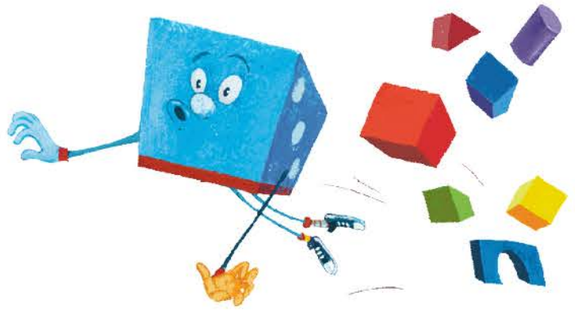


Although on paper it doesn't appear so. My friend the illustrator had to draw me with one side shorter. If he had drawn the sides all the same length, it would look odd. Look for yourselves ...

Three-dimensional objects like me must be drawn in a certain way, because of an optical phenomenon called perspective. Distant objects appear smaller to us than close ones. That's why an artist must draw my most distant, top-right edge a little smaller than the others. Measure my sides and see.



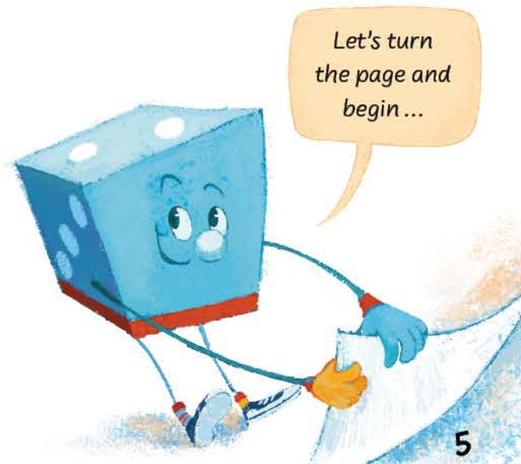
Mathematicians know many interesting things about me. They can tell you that I have 6 faces, 12 edges, and 8 vertices which are pretty sharp. As all these are rectangular, if some scoundrel were to kick me, his big toe would hurt for a long time afterwards. Which would serve him right: no one kicks a cube!



Most important of all, though, is that I'm more than exceptional—I'm very special and precious. I'm not just saying so. Take a good look around. Do you see any cubes?

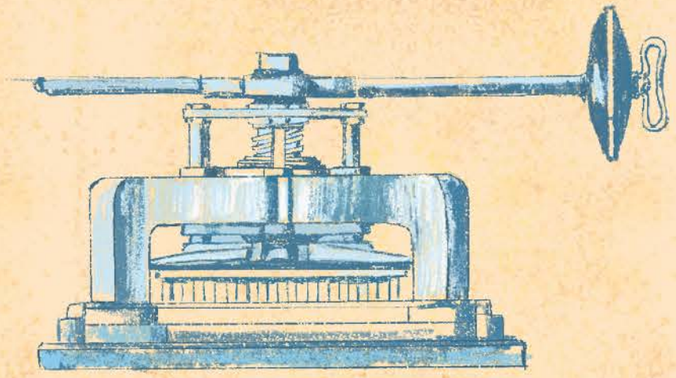
A house or a box has the same number of faces, edges and vertices as a cube, yet they are not one. That's because some of their sides are longer than others, making them cuboid but not cubes. This book is a cuboid too.

There are cubes in the world, though. Pretty famous ones too. I'm going to tell you about them in this book—and it's some trip we're about to take! I shall present you with the same number of stories as I have sides, i.e. six. Expect to play, snack, learn about animal poop ... Hee-hee!



MAKE THE SCREW NICE AND TIGHT!

A cutting machine crushed the still-wet sugarloaf to powder. This was poured into 400 square holes in a brass plate. Another brass plate was placed on top of this. Both were placed under the press. By means of a screw, the press was tightened until something was pressed out onto the wooden base. Can you guess what? Yes—sugar cubes!



FIRST BOX

Two months after her injury, Juliana received a present from her husband—a box containing 350 sugar cubes. Some were red, some white. How romantic!

Juliana wasn't the only one delighted by the cubes. Realizing what progress he had brought to the household, Mr Rad had his invention patented.

FROM DAČICE TO THE REST OF THE WORLD

Sugar cubes were first sent out from the Dačice refinery a few months later—in two sizes (2cm and 1.2cm). More than a ton of these was produced daily. Can you even imagine that much sugar?

