

ALBERO DELLE MATITE

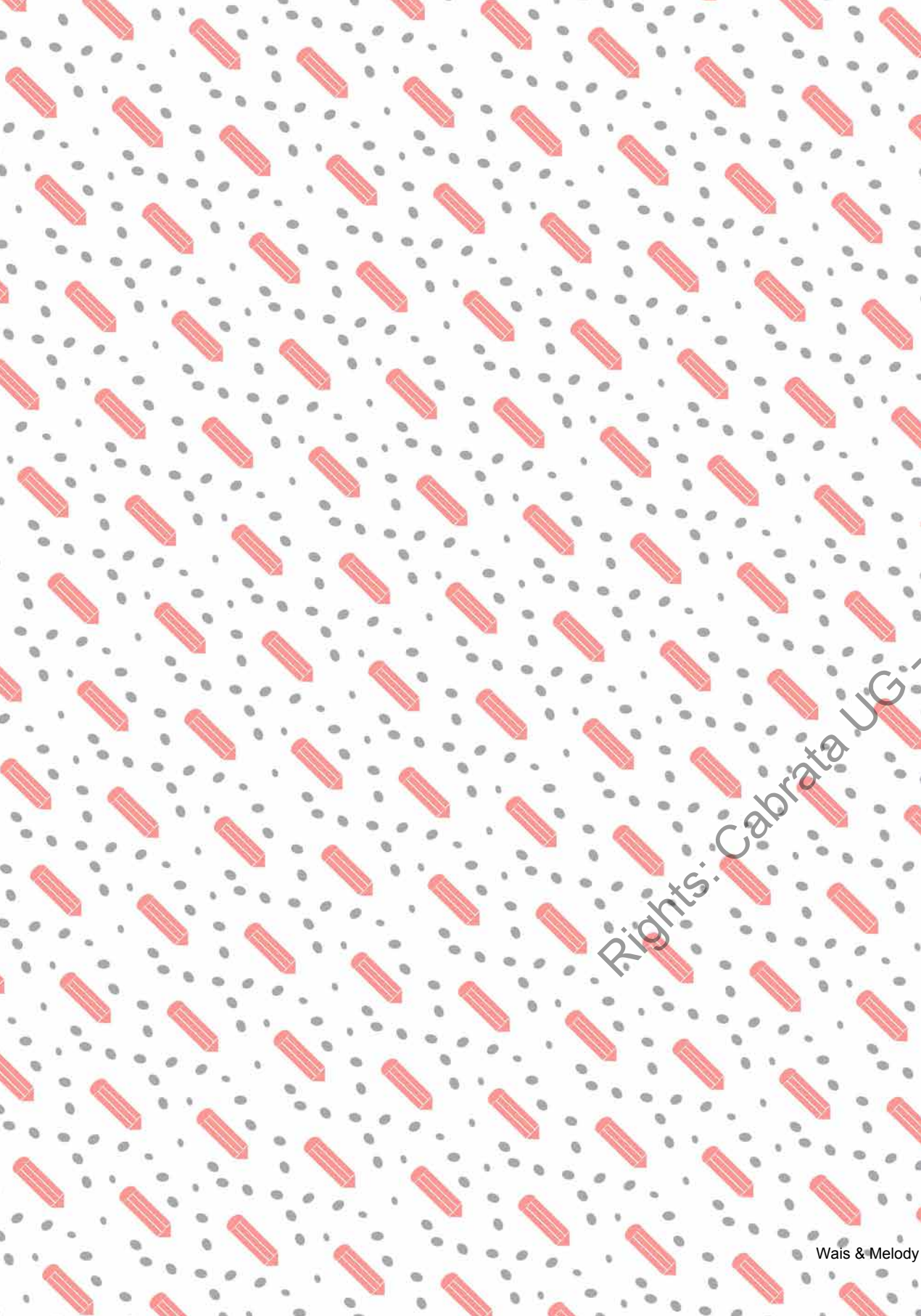
CARLOTTA
RINDONE

WAIS e MELODY 1

Il Baule Scomparso

Illustrato da
Roberta Rindone



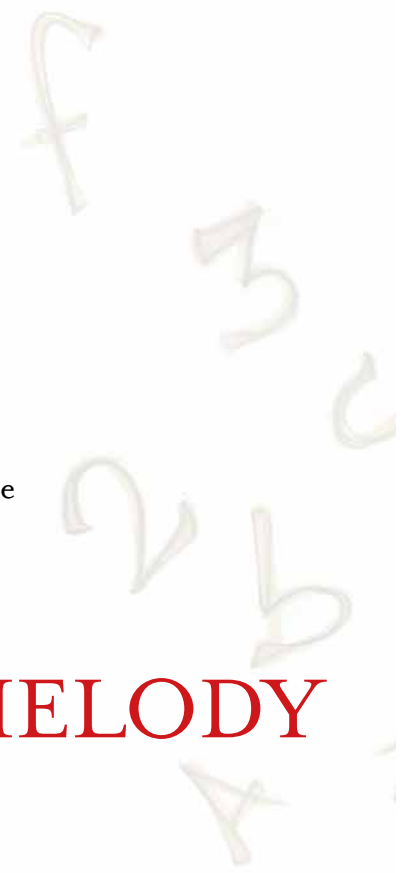


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Albero delle Matite

WAIS AND MELODY



CARLOTTA RINDONE

WAIS
MELODY 1
The disappearing chest

Wais e Melody 1
Il baule scomparso
Carlotta Rindone

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Roberta Rindone

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ALBERO DELLE MATITE

“Un bambino, un insegnante, un libro ed una penna
possono cambiare il mondo.”

Malala Yousafzai

Premio Nobel per la pace all'età di 17 anni.

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This is us



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Wow! Wow! Wow! – I yelled, completely enthralled, from the car window. Dad smiled a big smile at me. Big black eyes, hair always neatly combed, inseparable from a short-sleeved shirt even in winter, this is my dad.

Sat next to him, lost in her thoughts, there's my mum. She has green eyes, red hair and one of her headbands that she brings with her everywhere.

We had just arrived in Newport, the city in which we

would live for a brief period, and we were making our way down a road called Singleway that was full of bazaar houses.

On the way, we found Mr. Brown's house with its tall stone tower, that of Miss Fisher with its balconies full of lace, the Bricks' house made of multi-coloured bricks and the Greens' house with a garden full of exotic plants.

Of all the houses there was one that struck me in a most particular way; it was at the end of the road just before a wood and it had large clocks on its façade.

- Look, this is brilliant! Each clock is telling a different time!

My dad stopped the car right outside.

- Shhh, listen! – said my mum, - do you hear the music too? The hands of the clocks are moving around at different rhythms and are creating this beautiful tune with their ticking... incredible!

Newport... a really lovely place to go live!



This is Melody



It was the beginning of September when we moved to the new house, a cottage with wooden windows painted blue. The little front door, also blue, had a wooden music box as a door bell that played a cheery tune written by who-knows who, who-knows when.

Lara, my dog, didn't like the tune of the music box but was crazy about the garden; she spent all day searching for the ideal hiding place for her bone, digging massive holes

everywhere!

Autumn arrived quickly and with it came the start of school.

I liked the new school but I liked being able to walk up and down odd Singleway every day even more.

One morning, in which the air was pungent with the smell of citrus and cinnamon and the sky was clear even if the sun wasn't giving off much heat anymore, I walked past the house with the big clocks and saw that from it a girl was leaving who was taking my route...

-I believe we're going the same way, - she said, - it's better we present ourselves, my name is Melody.

- I'm Wais, - I stuttered.

- We go to the same school, - said Melody, - but I am in class 1B. Would you like a fruit pastille?

