

Cassie's Beach Adventure

Discovering Newton's Amazing Ideas

By Suneeta Mall

FableFlow Publishing



Cassie's Beach Adventure

Discovering Newton's
Amazing Ideas

By Suneeta Mall

Powered by



Once upon a time...

Fable Flow 
Where Stories Come to Life and they all lived!

FableFlow Publishing

FableFlow Publishing

First Edition, 2024

Based on original story by Suneeta Mall Enhanced with AI by FableFlow

All rights reserved

ISBN: 978-0-6456963-2-5

*No part of this publication may be reproduced, stored in a retrieval system,
or transmitted in any form or by any means without prior written
permission.*

Contents

Chapter 1: Let's Get Moving!	13
Chapter 2: How Far? How Fast?	32
Chapter 3: The Backward-Running Trees	48
Chapter 4: Push and Push-Back!	71
Chapter 5: The Hidden Rainbow	82
A Note to Young Scientists and Their Families	9
About the Author	97
Acknowledgments	100
Index	99

A Note to Young Scientists and Their Families

Welcome to Cassie's Beach Adventure! This book celebrates the wonder of everyday physics through the eyes of a curious six-year-old who asks the kinds of questions that lead to great discoveries. Just like Sir Isaac Newton, who changed our understanding of the universe by staying curious and thinking hard, Cassie shows us that science isn't something that happens only in laboratories—it's all around us, waiting to be noticed.

As you read, you'll discover the fundamental laws of motion, gravity, and light alongside Cassie and her family. Each chapter transforms a simple car ride to the beach into an exploration of Newton's revolutionary ideas: why things fall down, how motion looks different from different viewpoints, why every push creates a push-back, and how white light hides a rainbow of colors inside.

This story is designed to spark conversations between young readers and their families. The questions Cassie asks are questions all children wonder about, and the answers reveal that physics is simply the art of noticing patterns in the world around us. Through playful experiments, skip-counting calculations, and keen observation, Cassie demonstrates that curiosity is the most important tool any scientist can have.

As Einstein once said, "I have no special talents. I am only passionately curious." May this adventure inspire the young scientists in your life to stay curious, ask questions, and discover that the world is full of hidden wonders waiting to be understood. The next great discovery might begin with a simple question on an ordinary day—just like Cassie's beach adventure!

Chapter 1: Let's Get Moving!

Chapter 1: Let's Get Moving!

Cassie is six years old, and her mind sparkles with questions the way morning dew sparkles on spider webs. Today, while she plays in the backyard sandpit, she doesn't know that an adventure awaits—one that will take her from falling sand to falling raindrops, from dancing trees to hidden rainbows.



Cassie builds her sandy masterpiece under the golden wattle tree.

Above her head, the wattle tree spreads its branches like a giant's umbrella, golden flowers dangling like tiny captured suns. Bees hum their drowsy afternoon song, drifting from bloom to

bloom. Cassie pats another tower onto her sandcastle, her tongue poking out in concentration.

"Let's get moving, Cassie!" her mum's voice rings out from the back door. "We're going to the beach!"

Cassie springs up so fast her tower crumbles. The beach! Her favorite place in all the world! But then—as happens so often with Cassie—a thought catches her like a butterfly net catches butterflies.

She looks at her sandcastle. She looks up at the wattle tree, its branches swaying gently in the breeze. She says the word slowly, tasting each letter: "M... O... V... E."

Her eyes begin to sparkle with that particular shine that means Curious Cassie has found a question.

"Mum," she calls out, her voice full of wonder, "you and I can move anywhere we want. Why can't

trees move?"

Mum walks over, her face lighting up the way it always does when Cassie asks her brilliant questions. She gazes up at the wattle tree, admiring how its branches stretch toward the sky like arms reaching for something just beyond their grasp.

"You see, sweetheart," Mum begins, settling down beside Cassie in the sand, "this tree has roots. Deep, deep underground, there are roots spreading out like underground branches—some as long as the tree is tall! They drink up water and minerals from the soil. They hold the tree steady, even when wild winds blow and try to push it over."

Cassie stares down at her own feet, wiggling her toes. "But I don't have roots!"

"Exactly!" Mum grins and does a silly bunny hop, her legs springing up and landing with a soft thump. "We have legs! We can lift our feet up and put them down somewhere else. We push against

the ground, and that's how we move from place to place!"

Cassie giggles at her mum's hop and tries one herself. Her legs push down, and up she goes! For just a moment, she's flying—then she lands with a satisfying thud, feeling the ground solid beneath her feet.

"So trees are stuck because of their roots, and we can move because of our legs?"

"That's exactly right, my clever girl!"

Satisfied, Cassie returns to her sandcastle. The wind whispers through the wattle tree, making its branches dance and sway. The tree might not walk away, but it can still dance in the breeze.

Suddenly, Mum's eyes light up with remembered wonder. "Cassie! Caleb! Come here—I have to tell you something amazing!"

Three-year-old Caleb toddles over from his hole-digging project, hands caked with dirt, smile wide as the horizon.

"There's a special type of tree," Mum begins, her voice hushed as if sharing a precious secret, "that grows in tropical rainforests far, far away. It's called the Walking Palm. And this tree... can actually MOVE!"

Cassie's eyes grow round as full moons. "A WALKING tree?! But you just said trees have roots!"

"It DOES have roots," Mum says mysteriously. "But this clever tree has found a way to move even with roots. Want to know how?"

"YES!" both children shout together.

Mum settles more comfortably into the grass, preparing to tell her story properly. "Well, this tree absolutely loves sunshine—needs it, actually. All

plants need sunshine to make their food. We eat sandwiches and apples, but trees? Trees use sunshine to make energy!"

"Trees eat sunshine?" Caleb repeats, wonder-struck.