SUGAR FOR TEA

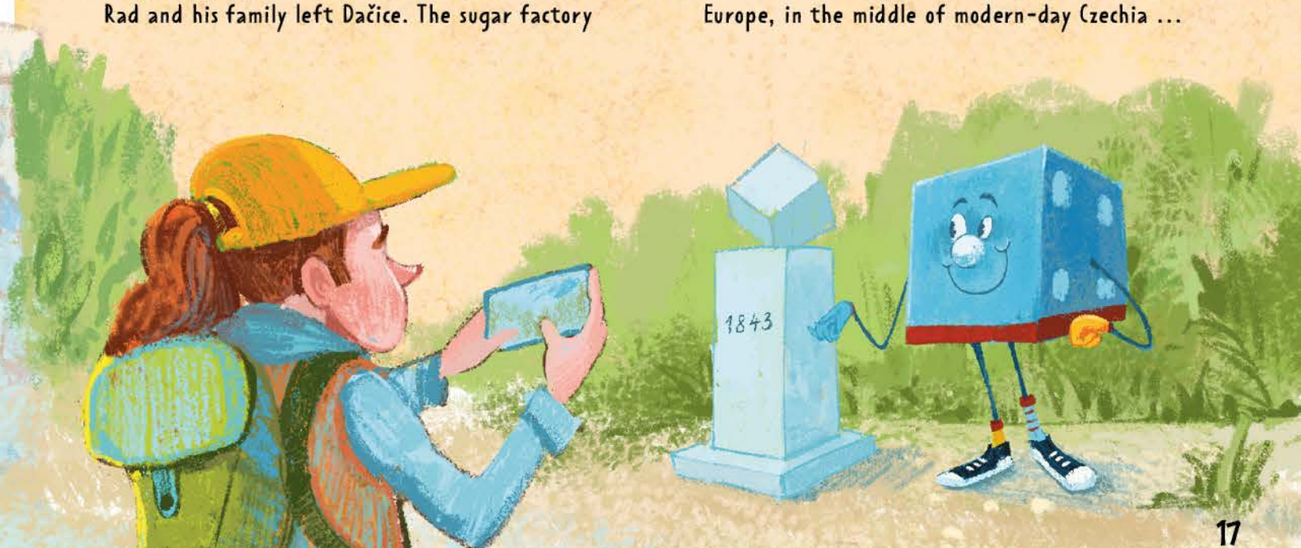
The patent was soon bought by Prussia, Saxony, Bavaria, Switzerland and the United Kingdom. Many sugar warehouses were built in Europe. In Vienna, Rad's sugar cubes became popular under the name Teezucker (tea sugar). The box, adorned by a picture of the Dačice sugar factory, contained 250 cubes and weighed a little under half a kilo. How much easier this sugar was to serve than that hard lump!

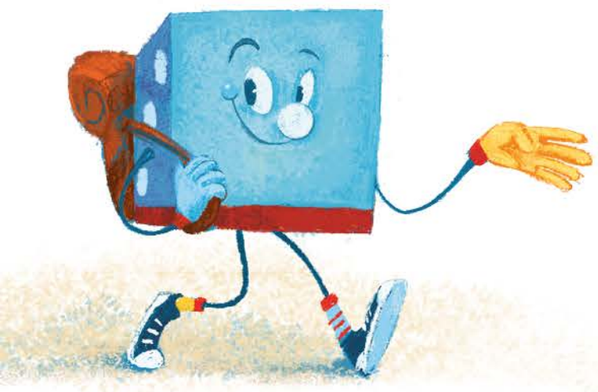
THE NEWER, THE BETTER

As the years passed, the sugar-cube press got better and better. A French grocer called François invented a sugar-cutting machine, a Belgian called Adant developed a turbine to produce sugar in sheets, while a mechanical engineer called Chambon built a rotary press. Amid all this innovation, Rad's name was frequently forgotten. On examination of the patents, however, archivists confirmed Dačice as the birthplace of the sugar cube.

A CUBE AT THE CENTRE OF THE WORLD

Sugar cubes were produced in Dačice for ten years only. As conditions around the town were not good for growing sugar beet, the refinery did not thrive. Rad and his family left Dačice. The sugar factory was demolished long ago. Yet the people of Dačice still remember Mr Rad and his invention with pride. The sugar cube is memorialized by a monument and a museum in the town. It all began in the middle of Europe, in the middle of modern-day Czechia ...