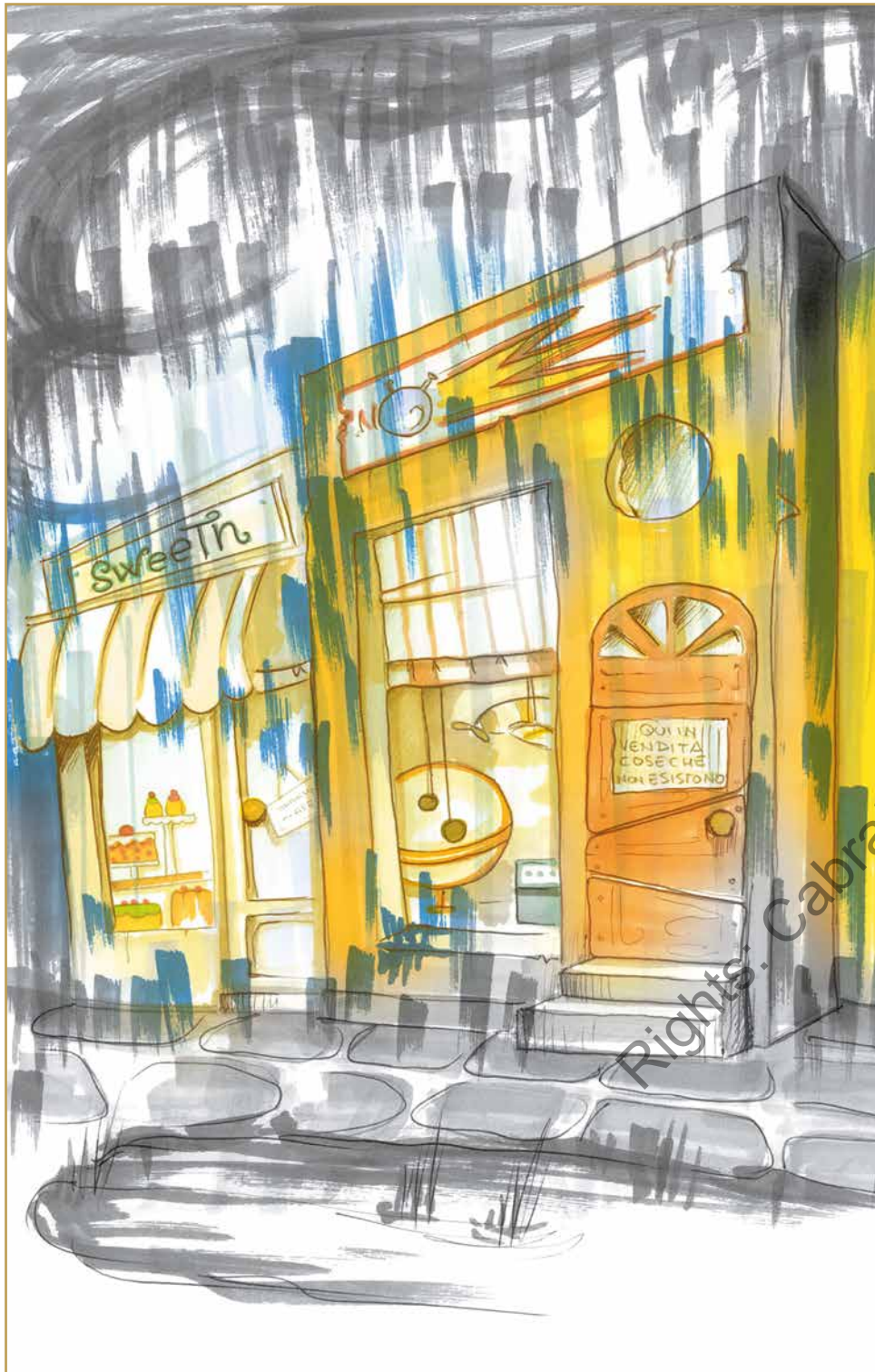
- Yes thanks!

It wasn't hard at all to make friends because we had a lot in common: music, reading and an unrestrained passion for fruit pastilles!





Everything started



One afternoon, while we walked home from school, we were caught in a sudden storm, the wind was becoming ever stronger and the rain didn't show signs of stopping, we really needed some shelter.

I was drawn to a shop just up the way, of which the door had a sign that read: "Here we sell things that do not exist".

- Let's shelter in there, - I suggested.

- But we don't need to buy anything... - objected Melody

- What about this: we have a look round while we wait for it to stop raining, there's no harm in that. What do you think? – I asked.

- You're right! There's nothing wrong in looking and what's more I'm very curious to know what they sell! – Melody replied, thrilled.

The shop was open, but there was no sign of the owner.

We looked around; we were surrounded by shelves and shelves as high as the ceiling. The place was welcoming; it felt like home. For a second I even thought I could smell the chocolate and almond cake that my mum makes. After hesitating for a second we started to browse the shelves on which the most extraordinary objects stood...

- Wais, put things back exactly where you find them, it's all been organised with extreme order...there's not even a speck of dust, - Melody said worriedly.

- I know... and it's all separated by category... wooden objects, metal objects, objects...

Melody interrupted me,

- and that, what is that? It looks like the chest my grandma keeps in the attic and where I found this pendant.

Inspecting it, I noticed that there was a strange sentence engraved onto the chest:

“These objects are a mistake”

...whatever did it mean?

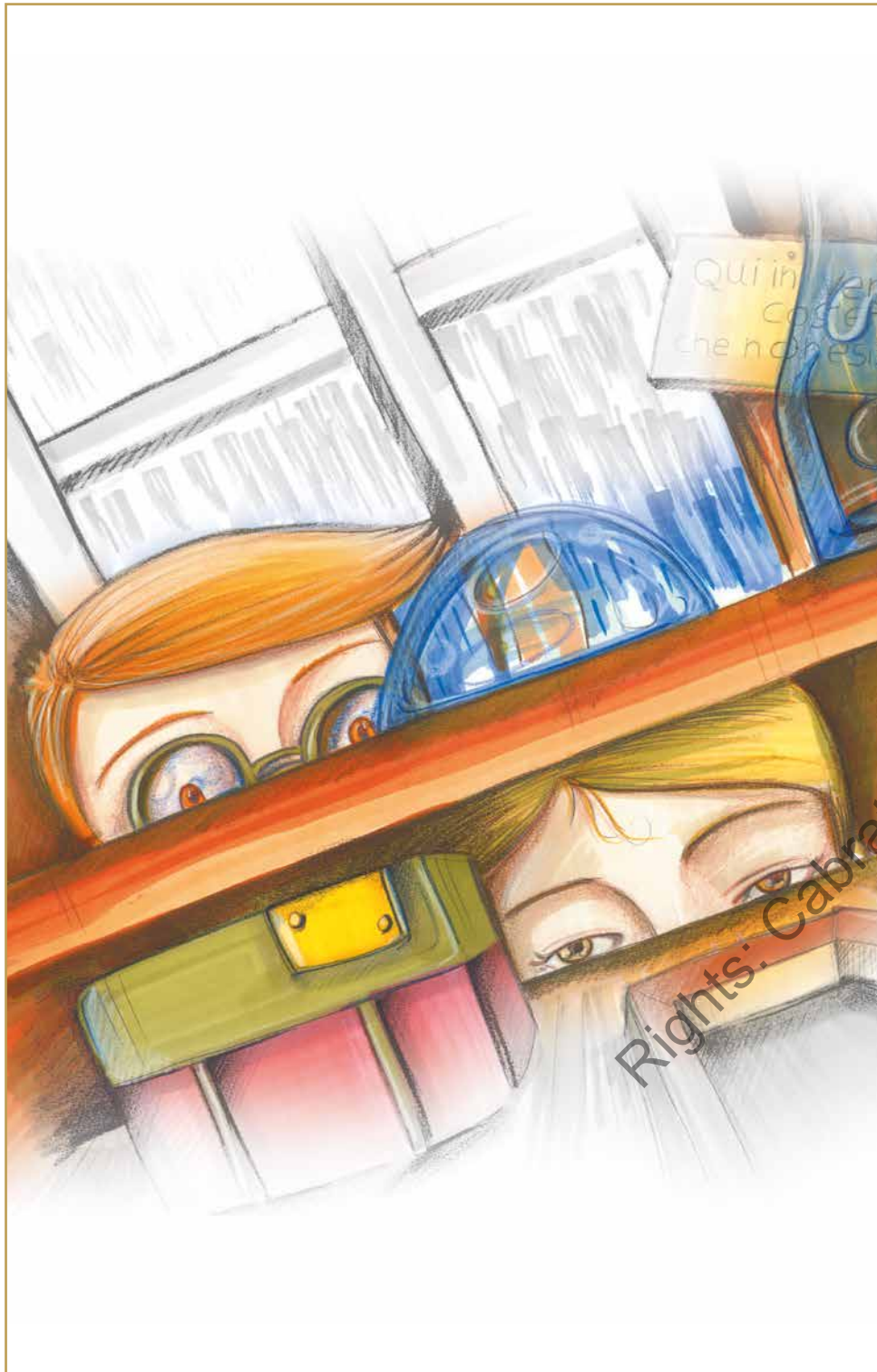
Driven by curiosity we opened it and we were hit by an intense flash. When we opened our eyes, the chest was no

longer there and a sphere had appeared in its place.

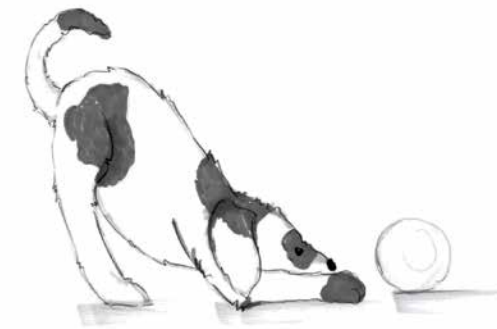
We couldn't take our eyes off of it, it was like we were hypnotised by its splendour. Fortunately the ticking of Melody's watch brought us back into the room...