"In a way, yes! They use sunlight to make energy, to grow big and strong. Now, the Walking Palm is remarkably clever. When it notices there's more sunshine in one direction—perhaps another tree has fallen, creating a sunny gap—it starts growing brand NEW roots on that side, the sunny side."

Cassie leans forward, utterly fascinated, her sandcastle temporarily forgotten.

"The new roots grow toward the sunshine, reaching out like fingers pointing at the light. Then, very slowly, the tree begins to lean that way. Caleb, what happens when you lean forward?"

Caleb tries it, wobbling. "My bottom feels stretchy!" He giggles.

"Exactly! When the Walking Palm leans toward its new roots, it's like bending forward. And guess what happens to the old roots on the other side? The ones that aren't getting as much sunshine anymore?"

"What?" Cassie whispers, barely breathing.

"They dry up! They let go of the ground! So the tree is now standing on its new roots, a little bit forward from where it was before."

"So it took a STEP!" Cassie exclaims.

"A very, very slow step," Mum laughs. "This process takes years, Cassie. The tree might move only a tiny bit—maybe as far as you can stretch your arms—in a whole year! But over many, many years, the Walking Palm can actually travel through the forest, following patches of sunshine like a

treasure hunter following a map."

"That's AMAZING!" Cassie shouts. She grabs Caleb's hands and spins him around. "Caleb! Did you hear? There's a tree that can WALK!"



Cassie and Caleb pretend to be walking trees in slow motion!

Caleb starts stomping around in exaggerated slow motion, stretching his arms out like branches. "I'm a walking tree! Growing new roots!"

Cassie joins him, and they both move as slowly as possible around the backyard, pretending to grow new roots with each step while their old roots shrivel up behind them. Mum watches with delight, her heart full.

"What a wonderful fact, Mum!" Cassie says when they finally collapse in giggly exhaustion. "We love it!"

Cassie returns to her sandpit, but her mind is buzzing like the bees in the wattle flowers. She picks up her spade and scoops some sand, then tosses it high into the air. The grains catch the sunlight and sparkle like falling stars.

Up, up, up goes the sand... and then down, down, down it comes, landing on her shoes and the ground around her with a soft whisper.

She tries again. Up, up, up... down, down, down.

"Hmm," she says to herself, her forehead wrinkling in thought.

Just then, she feels something cool and wet on her nose. She looks up. Tiny droplets are falling from the sky—a light drizzle! The raindrops patter down, down, down, just like the sand.

Cassie watches the rain falling. She watches the sand falling. Everything comes down! But why? Why doesn't anything just float in the middle, or drift upward?

"Mum!" she calls across the yard. "Why does EVERYTHING come down to the ground? The sand goes up when I throw it, but it always comes back down. The rain comes down. Why doesn't anything just... stay up?"

Mum walks over, not minding the gentle drizzle freckling her arms. "Because of gravity, sweetheart."

"Gravity?" Cassie rolls the new word around in her mouth. "What's that?"

"Gravity is like an invisible force," Mum explains, sitting on the edge of the sandpit. "The Earth—our whole planet—pulls everything toward itself. It's not a hard yank, but a gentle, constant pull. Every single thing gets pulled down toward the Earth, all the time."

Cassie looks around, searching. "But I can't SEE it!"

"No, you can't see gravity. But you can FEEL it! Want to try something?"

Mum stands and holds out her hands invitingly. "Do a bunny jump, as high as you can!"

Cassie bends her knees and pushes off the ground with all her might. For one glorious moment, she soars—then lands back on her feet with a thump.

"Did you feel that?" Mum asks.

"Feel what?"

"Let's think about it carefully. When you jumped UP, what did you have to do? Did it happen easily?"

Cassie thinks, replaying the jump in her mind. "No! I had to squeeze my legs really tight and push really, really hard to go up!"

"Right! You made an effort. Your muscles had to WORK to push you up into the air. Now... what about when you came back down? Did you have to do anything special?"

Cassie's forehead wrinkles in concentration. She does another jump, paying close attention this time. Up—she pushes hard with her legs. Down—she just... falls. No effort at all.

"I didn't do ANYTHING to come down!" she realizes, astonishment in her voice. "I just... came

down by myself!"

"THAT'S gravity!" Mum exclaims. "You didn't have to work to come down because gravity was pulling you. Gravity did all the work for you! It brought your sand down, it brought the rain down, and it brought YOU down."

Cassie's whole face lights up with understanding. "So gravity is like... the Earth giving me a hug? Pulling me back home?"

"What a beautiful way to think about it! Yes, the Earth is always hugging everything, pulling us gently close."

Caleb comes bouncing over on his sturdy little legs. "I want Earth hugs!" He starts jumping up and down, up and down, his giggles floating up into the drizzly air.



Jump up, fall down—the Earth is giving them hugs!

Cassie joins him. They jump and jump, feeling themselves fly up with effort and fall down with ease. Every landing is gravity catching them, pulling them safely back to the ground.

As they jump, Cassie chants:

Jumping up takes work and
might, Falling down feels
feather-light! Earth pulls close
with gentle care—Gravity hugs
everywhere!

The words tumble out naturally, matching the rhythm of their bouncing feet. Caleb tries to repeat the words, though they come out jumbled and giggly on his three-year-old tongue.

Then Cassie suddenly remembers—they're supposed to be going to the BEACH!

"Mum! Mum! We were getting ready to leave!
Can we go now? Please, please, please?"

Mum laughs, her eyes crinkling at the corners.
"Yes, my little jumping bean. Let's get moving!"

As they head toward the house to gather their
beach things, Cassie begins to march, and a
marching song bubbles up from her heart:

I am marching up and down,I am
moving all around,I am going to
the town,Where beaches are
abound!I will make some sandy
towers,And show my
superpowers,I will jump up and
down the towers,And scamper
about at this hour!