There they are on the ground, one next to the other, drawing attention only if they're not quite straight, which is to be expected with cobblestones. Although in some places master pavers have made mosaics that bring your eyes out on stalks. Let us walk the pavements of the world!

SETTS

FOR THE BOLD RIDER ONLY

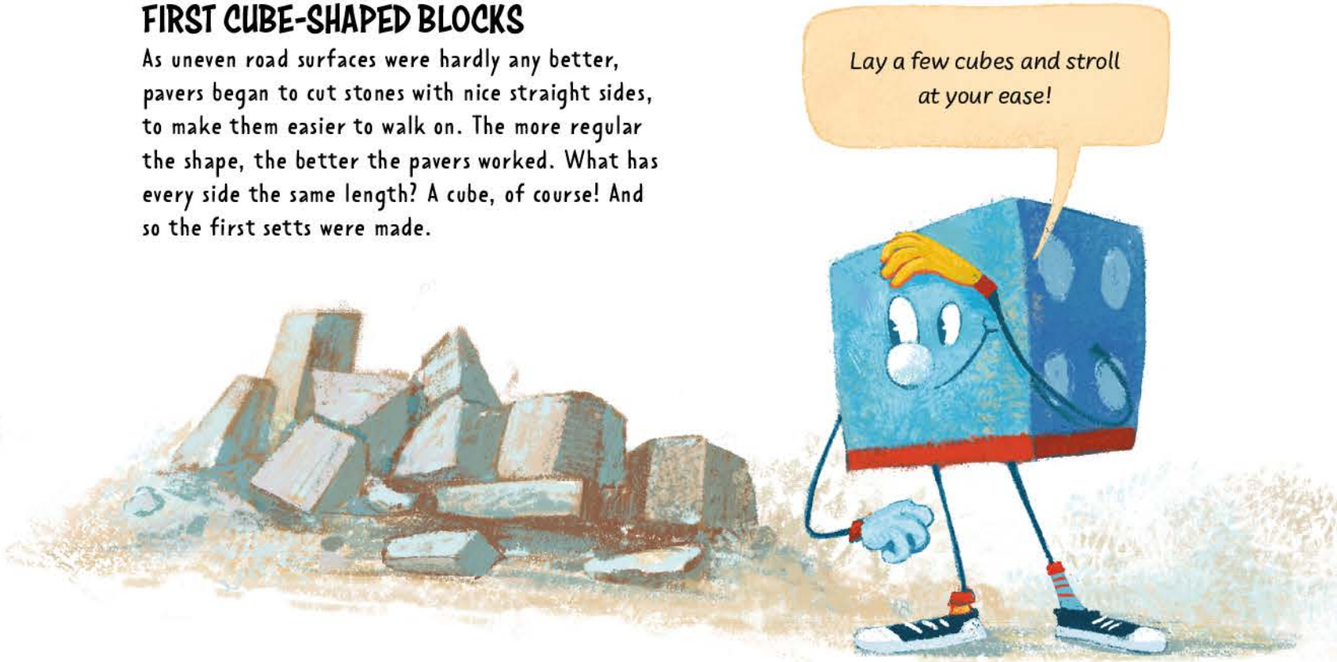
The history of paving reaches back to ancient times. Cubes didn't feature at first, however. Early paving tended to comprise a patchwork of pebbles and stones for carts to ride over, so keeping them out of the mud. The ride was so bumpy that it wasn't unusual for a loaded cart to lose a wheel.

BEDRAGGLED SKIRTS

Fashion bears some responsibility for the paving we know today. Before ladies started to wear full-length dresses and men shiny shoes, there was no need for pavements. A walk through streets with packed-dirt surfaces would cover clothes in dust, no matter how often the road-sweepers came around.

FIRST CUBE-SHAPED BLOCKS

As uneven road surfaces were hardly any better, pavers began to cut stones with nice straight sides, to make them easier to walk on. The more regular the shape, the better the pavers worked. What has every side the same length? A cube, of course! And so the first setts were made.