We asked ourselves what had happened, where the chest had ended up but time went by and, scared by the idea of someone finding us, we decided to leave.

But before we did, I rummaged in my pockets and found two coins my dad had given me that morning; I left them near the till, picked up the sphere and we left.



Breathless



It had stopped raining and a beautiful rainbow joined my house to Melody's. Later on, Melody was in her room, absentmindedly watching her kitten Aurora that was playing with a ball of wool.

I on the other hand, lying on my bed, continued to think of the disappearing chest, not realising that in the meantime Lara, my dog, had knocked the sphere off the desk.

She went up to it to sniff it, then started to roll it around and as she was about to bite it the sphere exclaimed: - Leave me alone, I'm not a bone! -



The dog hid under the bed and I suddenly awoke from my thoughts.

I tried to say something, but no sound came out from my mouth, I went to get off the bed, but my legs were shaking. I managed just to roll down onto the floor and move closer, sliding like a slug, to the sphere.

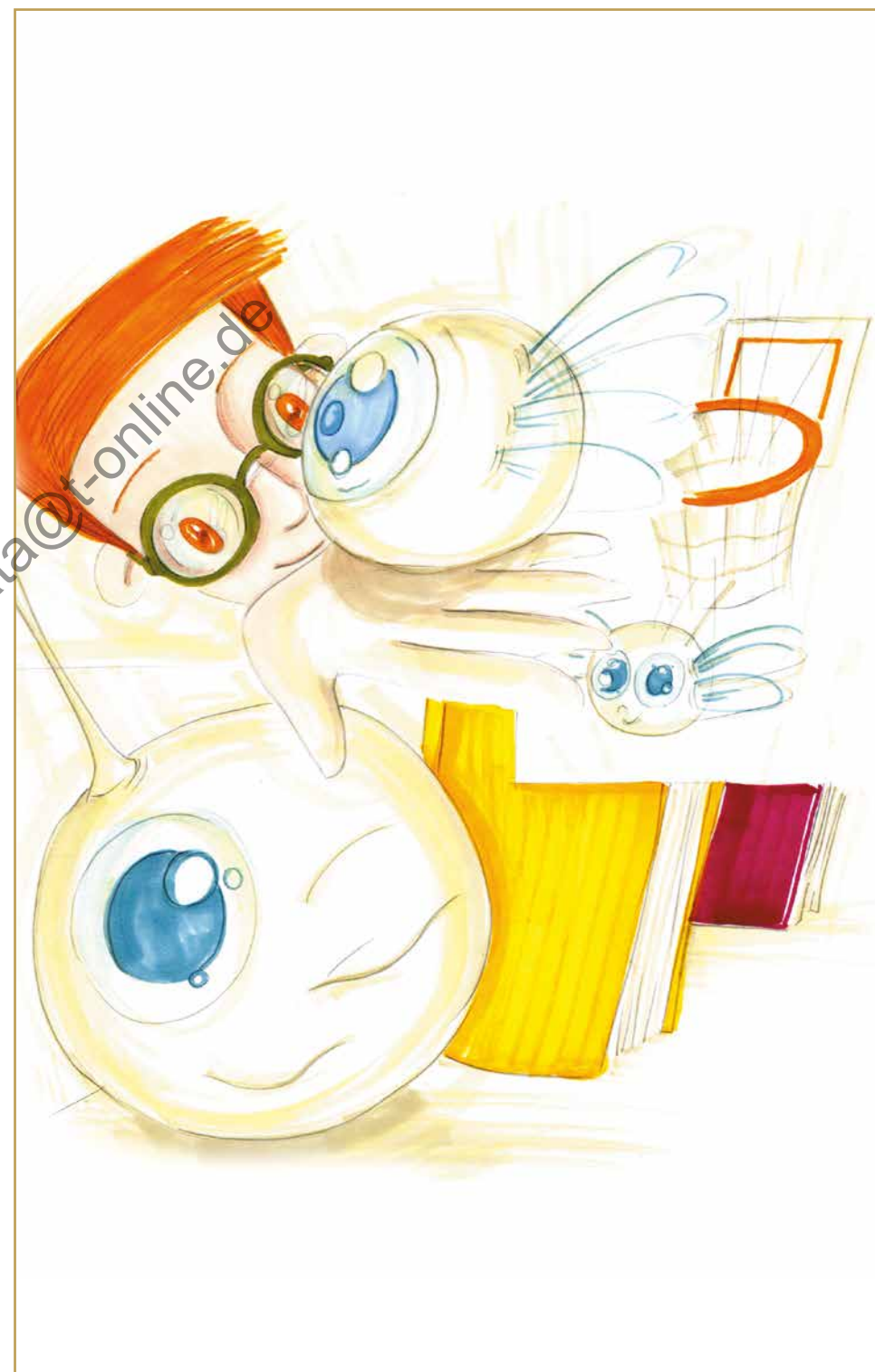
This thing opened her eyes wide, an antenna rose up from her and, when I was a few centimetres away from her, she pulled out her wings and flew up onto the highest shelf of the bookcase.

- ok this isn't a good start, we didn't start on the right foot I admit...let me present myself, my name is Wais and unlike what you might think I didn't steal you, I left two coins in return.

Without saying anything the sphere smiled and started to fly around the room, looking around here and there. When she saw the basketball hoop hanging on the door she showed herself off in a pirouette and passed through the hoop shouting: - score! – after which, flying, she winked at me.

- Ok, I think I will be safer there!

She had chosen her future house: the highest shelf of the bookcase!



So many doubts



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The following morning I woke thinking I had dreamt it all, yet the sphere was there on the top shelf of the bookcase in a deep sleep.

I went downstairs for breakfast and crunching on my cereal I started to think of what to do.

-So many doubts!

“Tell mum and dad...No! Seeing two adults would frighten the sphere and she’d escape.

Leave her there, go to school and think about it when I get back...No! When she wakes up she would feel lonely and abandoned in such a big house with no one there.

So, take her to school...yesss! All my classmates would see her and I would become a HERO but...Nooo, poor sphere! I’ve got it! I’ll take her to school with me but well-hidden and I will tell everything to the only person whom I can trust: Melody. With her she will definitely feel comfortable!”

And so after having breakfast and getting myself ready for school I tiptoed into my room so as not to wake her, I picked her up and put her carefully in my hoodie pocket.



A promise



Walking down Singleway I didn't do anything but ask myself: - And now, how do I do it? How do I tell her the sphere isn't just a simple object but it is alive! Will she believe me?

Consumed by my thoughts I almost collided with Melody who was waiting for me.

While I searched for the right words Melody started to tell me about an adventure book she was reading, that was set in the Amazon rainforest; carried away by enthusiasm

she moved her arms around and jumped around until the pendant she always carried around with her hit the pocket of my hoodie and the sphere suddenly lit up and flew out into the open.

Melody jumped back and almost fell to the floor from shock; as soon as she calmed down we started to walk towards school and I began to tell her everything that had happened the day before when I had gotten back home.

