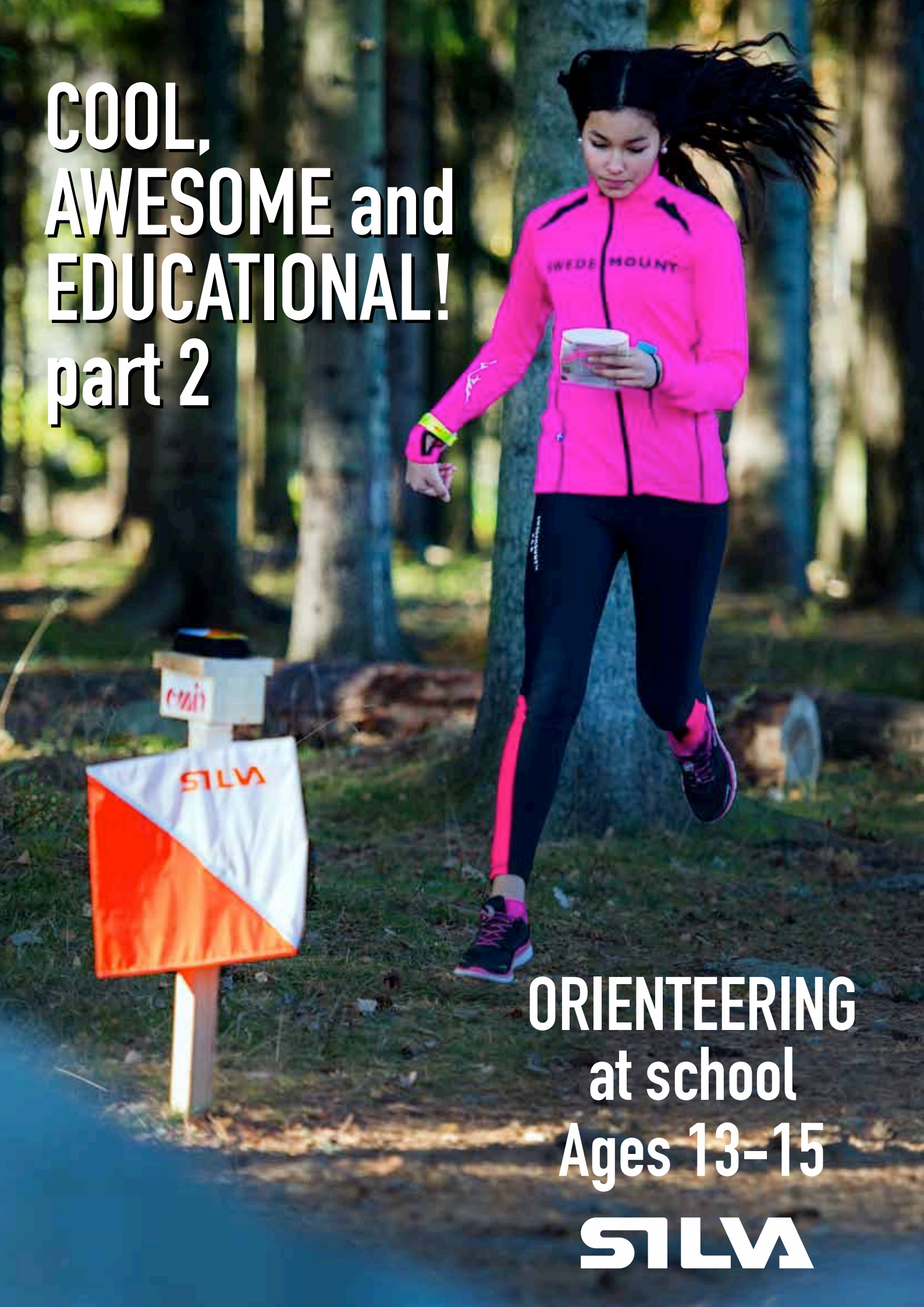


COOL, AWESOME and EDUCATIONAL! part 2

ORIENTEERING at school Ages 13-15

SILVA

COOL, AWESOME and EDUCATIONAL! part 2

Idea, text and layout: Göran Andersson
Cover photo: Ulf Palm
Photos: Ulf Palm, Göran Andersson, Martin Bergling, Bo Lindwall and Magnus Danielson
Maps: WOC2016, Dalaportens OL, Stora Tuna OK, Kvarnsvedens GoIF, Säterbygdens OK, Kvillebyns SK, Stångenäs AIS, Svanberga School, T-Kartor AB, Lantmäteriet Metria, Google Earth, Eniro and the Turkish Orienteering Federation
Production: Silva Sweden AB, Box 85, 161 26 Bromma; www.silva.se
Version 1, January 2017
Copyright ©: Göran Andersson

ISBN 978-91-983852-1-2

CONTENTS

World Orienteering Day 4
Orienteering is easy! 5
Cool, awesome and educational! 6
The project ”Skol-Sprinten” 7

What is a map? 8
We are approaching the earth! 9
Maps World Wide 10-11
The map’s colours 12
The map’s symbols 13
Learning orienteering 14
Steps of development 15

Red to Red! 16
Orienteering indoor 17
Orienteering indoor, two floors 18-19
To understand hills and valleys 20-25
Green map shows dense vegetation 26
Three factors for success 27

Exercises ”Yellow level” 28-35
Line orienteering *28*
Six peaks *29*
Star-O, 1 control *30*
Star-O, 3 controls *31*
Control picking along handrail *32*
One man relay *33*
Get to know your school *34-35*

MOBO, MOBile Orienteering 36
Alpine Orienteering 37
Orienteering among mathematical formulas 38
Orienteering in the spirit of Linnaeus 39
Adventure day by orienteering 40-41
Orienteering with GPS 42
Micro and night orienteering 43
Assessment Year 9 (age 15) 44
Implementation 45
Notes 46

Appendix 47-59

WORLD ORIENTEERING DAY

World Orienteering Day – A record breaking event

On Wednesday May 11th 2016, the first ever World Orienteering Day took place all over the world. It proved to be a great success, with more than 250 000 participants all around the world taking part in an orienteering event.

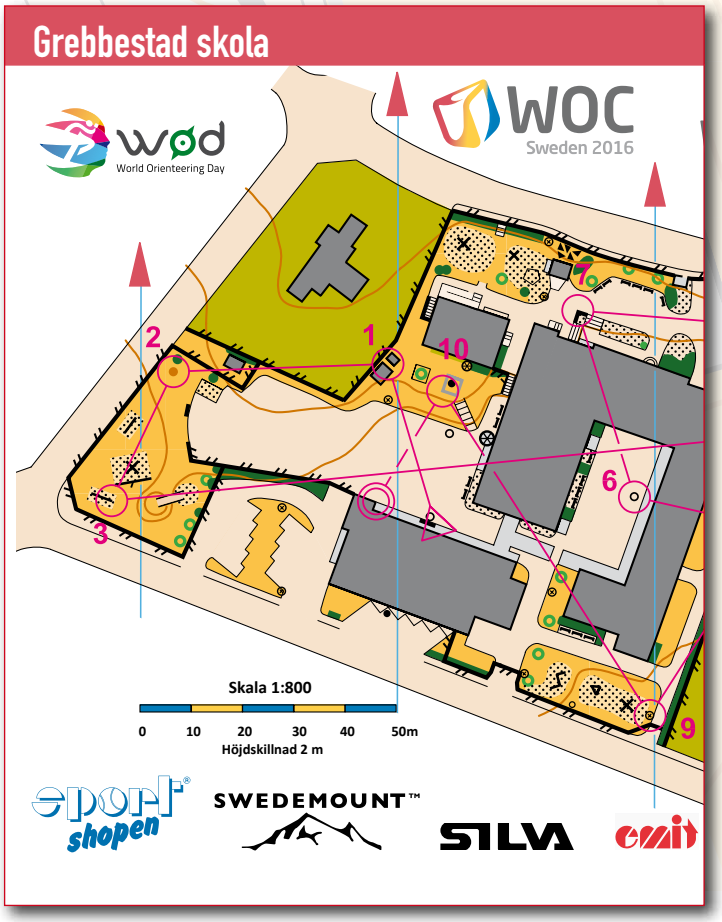
After having finalised the results, the total number of participants in the first ever World Orienteering Day stood at 252 927 participants at 2013 locations in 81 countries and territories.

What was once only an idea, had come to be a reality beyond what anyone could have hoped for. Schools, clubs and enthusiasts from all over the world made a fantastic contribution, and together managed to set a world record.

With the collaboration between schools and orienteering clubs, the World Orienteering Day may just become the most important activity for the global development of orienteering. All clubs can make a fantastic contribution that benefits both education at school and orienteering development of the sport to recruit youngsters.

Cool, awesome and educational! Do you want to join us?

To get more information regarding World Orienteering Day and "Skol-Sprinten" (a Swedish project), please contact: Göran Andersson, see page 54.



World Orienteering Day

SKOL SPRINTEN

ORIENTEERING IS EASY!

Orienteering at school is easy to implement if you are well prepared. From our experience, there are many reasons why orienteering should be taught at schools. The lack of availability of teaching materials and lack of preparation time are the key impediments to teaching orienteering in schools.

Access to learning materials, primarily maps, compasses, orienteering markers and punching systems are very different in schools today. The Swedish National Agency for Education through its revision of the curriculum, required municipalities and schools to implement teaching in an adequate and relevant manner to judge the student's level on a based grading system.

During ages 7-12 years, students achieve a certain knowledge of orienteering in "known environment". During the Ages 13-15 years students achieve equivalent knowledge of orienteering in "unknown environment". The "known environment" means the campus/grounds and its immediate vicinity. The unknown environment refers nearby forest areas of outdoor character.

Based on experience from the project "Skol-Sprinten", "World Orienteering Day" and in close cooperation with the PE teachers at primary and secondary school we have an idea of how to make orienteering easier at school. With these guidelines, we want to create better conditions for the education of orienteering at school.

We also believe in a map that corresponds to reality, finalised exercises in a pedagogical approach and orienteering equipment that helps teachers to create fun lessons in orienteering. This "Teacher's guide" will hopefully inspire all of you!

Stockholm January 24th 2017
Göran Andersson

COOL, AWESOME and EDUCATIONAL!

Full speed to the first check point. The flash from the tag confirms the punch. Orientating the map using red to red - compass red needle points at the red edge of the map. The stone on the lawn! The teacher points east. Where is it on the map? The Student considers. Rotate the map. Glancing at friend's thumb. "There, there it is" pointing vigorously to a black point. "Good! Anyone else who knows?" This is real Orienteering. Cool!

Second control. "Where now"?? "That way!" "OK, then we'll see you there." Full speed again. Someone takes the lead, you find a control. Some others hesitate. Viewing map, red to red. Changing direction and finding the right control. An extra marker is placed at another tree and a discussion arises. This is real Orienteering. Awesome!

"When can I run by myself? I can do this first as an introduction course, then Challenge 1 and Challenge 2. 40 minutes of vigorous activity and 60 controls have been found at most. Sweaty, smiling kids make me happy. I'm feeling satisfied and fortunate to experience teaching in this way. "Will you come tomorrow too?" I'm somewhat shocked. Sprint back to school. This is real Orienteering. Educational!

"May I run one more course? Did I get the right check points? Did I run faster than the last lap?" The questions come quick and fast. I scan the tag, tear off the split time strip and give it to the curious boy with long running legs from Somalia. "I want to start orienteering" he says spontaneously. "Fun! Come to our training tonight. We are here, at the same place. But new challenges, of course!" "Hi, see you tonight! Skol-Sprinten has arrived. This is real Orienteering. Cool, Awesome and Educational!