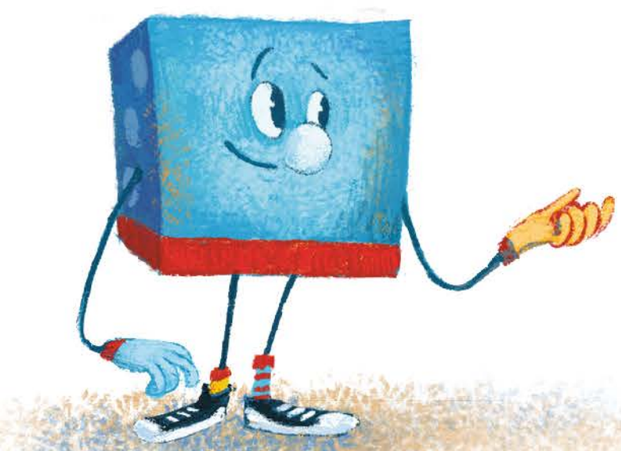


BLACK OR WHITE?

As transporting paving blocks in large numbers was expensive, stone from nearby was used. This explains why the colour of pavement varies from town to town. Limestone makes light-coloured setts, while setts made of slate or basalt are dark. Pavements vary greatly in colour, from snow-white to red. We may find ourselves walking on granite, marble or gneiss.

CHANGING ROCK

A rock may not be the same colour everywhere. The colour depends on the composition of the soil in the quarry where the rock is mined. A granite pavement will be dark grey in Spain but have a reddish hue in Brazil. Marble and quartzite are similarly various in colour.