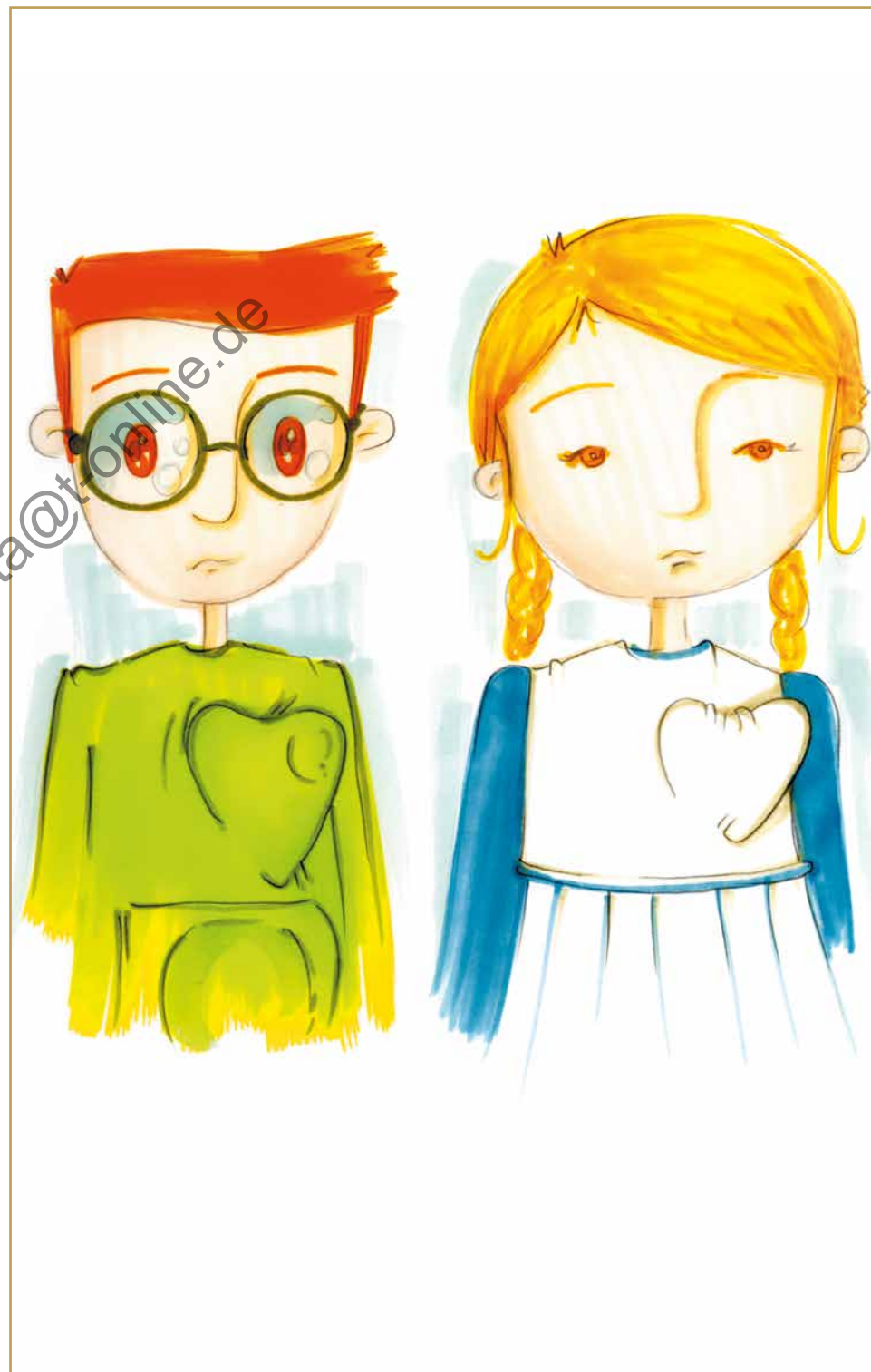
Meanwhile, the sphere followed us, looking fascinated at the pendant, a watch that Melody had found in the attic of her house and that had never stopped, and always told the exact time.

Once we had arrived at the school entrance:

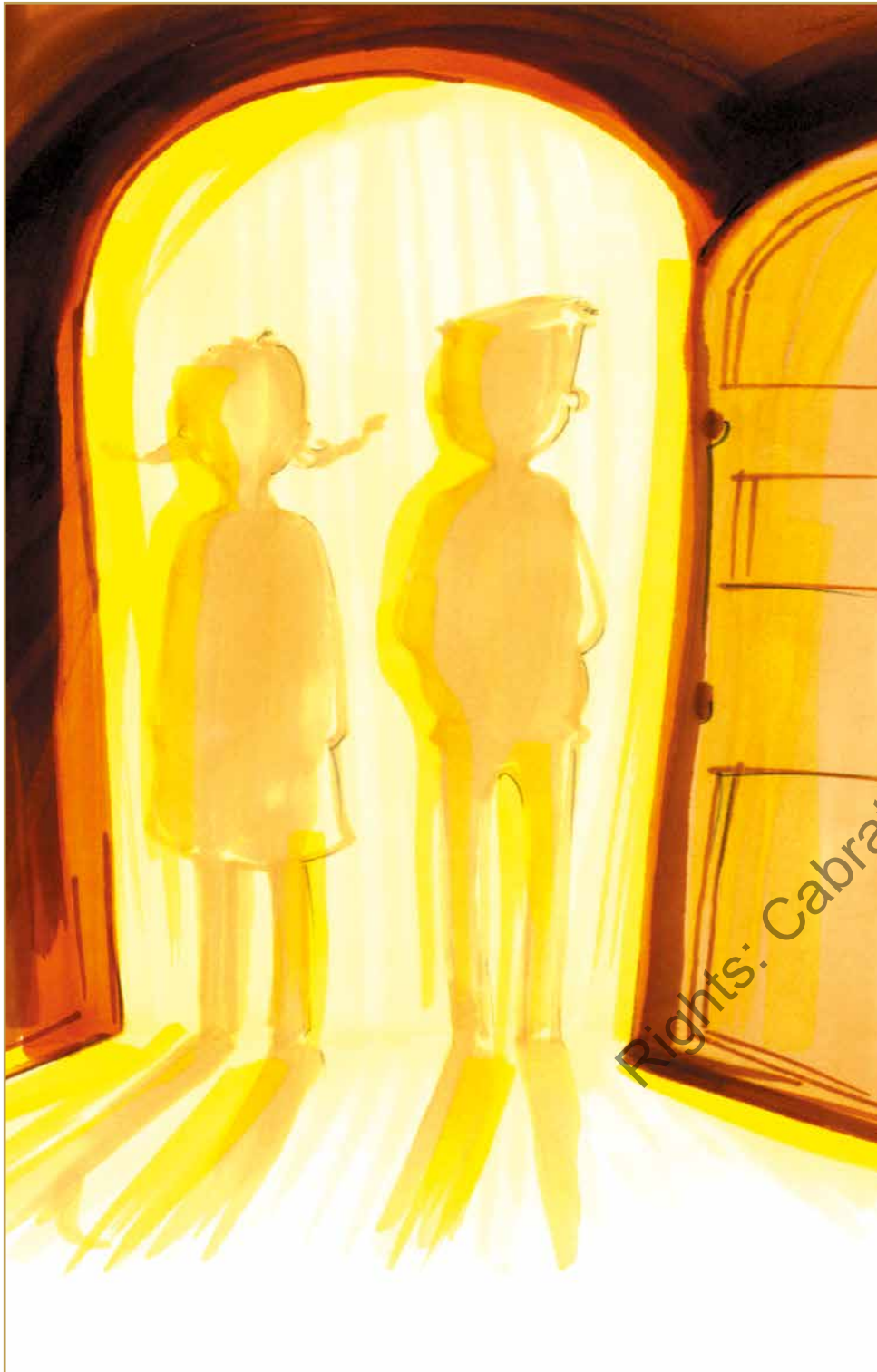
- You won't tell anyone, will you? – I asked Melody.

- I promise! – she replied.

So we entered with both our hearts beating fast.



No sign



A few days had gone by and the sphere had no longer shown any sign of life. We had tried many things, taking her for a walk, proposing a game of basketball and even offering her fruit pastilles, but there wasn't anything we could do to get her to interact with us.

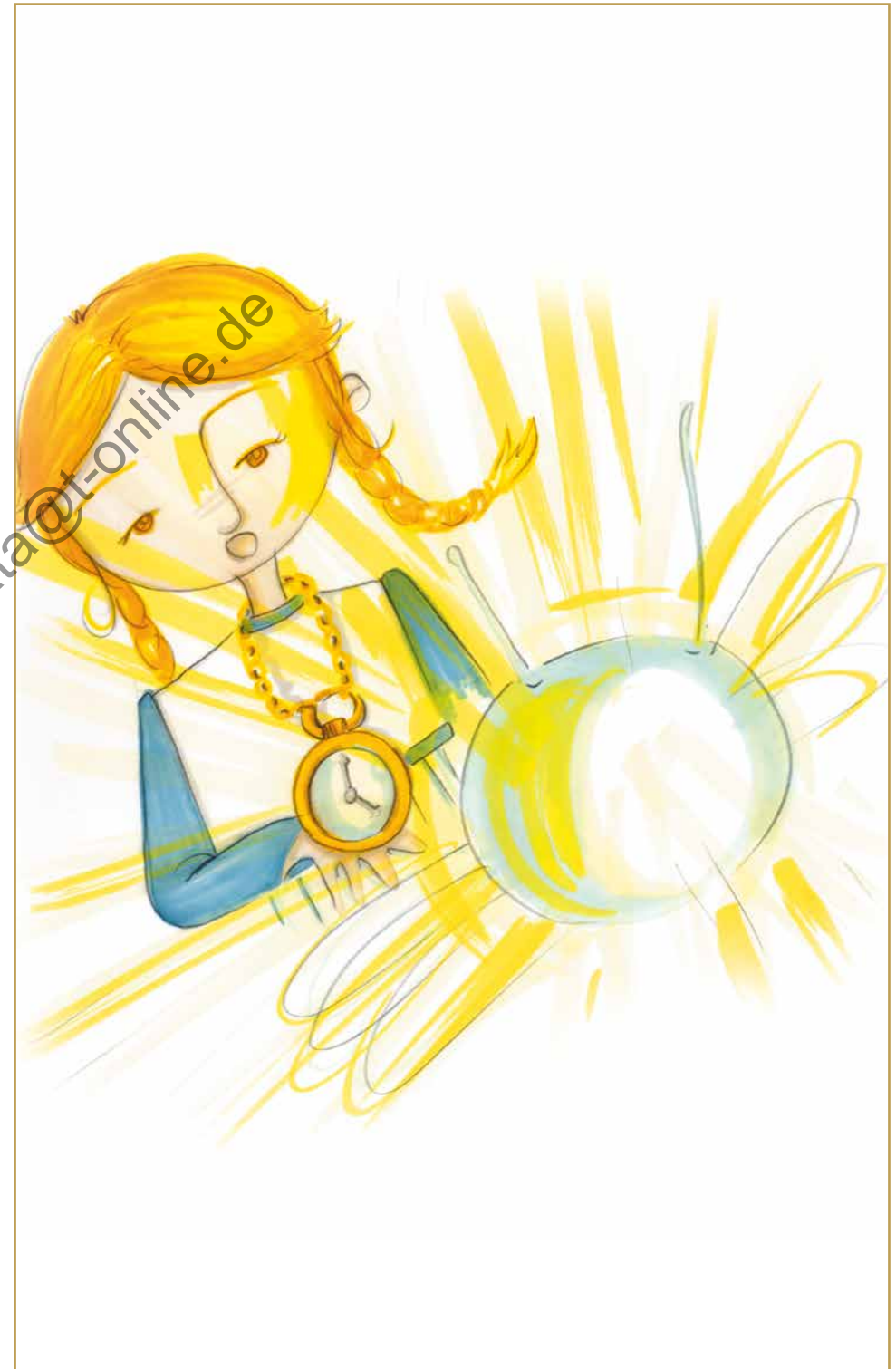
We decided therefore to return to the shop, convinced that there we would find some information.

