



Camping at the mountain

10-11



Camping at the mountain

Topic: Science - Chemistry

Level: Primary education (10-11 years old)

Concepts: Matter - states of matter - matter properties - water cycle

Time required: +/- 25 min

Summary of the activity: Three friends discover the mountains and their landscapes with Sam, the coordinator. They intend to use their birthday present in this new adventure, and you join them in their journey.

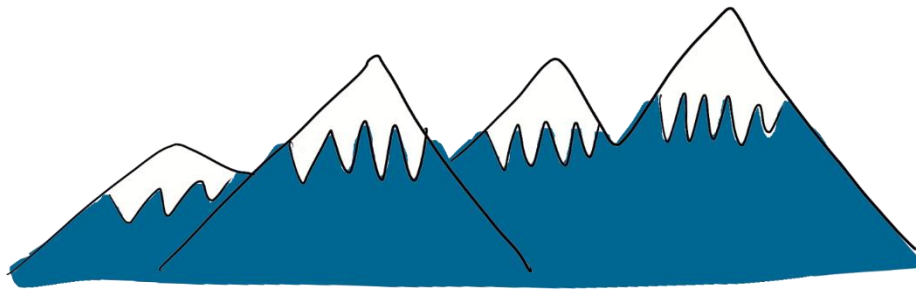
Material needed: Paper, pencil

Paths/mechanisms summary: Order of narrative paths to be chosen by the reader (kids' favourite object; the forest/the river).

Exercise mechanisms: Instructions given in the exercise; "check your answers" paragraph; hints given if incorrect answer, then try the exercise again or continue the story.

Introduction

In winter, three friends decide to go to the mountain for their holiday camp. With Sam, a coordinator who is very familiar with the mountains, they will discover this new place they have never been before, and they each have a dream to fulfil. Help them by answering the exercises and questions.



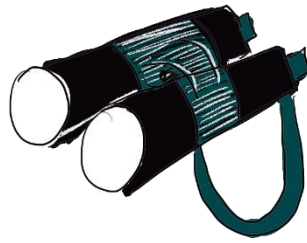
To start playing, just read the first paragraph and see where it leads you.

1

The older Mélanie, Adam and Léa get, the more inseparable they become. The three best friends have never left each other since childhood. They have always lived in the same town, on the same street, always gone to the same school and all three were born at the end of the year! These three have completely different interests: birds and insects for Adam, space for Mélanie, manual activities for Léa. However, when it comes to going on an adventure, it's always together, whatever the destination!

 **Go to paragraph 8** to see where they want to go.

2



"Wait, I'll use my binoculars to check," says Adam, courageously.

He opens his bag and pulls out his magnificent binoculars.

He points it at the dark bear-like mass, adjusts the focus, and what he sees leaves him speechless.

"Aren't bears supposed to be hibernating?" asks Léa.

"Yes, they are!" says Mélanie.

➡➡➡ → **Go to paragraph 22.**

3

Mélanie says, "Are you sure Adam? Remember, liquid matters flow and take the shape of the container, solid matters have their own shape and can be held, and gaseous matters have no shape and will spread out. Have a look again!"

- Back to the exercise to try again before continuing

↪ → **Go back to paragraph 18.**

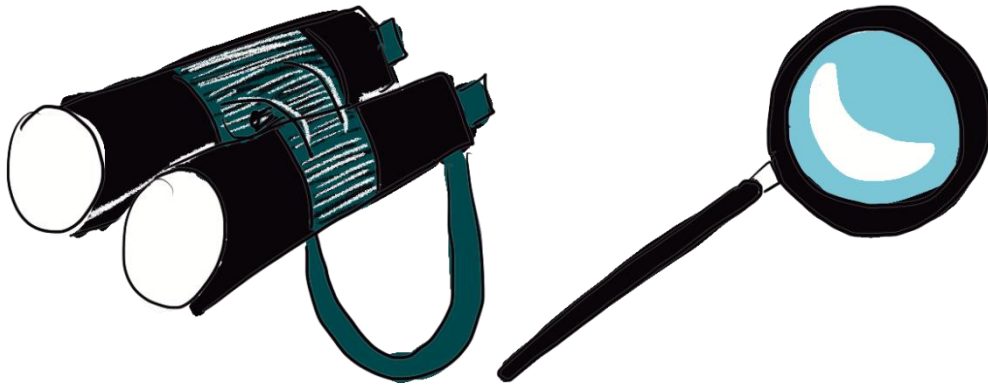
- Or continue

↪ → **Go to paragraph 19.**

4

Know more about Adam's favourite object.

He can't wait to use his gifts in the mountains and make many beautiful discoveries, after having identified all the animals and plants he had seen around his home.



