

Matematik

Lärarinformation

Genomförande av delprov A
Berättelsen
Självbedömning

ENGELSK VERSION

ÅRSKURS

3

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1. Genomförande av delprov A

Genomförande vid provtillfället

I denna uppgift är det viktigaste att eleverna får möjlighet att kommunicera och resonera med varandra, inte att komma fram till rätt svar. Meningar skrivna som citat läses högt för eleverna.

Introduktion till elevmaterialet

“In this task you will be working together and reasoning and discussing your ideas with one another. Reasoning and discussing means that you should think out loud as a group, tell each other your ideas and explain them. It is important that everyone in the group joins in and shares their knowledge of mathematics. The task will be about weather and temperature.”

Moment 1 - Statistik

“At Nova and Troj’s school, the pupils measure the temperature and make notes about the weather on the first Monday of each month. In other words, the first Monday in January, the first Monday in February, and so on. You will now see how Nova and Troj reported the temperatures they measured last year.”

Lägg fram underlaget diagram på bordet. “Study this together. What do you see?”
Låt eleverna få tid att samtala med varandra.

Exempel på frågor:

- What is this?
- What is the title?
- Have you seen this before?

Lägg diagrammet åt sidan och lägg ut de utklippta staplarna osorterat på bordet.

“But there is something missing... These bars show temperatures. Begin by arranging the bars so you can see what you have.” Låt eleverna få tid att ordna staplarna på bordet för att bli bekanta med staplarna och deras förhållanden.

“Now you will be given some clues, one at a time, to help you figure out which temperature bar belongs to which month.”

Lägg fram diagrammet igen och ta fram kort med ledtråd 1–8. Läs ledtråd 1 högt och låt en elev påbörja lösningen. Lägg därefter ledtråd 1 på bordet så att alla kan se kortet och hjälpas åt att lösa uppgiften. Fortsätt på samma sätt med ledtråd 2 till en annan elev och så vidare med ledtråd 3–8.

Exempel på följdfrågor:

- Why do you choose to place that particular bar on that month?
- How can you tell?
- What bars do you have left?
- Does anyone disagree?

“Now, we have run out of clues but we still have two bars left. Where might they fit in?”

“So, now you have put out all the bars in the diagram, is everyone satisfied?”

Ta bort staplar och ledtråds kort. Lägg diagrammet åt sidan.

Moment 2 – Sannolikhet

“Nova and Troj’s school has a twin school in Argentina, which is far away from here in South America. The pupils at their twin school also keep a weather diary in which they make notes about the weather on the first Monday of each month. Grade 3 pupils at the school in Argentina have been doing this for many years. They have now sent the notes from their weather diary to Nova and Troj’s school. Pupils at their twin school in Argentina record the temperature, if it is sunny or cloudy and if it is windy. These are the images they use.”

Lägg fram kort med vädersymboler på bordet.

“Describe the type of weather you think these images show.” Prata om bilderna och vad de betyder.

Lägg fram underlaget tabeller. “Here, you can see three months of reports from their weather diary. They cover July, October and December. Study the tables together.” Peka på månaderna.

Ställ frågor om tabellerna och låt eleverna få tid att samtala med varandra.

- For how many years have they been recording the weather in the diary?
- Which month appears to be coldest? How can you tell?
- In which month is it most likely to be sunny? How can you tell?
- In which month is it most likely to be cloudy? How can you tell?
- In which month is the temperature least likely to drop to zero degrees centigrade. How can you tell?
- Which month is most likely to be windy? How can you tell?

“As you can see, 2023 is blank as they have yet to fill in the table. Now I would like you to think about what the weather is likely to be during those three months. Study the weather diary carefully to see what the weather at the twin school was like in previous years.”

Ta fram utklippta kort med väder 1–5. “There are five cards showing different types of weather; so, two cards will be left.” Visa korten, ett i taget, i nummerordning (finns på kortens baksida). Låt eleverna diskutera. “Is this weather likely in any of the months? If so, in which month?”

Exempel på följdfrågor:

- Why do you think this type of weather fits?
- Might it occur in any of the other months?
- Is there anything in the tables that makes you think so?
- Have you reached an agreement?

Om mer underlag för bedömning behövs finns följande frågor att använda:

- Are any of the months similar to each other?
- You have not used this weather card: could it fit anywhere?
- Can we be sure that it is always windy in October?
- Can we be sure that it never rains or snows where the twin school is situated?
- What might the pupils at the twin school have done to ensure that Nova and Troj could be more certain about what the weather is normally like there?