Caleb tries to march in time, his little legs working hard to keep up with his sister's longer strides. The drizzle has stopped, and patches of blue sky peek through the clouds like windows opening. It's going to be a perfect beach day!

Chapter 2: How Far? How Fast?

Mum gathers sunscreen, towels, snacks, and two excited children. She buckles Cassie and Caleb safely into their car seats—click, click—checking that the straps are snug but comfortable. Safety first! Then she walks around to the driver's side, slides in, and turns the key. The engine rumbles to life with a reassuring purr.

She's just about to reverse out of the driveway when a small voice pipes up from the back seat.

"Are we there yet?" asks Caleb.

Mum and Cassie look at each other in the rearview mirror and burst out laughing!



Are we there yet?" Caleb asks—but they haven't even left home!

"Caleb!" Cassie giggles. "We haven't even MOVED yet! Look—we're still in our driveway! You can see our house!"

Caleb peers out the window and sees their familiar house, their garden, their mailbox with the painted flowers. He grins sheepishly. "Oh. Right."

Mum backs carefully out of the driveway, and they're off! The car rolls forward, and the adventure truly begins. But now Curious Cassie's mind is whirring again. She wants to picture the journey in her imagination, to see it before they arrive.

"Mum," she asks, "how far do we need to travel to get to the beach?"

"It's about 10 kilometers away," Mum replies, checking her mirrors before turning onto the main road.

"10 kilometers," Cassie repeats slowly, testing the words. She scrunches up her face in thought. "What does that even MEAN, though?"

There's a big question mark floating above her head—not really, of course, but that's certainly

what it feels like!

"A kilometer is how we measure distance," Mum explains. "Remember the walk from our house to Aqua Flora Park? The one where we feed the ducks and watch them dive for the bread?"

"Yes!" both children say together. They love that park!

"Well, the distance from our home to Aqua Flora Park is about 1 kilometer. That's how long 1 kilometer is—it's that whole walk. Now, imagine walking that distance not just once... but TEN times in a row! That's how far Cronulla Beach is from our house."

Cassie's eyes grow wide. Ten times! That's an enormous distance!

But wait—her brain is working on something. If she walks TO the park, that's 1 kilometer. But what if she walks there AND back home? How far would

that be?

"Mum! If I walk to the park and back home again, that's TWO kilometers, right?"

"Exactly right, clever girl!"

Cassie holds up her hands, ready to figure this out. She's getting good at skip counting!

"One trip to the park and back is 2 kilometers." She holds up two fingers.

"A second trip would be another 2 kilometers." Two more fingers pop out. Now she has four fingers showing. "That's 4 kilometers for two trips!"

She continues, her confidence growing with each count.

"Third trip is 2 more... that's 6 kilometers!" Six fingers wiggling now.

"Fourth trip is 2 more... that's 8 kilometers!"
Eight fingers dancing in the air.

"Fifth trip is 2 more... that's 10 kilometers!" All
ten fingers spread wide like a star!



Ten fingers—ten kilometers! Cassie solved it!

"MUM! It's FIVE trips to the park and back!
That's how far the beach is from our house!"

Mum beams at her through the rearview mirror,
pride shining in her eyes. "Brilliant skip counting,

Cassie! Five complete trips to the park—that IS far, isn't it? That's definitely why I'm driving us instead of walking!"

Cassie settles back in her seat, feeling accomplished and pleased. Five whole trips worth of distance. No wonder they need the car!

But then...

"Are we there YET?" Caleb interrupts again, his little legs kicking restlessly against his car seat.

Cassie sighs with all the patience of an older sister. "Caleb, we JUST talked about this. It's 10 kilometers away—that's really, really far!"

But then she stops. A new thought arrives. Wait a minute. They know how FAR they're going... but that doesn't actually tell Caleb WHEN they'll arrive! Caleb wants to know how much LONGER, not how far away!

"Actually, Mum," Cassie says slowly, her brain working through the problem, "we know it's 10 kilometers. But that doesn't help us know how long until we get there, does it? We need to tell Caleb WHEN we'll arrive so he'll stop asking!"

Mum glances back with a proud smile that reaches all the way to her eyes. "Cassie, that's very thoughtful—and absolutely right. We have a problem that needs solving! We know how far we're going, but not how long it will take to get there. How can we figure that out?"

"How DO we figure it out?" Cassie asks eagerly.

"Well, we make a smart estimate! And to make a good estimate, we need to understand SPEED."

"Speed?"

"Speed tells us how many kilometers we travel in a certain amount of time—like in one minute, or one hour. The more kilometers you cover in a

minute, the faster you're going!"

"Vroom vroom!" Caleb squeaks, pretending to grip a steering wheel and making race car noises.

Mum laughs, her eyes crinkling. "Exactly, Caleb! Now, when we drive, the car's wheels spin round and round. Each time a wheel completes one full rotation, the car moves forward a certain distance."

Cassie looks down toward the floor of the car, trying to imagine the wheels spinning beneath them, touching the road over and over.

"How far the car moves with one spin depends on the size of the wheel—specifically, something called the circumference. Have you heard that word before?"

Cassie shakes her head, loving new words.

"Imagine you take a piece of string and wrap it all the way around the edge of a wheel, just once,

following the curve. The length of that string would be the circumference—the distance around the outside of the wheel!"

"Oh! Like wrapping a ribbon around a birthday present?" Cassie asks.

"Just like that! Perfect comparison! Now, in real life, a car wheel's circumference is about as long as you are tall—roughly 2 meters. But to make our math easy for learning, let's pretend we have a huge, imaginary wheel with a circumference of 1 kilometer—I know that's silly, but it helps us understand!"

Cassie giggles at the thought of wheels as big as houses.