Skol-Sprinten is a pilot project, implemented by Dalaportens OL and financed mainly with funds from Sport Foundations. Skol-Sprinten has been implemented at the primary level at eleven schools in the Avesta, four schools in Borlänge and one school in Säter. Over 3000 students have run as if hounds after fleeing hares. They found and punched 120,000 orange-white markers and 650 meters of timing records have been printed.

The approach to orienteering has changed dramatically as a result. 90% of the young students thought it was "good fun", 8% "fun" and 2% "OK fun". Sprint Orienteering at school is valuable and an important key for international orienteering to grow through. It's also an educational asset to any school to develop and improve students' knowledge of map reading, problem solving and perform orienteering in a fun way.

Map knowledge is today an important part of the school curriculum and teachers need help in getting education materials and assistance in implementing their lessons to inspire student learning. School Orienteering can be used to help the school to achieve its goals while concurrently attracting a future generation of orienteers.

Sprint Orienteering on school property is both known and safe for students. Many detailed, continuous direction changes and frequent feedback when the students find the orange-white markers provide some very good educational experiences for students. They learn map skills, spatial understanding and decision making when selecting routes between controls. Mistakes can be rectified, and learning reinforced. They just need to get back to the beginning and start again. Sprint is better than forest orienteering for learning orienteering in a fast and simple way.

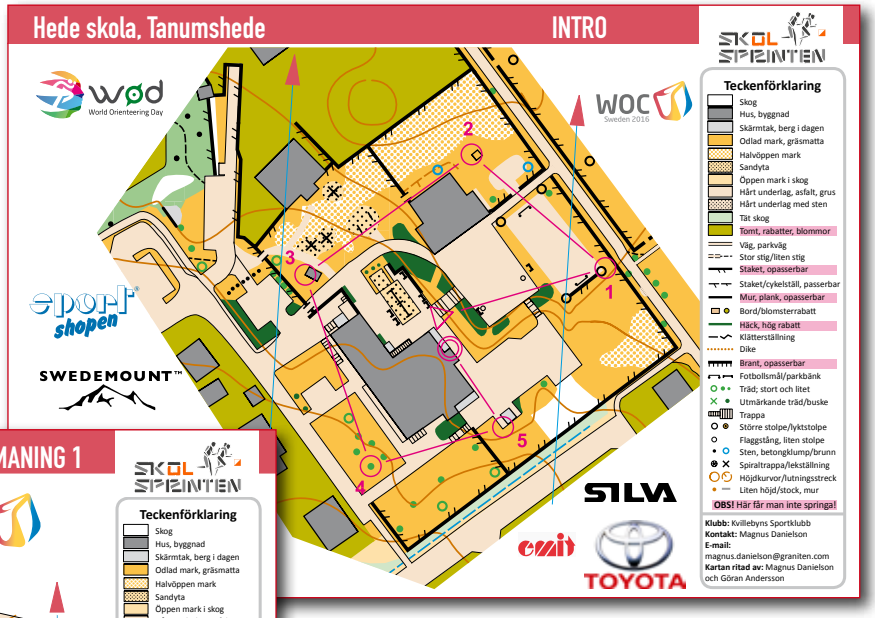
The concept is developed, we have inspiration and enthusiasm. The aim of this booklet is that you as a teacher have an educational tool to guide your teaching of orienteering for "Ages 13-15" to enable you to deliver lessons that stimulate physical activity with fun.

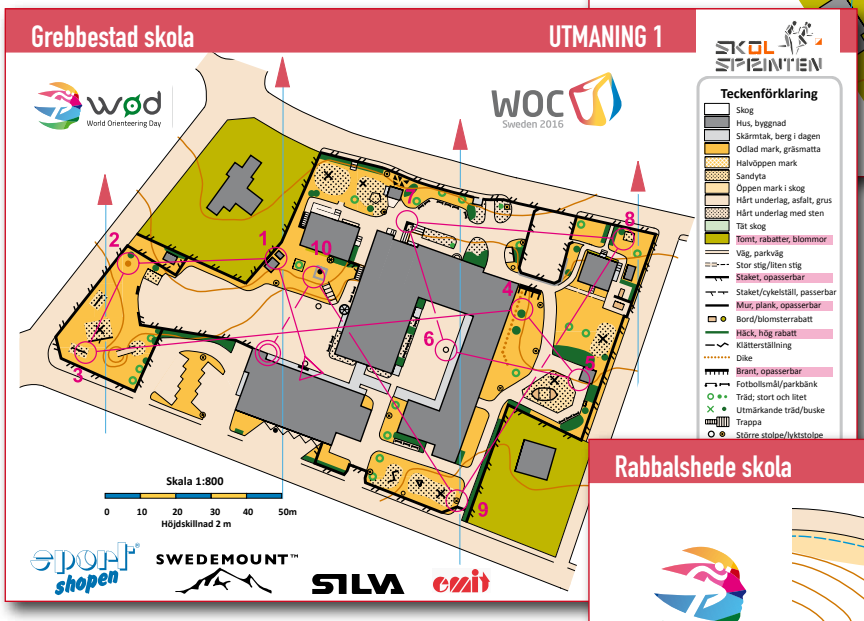
Welcome to a new world, with maps and compasses!

THE PROJECT "SKOL-SPRINTEN"

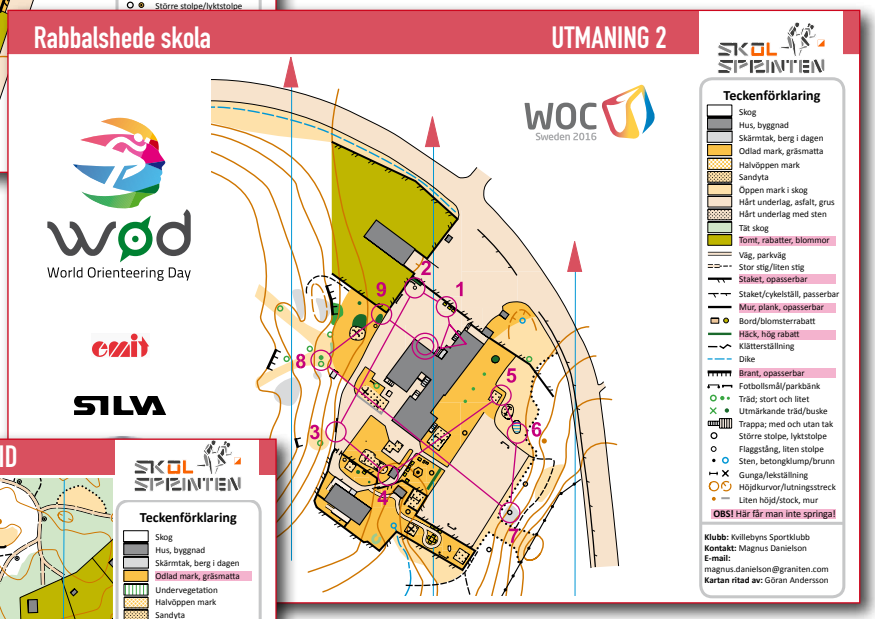
Intro

We begin, depending on the weather, either in the gym or outdoors to explain the map colours, the map's symbols and how to orientate the map using the compass "red-to-red". Because the compass sits smoothly on the wrist, it is very easy to orientate the map to reality. Then the instructor runs with the students in groups to all controls. At each control, the instructor repeats "orientate the map" - "red to red," pointing out some objects and starts a dialogue about how the objects are drawn on the map.



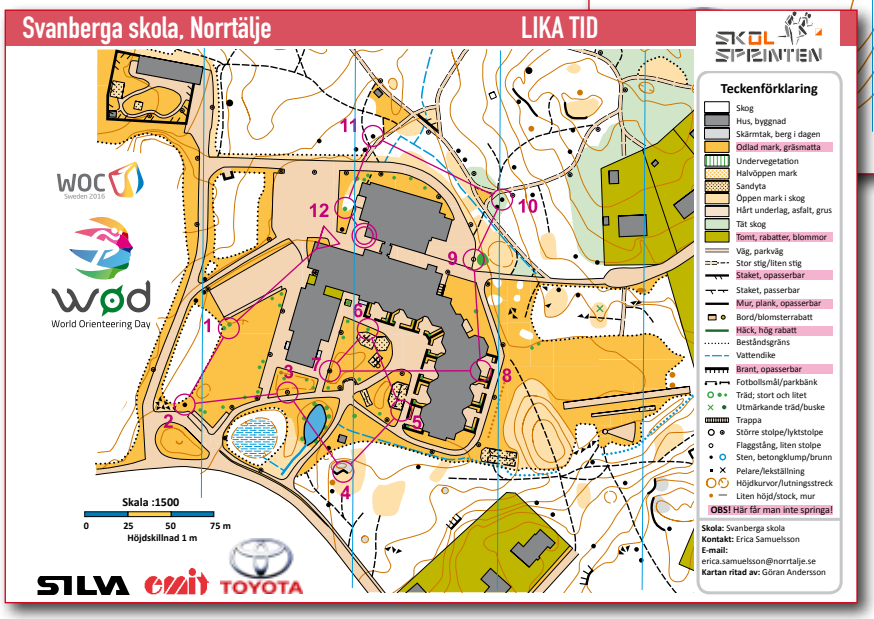


Students show the instructor where the object is on the map and take a new direction to the next checkpoint and repeat the steps. Students should work together 2 or 3 in each group. Then, at their own speed, they run the same course, individually or in groups. The target is to find all the controls.



Challenge 1 and 2

Students at middle school and those at primary school with a bit more experience of orienteering can then run a more complex course, "Challenge 1" or/and "Challenge 2".



Equal time

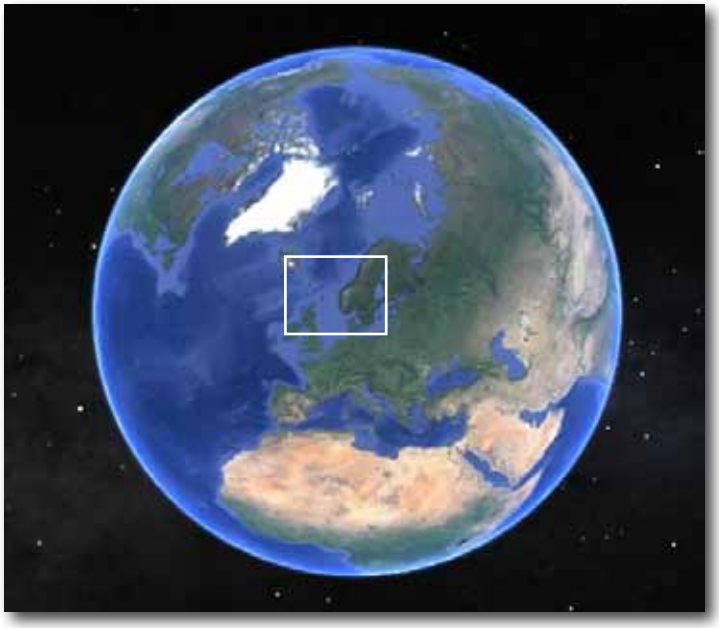
After school, during volunteer time, we put on a "competition" in orienteering. The difficulty level is equivalent to "Challenge 1-2" and the participants can walk, jog or run the course. The students perform the course at least twice. The time of the first lap the students have to "dot" on the next lap. They are free to try as many times as they want. The student who comes closest to her/his first time i.e. "equal time" is the winner of the competition.

WHAT IS A MAP?

Google Earth has opened up a whole new world of amazing experiences of how the Earth's different parts look like. Google Earth is a graphical 3D application whose purpose is to show the earth from above. It uses aerial photographs, satellite imagery and GIS information over the earth, and these join to form a mosaic of a virtual globe.