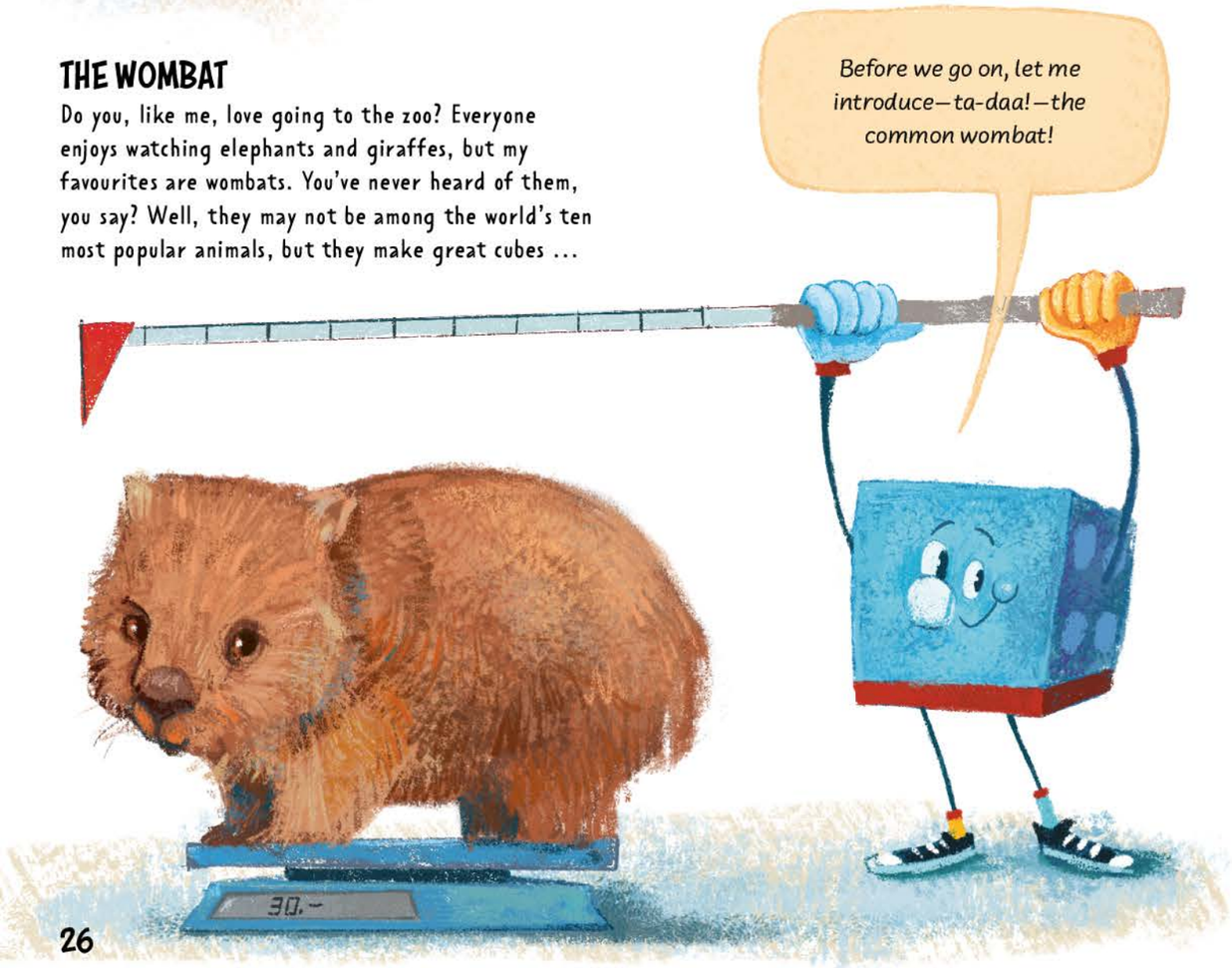
THE WOMBAT CUBE

The story I've left till last is about a famous colleague you will prefer to admire from a distance. Though you may not wish to touch her, you will find her fascinating. So without further ado, here's the sixth story.

THE WOMBAT

Do you, like me, love going to the zoo? Everyone enjoys watching elephants and giraffes, but my favourites are wombats. You've never heard of them, you say? Well, they may not be among the world's ten most popular animals, but they make great cubes ...

Before we go on, let me introduce—ta-daa!—the common wombat!



WOMBATS TO THE RESCUE!

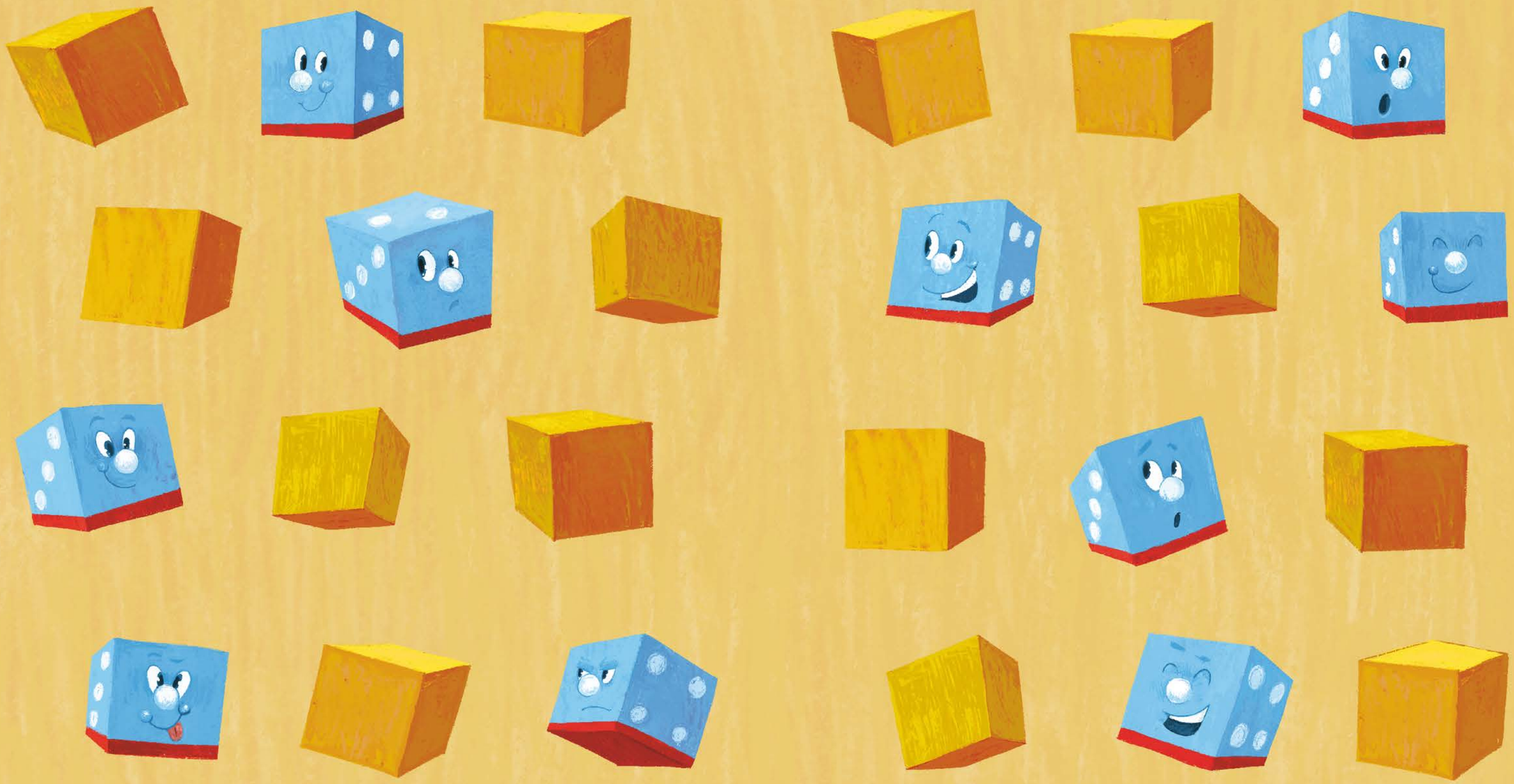
To see a wombat, children in Australia don't have to go to a zoo, because wombats live in the wild there. Even so, being nocturnal animals, they are not often seen. What we do see during the day are the extremely long burrows they dig in the ground. These are so roomy that other animals take shelter in them, too. In the event of a forest fire, the wombat becomes a saviour for birds, lizards, even kangaroos.