"So if our pretend wheel goes around one complete spin, the car travels 1 kilometer. Make sense?"

"Yes!"

"Now, if the wheel spins TWO times in one minute, how far would the car travel in that minute?"

Cassie thinks carefully. One spin equals 1 kilometer. Two spins equals... "2 kilometers!"

"YES! So in that case, the car's speed would be 2 kilometers per minute. We can write it as 2 km per minute."

Cassie nods, following the logic like following stepping stones across a stream.

"Now here's where it gets fun. If we're traveling at 2 kilometers per minute, how many minutes would it take to travel 10 kilometers? Time for more skip counting!"

Cassie holds up her hands again, ready for the challenge. "2 kilometers in 1 minute... 4 kilometers in 2 minutes... 6 kilometers in 3 minutes... 8 kilometers in 4 minutes... 10 kilometers in 5

minutes!"

"FIVE MINUTES!" she announces triumphantly. "We'd get there in 5 minutes if we were going that fast!"

"Oh no," Cassie then says, her face falling as she looks at Caleb. "But five minutes is still a really long time for Caleb. He asks 'are we there yet' every single minute!"

Mum chuckles warmly. "Well, here's the thing. We're not actually going quite that fast today. We have traffic lights to stop at, and other cars sharing the road, and busy intersections where we need to slow down. Taking everything into account, we're probably traveling at about 1 kilometer per minute right now."

"So if we go 1 kilometer every minute..." Cassie starts counting again, but this time it's delightfully simple. "That's 10 minutes for 10 kilometers!"

"10 minutes!" both children exclaim together.



Cassie teaches Caleb to count to ten—that's how many minutes until they arrive!

Cassie turns to her brother with big-sister authority. "Caleb, listen very carefully. Don't ask

'are we there yet' for another 10 minutes, okay?
Count to ten really, really slowly, then count to ten again, and again, until you've done it ten times.
THEN you can ask!"

Caleb nods very seriously, understanding the importance of this mission. "Okay, Cassie. Ten minutes." He starts counting on his fingers, murmuring numbers under his breath with intense concentration.

Cassie looks out the window, watching the world slide past. Her mind is pleasantly full of new ideas about distance and time and speed, all fitting together like puzzle pieces. Who knew there was so much to think about just driving to the beach?

She thinks about skip counting, and the words flow out naturally:

*Ten trips to the park and back,
Keep our counting right on track!
Skip by twos to find the way—
Math helps us all day!*

Chapter 3: The Backward-Running Trees

Cassie settles into enjoying the view outside her window. Houses zoom by in a blur of colors—brick red, weatherboard white, painted blue. Shops flash past with bright awnings. A dog walker waves as they drive by, and Cassie waves back, even though they're gone in a blink.

Then Cassie notices something peculiar.

She watches the tall eucalyptus trees lining the road. They seem to be... **RUNNING!** Running backwards, away from her, as if fleeing from the car!



*The trees zoom backward like they're running away
from Cassie's car!*

But wait. That can't be right. Trees don't run!
Trees have roots—Mum explained that this
morning! Trees are anchored firmly in the ground.
Trees can't move from place to place!

And yet... watching them through the window... it really, truly LOOKS like the trees are traveling away from her, sliding backwards faster and faster until they disappear behind the car.

"That's so WEIRD," Cassie murmurs to herself.

She knows that SHE is the one traveling. She's sitting in the car, moving forward down the road. The trees are standing perfectly still, rooted deep in the earth. But her eyes are insisting on telling her a different story!

Have you ever noticed this? When you're in a car or a train, watch the things outside your window. Don't they seem to be moving, even though YOU'RE the one going somewhere?

"Mum," Cassie asks, fascinated by the mystery, "why does it FEEL like the trees are traveling away from me? I KNOW we're the ones moving. I know trees can't run! But it LOOKS like they're zooming backwards!"

Mum nods thoughtfully, always ready for Cassie's questions. "That's a wonderful observation, Cassie. What you're noticing is all about perspective—how we see movement depending on where we're watching from!"

"What do you mean?"

"Well, think about it. You, Caleb, and I are all traveling in this car together, right? We're all moving at the same speed, in the same direction."

"Right..."

"So when you look at me driving, do I seem to be moving?"

Cassie studies Mum in the driver's seat. Mum is sitting still, hands on the wheel, eyes on the road. She doesn't look like she's going anywhere relative to Cassie!

"No! You look completely still!"

"And Caleb? Is he zooming past you?"

Cassie looks at Caleb beside her, still counting seriously on his fingers. Nope. He's just sitting there, same as always.

"No, he's still too!"

"But to those trees outside—if they could see us—we would ALL be zooming past at 1 kilometer per minute! To the trees, we're the ones moving. But to US, looking at each other inside the car, nobody seems to be moving at all. We're all moving together, you see."

Cassie's brain does a somersault. "So... movement looks different depending on where you're watching from?"

"Exactly! And from where you're sitting, the car stays in the same place around you—but the trees are getting further and further away, left behind. So your eyes tell you the trees are moving backward,

even though your brain knows they're standing still!"

"Woah," Cassie breathes, her mind expanding with the idea. "That's like a brain puzzle, Mum!"

"It really is!" Caleb agrees, looking up from his counting with wide eyes.

The understanding settles over Cassie like a warm blanket, and she chants softly:

Motion's tricky to your eyes, Full
of fascinating surprise! What
seems still, what seems to race—
It all depends on your place!

Both children are tingling with excitement about everything they've learned today. They can't wait to tell their friends at school!

But Mum has a mischievous twinkle in her eye. "I have another puzzle for you. But this one needs to be done very carefully and only when I say it's safe. Are you ready to be scientists?"

"YES!" both children shout with enthusiasm.

"Okay. Cassie, you have your soft ball there on your lap, right?"