- Know more about Léa's favourite object
➤➤➤ ➔ **Go to paragraph 13.**
- Or learn more about Mélanie's favourite object
➤➤➤ ➔ **Go to paragraph 7.**
- Or discover what happens next
➤➤➤ ➔ **Go to paragraph 15.**
- Or go back to "The three friends" paragraph.
➤➤➤ ➔ **Go back to paragraph 8.**

5

“We won! shout the kids, we won!”

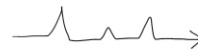
“Congratulations guys! says Sam, your boat is very fast! Since you won, I will share my marshmallows with you tonight in front of the fire!”

“Yeahhh!”

The three friends celebrate again and almost fall in the river!

“Let's go somewhere else before you get all wet!” says Sam.

- Go to the forest (if you haven't been already)



Go to paragraph 20.

- Continue the story (if you visited both places)



Go to paragraph 36.

6

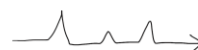
“That's disgusting, says Léa, all those things should not be there!”

“You're right Léa, says Sam. Don't get too close. I'll call the town hall to tell them it's here and that it has to be cleaned when we will be at the camp.”

“I hope they will find who did this!” says Mélanie.

“I hope we will see a real bear!” says Adam.

“It is safer to stay away from a bear anyway, you know Adam? Sam says. But if we can't find a bear, I'm sure we will find other spectacular things! Let's continue.”

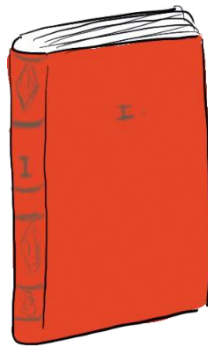


Go to paragraph 24.

7

Know more about Mélanie's favourite object

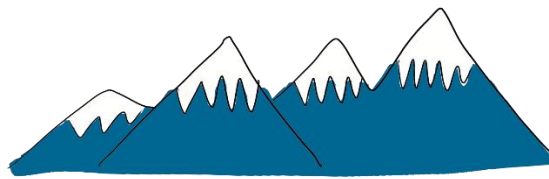
Mélanie loves reading and learning new things. Her friends immediately thought of a book when her 10th birthday approached. They chose a nice book about the universe and the stars that they offered her with the help of her parents. Mélanie knows that she will have better luck observing the stars in the mountains, where there will be less light than in the city.



- Know more about Adam's favourite object
➤➤➤ ➔ **Go to paragraph 4.**
- Or learn more about Léa's favourite object
➤➤➤ ➔ **Go to paragraph 13.**
- Or discover what happens next
➤➤➤ ➔ **Go to paragraph 15.**
- Or go back to "The three friends" paragraph.
➤➤➤ ➔ **Go to paragraph 8.**

8

The three friends have been thinking for a long time about where they want to go for their holiday camp this year. They have already been to the beach; they also did pony rides and camping... This winter, they want a new challenge: to discover the mountains and the snow. Mélanie, Adam, and Léa are going there with Sam, a coordinator for whom the mountains, their mysteries and their dangers hold no secrets! Each of the children has taken care to pack their bag and bring their favourite objects with them.



Choose between those 3 paths:

- Know more about Adam's favourite object

 **Go to paragraph 4.**

- Know more about Léa's favourite object

 **Go to paragraph 13.**

- Know more about Mélanie's favourite object

 **Go to paragraph 7.**



9

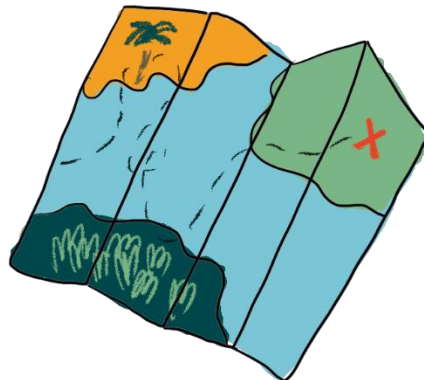
“I know a lot, but you too guys! says Sam. I am sure you will teach me something I don't know yet during our first walk!”

“Yeahhhh!” shout the three friends, excited to discover the mountain.

“Which way do you want to go first? Would you like to and see the forest a little bit farther on our left, or to go and see the river a little higher up there? Sam asks. We will do both anyway!”

You can decide which way Adam, Léa, Mélanie, and Sam will go first! If you can't or don't want to choose, look at a clock around you. If the number of minutes is odd, you start with the forest, if it's even, you start with the river!

- Forest  **Go to paragraph 20.**
- River  **Go to paragraph 41.**



10

“You get it now? Sam asks. This drop and the lake do not behave the same because particles of which solid, liquid, and gaseous matters are made of do not behave the same!”