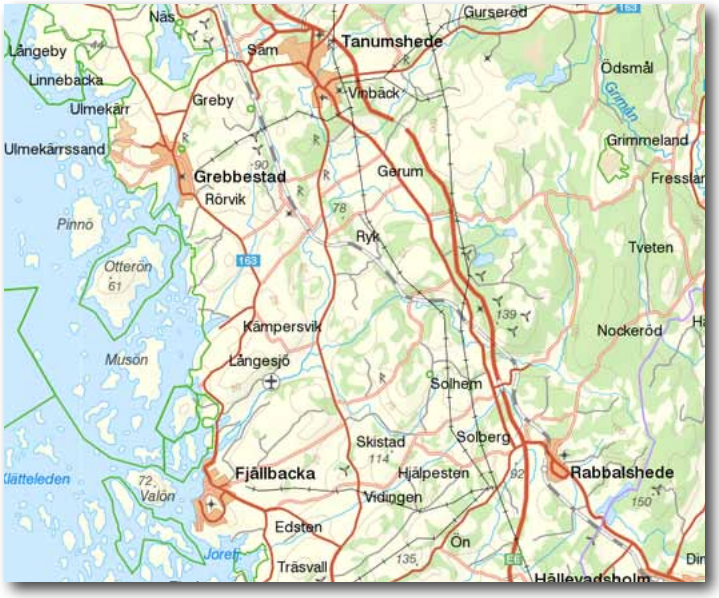
In the programme you can enter a location, zoom in down to city and street level. Everywhere on earth you can distinguish lakes, cities and rivers, and in most inhabited areas, you can see major traffic routes, parks, squares etc.

In the areas with higher resolution individual buildings, streets, bridges, cars and in some special cases even people can be identified.



Using this software it's much easier to understand how a traditional map is created. All maps are drawn in a unique way depending on their use - tourist maps, road maps, city maps are some maps we all use at some point. All these maps are a simplified representation of reality. The larger the area you want to map, such as the Nordic region as shown left, the less detail you can put on the map. The map becomes highly simplified in comparison with the map below.

The cities of Tanumshede, Grebbestad and Fjällbacka are not on the Nordic map but on this map you can add more detail because the area is much smaller. Houses and roads (yellow colour), forest (green colour), lakes (blue colour) as well as fields and meadows (white colour) appear very clearly. This map is suitable to use when you are orienteering by bicycle or car.

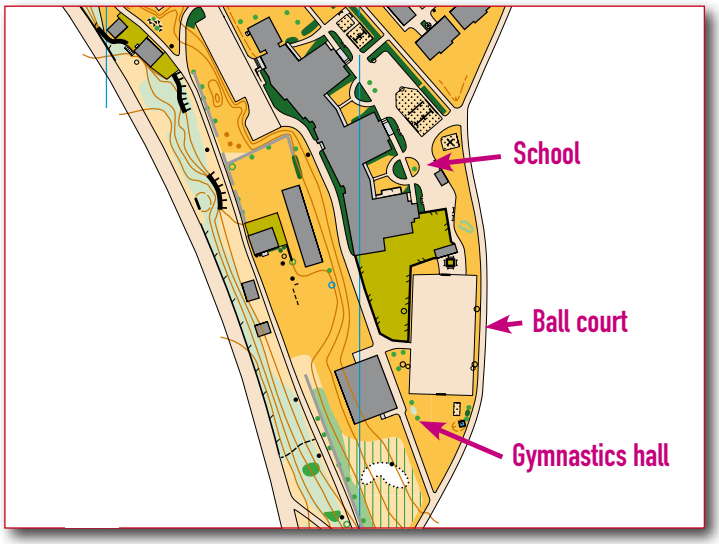


WE ARE APPROACHING THE EARTH!

The spacecraft is approaching the Earth and from above, we can see the “small ball” getting bigger and bigger. We can identify Europe, Greenland, North Africa, Asia and the Atlantic Ocean. The closer we get, the more countries we recognise. Sweden, Norway, Denmark and Finland are right in front of us, Iceland top left and UK bottom left. Gotland is clearly visible in the Baltic Sea as are the white icecaps in Norway and Iceland.

We steer the spacecraft towards the West part of Sweden and suddenly the main road E6 between Gothenburg and Oslo appears like a winding snake through the county Bohuslän. The braking rockets light up and it’s time for landing. The goal is Fjällbacka School in the village that have become famous by Camilla Läckberg’s detective stories. The roundabout appears a little weak at long range, but becomes clearer as we get closer. This roundabout is our “last safe” or “attack point” to find the school as fast as possible.

In the lower right corner we get glimpse of a brown area, the school’s football field. We focus on the brown rectangle, flying a few laps over the area. We see the school’s characteristic features and gymnastics hall clearly. We land softly on the southern part of the ball court, right next to the gymnastics hall.



The map is a simplified representation of reality and the smaller the area you want to draw, the more detail you can put on the map. On the Google Earth picture you can see houses and roads very clearly, but you can even discover trees, play equipment and soccer goals. This means that a map of a school and school yard can be very detailed. This is very important when you learn to navigate. What you see in reality is included on the map. The map becomes credible and students trust what the map shows. Having a reliable map is what makes orienteering fun!

All maps in this booklet are drawn in the international map norm for sprint maps (ISSOM). The colours are logical and easy to understand. All houses are grey, all roads are light brown, lawns are yellow and trees are green. Fences, walls and other manmade objects are black. All that is wet is blue, e.g. lakes, streams, wells and ponds are drawn in blue. The olive green colour denotes private areas and flower beds. More colours and map symbols are described on the following pages.

MAPS WORLD WIDE

Navigation is a valuable knowledge

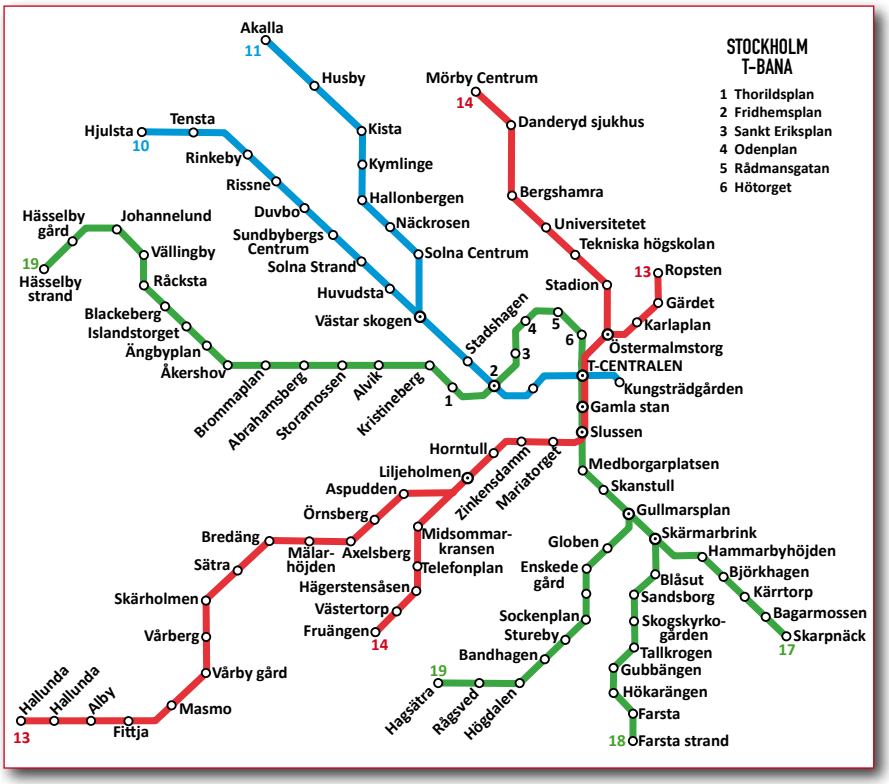
Today we meet maps everywhere, both analogue and digital. Still, the analogue maps are most common in the form of paper maps, nautical charts and signs in all of its forms. However, the generation of today are uses the digital maps more and more through the "smartphone" or tablet. Regardless of the form of map, it is an important piece of knowledge to understand what information a map is giving. It is important to find the right route, to navigate or to orientate to the desired goal in a smart and efficient way.

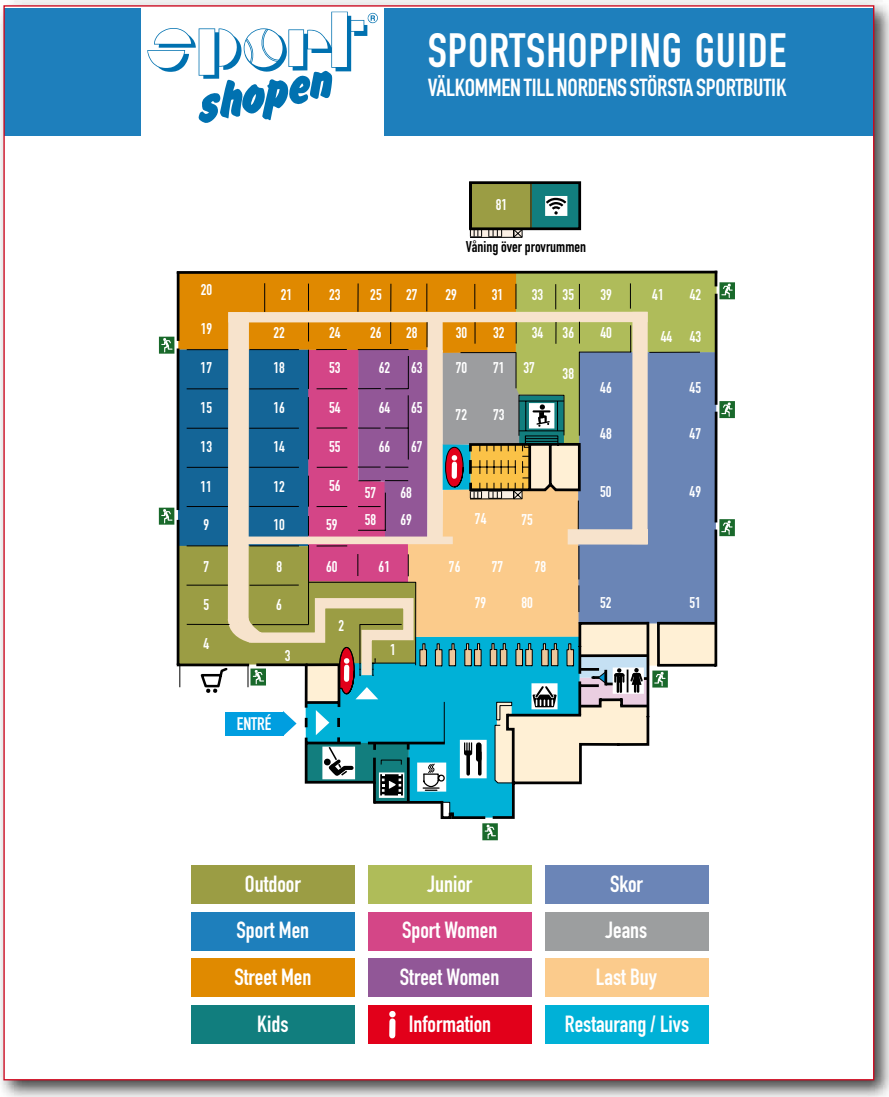
Sweden's most studied map, is most likely, the metro map in Stockholm. There are different versions of this map, more or less close to reality. The map to the right is the most relevant as it shows where the various metro stations located relative to each other and relative to T-Centralen. It is "adapted to reality."

In the curriculum for Sports and Health (Sweden), you can read the following:
"Knowledge of how to interpret the maps and drawings is essential for students to orientate themselves in different environments. In the environment, they should be able to orientate themselves in any different area. It can be anything from a shopping centre, to the forests and meadows. The curriculum has therefore decided to use the generic term "to orientate" rather than orienteering, reminiscent of the sport orienteering. Knowledge of how to orientate will of course also be used in the sport orienteering".