Cassie looks down. Her squishy rubber ball is sitting right next to her, waiting patiently.

"What do you think would happen if you tossed that ball straight up in the air, right now, while the car is moving forward? But remember—we only try this when I say it's completely safe, and you must keep your seatbelt fastened!"

Cassie picks up the ball and thinks hard, her forehead wrinkling in concentration. They're moving forward down the road. If she throws the ball up, and the car keeps moving forward... won't the car drive away from the ball? Won't the ball land... behind her?

"I think... it will land behind me?" she guesses carefully. "Because we'll keep driving forward while the ball goes up in the air?"

"Interesting prediction! That makes sense with what we know. Why don't you try it when I tell you it's safe, and see what really happens?"

They reach a quiet, straight stretch with no other cars around. "Okay, now you can try—but keep holding onto it loosely so it doesn't hit anything!"

Cassie holds the ball carefully in both hands. She tosses it gently straight up toward the ceiling of the car. Up it goes... she watches it rise, seeming to float for a moment at the top of its arc... then it

starts to fall back down...

PLOP! It lands right back in her lap!



*The ball drops right back into Cassie's lap—but
how?!*

"WHAT?!" Cassie is genuinely shocked. "How did it come back to ME? We're moving forward!"

Mum is grinning like she knows the best secret in the world. "Aha! Here's the mystery to solve. Think about this: before you threw the ball, where was it?"

"In my lap."

"And were you moving?"

"Yes, in the car."

"So was the ball ALSO moving?"

Cassie's eyes widen as understanding begins to dawn like the sun rising. "The ball was moving forward too! Even though it was just sitting in my lap, it was actually traveling with us!"

"YES! The ball was already traveling at the same speed as you and the car—1 kilometer per minute, just like us. When you tossed it up, the ball

didn't just go UP—it also kept going FORWARD at the same speed it was already going. It never stopped its forward movement!"

Cassie stares at the ball in her hands with newfound wonder. "So even though it felt like the ball was just sitting still in my lap... it was actually zooming forward the whole time at 1 kilometer per minute?"

"Exactly! The ball went up and down through the air, but it ALSO kept moving forward with you at exactly the same speed. That's why it landed right back in your lap—you and the ball were moving forward together!"

"So the ball had MY speed!" Cassie exclaims, delighted. "It borrowed my motion!"

"You've got it perfectly!"

Caleb is bouncing with excitement, straining against his seatbelt. "Me understand!"

"I have an even better experiment," Mum says, her voice full of scientific mischief. "What do you think would happen if I SLOWED DOWN the car right after you threw the ball up? But we'll only do this at the next stop sign where it's completely safe."

Cassie thinks very hard, her brain working through the problem like a detective solving a mystery. If she throws the ball, it has her speed—1 kilometer per minute. If Mum slows down, then she and the car will be going slower—maybe half a kilometer per minute. But the ball will still have the faster speed!

"The ball would keep going faster than us! It would go further forward and land... in FRONT of me!"

"Brilliant reasoning! Shall we test your hypothesis at the next stop sign?"

They approach a stop sign, and Mum prepares for the experiment. "Ready, Cassie? I'll tell you when to throw gently, then I'll softly brake. Remember, hold it loosely!"

"Ready!"

"Now—gentle toss!"

Cassie throws the ball straight up with a soft, controlled toss—and Mum gently presses the brake pedal. The car slows down smoothly.

The ball rises up, still moving forward quickly... and comes down—PLOP!—landing near Caleb's feet, well in front of where Cassie is sitting!

"It worked! It went forward!" Cassie squeals with delight, clapping her hands.

Caleb picks up the ball and hands it back to his sister, giggling at the magical trick.

"Now," Mum says, "I bet you can figure this one out without even testing it. What would happen if I SPED UP after you threw the ball?"

Cassie doesn't even hesitate. The answer is clear as glass in her mind. "Then WE would be going faster than the ball! The car would move ahead, and the ball would fall BEHIND me!"

"Want to test that prediction when it's safe?"

They wait for a safe, clear stretch of road with no other cars nearby. Cassie gets ready, holding the ball up.

"And... gentle toss now!" Mum says.

Cassie throws the ball straight up with a careful, soft toss, and Mum gently presses the accelerator. The car picks up a little speed smoothly.

Up goes the ball, still moving at its original speed... down it comes—PLOP!—landing behind Cassie, near the back window!

"I KNEW it! I knew it!" Cassie cheers, pumping her fists in the air. "I can predict what happens now!"

They all burst into giggles, the car filling with joyful laughter. Caleb claps his hands, thoroughly entertained. This is the absolute best car ride EVER!

"Woah, Mum," Cassie says when she catches her breath, her cheeks pink with excitement. "This is SO super cool! Why didn't you tell us about this before?"

Mum's eyes crinkle with warmth as she glances back in the mirror. "Well, I'm telling you now! And here's the most important thing, Cassie—you keep asking questions. You keep thinking carefully. You keep putting on your curious cap and really looking at the world around you. When you do that, you'll discover amazing things everywhere you look, every single day."

"I promise, Mum. I'll always stay curious!"

Cassie's heart feels so full, she has to let the feeling out in words:

Questions bloom like flowers
bright, Answers shine like
morning light! Every wonder that
we see Shows us how the world
can be!

At that very moment, Caleb shouts: "I SEE THE BEACH! I SEE THE WATER!"

Sure enough, through the windshield, they can see the sparkling blue of Cronulla Beach stretching out ahead of them. White waves are rolling onto

golden sand, one after another in an endless rhythm. Seagulls wheel and circle in the bright blue sky, their calls drifting on the breeze.

They've arrived!



We're here!" shouts Caleb as the sparkling beach spreads out before them.

As Mum pulls into the parking lot and finds a spot under the shade of a Norfolk pine, she turns around to face both children, her expression tender and thoughtful.