- Hello? Is anyone there?

Once again the door was open and once again there was no sign of the owner, so we started to rummage through the shelves.

While I tried to put the objects together – I thought maybe they were like pieces of a puzzle- in the hope that something would happen Melody searched through the books and, whistling, tried to interpret a stave that she had found on the floor.

Suddenly silence fell, Melody wasn't whistling anymore, she was stood there as if turned to stone, she had realised that she could no longer hear the ticking of her pendant; the clock had stopped for the first time! In that same moment the sphere lit up and in a flash flew from my pocket, reached Melody and, flying close to the clock, gave off an intense light that overwhelmed us.





The journey



When we opened our eyes we found ourselves catapulted into the road, but nothing that surrounded us was familiar, we were definitely not in Newport!

The sky was an intense light blue colour, from the chimneys of the buildings puffed a continuous stream of smoke and every now and then a phaeton or cart passed by carrying

goods.

In front of us stood a majestic building...

- Let's see what it is, - I said.

As soon as we reached the entrance the sphere darted inside. We ran after her, but once inside we were hit by an incredible silence that dominated the place. Yet the building was populated; men dressed in strange outfits were entering, leaving, going up the stairs and walking the corridors. They all had long hair, some kept it gathered in plaits or in ponytails, others left theirs loose and curly. They wore shirts, waistcoats, long jackets and knee length trousers. There were also women there with long dresses that had bulky skirts.

- We have to find her! – Melody said, worried – where will she have gone?

- Let's try upstairs... - I suggested.

We climbed the great staircase that dominated the hallway; no one seemed to notice our presence. Perhaps they were too busy with their business.

At the top of the stairs, we found a long corridor with doors to the left and to the right, so we started discreetly looking for the sphere. In contrast to the calm that reined along the corridors, in the rooms the men were talking energetically, explaining their reasons through strange symbols.

- Look, this looks like our science labs!

- Yeah...but I don't see computers or interactive whiteboards! – said Melody,

- well there's no sign of the sphere in here anyway...
argh! -

- There at the end of the corridor, look Melody, there's another flight of stairs!

- Wow! It's so steep! Let's go, let's go! Who knows what's up there... - said Melody.

And in no time at all we had scaled the entire flight of stairs.

Acrobatics



At the end of the flight of stairs there was just one door. We opened it and found ourselves in a vast room, with a very high ceiling and big windows, divided in two by a very wide hole in the floor. When we looked up from the ravine, we finally saw the sphere, which was waiting for us, sitting on a chest.

- And now?! How do we get her?... – I asked myself.

I didn't waste time and started to think of how we could reach the other side of the room, while I told Melody of when I had gone to an adventure park where I had tackled

various dangerous routes.

I started therefore to look for ropes, nails or anything else that would allow me to get to the other side.

Melody, the great observer that she was, noticed a ladder leaning up against a wall.

- Wais, help me, I think this is tall enough; it's probably used to clean the windows...

I helped her and we lay it over the hole, making a walkway across it.

Like tightrope walkers, whistling a circus tune: - Ladies and gentlemen here for you tonight the greatest tightrope walkers of the century...lallallero lallallaaaaa fiuu fiuu tata-taaaaaa...oplà!!

We reached the other side of the room and the sphere cheered, performing a sequence of pirouettes.

- Hey! That's the chest that disappeared from the shop!
- Melody shouted.



So afraid



We tried opening the chest, but the lid wasn't shut tight. The sphere noticed our disappointment and decided to help us; flying she reached a switch next to the door, she pushed it and suddenly everything started to shake; a moment later there was an uproar and a cloud of dust filled the entire room.

- I can't see anything, Melody where are you?

- Wais I'm here! Help, everything's about to collapse!

We thought the building was about to crumble right under our feet. However, only seconds later, everything calmed down and the dust settled, revealing the presence of an extraordinary contraption at the bottom of the hole.

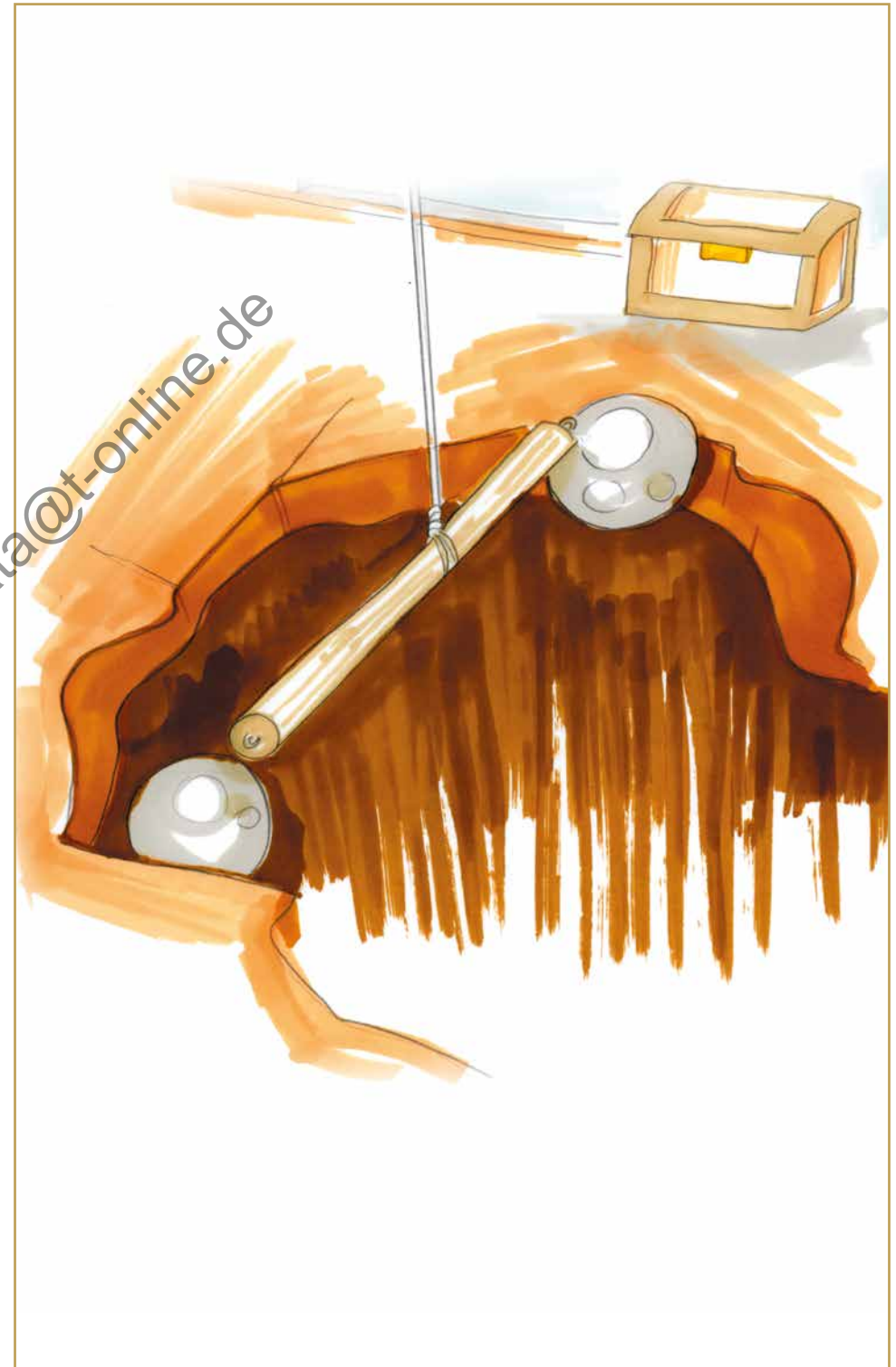
- Melody! Are you okay?