You can find Shopping Malls nowadays everywhere and they are also one of the most visited places. We shop, we roam, we hang out, we drink coffee and ... well, the list goes on. The Shopping Mall has almost become a tourist attraction and an experience for the whole family.

All shopping centres have maps to help customers find the right department, the right business or "right product". It also inform you as a customer so that you can find what you are looking for. The map to the right shows the largest sport stores in Scandinavia, "Sport Shopen", located a few kilometres south of Grebbestad.





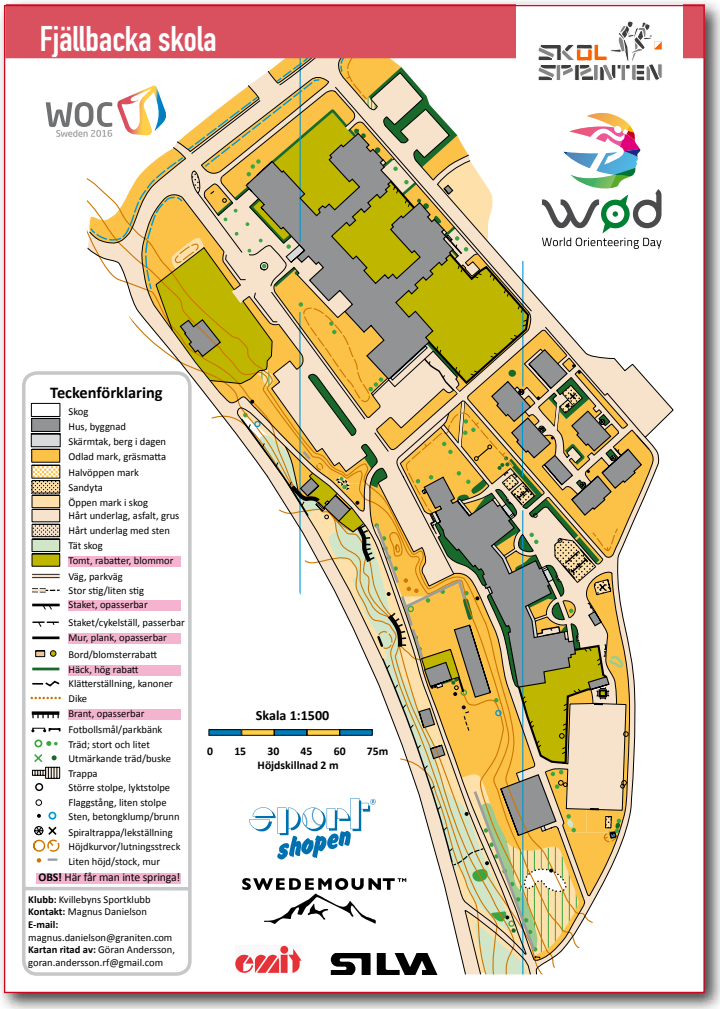
MAPS WORLD WIDE

From the known to the unknown

It is well known to most sports teachers that the forest, for many students, is an unknown place, a place that scares and it easily creates an insecurity. The unknown forest, the strange big city or a new country creates tough challenges to overcome.

In London and in New York, a Swedish company, T-Kartor AB, achieved the ability to deliver large and illustrative cycle maps. In these global metropolises these maps are posted on a number of strategic locations. Each sign has a map on both sides. It is the same map but they are "turned correctly" so that the person viewing the map, either from one or the other direction can see that the map is adapted to reality. The symbol on the right of the map is also to the right in reality. You don't have to turn around the map in your brain to understand in which direction you are looking at.

To fit the map to the reality or "red to red" is the basis for all maps understanding. This skill is very important for learning to orientate in a smart, understandable and effective way. The knowledge of this must be repeated at all stages, and it must be anchored in the beginning of the learning. The schoolyard map, not the forest map, is the best tool to use for this purpose.



THE MAP'S COLOURS

The language of the map

The map's language is international. In the global orienteering of the world, it is important to understand how a map is drawn. International Orienteering Federation (IOF) has developed an international standard for map drawing.

The sprint norm

Urban maps and park maps are drawn based on this standard. It is generally called "the sprint norm". It is used for orienteering in sprint.

School maps are drawn in the sprint norm (ISSOM). Usually you draw sprint maps in the scale of 1: 4 000 or 1: 5 000. The school maps are drawn in the scale of 1: 1 000-1: 2 000. The advantage of this is that you can draw more details on a school map.

Colours

An orienteering map in the forest is usually drawn in five or six colours. Sprint maps and school maps have a few more shades of the basic colours:

White - Forest with good runnability

Brown - Hills, pits

Black - Rocks, cliffs, roads, fences, walls, bridges, pillars

Yellow - Open land as fields, meadows and lawns

Green - Dense vegetation. Used when the terrain is difficult to run through or to highlight hedges

Grey - Houses, buildings. Light grey highlights canopies

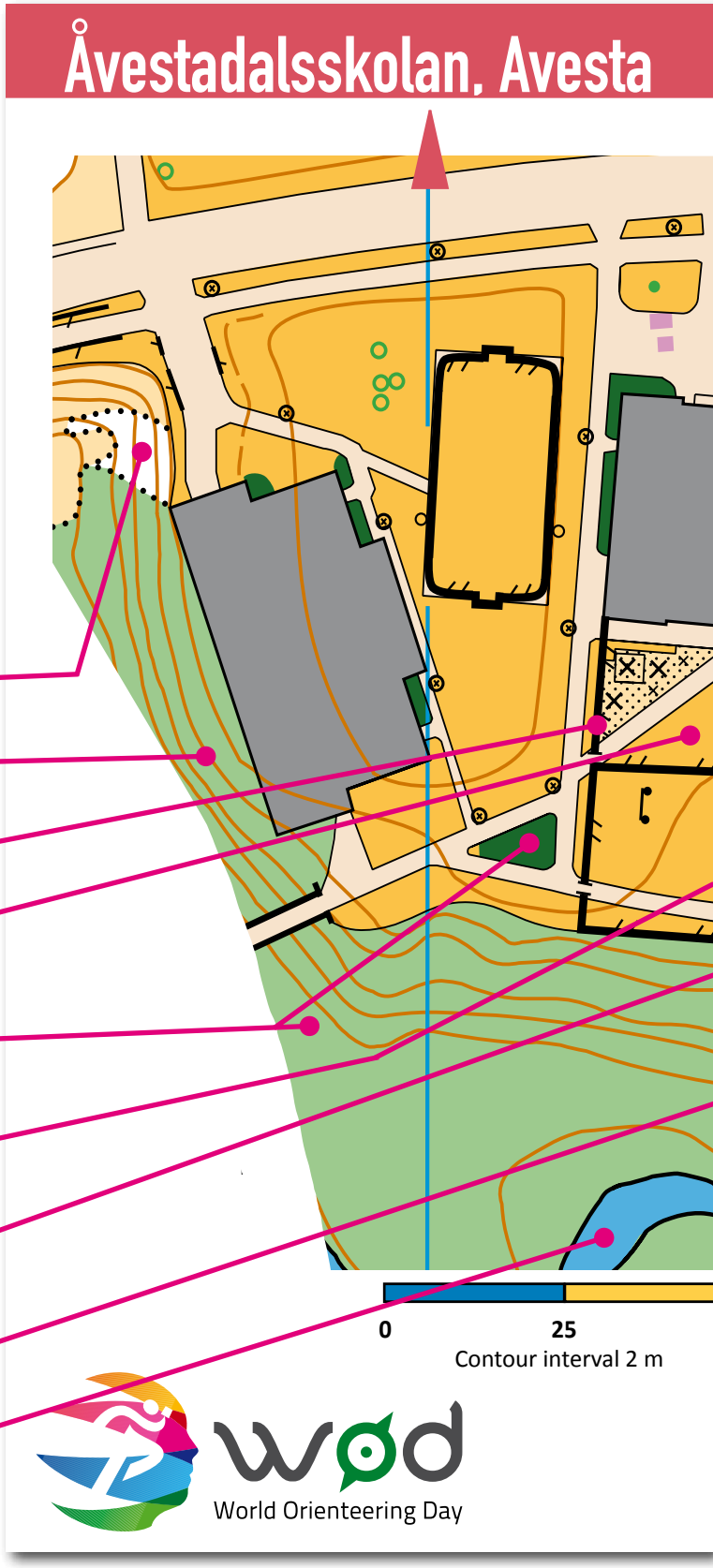
Light brown - Paved or hard gravel surfaces such as roads, car parks, school yards

Pink - Temporary buildings, outdoor café, containers

Blue - Water: lakes, rivers, streams, ditches, marshes

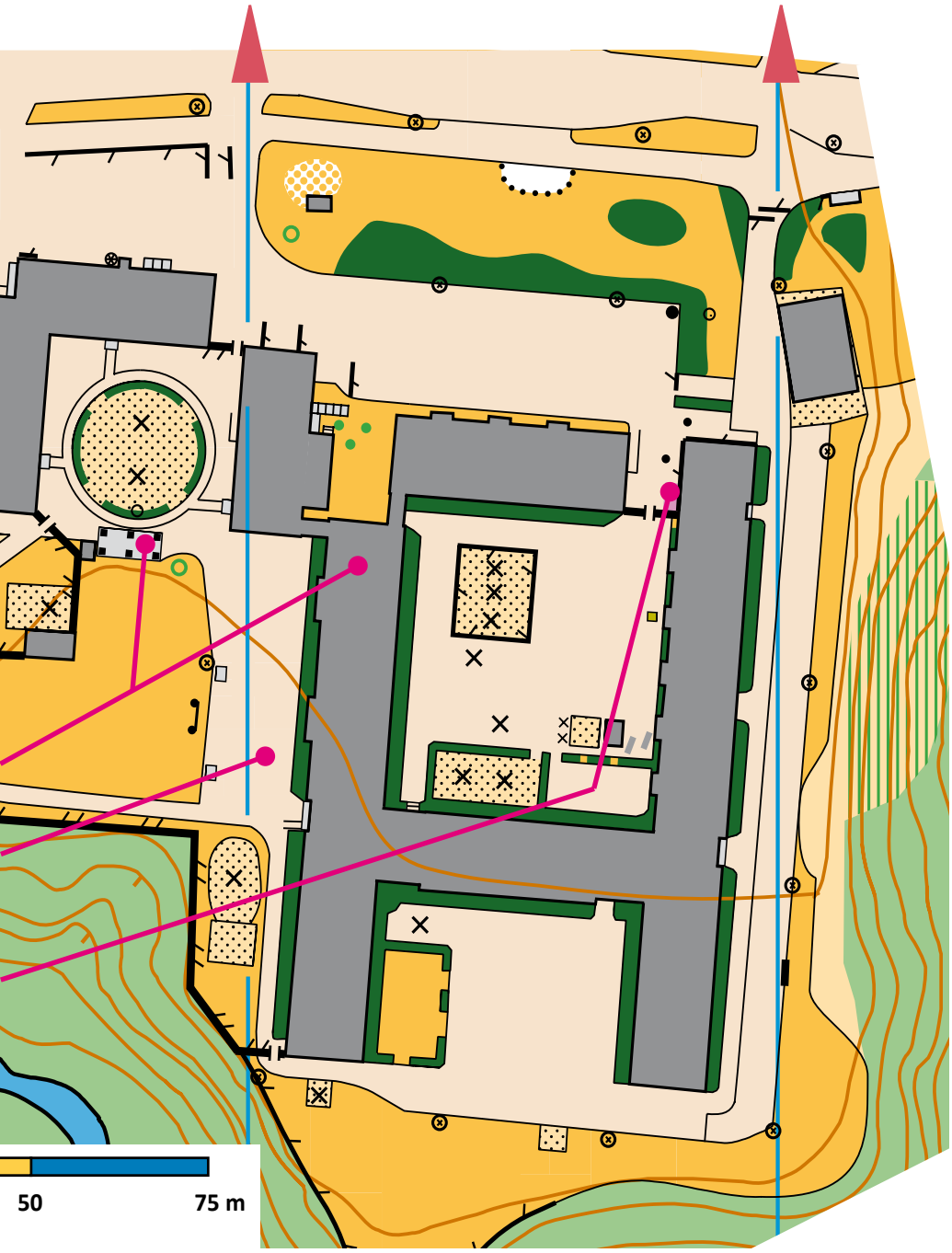
Explanation ISOM and ISSOM

ISOM:
International Specification for Orienteering Maps
ISSOM:
International Specification for Sprint Orienteering Maps



THE MAP'S SYMBOLS

The map symbols are the same throughout the world. A boulder is marked as a black dot on the map. The same sign if you are in Sweden, Australia, China or Brazil. The legend to the right of the map shows most maps characters. However, there are more characters to use to make the map more detailed. Some maps characters are highlighted with a pink background. This is important information for both the teacher who prepares the courses and the students who participate in the activity. No running here!