2. The Story – In the nature

Introduction

Nova and Troj's school is rather old. The year 1923 is written in black iron numerals on the facade above the main entrance to the school. Throughout her primary school years, Nova has amused herself by playing with the numbers in the year whenever she arrives at school, during breaktime or when she walks past the school on weekends. One plus nine plus two plus three, nineteen plus twenty-three, 192 minus three. As she learns new mathematical operations, she tries new ways to play with the numbers: nineteen times twenty-three, 192 divided by three. She finds it exciting that there are so many different ways to count using only four digits.

Nova has been looking forward to 2023 for quite some time, as it is the school's centenary. Next Friday, the school will celebrate its centenary with a large number of different events.

Right now, Nova is sitting thinking about what will happen next week at the centenary party. Her class teacher, Emil, is standing at the front of the classroom reading a letter out loud to the class. The letter is from the class's twin school in South America. In the letter, children on the other side of the globe describe what they are currently being taught, what they usually do during breaktime and what the weather is like where they live. Suddenly, Nova feels a drop of water splash on her forehead. She looks around, but all of the children's faces are turned towards Emil and the large map of South America. She feels another drop landing, this time on her nose. This time, Nova looks up at the ceiling. A large, dark patch, a patch she has never seen before, is spreading slowly but surely across the ceiling above Nova's desk. Another drop, then another. A narrow stream of water now begins to flow straight onto Nova's exercise book.

- "Um... Emil?" says Nova.

At the front of the classroom, Emil is busy pointing at the map while continuing to read the letter.

- "Raise your hand please, Nova."

Nova raises her hand.

- "Excuse me, Emil."

- "Yes, Nova?"

- "There's water running down from the ceiling."

Emil looks at Nova, then up at the stain on the ceiling, then down at Nova's wet exercise book, then back at Nova. Emil sighs and puts the letter down on a table.

- "Well, this isn't good," says Emil. "I think it's best we all leave the classroom and then I'll go and try to find the caretaker."

Nova and Troj sit on a bench in the playground discussing this unexpected turn of events. Some of their classmates have wandered over to the climbing frame, others to the swings. After a while, the door to the school opens and their teacher, Emil, the caretaker and the head teacher emerge. Emil shouts across the playground, summoning the class.

- "Hello everyone," says the head teacher, Maria, once all are gathered. "It appears that a water pipe has burst directly above your classroom. I'm afraid this type of thing can happen in an old school like ours. It will take about a week to fix, so next week your classes will be held outdoors."

Part B

Nova and Troj are almost at the school gates. It was on Friday last week that the water pipe in the ceiling sprang a leak. Head teacher Maria had informed the class that their lessons would be held outdoors until the pipe is repaired. It was not unusual for Nova and Troj to have the occasional lesson outdoors, but never every day for a whole week.

The class and their teacher, Emil, are already gathered in the playground. Nova and Troj hurry to take their places with the rest of the class.

- "Splendid," says Emil. "Now that we're all here, let's go to the woods for our first lesson of the day."

On the way to the woods, Troj looks in the direction of their classroom, which is on the bottom floor of the school. Through the window, Troj can see several tradespeople in blue overalls inside the classroom. A couple of them are carrying a large roll of plastic sheeting, another a tin of paint and a large toolbox.

There is a lovely piece of woodland a short walk from the playground at Nova and Troj's school. Once you enter it, it feels like you have stepped into another world but, if you turn your head, you can still see the roof of the school through the trees.

- "I'm going to walk backwards and watch as the school gets smaller and smaller," says Troj. "Nova, can you hold onto me so I don't trip over any roots."

- "Okay," laughs Nova, grabbing a handful of Troj's shirt and leading him onwards.

Troj walks backwards, occasionally stumbling, his eyes fixed on the roof of the school as they walk deeper into the woods with the rest of the class.

- "Nova... am I walking forwards or backwards now?" enquires Troj. "Of course, I'm walking backwards but I'm still moving forwards with the class."

- "It seems to me that you're mostly stumbling," replies Nova.

Just then, Emil's voice rings out from the front of the group:

- "Get a move on now, or a forest nymph might get you!"

Troj takes a short skip and jump until he is facing forwards once again, then turns to Nova.