- Yes! But what is that?

The contraption was made of two parts; held suspended by a long cable, that from the ceiling arrived close to the hole, there was a wooden rod with two empty hooks at either end and, stuck to the walls of the pit, two lead spheres placed next to either end of the suspended rod.

We sat on the ladder-walkway and began to inspect the contraption, Melody went towards one of the lead spheres and tried to move it but it was well glued to the wall; it didn't go up nor down, so she tried the wooden rod. This began to sway but nothing happened.

We had absolutely no idea what it was or what it was used for, but we guessed that we had to find the way to work it if we wanted to open the chest.



Surprisingly



I remembered that, as I searched for useful objects which with to cross the hole I had found some ropes, nails, some hooks of different lengths, pieces of wood, spheres of metal and various tools.

We gathered therefore all these things and decided to each suggest a plan of action.

Melody went first, tying two ropes to the hooks; we took each hold of an end of the rope, rotated the rod as far as it would go but when we let go the beam returned to where it started; how disappointing! So I decided to construct a miniature of the contraption using a plank of wood, nails and hooks; I took two spheres and put them on the floor, but I couldn't understand...

- There's something trying to get out!

We made several attempts. Meanwhile the sphere fluttered about here and there, mocking us, one moment whistling a song and flying past at lightning speed ruffling my hair in the next.

I finally got angry and ordered her – stop it or I'll hang you in the place of one of the spheres that are in the pit! -

In that moment Melody's eyes lit up and she started to yell: - Found it! Found it! Found it! -

- The missing object has to be a sphere – she added - but where, how?

- How? - I exclaimed and picked up the only two spheres that had hooks, these were made from lead too but a bit smaller and...

- Where?! – I attached them to the empty hooks of the rod and...

Holding our breath we were witnesses to an exceptional phenomenon!

The rod with the two spheres attached to it rotated slightly to the two big spheres and when it stopped in absolute



silence, we heard the click of the lock, the chest had opened!

We remained still, our mouths wide open. We managed only to whisper in unison: - Wow, these are magic spheres, too!

The sphere that was mocking us any more came over to us and complemented us: - Well done! The credit goes to you, these aren't magic balls, and you simply saw the effects of gravitational force. The two balls attached to the rod by you were attracted by the other two fixed in the hole and it was precisely this attraction that made the rod rotate towards the bigger balls. This is gravitational force, the force of attraction between two bodies

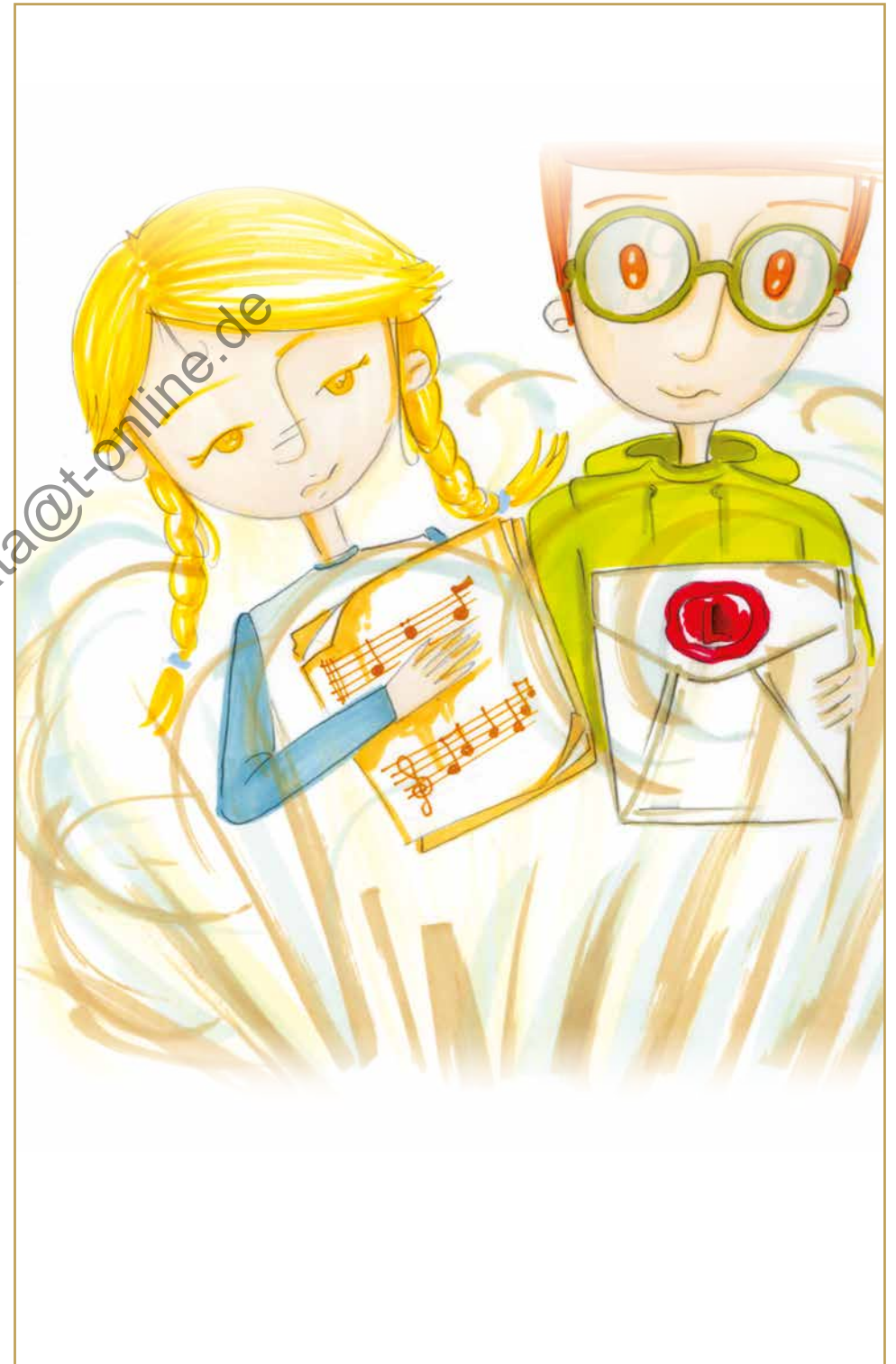
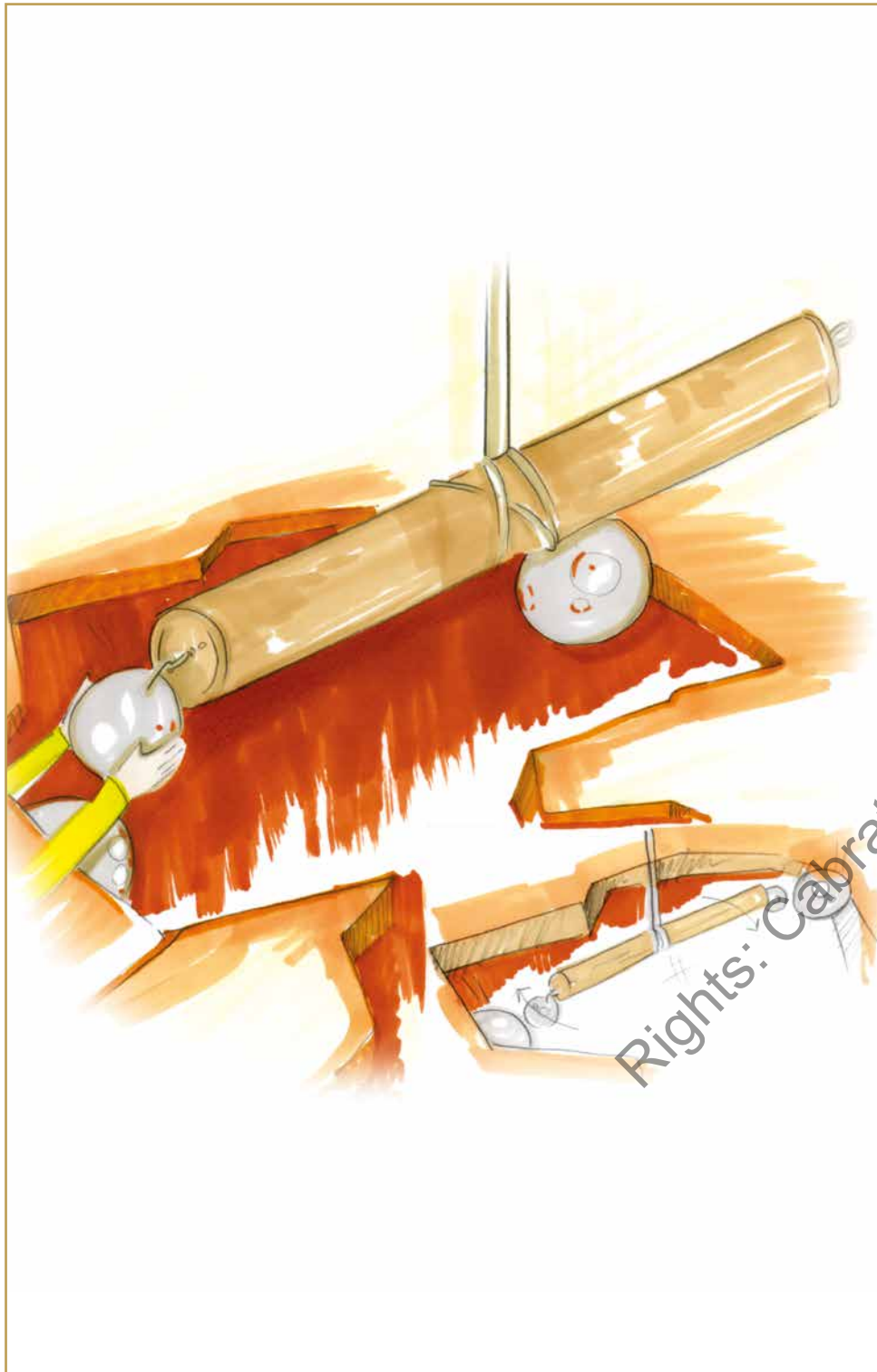
- That keeps our feet on the ground – exalted Wais,
- And what makes the moon orbit around the earth – added Melody.
- Exactly, It's precisely that! – the sphere concluded.