“Yes, I see, I did well to bring my magnifying glass, otherwise I would have found it hard to understand!” replies Adam.

The three friends shared the magnifying glass to observe the drops of water that fell to the ground.

After a few minutes, Sam asks, “Great! What do we do now?”

- Go to the river (if you haven't been already)



Go to paragraph 41.

- Continue the story (if you visited both places)

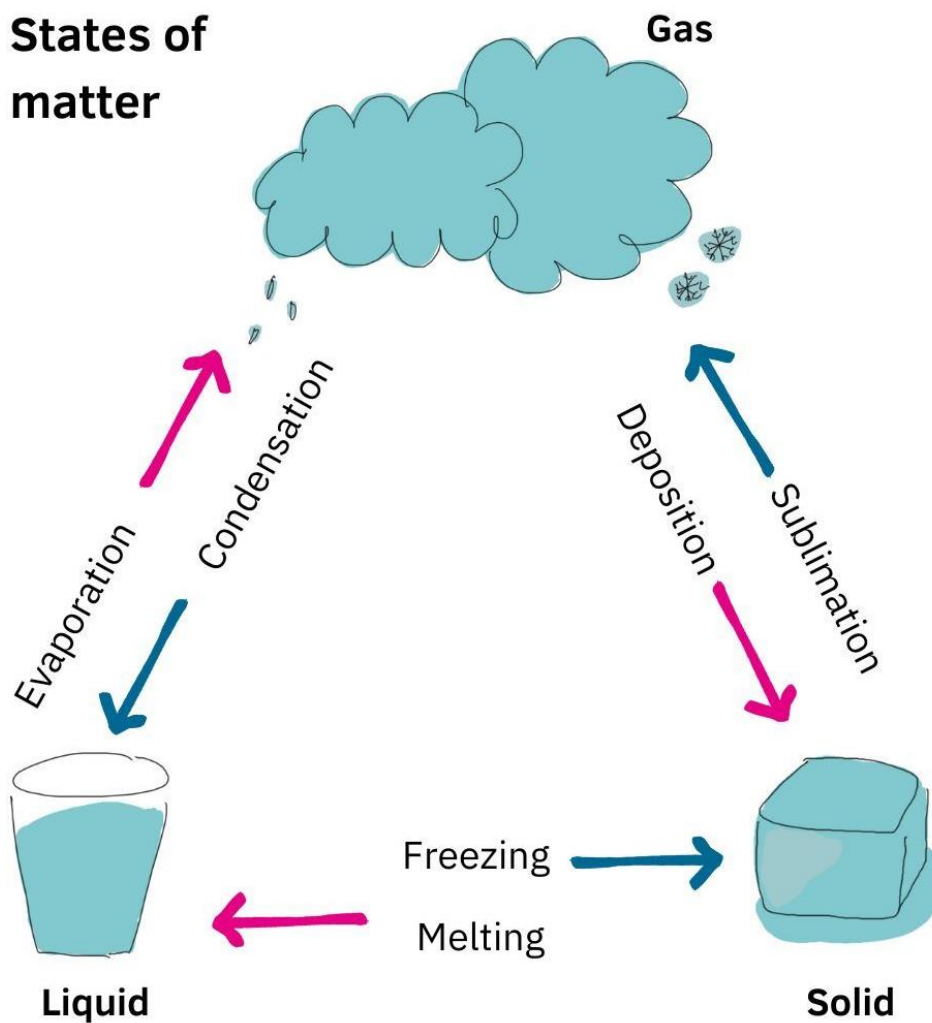


Go to paragraph 36.

11

Don't let your brain get to the boiling point!

Try to remember this image:



- Back to the exercise to try again before continuing

 **Go to paragraph 50.**

- Or continue

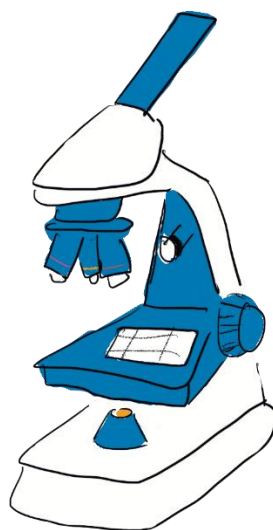
 **Go to paragraph 47.**

12

Lots of plastic bag:	solid	/	gaseous
Oil dripping from a car engine:	solid	/	liquid
Content of a deodorant spray:	liquid	/	gaseous
Strange green puddles:	gaseous	/	liquid
Smoke coming out of a cigarette:	solid	/	gaseous
Broken glass bottles:	liquid	/	solid