- "Nova, what's a forest nymph?"

- "No idea," replies Nova, "let's go and ask Emil."

Troj and Nova increase their pace and catch up with Emil, who is walking at the head of the class. Troj asks Emil what a forest nymph is. Emil tells them that people once believed that many different creatures and beings lived in the forest. People told each other tales about elves, trolls, fairies and witches. One such tale was about the forest nymph, who would enchant anyone lost in the woods and force them to do her bidding.

- "Kind of like becoming a robot that obeys instructions, like when we did programming?" asks Troj.

- "Yes, you could say that," replies Emil.

- "A forest nymph that turns people into forest robots?" jokes Troj.

- "Yes, exactly," chuckles Emil.

Part C

Nova and Troj's class are on a field trip in the forest. Nova finds it quite nice assembling outdoors each morning and going into the woods with the rest of the class. She enjoys how the sound of cars and chatter gradually disappears to be replaced by almost total silence all around her. Sometimes, Nova hears a branch snap or a bird take flight from its hiding place. Nova is sitting with her back against a tree reading her book when she spies a bird with a brown stomach and grey neck feathers land on a branch in front of her. The bird looks down at Nova, hops around on the branch for a moment then begins to sing its song. Nova is sitting watching the bird when Emil approaches.

- "Hi Nova, I see you've found a chaffinch, or perhaps he found you."
- "Chaffinch?" asks Nova.
- "Yes, that's a chaffinch. People used to believe that it would start raining whenever the chaffinch sang."
- "People used to have some very strange beliefs," Nova says.
- "Indeed they did," agrees Emil. "That aside, I came to tell you it's time for lunch. C'mon, let's get our packed lunches and join the others."

Troj and Nova stand unpacking their lunchboxes. Each has a picnic blanket to sit on so they do not get wet on the damp ground. They sit down on the blankets and open their lunchboxes. Today, they have meatballs and macaroni. Afterwards everyone has an apple each.

- "An apple a day keeps the doctor away," says Troj, taking a bite.
- "That's weird," says Nova. "Why would an apple keep the doctor away?"
- "No idea," replies Troj. "That's what Mum always says."

Nova replies,

- "Emil told me that when the chaffinch sings, it means it will soon start raining. Or, anyway, that's what people once believed."
- "That sounds weird as well," says Troj.
- "Yes, you shouldn't believe everything you hear," says Nova.

Nova and Troj are just about to tuck into their lunch when they feel the first drops of rain. As luck would have it, both of them have packed umbrellas in their backpacks.

Now they sit on their blankets beneath umbrellas.

- "Looks like the chaffinch was right about the rain this time," laughs Troj.

Part D

Today, the class is exploring the woods. Some of them are examining plants and others are studying various animals that they come across. Matteo has found a caterpillar and is studying it through his magnifying glass. He draws the caterpillar in his exercise book. Elvina has come across a beetle crawling around on a stone. Sven has stumbled across a tree trunk lying on the ground. It has begun to rot and is teeming with small insects.

All of the pupils are hunched busily over rocks or stumps, or sitting on the ground writing about what they see. They measure the things they find and examine them under magnifying glasses.

After a while, the class teacher Emil calls for them to gather around. Everyone sits on the ground in front of Emil, who is standing next to an enormous boulder. If four of the children were to stand on each others' shoulders, they might reach the top of the boulder.

- "I'm sure you remember this from when we studied the ice age," says Emil, pointing up at the towering boulder. "This boulder is what is called a glacial erratic. Many thousands of years ago this boulder was transported by an ice sheet until, when the ice finally melted, it was deposited here, where it has been ever since."

- "It's weird to think that there was once ice everywhere around here, and no school or forest," says Nova.

- "Yes, but then you can imagine how strange it must have seemed to people living here long ago to find a giant boulder in the forest," replies Emil. "Back then, there were no researchers and books to explain things scientifically."

- "In the past," continues Emil, "people told each other stories about these boulders. According to them, church bells ringing in the village woke giants living nearby. The giants were so annoyed by the noise that they picked up large boulders like this one and threw them with all their might at the church."

- "Fortunately," says Emil, "the giants were not particularly good shots, so the boulders ended up scattered around the villages."

- "But didn't people know that giants don't exist?" asks Troj.

- "Well, I'm sure many people knew," replies Emil. "But sometimes, when things are difficult to understand, it's easier to make up stories to explain everything, even if they aren't true."