SKOL SPRINTEN

Legend

- Forest
- Building
- Canopy
- Open land
- Undergrowth
- Open land scattered trees
- Open sandy ground
- Rough open land
- Paved area
- Dense vegetation
- Private area, flower bed
- Road, paved footpath
- Big and small footpath
- Impassable fence
- Passable fence
- Impassable wall
- Passable wall
- Impassable vegetation
- Vegetation boundary
- Minor watercourse
- Impassable cliff
- Football goal
- Big and small tree
- Prominent veg features
- Stair
- Big post/Lamppost
- Flagpole, small post
- Shower/Boulder
- Well/Man-made object
- Hill/Depression
- Knoll/Pit

NB! Forbidden to cross!

Club: Dalaportens OL
Info: www.dalaporten.se
E-mail: info@dalaporten.se
Contact persons: Lisa Silvemark and Linda Mattsson
Mapper: Göran Andersson
goran.andersson.rf@gmail.com

SILVA emit WOC Sweden 2016

LEARNING ORIENTEERING

”Steps of development” is a pedagogical description of how to learn orienteering in a clear sequential way. The basic elements come first followed by increasing difficulty.

This guide is a supplement to the Swedish Orienteering Federation’s book “Orientera i skolan” and provides practical and concrete guidance on how to utilise the school and its neighbourhood for teaching orienteering within the “Physical Education” curriculum.

Based on the levels of green, white and yellow, this guide contains a number of exercises which the teachers can transfer for use with their own school maps. If you don’t have access to any map of the school, i.e. educational material, there is more information in the back of the folder on how to obtain functional educational materials for teaching.

The early school age learning starts at the green level. Many checkpoints provide regular on-going feedback to reaffirm the student that they are getting it right. The short legs also help focus concentration. The next checkpoint should be visible once one finds their right control.

Three key principles: Orientate the map, red to red and thumb your map. Students have to repeat and emphasise these three principles with every learning opportunity. This is the basis for orienteering to be interesting and fun. When you understand how things fit together, the students will look forward to the next challenge.

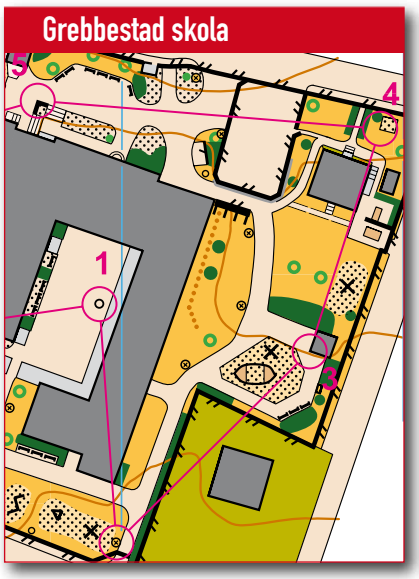
White level requires two to three map reading decisions to find the correct way to the control. In the beginning you navigate one step at a time. Over time every step is pulled together into a larger unit – “first south through the gate, follow the house to the east and then north along the hedge to the control.

The yellow level is designed for teaching in secondary schools but parts of this level can be used at the end of middle school too. In particular, by using a small forest area nearby with some hills. An area where the kids normally play. Students get an understanding of what goes up and down on the map. The area is both known and safe for children.

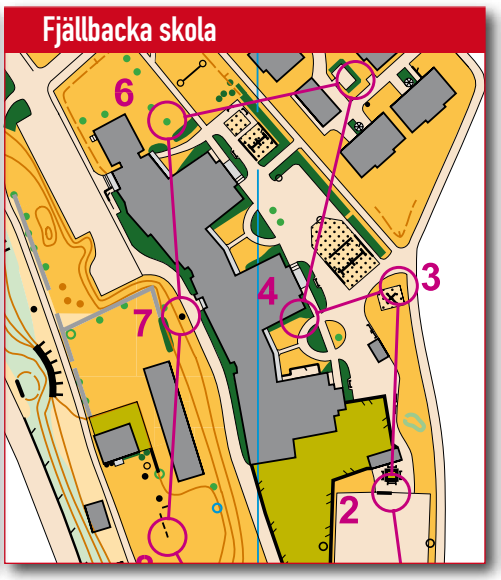
If somebody makes a mistake and become a “little lost” it is better if this happens in the known and safe environment. They can return to the teacher and start again. If a child gets lost in less familiar terrain, the risk is very high that this experience will put them off for the rest of the school years, maybe even for life.

It is an advantage if a teacher is experienced at one level higher than they are teaching. For most teachers orange-level is sufficient. As a teacher, you are the catalyst to ensure that the learning of orienteering is as smooth as possible. Play and ’learning by doing’ are factors for success in learning something that can be a bit difficult and complicated. Therefore the school area, a good and updated map, a simple compass and a dedicated teacher are the foundation for successful learning and for a great, positive experience of orienteering.

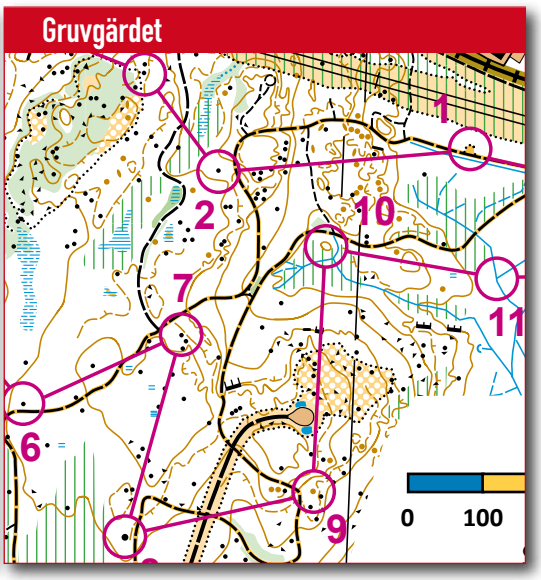
Cooperation with the local orienteering club is valuable as well. If the school can borrow electronic punching equipment from them it will increase the motivation to learn.



Green level



White level



Yellow level

STEPS OF DEVELOPMENT

Orienteering's steps of development are adapted to the school's goals according to Lgr11* and Gy11*, and the curriculum in physical education. It gives concrete examples of navigation skills that must be demonstrated at this level. The higher the level is, the higher the qualitative requirements will be.

Developed by Swedish Orienteering Federation (SOFT).

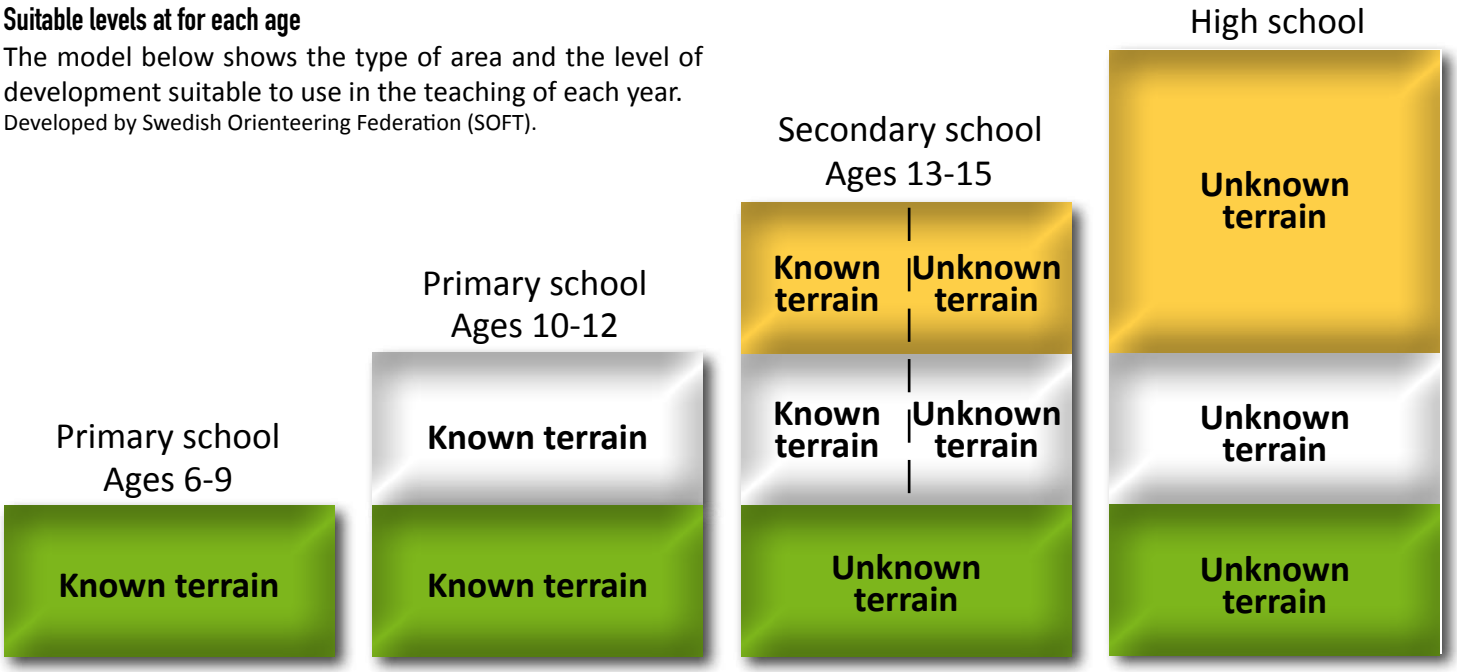
*The Swedish National Agency for Education

14. Deeper understanding height. Depressions, ridges and cliffs as control.
13. Route choices in hilly terrain.
12. Compass and map reading to the checkpoint.
11. Compass and map reading towards distinct handrail.
10. Understanding of height. Highest point. When is it uphill and when is it downhill?
9. Understanding of colours and symbols showing runnability.
8. Short cut towards distinct handrail.
7. Paying attention to terrain objects beside the handrail.
6. Thinking ahead, choose a route, short or long.
5. Knowing the term and be able to orientate along distinct handrails.
4. Orientate the map using the terrain and the compass, "thumb your map" and "red to red".
3. Understand the concept of "where you are on the map" (start), and "where to go" (the control).
2. Knowing the colours of the map and the most common map's symbols.
1. Map understanding, what is a map?

Suitable levels at for each age

The model below shows the type of area and the level of development suitable to use in the teaching of each year.

Developed by Swedish Orienteering Federation (SOFT).