 If you chose those answers  **Go to paragraph 6.**

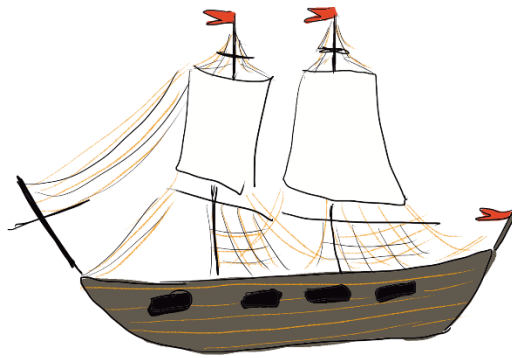
 If you did not choose those answers  **Go to paragraph 17.**



13

Know more about Léa's favourite object

Léa always needs to keep herself busy. She is so good with her hands that it took her less than 10 minutes to build the kit boat she received for her birthday! With the help of Mélanie and Adam, she decorated it but could not find a name for it yet. And around her home, there is no river on which she could sail her little ship.



- Know more about Adam's favourite object



Go to paragraph 4.

- Or learn more about Mélanie's favourite object



Go to paragraph 7.

- Or discover what happens next



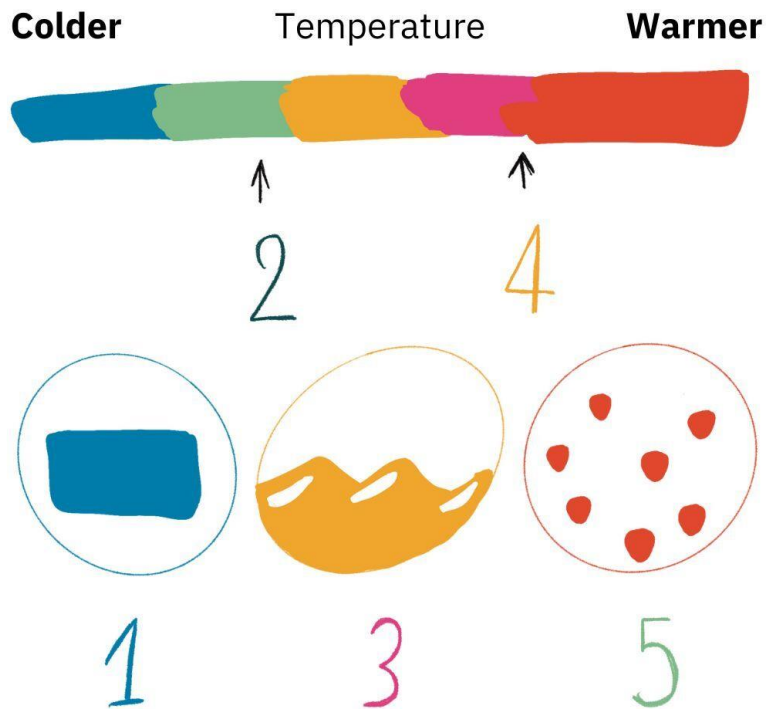
Go to paragraph 15.

- Or go back to "The three friends" paragraph




Go to paragraph 8.

14



- 1: Solid
- 2: Freezing point
- 3: Liquid
- 4: Boiling point
- 5: Gaseous

+ If you put the answers in this order  Go to paragraph 52.

 If you put the answers in another order  Go to paragraph 34.

15

After a long train journey, the three friends finally see the base of the mountain. When they arrive at the camp, they settle into the chalet and unpack their things. Léa exclaims, "There's water everywhere! How is it possible?" She follows the water trails on the floor and gets to their coat, specifically Adam's coat.

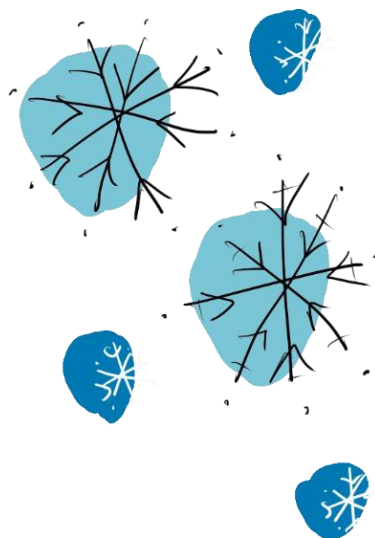
"Adam... what did you put in your pockets to get it all wet?" Léa asks.

"A snowball! I wanted to have a snowball fight with it and take it home as a souvenir..." replies Adam.

"But Adam, your ball will melt, it won't stay like that, it's water," says Mélanie.