- "But how far do you think a giant could throw them then?" asks Nova.

- "I guess they could throw... a very long way," replies Emil with a chuckle.

Part E

Nova and Troj's class has been learning about butterflies for a few weeks. About five weeks ago, before the pipe in the ceiling sprang a leak, Emil had arrived in the classroom with two large boxes. In one box were magnifying glasses and in the other a collection of small jars. Emil had then passed the magnifying glasses and jars around the class. Each jar contained a tiny caterpillar crawling around and apparently eating a yellow goo lying in the bottom of the jar.

Emil told everyone to think of a name for their caterpillars and explained that they would be following their development from caterpillar to butterfly over the next few weeks. The pupils had then examined the caterpillars in more detail using the magnifying glasses, drawn their caterpillar and written down facts.

Troj had named his caterpillar Butter, which was apt considering both that it was destined to become a butterfly and that "butter" in Swedish means *grumpy*, which suited its demeanour. Nova named hers Catbert.

After about two weeks, the caterpillars had all found a comfortable place inside the lid of the jar and turned into pupae. Emil had then moved all of the pupae to a large cage where they hung on sticks. After another two weeks, the pupae started to open and out of the pupae crawled butterflies, which were soon fluttering around the cage.

Today, it is finally time to release the butterflies. Troj has been a little concerned about Butter, who had been in the classroom when the pipe burst, but the butterflies in the cage had been safely moved into another classroom where they had remained until today.

Emil is carrying the large butterfly cage in which all the butterflies are fluttering around, seemingly impatient. The butterfly cage is so big that Emil's face is concealed behind it. Troj notices a skipping rope in Emil's path, left behind after a breaktime. Before Troj can shout a warning, Emil's feet become tangled in the rope. Emil trips, the butterflies flutter about; Troj and the others gasp. What if Emil drops the butterflies? Fortunately, Emil regains his balance, takes a firmer grip on the butterfly cage, mutters something about the discarded skipping rope and continues walking into the forest.

Troj sees Butter sitting on one of the sticks in the cage. He recognises Butter because he has a slightly tattered wing; it has been like that since he emerged from the pupa. Troj hopes that Butter will be able to fly away like the others. Emil carefully places the cage on a large rock and the class gathers around in a ring, watching.

- "Right," says Emil. "Everybody ready?"

- "YES!" the class shouts in unison.

Emil lifts the lid of the cage and the butterflies begin to stream out into the forest. Everyone in the class cheers and claps as they watch the butterflies flutter into the trees and into the forest.

But when Troj looks in the direction of the cage, he sees Butter still clinging to his stick inside. Troj walks towards the cage to check on his butterfly and, just like that, Butter lifts off from the cage and flutters upwards. Butter circles Troj's head once, as if saying goodbye and then flies away into the forest.

- "Bye, mate," says Troj to himself as he watches Butter fly away.

Part F

It will soon be the school's centenary. During a mathematics lesson, Emil has given the class the task of working out what they could buy for the party if they had 500 crowns.

Nova, Troj and Boris sit around a table in the playground writing down things they think should be included at a party. They also have a list of how much things cost.

- "We must have lemonade," says Boris. "And buns. And balloons. And fireworks. And horses. And a giant gold cake that Emil jumps out of. And the head teacher should parachute from an aeroplane. And..."

- "Wait, stop!" cries Nova. "We only have 500 crowns to spend. All of that will cost much more than that."

- "Yes," Troj concurs, "we have to check the price list and add it up. "We'll probably have to choose between a gold cake and the head teacher's parachute jump."

- "I don't think we can have any of those things," replies Nova. "And they're not even on this list. It only has normal party things, like biscuits, buns, ice cream, lemonade and soft drinks."

- "Okay then," says the somewhat disappointed Boris. "But are there balloons at least?"

- "Yes, look" says Troj. "100 balloons for 100 crowns. We have to have those, otherwise it's not really a party,"

- "No, quite right," says Nova. "And it's perfect for a 100th anniversary as well!"

The pupils continue their calculations and after a while Emil collects all the suggestions regarding what to buy for the party.

- "Well done everyone," Emil congratulates the class, "I didn't mention this when we began, but now that all of the groups have submitted their proposals, one of the groups will be accompanying me to the shop to buy the things on our list!"