Known terrain: means the school yard and areas in the school's immediate vicinity.

Unknown terrain: means a nearby forest area of outdoor character close to the school.

GLOSSARY

Map understanding: Knowing that the map is reduction small scale and simplification version of reality.

Handrail: Distinct terrain objects that are easy to follow, for example, roads, paths, fences or large buildings. Less distinct handrails can be small paths, hedges, ditches and, vegetation boundaries.

Orientate the map: Alignment of the map consistent to the real north with the map image aligned with reality. This is achieved by the Red to Red principle.

Thumb your map: Positioning of the thumb on the map precisely where one is in reality. As one moves in reality, so too should the thumb consistent with that movement.

RED TO RED!

"Red to Red", "Orientate the map", "thumb your map" are some terms that occur repeatedly for beginners and elite orienteers alike. Applying these principles is vital for interpreting the map. Constant repetition will reinforce these basic techniques of orienteering.

The map is a simplified image of reality (see page 6-7). If the map is orientated incorrectly, the reality does not match the map. We cannot change reality but we can reposition the map to reality or, as we say "orientate the map".

You can either orientate the map to the terrain for example, by using houses and roads or by using the simple "red to red" principle with the help of a compass. In cooperation with Silva and the project "Skol-Sprinten", we have developed a new compass "Begin" which is perfectly adapted to children's hands and sits smoothly on the wrist.

1 Fold the map

Fold the map to a proper size.

2 Thump your map

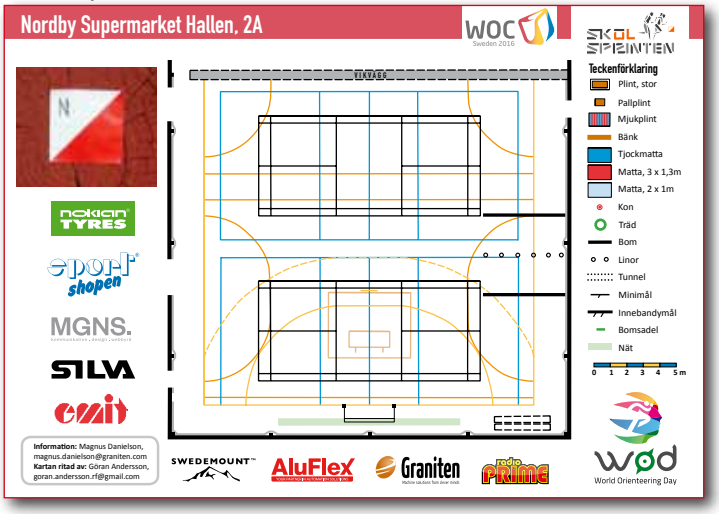
Place your thumb where you are right now.

3 Red to Red

Rotate the map until the red edge of the map and compass red north arrow form a "T", i.e. north arrow is pointing toward the edge of the map. You are now orientated to reality or to the terrain.

Orientate the map in the multi-gym

The student gets a map of the multi-gym and a pen. The teacher divides the class into four groups. All students receive a colour. There are four colours on the floor showing lines for different sports. Handball (yellow), mini-handball (orange), badminton (black) and volleyball (blue). The student begins in one of the corners. As soon as the student crosses a new colour line it will change the student to the new colour line.



Cut the tape into squares. Write a letter on each control marker. Place them on the floor (on the lines).
The tape can be purchased at Bauhaus.

TIP to the teacher:

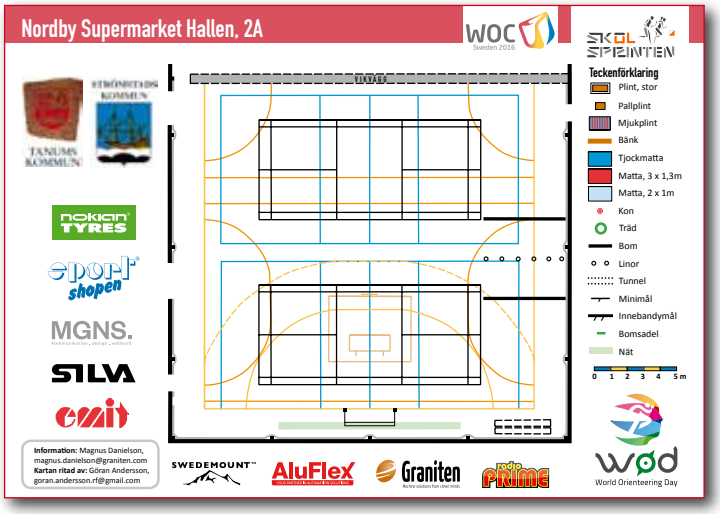
Place 22 controls on the lines (see photo on map). The letters can create three words that students should put together. The words can be:
COOL, AWESOME and **EDUCATIONAL**

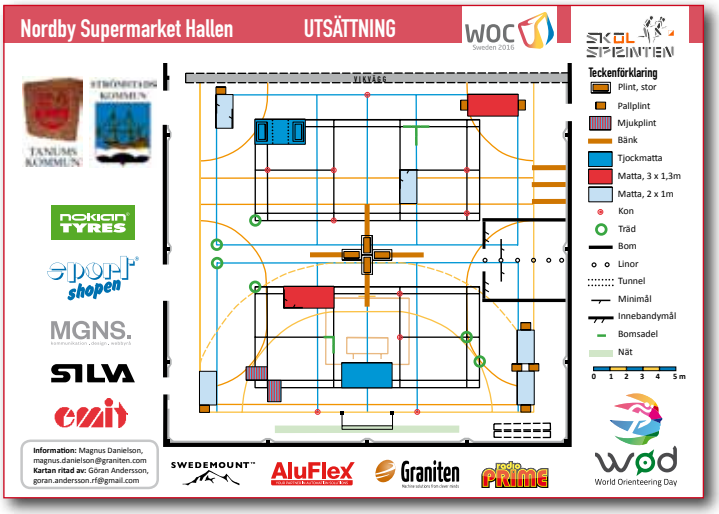
ORIENTEERING INDOOR

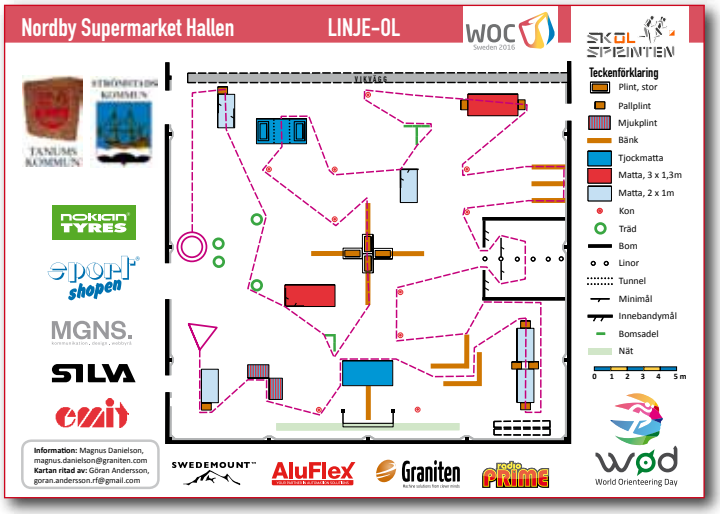
Multi-gym, ideal for learning orienteering

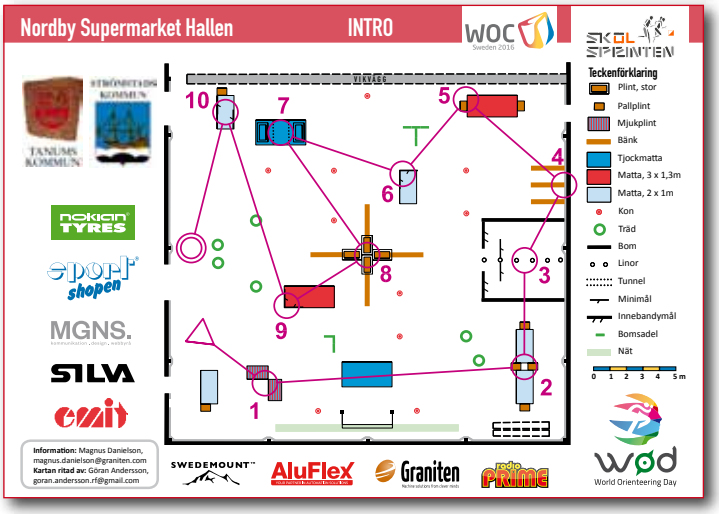
The following maps show how to use multi-gym for learning to navigate from “A to B”. Before starting up the teaching outdoor you may conduct a lesson indoors during late winter. It is important to repeat the grounds as “red-to-red”, fit the map or orientate the map to reality. Choose which phrase you think is best to use, I prefer the “red-to-red.”

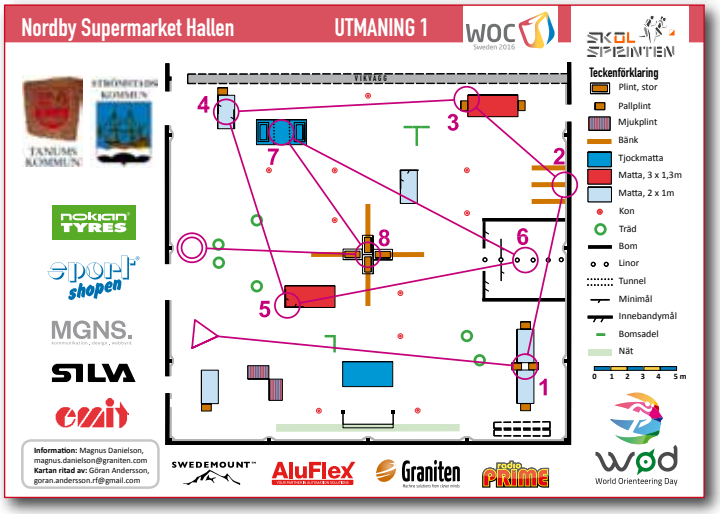
The simplest version of this is the “Line-O”. In this exercise, students are forced to fit the map very often to navigate between gymnastics equipment in a winning way.
Then follow up with ”Intro-course” and finish with the two “Challenge courses”. If you have access to EMIT or SportIdent it will be a very fun exercise. Otherwise, just touch the control marker with your hand.

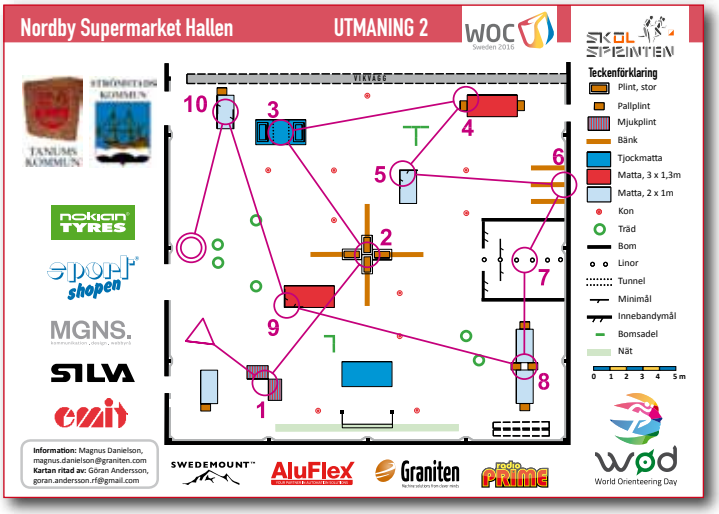












ORIENTEERING INDOOR, TWO FLOORS

The example below is an ambitious way to implement indoor orienteering. If you have the opportunity to use a larger venue or building in many levels it will be very fun. It doesn't need to be a sports facility like this one, it could very well be a school with several floors.