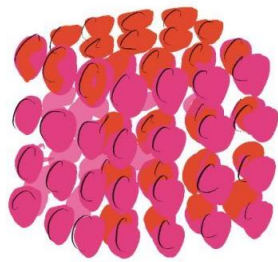
"What do you mean?" Adam asks.

 **Go to paragraph 18.**



16

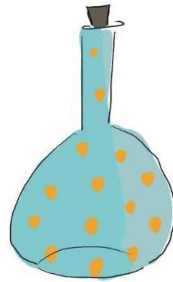
It looks like you skate on thin ice! Look at this image, it will help you find the correct answers.



Solid



Liquid



Gas

- Back to the exercise to try again before continuing



Go to paragraph 35.

- Or continue



Go to paragraph 10.

17

“I think the binoculars are not on focus! Remember, liquid matters flow and take the shape of the container, solid matters have their own shape and can be held, and gaseous matters have no shape and will spread out. Have a look again!”

- Back to the exercise to try again before continuing

 **Go to paragraph 25.**

- Or continue

 **Go to paragraph 6.**

18

Exercise: Help Adam understand the different states of matter.

It is generally said that there are three states of matter: **solid, liquid, gaseous.**

Can you select the right state of matter for each element?

Ice cubes	
Snow melting	
Rain	
Steam on windows	
Icebergs	
Water vapor	

 **Go to paragraph 21** to check your answer.


19

"Oh, I see now," says Adam. I'd better think of another souvenir idea to bring home."

While Mélanie and Adam were talking, Léa went outside to make snowballs, very determined to have a snowball fight.

"Mélanie, Adam, come and see outside!" she shouts.

As soon as their heads were out the door, Mélanie and Adam were hit with a huge snowball. Of course, they do not wait long to do the same!

Continue the snowball fight  **Go to paragraph 28.**

20

Forest path



"Let's go to the forest!" says Sam.

"This is the perfect occasion to use your binoculars and your magnifying glass Adam!" says Léa.

"Yes, I put them in my bag in case we see mountain birds or their nest, or small insects looking for food before it's too cold."

"Look! A bear!" shouts Mélanie.

"Are you sure this is a bear?" says Sam, smiling.

- Continue to see the bear  **Go to paragraph 2.**
- Or back to choose the other path  **Go to paragraph 9.**

21

Ice cubes	Solid
Snow melting	Liquid
Rain	Liquid
Steam on windows	Gaseous
Icebergs	Solid
Water vapor	Gaseous



If you put answers in this order



Go to paragraph 19.



If you put answers in any other order



Go to paragraph 3.

22

Sam, convinced that there is no danger, suggests they approach together.

“It’s not a bear, it’s a giant pile of trash!” says Mélanie.

Indeed, the children and Sam are standing in front of a mount of rubbish that, from a distance, looked like a bear.

“There are so many things left here, it’s difficult to recognise them all,” says Léa.



Go to paragraph 25.

23

S	Is often invisible
L	Can be cut or shaped
A	Is not easy to hold
E	Does not flow
M	Does flow
A	Can be held easily

+ If you found out that Léa was the winner

➡➡➡ Go to paragraph 5.

👉 If you did not find that Léa was the winner

➡➡➡ Go to paragraph 30.



24

Léa Adam Mélanie and Sam walk deeper into the forest. The four adventurers try not to make too much noise, as they are walking on a thin layer of snow. The children hear lots of new sounds that they have never heard before!

“How lovely are these lines of light going through the trees, says Mélanie. Sam, do you think we'll be able to see the stars?”

“It's too early! But we'll try to see them during the week, I promise,” Sam replies.

“Let's see these white trees next to the frozen lake, they look giant!” says Adam.

Continue the walk  **Go to paragraph 29.**



25

Exercise: Help the children identify the different elements left in the forest by people

Select the correct word for each sentence.

Lots of plastic bag: **solid** / **gaseous**

Oil dripping from a car engine: **solid** / **liquid**

Content of a deodorant spray: **liquid** / **gaseous**

Strange green puddles: **gaseous** / **liquid**

Smoke coming out of a cigarette: **solid** / **gaseous**

Broken glass bottles: **liquid** / **solid**

 **Go to paragraph 12** to check your answers.

26

While the children were celebrating, Sam made a little boat out of a walnut shell and a small stick he found on the ground, a piece of fabric and some yarn he carried in his bag.

"Here is my boat," he says with a smile.

The friends place their boats, wishing both of them good luck.

"Are you ready?" Sam asks.

All 4 start the countdown: "5...4...3...2...1...Go!!"

 **Go to paragraph 33.**

27

When water is heated and starts to make bubbles, it's **boiling**.

When snow is heated and starts to turn liquid, it's **melting**.

When water vapour cools down and lands on Adam's magnifying glass, it's **condensing**.