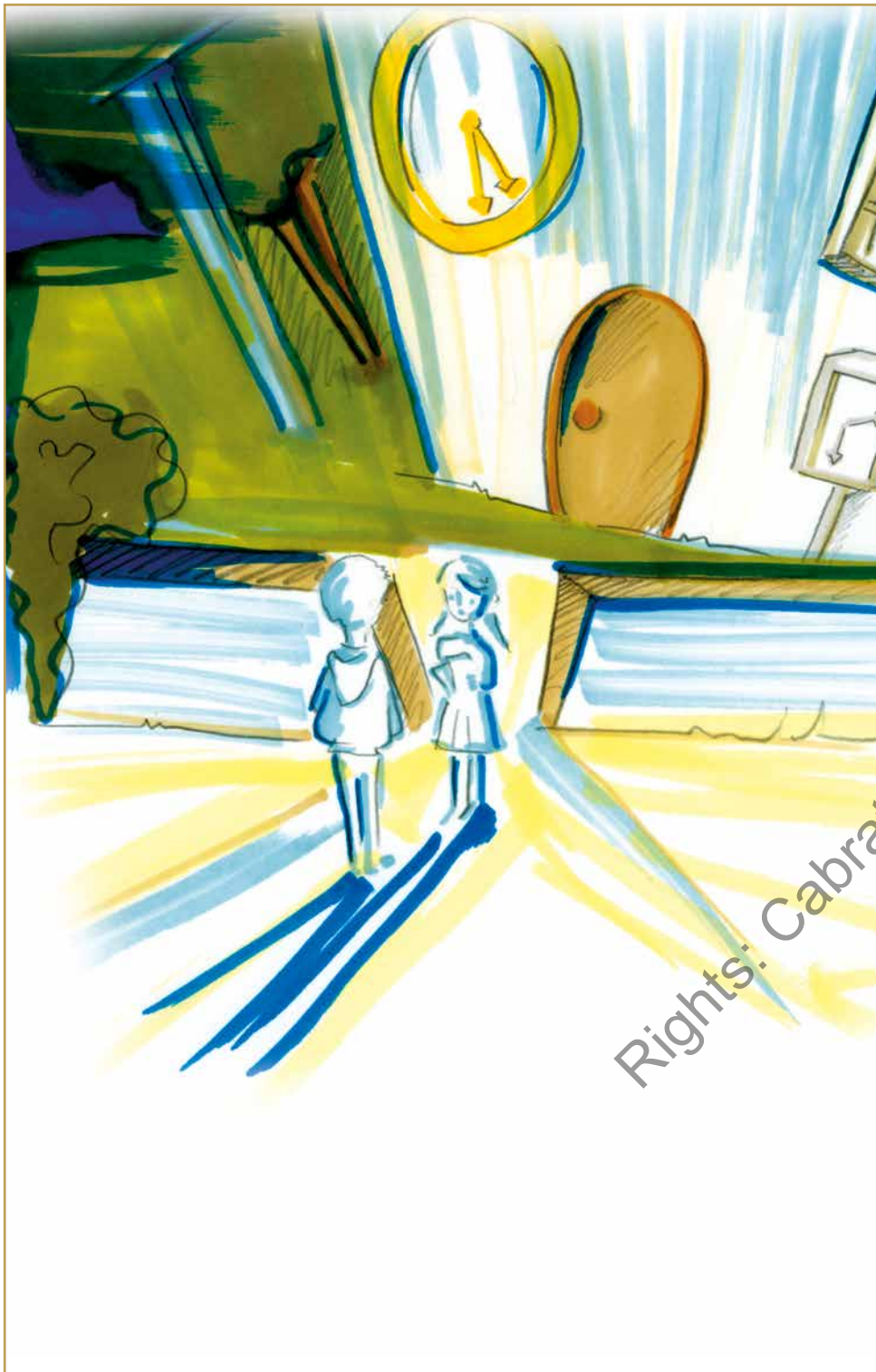
At that point, with our hearts in our throats, we went up to the chest.

Inside we found an old looking score of music that attracted Melody's attention straight away and a yellowed envelope sealed with a wax lacquer mine.

Once we had taken the objects the chest suddenly shut itself and once again the whole room began to tremor, rising a great cloud of dust.

Followed by the sphere we ran to the door, opened it and out of the blue we were sucked into a vortex to then find ourselves once more inside the shop.





Putting the pieces back together



There was no longer any trace of what we had seen, nothing at all, not even the chest. Meanwhile, the sphere had taken shelter in the pocket and the deafening silence that surged in the shop was interrupted by the ticking of Melody's pendant; the clock had started to work again!

It was being to get dark when Melody took the music score with her and I the envelope.

We waved goodbye to each other outside the big house with the clocks without saying anything, we were still stunned by what had happened and certainly very tired.

Melody entered the house and went straight upstairs to her room. Miss Beth, the nanny, remained shocked from her unusual behaviour, as normally Melody filled her with small talk and she had to stop whatever she was doing, this time no...

The unexpected silence was interrupted by a tune coming from Melody's piano; Miss Beth recognised the song, a composition by Mozart, and went upstairs, enchanted by the rendition. She peeked into the room without being seen and witnessed the passion with which Melody played, it was like she had been stolen to a world of notes. Miss Beth had never before seen Melody so engrossed in something, not even for her love of dance.

She returned back downstairs to the kitchen and not long after Melody also came down, cheerful as always, and like nothing had happened she asked if there was news from Africa, where her mother was filming a documentary.

"Passions are already inside of us, when we discover them the emotion is so strong and profound that often one does not have the courage to tell of it" this is what Miss Beth thought, justifying in this way Melody's decision not to confide in her.

Arrived at the house, I greeted dad and went straight

upstairs to my room, placed the sphere back on the shelf of the bookcase and opened the sealed envelope.

The envelope contained one or two cards of a puzzle, I began looking at them:

"I could ask mum for help, she'd put them together in no time but...I'll try on my own"

As I pieced together the puzzle, I realised it was missing pieces...

I managed to recreate a corner from which it was clear the puzzle had to be much bigger; in this corner I could see the letters N and U.

Disappointed I took the pieces apart once more and put them back in the envelope and it was then that I realised that on the wax lacquer there was a stamp with the letter L on it.

I was really tired, so I lay on my bed, half-closed my eyes and started to think of the chest that disappeared, the sphere, the force of gravity, an old score of music and the jigsaw pieces...I didn't understand what it was that connected all those elements...

Dad, worried at my not coming downstairs for dinner, peered round my bedroom door and found me asleep with Lara lying there next to me.

He tucked me into the covers and decided to leave me to sleep.

"Basketball practice must have tired him out" he thought.