"Before we run onto that beautiful beach," she says softly, "I want to tell you about someone very special. Someone who was just like you, Cassie—someone who stayed curious about everything and never stopped asking why."

Cassie and Caleb lean forward eagerly, all ears.

"His name was Isaac Newton. He lived a long, long time ago—hundreds of years ago—in a country called England, far across the ocean. And when he was young, he asked questions about EVERYTHING, just like you do, Cassie."

"What kind of questions?" Cassie asks, already fascinated.

"Well, everyone had noticed things falling to the ground since the beginning of time—apples tumbling from trees, rain falling from clouds. But Isaac Newton was the one who got deeply CURIOUS about it. He asked WHY things fall. He wondered what invisible force was pulling them

down. And he kept thinking and thinking, day after day, until he figured out the answer—gravity!"

"Gravity!" Cassie exclaims, remembering her jumping experiments. "Like we learned this morning with the bunny hops!"

"Exactly! Newton discovered and explained what gravity is and how it works. And everyone had noticed that when you travel, things LOOK like they're moving even when they're standing still—like those trees running backward. But Isaac Newton studied and explained WHY we see it that way, how our perspective changes what we observe."

"Like the trees looking like they were running backwards when really WE were moving forward!"

"Precisely! And the experiment with the ball—Newton figured out those rules too. He discovered that things that are moving want to KEEP moving at the same speed and in the same

direction unless something changes that. That's why the ball kept its forward motion even while going up and down!"

Cassie feels a warm glow spreading through her chest, like sunshine filling her up from the inside. She was thinking about the same things that a famous scientist thought about!

"Mum," she asks quietly, "was Newton super duper smart? Smarter than everyone else?"

"He WAS very intelligent. But do you know what his real secret was? What made him discover all these amazing things?"

Cassie shakes her head, curious.

"He once said something very important: 'If others would think as hard as I did, then they would get similar results.' Do you understand what that means?"

Cassie thinks carefully. "It means... his secret wasn't just being clever. It was TRYING hard. Thinking hard. Not giving up!"

"Yes! His secret was persistence and curiosity. He kept asking questions and wouldn't stop until he found answers. And you know what else?" Mum's eyes sparkle. "One of the greatest scientists who ever lived—Albert Einstein, who figured out amazing things about time and space—once said: 'I have no special talent. I am only passionately curious.'"

"Passionately curious," Cassie repeats softly, loving how the words sound together. "That means REALLY curious. Like when you're so curious about something you can't stop thinking about it."

"That's exactly right. And that's what you are, Cassie. And you too, Caleb! You both ask wonderful questions and really think about the answers. Never, ever stop doing that, okay? That's how you discover the secrets of the universe!"

"Okay, Mum!" both children chorus, their voices bright with promise.

"That's very inspiring, Mum. Thanks for telling us!" Cassie says, unbuckling her seatbelt with determination. Her heart is full to bursting—full of excitement for the beach, for science, for asking questions, for all the mysteries she hasn't even imagined yet!

The adventure is only beginning.

Chapter 4: Push and Push-Back!

The car doors fly open and Cassie and Caleb tumble out onto the warm pavement of the parking lot. The smell hits them first—salty air mixed with seaweed and sunshine. Then the sound—waves crashing in their endless rhythm, seagulls crying overhead. Everything calls to them: Come! Play! Explore!

"BEACH!" Caleb shouts with pure joy, toddling toward the sand as fast as his little legs can carry him, his arms pumping with determination.

Cassie runs after him, her bare feet hitting the sand. It's warm from the sun! The grains squish and slide between her toes, each step sinking slightly. She runs toward the water, feeling the sand change from dry and soft under her feet to wet and firm

near the waves.



Racing to the waves—the beach is the BEST place ever!

SPLASH! A wave rushes up and tickles her ankles with cool, foamy water. Cassie laughs with

delight, the sound mixing with the seagulls' cries!

She looks around, spinning in a circle. The beach is ENORMOUS! The sky is so big and blue it seems to go on forever! Everything feels open and free and absolutely wonderful!

Mum catches up with them, carrying a big striped beach bag full of towels and snacks and sunscreen. "Shall we set up our spot and build the most magnificent sandcastle this beach has ever seen?"

"YES!" both children agree enthusiastically.

They find the perfect spot—not too close to the water where the waves might reach, not too far away from all the fun. Mum spreads out a big colorful blanket, anchoring the corners with their shoes so the breeze won't blow it away. Cassie and Caleb get to work immediately.

Cassie scoops up wet, heavy sand and starts piling it into a mound, patting it down to make it firm. She pats it again, feeling the sand press back against her hands.

Wait.

Feeling the sand PRESS BACK?

Cassie pauses mid-pat. She pushes down on the sand with her whole palm, paying close attention. The sand pushes UP against her palm! She can feel it resisting, pushing back!

She presses harder. The sand presses harder too!

"Mum!" she calls out excitedly. "I'm pushing DOWN on the sand... but I can feel it pushing UP on me! Why is it doing that?"



The sand pushes her back. She fustles back.

Cassie feels the sand pushing back against her hand!

Mum comes over, her face lighting up with delight. "You've discovered something else that Newton figured out! He noticed that whenever you push on something, it pushes you right back—always, every single time!"

"Everything pushes back?"

"Everything! Try this—push against the sand with your hand. Feel how it pushes back? That's why your hand doesn't just sink right through to the bottom! Now try pushing the side of the sandcastle."

Cassie pushes the side of their growing sand mound. She can feel the resistance—the sand pushing her hand away just as hard as she's pushing the sand!

"I feel it! The sand is pushing me back with the same force!"