When water cools down and becomes ice, it's **freezing**.

 If your answers are in the same order  **Go to paragraph 47.**

 If your answers are not in the same order  **Go to paragraph 11.**

28

“Oh my, it's much colder than at home! I feel like my blood is freezing,” says Léa, with snow on her nose.

“Impossible! If it was frozen, it wouldn't be able to flow in your veins!” Mélanie retorts.

“Really? Why?” Léa asks.

“Because it would become a solid matter! To flow in your veins, your blood needs to be liquid,” says Mélanie.

 **Go to paragraph 31.**

29

Adam is delighted. Even though he hasn't seen a bear, he discovers many things in this new landscape.

Taking a closer look at these trees, he realises that they are not white, but covered with snow.

Suddenly, a drop of cold water falls on his nose.

“It's the snow that's melting,” he exclaims, as the drop goes down his cheek. I wonder how this drop can move like that on my face but the ice on the frozen lake can't. What if I looked at this drop with my magnifying glass?”

 **Go to paragraph 35.**

30

The race is intense. It is not yet clear who will win!

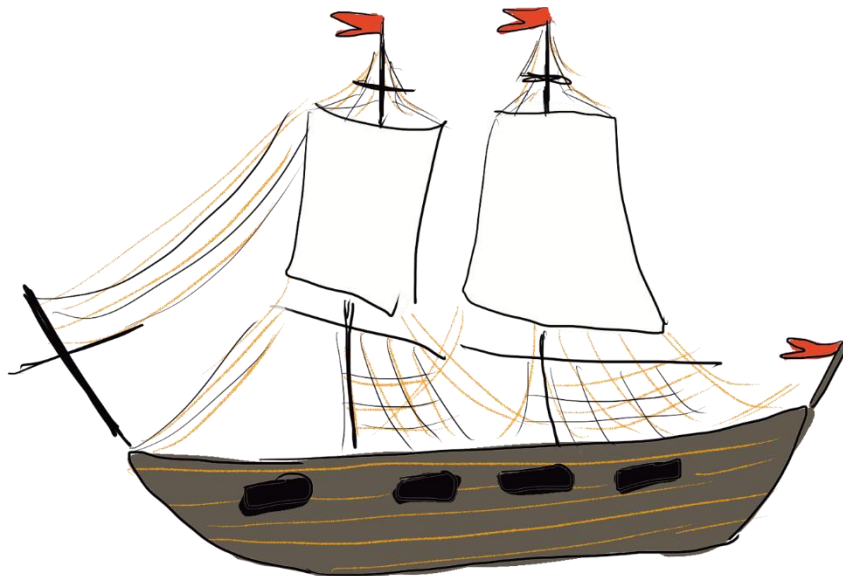
To find out, think of a solid object, like a boat, and try to see if the sentences in the exercise match it or not.

- Back to the exercise to try again before continuing

➡➡➡ → Go to paragraph 33.

- Or continue

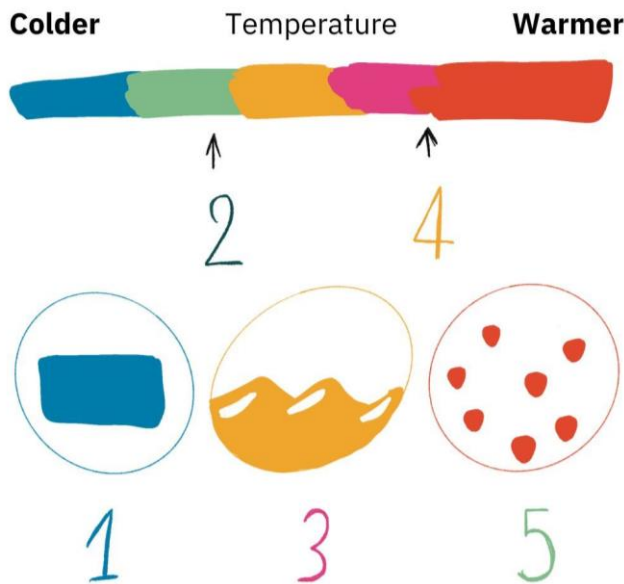
➡➡➡ → Go to paragraph 5.



31

Exercise: Help Léa understand the link between temperature and changes in states of matter

Replace the following elements in the right place on the figure: **liquid, solid, gaseous, boiling point, freezing point.**



- 1:
- 2:
- 3:
- 4:
- 5:

→ Go to paragraph 14 to check your answer.

32

The answer to this question is: **TRUE**. Well done if you found it; it was a hard one! If you did not find the right answer, no worries, you will learn all those things. It's a **matter** of time!

“Well, I did not know that!” exclaims Sam.