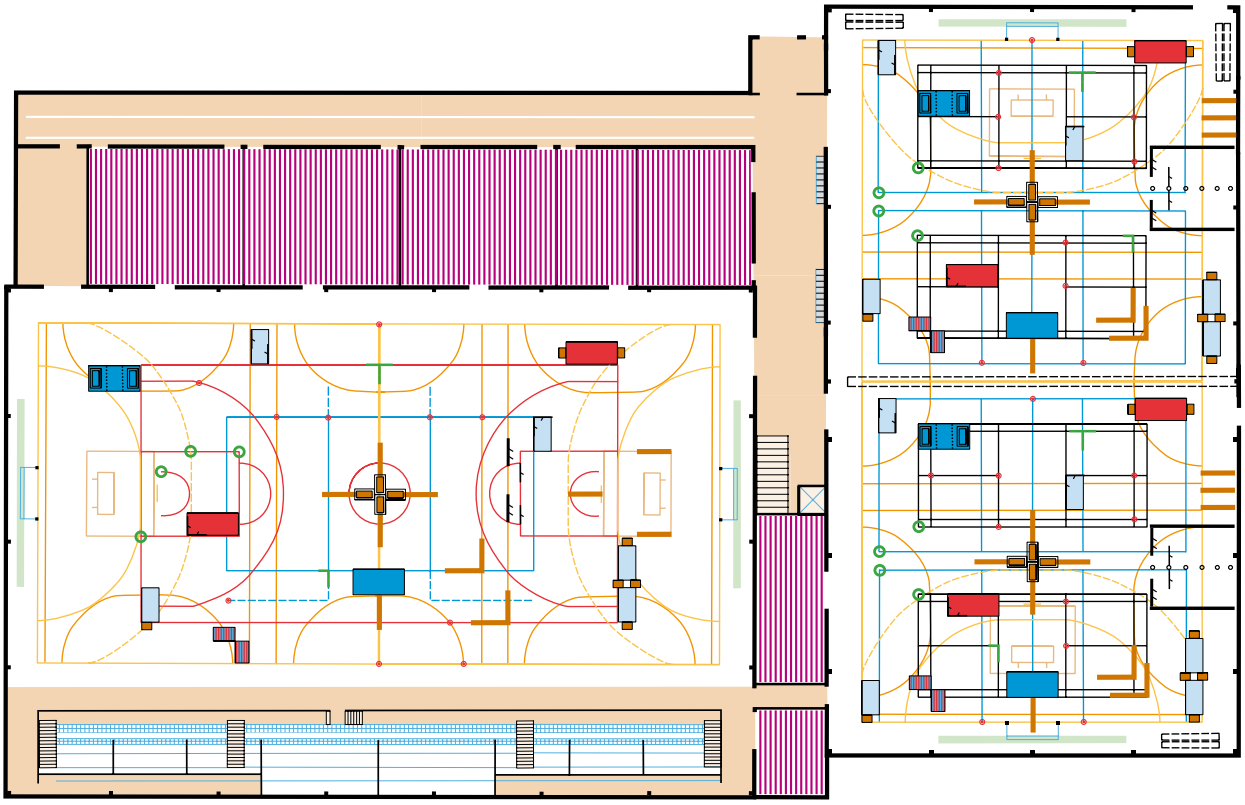
The numbers of equipment e.g. vaulting box, benches, springboard, mattress etc. decides how an area can be used for indoor orienteering. It is similar to carry out the "shipwreck" but this is with the map, and the controls can be hung high and low. Now you have started to be creative with both yourself and the students. Kids are full of imagination, and the ability the kids produce should take advantage of by us adults as much as we can.

My starting point is that all equipment, fixed or loosed, should be used and gladly combined. At the same time students focus on "to navigate in a correct manner" I would like to get coordination and balance as an important part of the exercise in this activity.

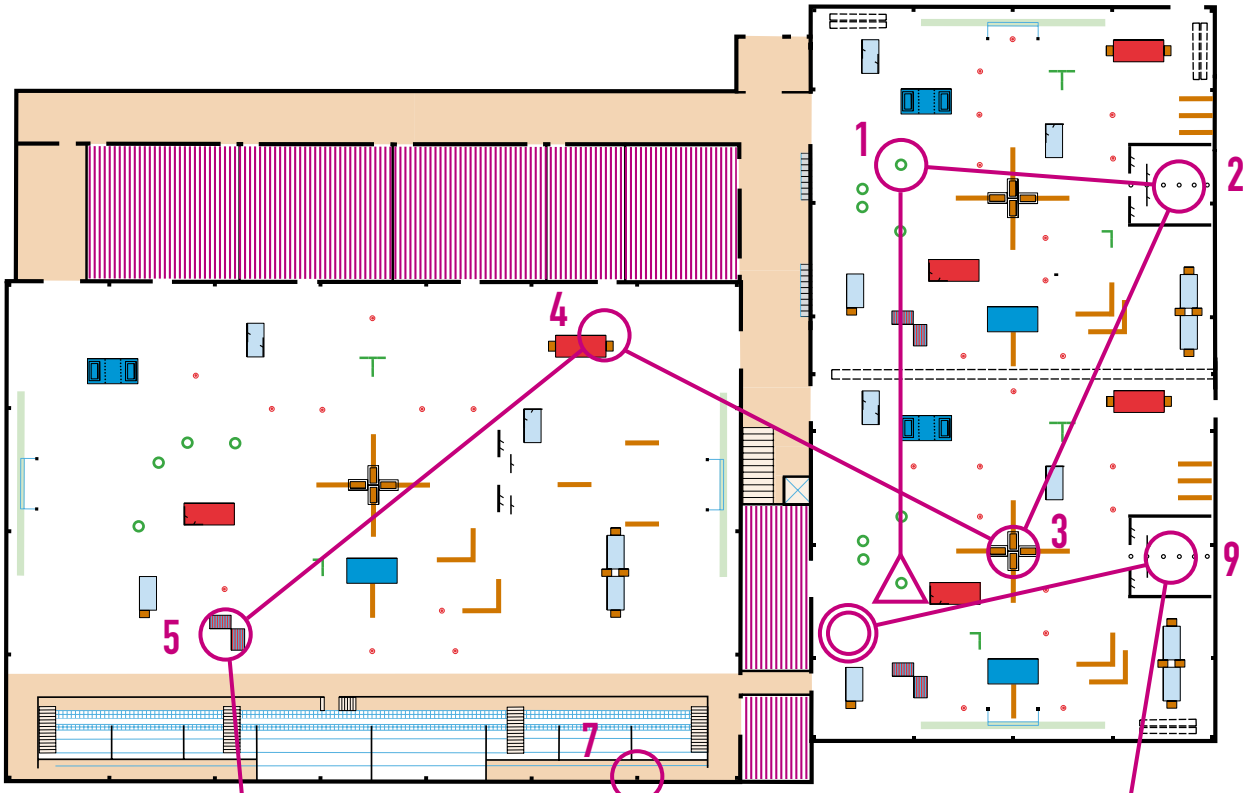
The master map consists of all lines (handball, basketball, badminton, etc) and this map you can use for line orienteering and as a support for you to put out all gymnastic equipment. The map, which is then used for the various activities, have no lines, only the equipment are marked. You have built a "terrain box" indoor and then it's these tools you are using for orienteering. The equipment correspond to stones, hills, buildings, lakes to a "real map".

From the second floor you can see the equipment on first floor and therefore the map is drawn with a transparent layer.

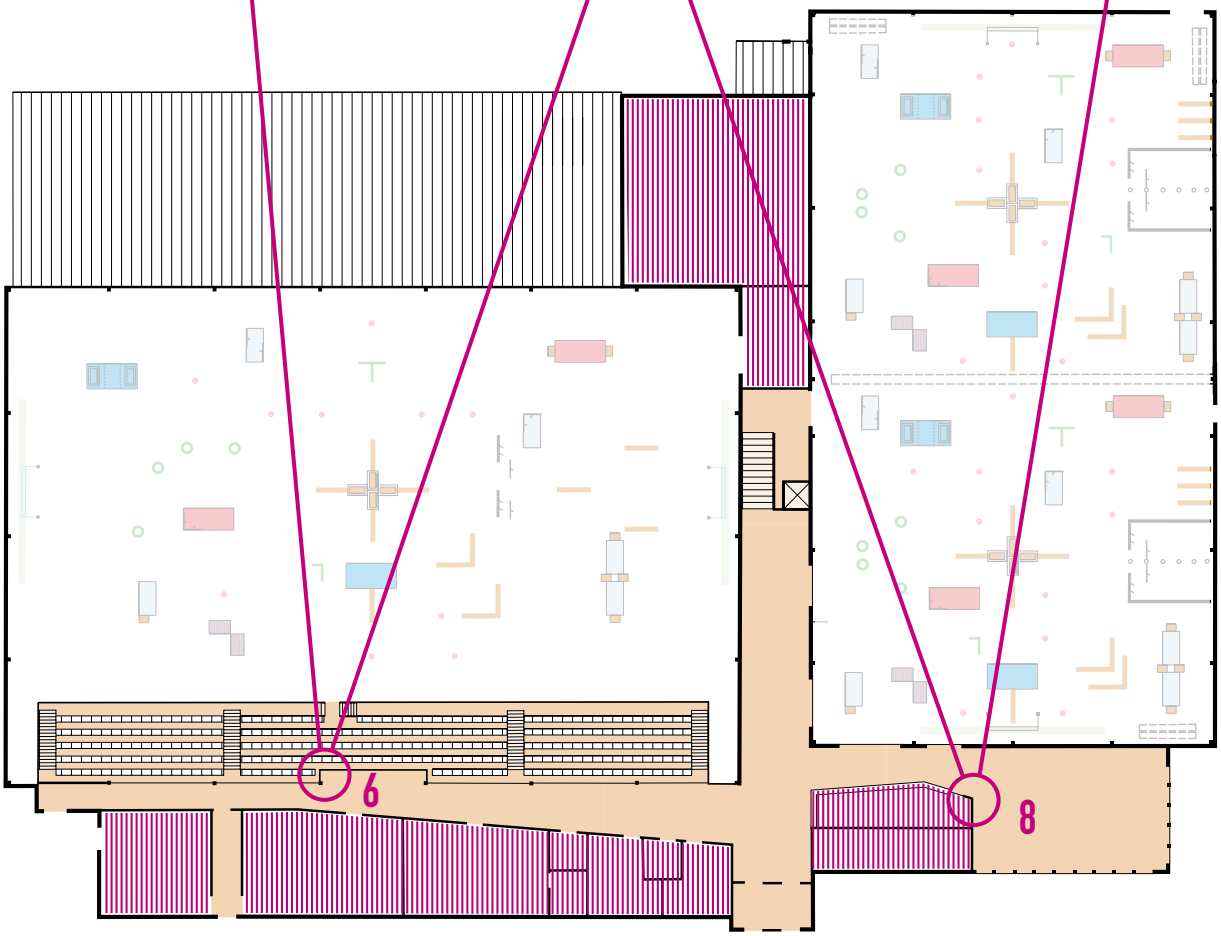
NORDBY SUPERMARKET HALLEN, Floor 1



NORDBY SUPERMARKET HALLEN, Floor 1



NORDBY SUPERMARKET HALLEN, Floor 2



TO UNDERSTAND HILLS AND VALLEYS

From 3D to 2D

On the following pages we focus on mountains and valleys, ridges and depressions, hills and pits. The three dimensional hill we will try to transform into a ”flat hill”. It should be drawn with help of contour lines.