"Newton called this the Third Law of Motion: for every action, there's an equal and opposite reaction. When you push the sand, the sand pushes you back with equal force. When you push the ground with your feet to walk, the ground pushes you forward! That's actually **HOW** you walk—by pushing backward on the ground so it will push you

forward!"

Caleb is splashing in a shallow pool of water nearby, left behind by the tide. Each time he slaps the water with his hand, it splashes back at him, droplets flying everywhere!

"Look, Caleb is discovering it too!" Cassie points, delighted. "He pushes the water, and the water splashes him back!"

Caleb giggles, absolutely enchanted by the splashing. "Water pushes me! Water pushes me!" He slaps it again and again, conducting a very wet, very fun experiment.

Cassie finds herself chanting the rhythm of Newton's law:

Push the water, splash comes
back—Every action makes a
track! Push the sand, it pushes
too—Newton's law in all we do!

Cassie goes back to building with new appreciation for every movement. Every pat of the sand, every scoop with her hands—she can feel Newton's Third Law at work! The sand always pushes back, helping her shape it, helping her build.

They work together, the whole family building. The sandcastle grows taller and wider. Towers rise up with shells decorating their tops—pink ones, white ones, spiraled ones. Caleb digs a moat around the castle, and every time his plastic shovel hits the

sand, he feels the sand pushing back against the shovel.

"We have to push the shovel down, and the sand pushes the shovel back up!" Caleb announces proudly. He's learned so much today, and he's only three!

After the castle is finished—their very best creation ever, with four towers and a bridge and a flag made from a seagull feather—they run to the water to splash and swim and play. Cassie floats on her back, looking up at the endless blue sky. She thinks about gravity, gently pulling her down toward the Earth. She thinks about the water pushing up against her, keeping her floating.



*Cassie floats peacefully, feeling the water hold her up
like a gentle hug.*

Everything is connected! Everything follows
rules! Everything has a reason!

"Mum," she calls from the water, "when I float, is that pushes too? The water pushing me up?"

"Yes! The water pushes up on you—we call that buoyancy. And gravity pulls down on you. When those forces balance out, you float!"

Cassie grins and flips over to swim, feeling the water push against her hands as she pulls it back, propelling herself forward. Push and push-back, everywhere!

They splash and play, building more castles, digging deeper holes, running through the shallow waves. The sun warms their skin, the water cools them down, and laughter fills the air. Every movement, every interaction follows Newton's laws—even when they're just having fun!

Chapter 5: The Hidden Rainbow

Later, as the afternoon sun starts to sink lower in the sky, turning from bright yellow to soft gold, something magical happens.

The waves crash and send up a fine mist of spray, tiny droplets caught in the air. The sunlight catches the mist at exactly the right angle, and suddenly—

"MUM! CASSIE! LOOK!" Caleb points with his sandy finger, jumping up and down with excitement.



Look! A rainbow!" Caleb shouts, pointing at the magical colors over the waves.

A RAINBOW! Arching over the ocean like a bridge of light, glowing with colors—red, orange, yellow, green, blue, and violet, each band distinct and beautiful!

They all stand together at the water's edge, gazing in wonder at the luminous arc.

"It's so pretty," Cassie whispers, not wanting to break the spell. "Where do all those colors come from? Is the rainbow real?"

Mum puts an arm around each child, pulling them close. "The rainbow is absolutely real—it's light! And this is another one of Newton's amazing discoveries. He found out that white sunlight—the light that looks like it has no color at all—is actually made of ALL the colors of the rainbow mixed together!"

"All of them? Hiding inside?"

"All of them! Red, orange, yellow, green, blue, violet—all hiding inside what looks like plain white light. When sunlight passes through tiny water droplets, like in that ocean mist, the water acts like a prism. It separates the light into all its hidden colors, spreading them out so we can see

them. That's how we get a rainbow!"

Cassie stares at the rainbow in absolute wonder. "So the colors were hiding in the sunshine the WHOLE time? All day long, while we were playing? And we just couldn't see them until the water showed us?"

"Until the water droplets revealed the secret! Newton figured this out using a special piece of glass called a prism—a triangular piece of glass. He shined white light through it and saw a rainbow of colors come out the other side. People had seen rainbows for thousands and thousands of years, but Newton was the first person to understand WHY they happen and what they really are!"

The words bubble up naturally from Cassie's heart:

White light holds a secret
bright—
Colors hidden, out of sight!
Water drops can show what's
true:
Red and yellow, green and blue!

Cassie thinks about all the incredible things she's learned today, counting them in her mind like treasures collected:

Gravity—why things fall down and how the Earth hugs everything close.
Movement—why some things can move and others stay rooted.
The Walking Palm—nature's clever way of taking

very, very slow steps.

Speed and distance—measuring how far and how fast.

Relative motion—why things look like they're moving when they're not.

The ball experiments—how moving things keep their motion.

Push and push-back—Newton's Third Law in action everywhere.

And now, the hidden rainbow—light's secret colors revealed!

All of these mysteries were unraveled by curious people who never stopped asking questions. Scientists from many different countries and cultures have studied light, motion, and forces throughout history—from ancient scholars in the Middle East to brilliant thinkers in Asia and Europe. Newton built upon the work of many who came before him, and others have continued his discoveries since. Science is like a conversation across time and place, with curious minds everywhere contributing pieces to the puzzle!

"Mum," Cassie says quietly, slipping her sandy hand into her mother's, "I want to be like Isaac Newton. I want to keep asking why about everything. I want to discover the secrets hidden in the world!"



Mum hugs Cassie tight as the young scientist shares her rainbow dreams.

Mum hugs her tight, and Cassie can feel her mother's heart beating. "You already are discovering them, sweetheart. Every question you ask is a step on your own journey of discovery.

Every time you wonder why, you're thinking like a scientist! And remember—great discoveries come from curious people everywhere, from every culture and background. Your questions matter, and your curiosity will lead you to amazing places."