Mélanie, Léa, and Adam laugh.

“I told you: you would have taught me something before the end of the day!” says Sam.

A new shooting star appears.

“Oh! Make a wish!” he says.

“I wish our next adventure will be as awesome as this one!” Adam whispers to his friends.

The children smile, delighted with their day, and eager to start the next one.

The end



33

Exercise: Who will win the race?

To find out, select in the list all the properties related to solid matters. With the letters you get, you will discover the winner.

S	Is often invisible
L	Can be cut or shaped
A	Is not easy to hold
E	Does not flow
M	Does flow
A	Can be held easily

 **Go to paragraph 23** to check your answers.

34

“You're getting warmer, but it's not in the right order! Think about when you eat ice cream and it starts melting, so you put it back in the freezer, or when your parents prepare some tea with hot water and there is steam on top of the cup!”

- Back to the exercise to try again before continuing

 **Go to paragraph 31.**

- Or continue

 **Go to paragraph 52.**

35

Exercise: Help Adam understand why solids, liquids and gases matters behave differently.

Solids, liquids, and gases are made of particles, tiny bits of matter. Fill the following sentences with those words defining how particles behave in the three states of matter: **very small; small; large; can't move; can move; move freely; can; can't.** (One of the answers can be used twice).

In solid matters, the distance between particles is In terms of motion, those particles That's why the shape of this matter change.

In liquid matters, the distance between particles is In terms of motion, those particles That's why the shape of this matter change.

In gaseous matters, the distance between particles is In terms of motion, those particles That's why the shape of this matter change.

➡➡➡ → **Go to paragraph 38** to check your answers.

36

End of both previous paths


After this great ride, Adam, Mélanie, Léa, and Sam walk quietly towards the camp.

“Which place did you like better, the river or the forest?” Sam asks.

“The forest with no hesitation! I used my binoculars and thought we saw a bear, that was scary but fun!” Adam replies.

“I loved both, says Mélanie, we had fun at each place, and I won’t forget those moments.”

“My favourite moment was at the river, when we won with my... Oh no! My boat!” Léa shouts.

Continue to see where Léa's boat is  **Go to paragraph 40.**

37

“Look, a comet! says Mélanie. I read in my book that its heart is made of ice and that when ice turns directly into gases when the comet reaches Earth’s atmosphere, it is called sublimation. Am I right, Sam?” she asks very confidently.

“Well, yes... Well done, Mélanie!” says Sam. “All three of you are very clever. Come on, ask me another question” proposes Sam.

The three friends search through Mélanie's book to find the most difficult question.

“This one! shouts Léa.”  **Go to paragraph 44.**

38

In solid matters, the distance between particles is **very small**. In terms of motion, those particles **can't move**. That's why the shape of this matter **can't** change.

In liquid matters, the distance between particles is **small**. In terms of motion, those particles **can move**. That's why the shape of this matter **can** change.

In gaseous matters, the distance between particles is **large**. In terms of motion, those particles **move freely**. That's why the shape of this matter **can** change.

 If you put the answers this way  **Go to paragraph 10.**

 If you did not put those answers this way  **Go to paragraph 16.**

39

"That was a big first day in the mountains for you, right?" Sam says.

The three children nod. The fatigue begins to appear. After another 15 minutes, the weather starts to improve. The four adventurers leave the cave. It is dark. Suddenly Mélanie looks up and exclaims, "The stars! Have you seen those stars?" Sam, Léa, and Adam raise their heads in response.

"Wow! This is Big Bear!" says Adam. "And this is Orion!" replies Mélanie.

"You see, you three got what you wanted: see a bear, see stars and find a name for the tiny boat," says Sam smiling.

See what happens next  **Go to paragraph 37.**

40

"I think I left it next to the river, we have to go and get it, Sam, it's my birthday present!" she says, crying.

"Don't worry, we are not that far from the river, I'm sure it is still there!"

They turn around and walk back to the river. Very soon, they arrive, and the little boat is here, waiting for them at the river's edge.

"Here you are, little rascal! says Léa, very happy to find her toy. Oh! Your name will be Little Rascal now!"

"Perfect! Now we can go back to the camp, says Sam. Be sure you don't forget anything!"

Continue the walk  **Go to paragraph 42.**

41

River path

“Let’s go to the river! says Sam.

They climb the mountains for a few minutes and start to hear distant noises.

“What is that? It’s a little bit scary!” says Mélanie to Sam.

“You will see. Don’t worry, I’m sure you will like it.”

As they got closer, the noise became louder and louder. Then, after a few minutes, they saw it.

“THE RIVER!!!” they shout.