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Going on

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Goloso di gelatine
e cereali al cacao.

Sogno nel cassetto:

Diventare il miglior giocatore
di basket del secolo!

Golosa di gelatine alla frutta.
La prima cosa che fa al mattino
è accendere la radio.

Sogno nel cassetto:

Diventare una ballerina di
danza classica.

Paure: Il buio.





Papà di Wais.
Adora sgranocchiare patatine
davanti ad una partita di basket.
Suona la chitarra.



Mamma di Melody,
è una reporter.
Indossa sempre un foulard
e nella sua borsetta trovi
mille creme di bellezza.



Passatempo preferito:
Scovare tesori!

È una giocherellona
ed adora il latte.



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**SPECIAL
CONTENT**

The law of universal gravitation



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Let me tell you the story about a certain Isaac Newton and an apple.

The apple fell on Isaac's head while he sat lazily under a tree. He didn't see stars but an object- named body- that fell downwards.

The apple wasn't interested in falling on Isaac's head, it wanted to fall to the earth!

Since he had interfered, Isaac felt he should give an explanation for this fall.

-Why, apple, did you not fall a bit further that way or this way, or fly up into the sky? – asked Isaac.

-For the same reason that you stay with your feet stuck to the ground and you don't fluctuate to the left or to the right,

- replied the apple.

The apple and Isaac had more in common than they thought, both were attracted to the ground.

Well, it didn't go exactly like this but almost...

What is certain is that we have to thank Sir Isaac Newton if we watch our favourite television programmes on satellite channels or if we check the weather forecast before leaving the house.

Born on the 25th December 1642, he is considered as one of the most brilliant minds ever been, since his childhood he didn't have an easy life but always continued his studies until writing his great work "Philosophiae Naturalis Principia Mathematica".



Do you know what language that is? It's Latin, and in English it means: "The mathematical principles of natural philosophy".

In the third volume of this work, Newton talks about the law of universal gravitation, maintaining that any two bodies, calling them M1 (apple) and M2 (earth), exert an attractive force on one another.

This law explains why if you let go of a ball (M1) it falls down towards the floor (M2) or why when you jump up you come back down rather than fly off into the air.

But how attracted are two apples to each other? How strong is the force that the earth exerts onto us?

Newton gave a response also to this, finding a formula, not certain magic, that allowed him to understand how "strong" the force of attraction is between two bodies:

$$F = (G \times M1 \times M2) : R^2$$

Where M1 and M2 are two bodies of whose weight is measured in kilograms and R is the distance between the two and is measured in meters.

Now we will try to understand how and how much this force acts.

Let's take two basket balls that weigh about half a kilogram (M1=M2=0.5kg) placed one meter apart (R=1m), in

this case the gravitational force is so weak that we don't manage to see the effect; now however, we let's consider the Earth M_1 that weighs about 6 billion, billion tonnes (so much more than a basketball) and a basketball M_2 , in this case you can see with your own eyes the effect of the gravitational force: let a ball fall from your hands and you will see how, attracted by the earth, it goes straight down.

This shows that gravitational force between two bodies depends on their mass



$$F = (G \times M_1 \times M_2) : R^2$$

The more the two bodies we are talking about weigh, the 'stronger' the force of attraction between them is.

The Earth with its elevated weight acts onto us with the relevant force, you could say it doesn't let us escape.

For example, when you try to throw a rock far away, what does it do? It goes a little bit away from us but then... it falls to the Earth; the Earth wants it back with her!

If we want to measure exactly the force between two bodies using Newton's law:

$$F = (G \times M_1 \times M_2) : R^2$$

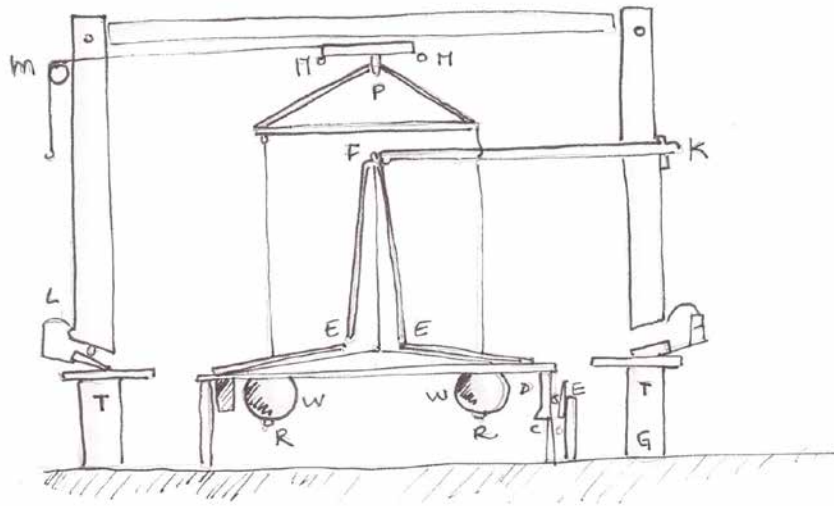
We must know the weight of the two bodies M_1 and M_2 , their distance R but also G which until now we haven't spoken of.

In the second half of the 18th century in London, Mr Henry Cavendish, thanks to an instrument similar to what Wais and Melody got to work, discovered the value of G !

The instrument that he use, known as "Cavendish's torsion balance", consisted of:

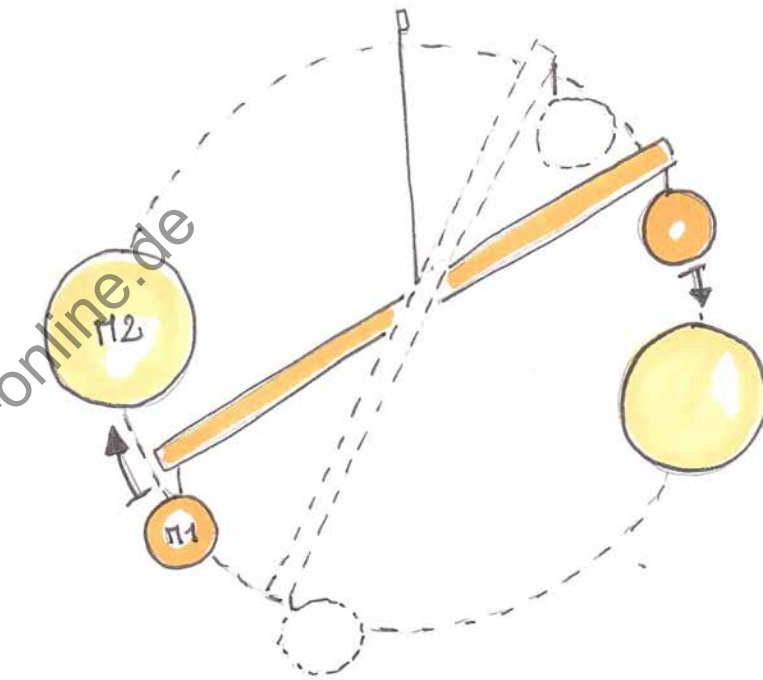
- a wooden rod, held suspended from a wire, on which two lead spheres with an equal mass M_1 of 0.73kg were attached to each end;

two much bigger spheres of lead M_2 of equal mass of 158kg, placed 0.23m (R) away from the small spheres; the



spheres M_2 are kept still by another system of independent suspension and positioned on the two opposite sides of the wooden rod. The two big spheres M_2 attract the small spheres M_1 , causing the wooden axis to rotate towards each other:

while the wooden plank, as a result of the force of gravity, turns towards the big spheres, the wire that kept it “twists”,



creating a resistance due to its twisting, or torsion, force; a force that tries to turn the wire back to its original position and so tends to turn the axis backwards, to its initial position.

So, on the beam of Cavendish’s balance, two forces are in action: that of gravity that makes the beam move forward and that of torsion of the wire that tends to make it go backwards. At a certain point these two forces become equal and the beam doesn’t move anymore forward nor does it move backwards.

Here Cavendish, measuring the force of torsion of the wire, also measures the force of gravity F.

Applying Newton's formula:

$$F = (G \times M1 \times M2) : R^2$$

and knowing F, M1, M2, and R, Cavendish manages to calculate G

$$G = (F \cdot R^2) / (M1 \cdot M2) = 6.67428 \times 10^{-11}$$

G has always the same value; whether you speak about the attraction between two spheres or between the earth and the apple, G is always worth the same number, for this it is named constant, the universal gravitational constant.

Now we have everything we need to calculate the force of the attraction of two bodies:

$$F = (G \times M1 \times M2) : R^2$$

In conclusion, today thanks to Newton and Cavendish we can calculate the gravitational force that the earth exerts onto any object: on a satellite, that we send into space to transmit cartoons; on the moon, that instead of escaping continues to spin around the earth, giving us the possibility to admire it every night!





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