Emil closes his eyes and waves his fingers over the pile of papers. He makes as if to pick up one paper, pauses, picks another paper and pulls it from the pile. Emil opens his eyes and reads the names on the paper.

- "It appears that Nova, Troj, Boris and I will be going to the shop to buy the things you suggested,"

- "Blimey," says Troj to Nova. "I really hope we did our sums right."

Part G

In the morning, as the class assembles in the playground as usual ready to walk to the forest, head teacher Maria is standing next to class teacher Emil.

- "Are you coming to the woods with us today Maria?" Nova asks.

- "Ah, if only I could," replies Maria, "but unfortunately I'm far too busy planning the school's centenary celebrations.

- "Actually, I'm here to ask a favour of you," continues Maria. "During the school's celebrations, we will have activities both in the school and in the park. As I walked to school this morning, I noticed that the park is full of litter. And things that should be in the shed are scattered around the playground and the woods. Do you think that you could help tidy up the park and find things that should be in the shed?"

Everyone in the class thinks that this sounds like a great idea and wants to help.

Emil and the class decide to split into two teams, one to tidy up the park and one the playground.

Troj and his team will tidy up in the park. The park is a short distance from the school. To get there, they will need to walk along a road, past the swimming baths and the big football pitch and down a hill.

Nova is assigned to the team that is going to tidy up the playground and woods in preparation for the party.

Nova and her team will look for things that children have forgotten to put back in the play shed. They find shovels on the playground and in the woods. They find some rakes in the sandpit and buckets lying around here and there. They assemble everything together and put things back where they belong in the shed. They are almost done when Nova finds a bucket that some kid has forgotten. It is full of nice cones. Nova thinks that it might have been left by a six-year-old who was collecting cones during breaktime. It seems a shame to simply pour out the cones so she leaves them in the bucket and takes it back to the playground. Just then, Troj and the others return from the park.

- "We found loads of litter! Cans, sweet wrappers, even a few pizza boxes," Troj informs Nova. "People really are messy, there are loads of litter bins in the park. And look, I even found a box of matches that someone left beside the grill."

- "And I found a bucket of cones," says Nova, holding up the bucket.

- "I have an idea," says Klara, who is standing next to them. "My granddad and I usually make little animals out of cones and matchsticks. You use cones for the body and matchsticks for the legs. Let's make some animals and leave them for the six-year-olds to find."

Several of the children think the idea sounds like fun and they pour the matchsticks and cones out onto the ground and start constructing.

Conclusion

It is Friday and Nova, Troj and the rest of the class are back in their classroom. The pipe in the ceiling has been fixed and all the water has been mopped up. The ceiling and walls appear to be freshly painted and Troj thinks that the classroom smells brand new. While it was very pleasant to be outside all day, it is quite nice to have everything back to normal.

Emil is sitting at his computer at the front of the classroom. The class can read what he is writing on the classroom's big screen. They are writing a joint letter to their twin school in South America. In the letter, they describe recent events, such as the burst pipe in the classroom, releasing the butterflies into the wild and all the other things they have done in the forest.

- "But of course," says Emil. "We must also tell our twin school that our school is celebrating its centenary."

- "Isn't the celebration today?" exclaims Boris.

- "Yes, indeed," replies Emil. "As soon as we finish writing this letter we will be joining the other classes to get the big party started."

- "Hurrah!" cries the class in unison.

Nova looks up at the ceiling, from which only a week ago water had poured onto her exercise book. What a week it's been, she thinks. Then she begins to think about the large black digits on the school's facade again. 1, 9, 2, 3. One plus nine plus two plus three. One times nine times two times three. Nineteen plus twenty-three. Just think... the school is 100 years old...



3. Kopieringsunderlag

I det här kapitlet finns följande kopieringsunderlag att använda vid genomförandet av provet.

- **Kopieringsunderlag 1:** Self-assessment – Me and mathematics

Self-assessment – Me and mathematics



Colour the clouds
with the colour that
best matches how
you feel when you
are going to ...

- green = sure
- yellow = fairly sure
- blue = not sure

... use a written method
of calculation

... describe and
know the names of
geometrical objects

... solve
a math problem

Me and mathematics

... explain what
happens in a
number sequence

... measure length

... show how many
one quarter of 8 is

... find a hidden number
eg. $6 + \underline{\quad} = 10$

... show which
arithmetic operation
you are going to use
in your working

Name: _____