Continue to see the river  **Go to paragraph 43.**

42

But suddenly, the weather turns cloudy, it starts to snow very heavily, so much so that Sam can no longer see the smoke coming out of the chimneys of the chalets.

He does, however, see a small cave.

“Let’s go and take refuge there until the weather calms down!” he shouts to the children.

Happy to have such an adventure, but careful not to lose sight of Sam, the children walk towards the cave.

Discover the cave  **Go to paragraph 51.**

43

"Wow! Have you seen the little waterfall over there?" Léa asks.

"And have you seen the length of this river? It must go very far from here!" replies Adam.

"The water goes down to the frozen lake near the forest, and it comes from the top of the mountain when the snow is melting!" says Sam.

"Wow! Water makes a long journey," says Mélanie.

"Yes, and it is constantly moving between sea, air and land, Sam replies. We are lucky, it snowed yesterday. The river is even more beautiful like that."

"Can we go closer?" asks Léa, eager to use her tiny boat on the river.

"Of course, the river's stream is not too dangerous at this time of the year, but do not slip, you would get cold!"

Léa puts her bag on the ground and opens it to take her boat and gets to the river.

Go closer to the river  **Go to paragraph 48.**

44

Exercise: Help Sam find the response to Léa's question.

True or False: All matter comes from space and the universe, including the particles that make up our body and all living and non-living things on Earth.

Check the answer  **Go to paragraph 32.**

45


"It floats! It's moving on the river like a real boat!" shouts Léa.

The three friends are very happy, they celebrate this moment.

Sam catches Léa's boat before it goes too far.

"Well done Léa, but be careful, you almost lost your boat! says Sam. And if you don't have your boat, how will you beat me in the race?"

"We will win", they shout together.

Start the race  **Go to paragraph 26.**

46

Sam walks to the exit of the cave and fills his cup with snow, then puts it on his device and lights it with a lighter.

"I'll make a hot chocolate with melted snow and your chocolate squares," he explains.

Soon, the snow becomes water and starts to make bubbles. Sam adds the chocolate in the cup. Meanwhile, the children play with their toys: Mélanie takes out her book, Léa makes her boat sail in the air, and Adam approaches his magnifying glass from the water cup, and the glass of his magnifying glass fogs up.

"What's is that? Adam asks. I can't see anything!"

 **Go to paragraph 50.**

47

“Oh, so I have... condensation of my magnifying glass! I learnt a new word, it's hard to pronounce,” Adam exclaims.

“Exactly! The same happens on glasses or on mirrors during a shower for example.”

The four adventurers finish their snack and watch the snow still falling outside.

To keep the children from getting bored, Sam suggests a game: try to remember everything they have learned today.

 **Go to paragraph 49.**



48

Sam, Mélanie, and Adam join Léa next to the river.

“This is the first time I try to put it on moving water, I hope it will float correctly!” says Léa.

“Oh really? Let's see! If it works, why not have a race?” Sam proposes.

The three children smile broadly, confident that they will win the challenge.

Léa puts her boat just after the small waterfall and...

See what happens  **Go to paragraph 45.**

49

Exercise: Take a few minutes to remember what you learnt or discovered by reading this story. Then continue reading!

 **Go to paragraph 39.**

50

Exercise: Help Adam understand the phenomena experienced by the matters.

Complete the sentences with the following words: **boiling, condensing, melting, freezing.**

When water is heated and starts to make bubbles, it's

When snow is heated and starts to turn liquid, it's

When water vapour cools down and arrives on Adam's magnifying glass, it's

When water cools down and becomes ice, it's

 **Go to paragraph 27** to check your answers.

51

The cave is perfect for our 4 adventurers: not too big to be a bear cave, not too small to be cramped. Time passes and the weather does not calm down.

“While waiting for better weather, we will have a snack, it will do us good after our journey,” says Sam.

He takes a chocolate bar and the famous marshmallow bag out of his bag, and hands it out to the children. He also takes out a cup and a strange device.

Discover the device  **Go to paragraph 46.**

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“I see! but is it the same for all matters?” Léa asks.

“Yes! But not for the boiling point and the freezing point, they are specific to each matter, Mélanie says. For example, water boils at 100°C and freezes at 0°C, and blood...well...”

“And blood freezes at -2°C and has a temperature of 37.5°C in your body, so you're not about to freeze Léa, don't worry!” says Sam the coordinator, taking them by surprise.

“You know everything Sam!” Adam says.

Continue the conversation with Sam  **Go to paragraph 9.**



Designed by 6 European organisations, the project intends to create efficient, engaging pedagogical materials and tools for teachers in order to implement an innovative gamified Homework methodology with pupils. In doing so, we wish to contribute to boosting their efficiency and engagement rate in remote work and, more specifically, in Homework.

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