The rainbow begins to fade as the mist settles and the angle of light changes. But the wonder stays, glowing warm inside Cassie's heart like a candle that will never go out.

The sun is setting now, painting the sky in oranges and pinks and purples—nature's own kind of rainbow spread across the horizon! The family gathers their things, shaking sand out of towels (and feeling it push back, of course!), collecting their special shells to take home as treasures and memories.

As they walk back across the beach toward the parking lot, leaving footprints in the sand, Cassie takes Caleb's hand. They're both tired from all the playing, their legs heavy and their skin warm from

the sun, but their minds are full—absolutely full—of new ideas and understanding.

Cassie adjusts her curious cap—her invisible, imaginary cap that she wears in her heart, the one that reminds her to always wonder, always ask, always explore the mysteries around her.

She starts to sing, and Caleb joins in with his sweet, off-key voice:

Let's go marching up and down,
Let's go moving all around!
Let's make some sandy towers,
Let's all scamper at this hour!

Newton watched and wondered
why,
Asked his questions to the sky!
He kept thinking, never quit—
We're asking questions just like
it!

I am marching up and down,
I am moving all around!
Gravity brings me to the ground,
And wonder is all around!



*After a day of wonders, Cassie and Caleb head home
with happy, tired hearts.*

As they drive home under the first evening
stars—those distant suns sending their light across

unimaginable distances—Cassie looks out the window. This time, she watches the trees "run" backwards with a knowing smile. She understands why it looks that way now. She's figured out the mystery.

She thinks about the Walking Palm, slowly, slowly chasing the sunshine across the forest floor.

She thinks about gravity, the Earth's gentle, invisible hug that keeps everything together.

She thinks about her ball, flying up and falling back down while still moving forward with her.

She thinks about push and push-back in everything she touches.

She thinks about the rainbow, hiding in the sunlight all along.

So many wonders discovered in one day! And tomorrow, there will be more questions waiting.

More curiosity to follow. More discoveries hiding in plain sight, just waiting to be found by someone curious enough to ask why.

Just like Isaac Newton, just like Albert Einstein, just like curious minds everywhere throughout history and across the world, Cassie knows the secret now:

Stay curious,
Think hard,
Never stop asking WHY.

And with that thought glowing in her heart like the stars beginning to appear overhead, Curious Cassie smiles and closes her eyes, dreaming of all the questions tomorrow will bring.

THE END

"If others would think as hard as I did, then they would get similar results."

— Isaac Newton

"I have no special talent. I am only passionately curious."

— Albert Einstein

Scientific Concepts Explored:

Discussion Questions:

Safety Note: The car experiments described in this story should only be conducted under adult supervision, with the vehicle at safe speeds on appropriate roads, with all passengers properly secured in seatbelts or car seats. Use only soft, lightweight objects that cannot cause injury or distract the driver.

Extend the Learning:

About the Author

Suneeta Mall is a passionate storyteller who believes that the best way to learn is through curiosity and wonder. With a deep appreciation for science and nature, Suneeta creates stories that inspire young minds to ask questions, explore the world around them, and discover the joy of learning.

Through engaging characters and exciting adventures, Suneeta's tales transform complex concepts into accessible and delightful experiences for children. Her work encourages families to explore science together, turning everyday moments into opportunities for discovery.

This story has been enhanced and expanded using FableFlow, a collaborative storytelling platform designed to bring educational narratives to life with rich illustrations and interactive elements that spark imagination and learning.

When not writing, Suneeta enjoys exploring beaches, watching rainbows after storms, and answering the wonderful "why" questions that curious children ask.

Index

Adventure 1, 3, 7

Backyard 1, 2

Beach 5, 8, 12

Cassie (main character) 1, 2, 4, 6, 8, 10, 12

Curiosity 1, 3, 9, 15

Discovery 2, 7, 11, 14

Falling objects 1, 4

Isaac Newton Title page, 3, 13

Learning 2, 6, 10, 15

Motion 1, 5, 8

Nature 1, 3, 7, 9

Questions 1, 2, 4, 6

Rainbows 1, 11

Raindrops 1, 9

Sandcastle 1

Sandpit 1, 2

Science 3, 8, 12, 14

Spider webs 1

Trees 1, 7

Wonder 2, 5, 13, 15

Acknowledgments

This book is dedicated to every curious child who has ever asked "Why?" and "How?" Your questions are the seeds from which all discoveries grow. Never stop wondering, never stop exploring, and never stop believing that you can understand the beautiful world around you.

Special thanks to Suneeta Mall, whose original vision and storytelling magic brought Cassie's adventure to life. Your dedication to making science accessible and exciting for young learners shines through every page.

To the educators and parents who read this book with children—thank you for nurturing curiosity and encouraging questions. You are the guides who help young minds discover that learning is not just about finding answers, but about enjoying the journey of exploration.

To the scientists and thinkers throughout history, especially Isaac Newton, whose curiosity about falling apples and dancing light transformed our understanding of the universe—thank you for showing us that wonder and rigorous thinking go hand in hand.

And finally, to every beach, backyard, raindrop, and rainbow—thank you for being the natural classroom where children learn that the world is full of magic waiting to be understood.

May this book inspire a lifetime of curious questions and joyful discoveries!

Join Cassie and her little brother Caleb on an exciting trip to the beach where ordinary things become extraordinary discoveries! You'll hop like a bunny to feel gravity, toss balls in a moving car, and find out why trees look like they're running backward. Best of all, you'll learn how asking questions—just like the famous scientist Isaac Newton—can help you understand the amazing world around you!

FableFlow Publishing
Sydney, Australia

ISBN 978-0-6456963-2-5



©2018 FableFlow Publishing

Fable Flow
Where Stories Come to Life