POUCHED MARSUPIALS

I could talk about wombats for hours. The first thing to say is that being marsupials, they carry their young in a pouch on the belly. A koala has a similar one. The koala is the wombat's closest relative. Both sleep for up to 16 hours a day. And both are cute and cuddly-looking ...

BIG EATERS

The wombat has the bigger appetite. The koala chews on nothing but eucalyptus leaves, which smell good but are poisonous to other animals. The wombat has a far more varied diet. It likes all kinds of grass, roots, tubers and ... well, I'm getting to it ...



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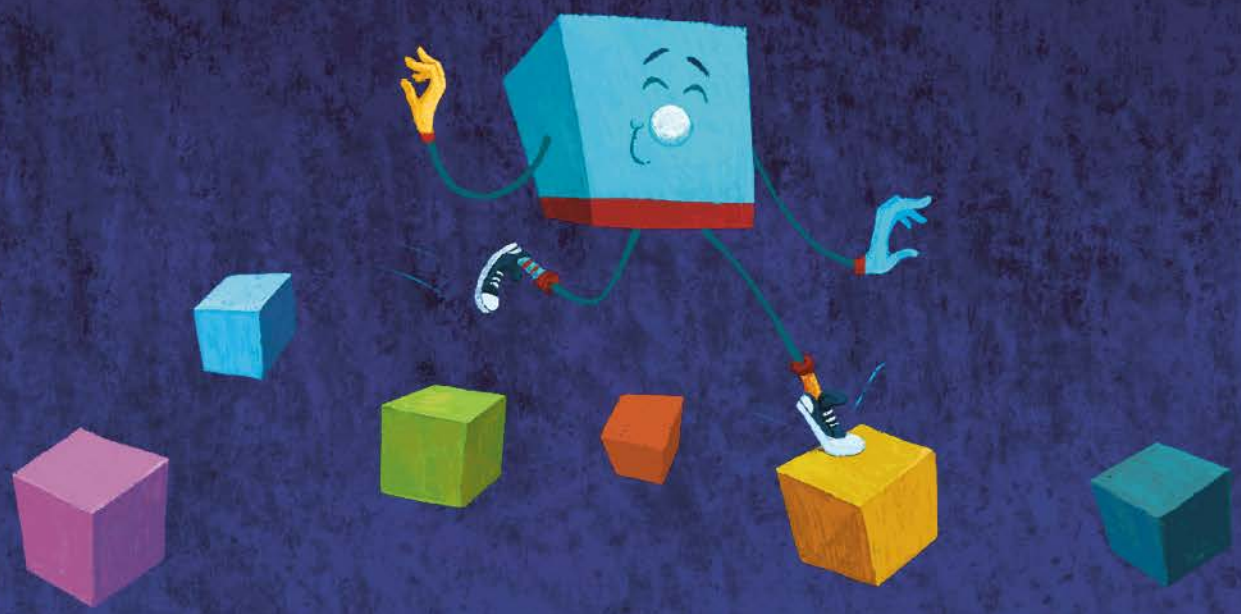
If you think that cubes are just for playing with, you couldn't be more wrong. Some cubes are for living in, some are as sweet as honey, some "come out at the wrong end"... But why not open this book and start at the beginning? If you do, you will be in the company of a storyteller as wise as King Solomon who has more stories to tell than there are hours in a day. And every one of them is cube-shaped!



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