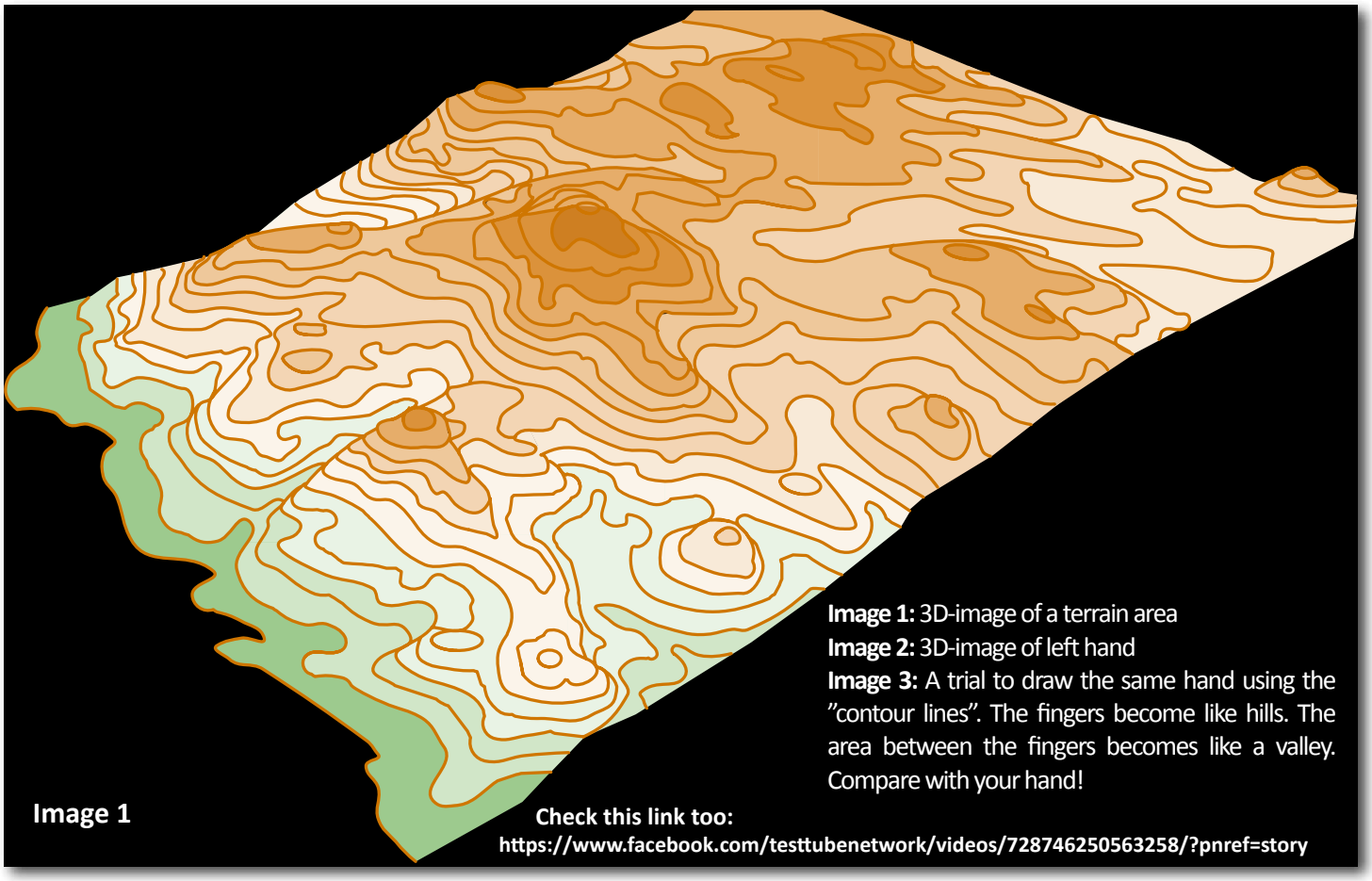


Image 1: 3D-image of a terrain area
Image 2: 3D-image of left hand
Image 3: A trial to draw the same hand using the ”contour lines”. The fingers become like hills. The area between the fingers becomes like a valley. Compare with your hand!

Image 1

Check this link too:
https://www.facebook.com/testtubenetwork/videos/728746250563258/?pnref=story

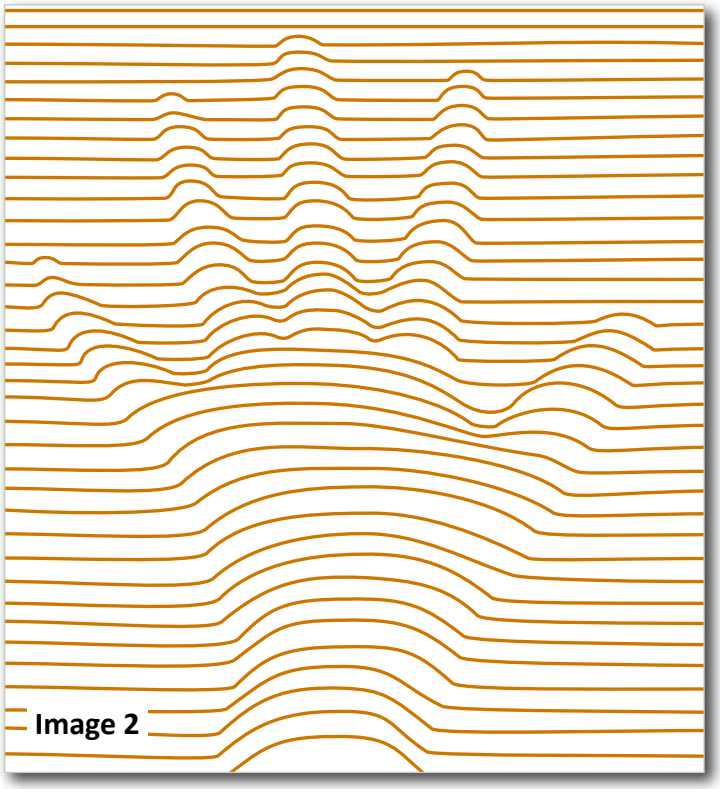


Image 2

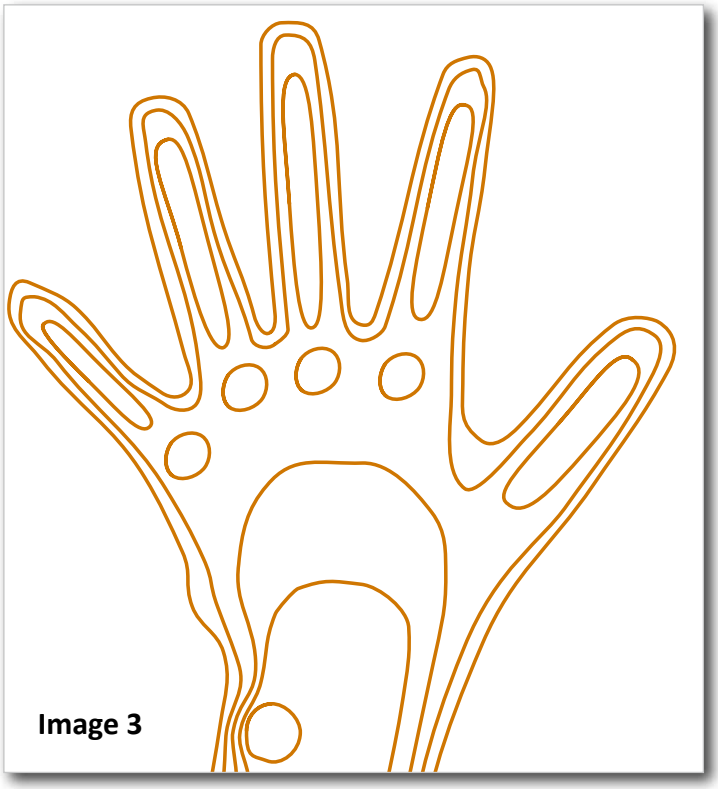


Image 3

TO UNDERSTAND HILLS AND VALLEYS

High mountains and deep valleys

The world's highest mountain is Mount Everest (8848 metres above sea level) located on the border between Nepal and China. The world's deepest ocean grave is the Mariana Grave (11,034 metres below sea level) located in the Pacific Ocean, south of Japan. It is more than 12 miles (19,882 m) between the highest and the lowest place on Earth.

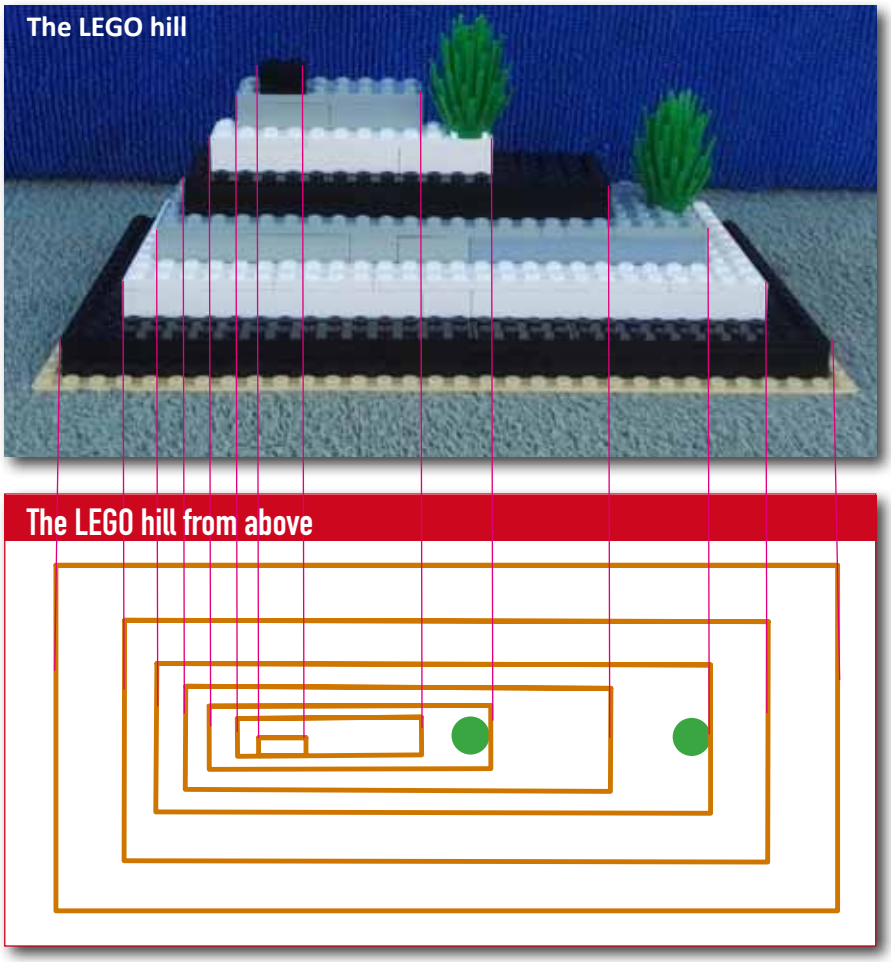
In Sweden, Kebnekaise, is the highest mountain (2097 metres above sea level), while the lowest land point can be found in Kristianstad, 2,41 metres below sea level.

All maps, including maps with hills, are drawn from a photograph or laser scanning which have been taken a few kilometres up in the air. With help of this "map" we try to translate the map into a real image. The previous page shows some examples of three-dimensional maps. These translations of reality are not quite to scale and are slightly distorted and they are therefore difficult to use for determining the position and direction. But they work great to understand how mountains and valleys relate to each other in the terrain.

In order to easily understand how a map with altitude formations works I will recommend to build a hill e.g. in the sandbox or using LEGO pieces that shown on the upper right of the page. You can also go outdoors to find a rock formation that is similar to a mountain in miniature (see the boulder to the right).

Common to these models is to understand the highest point, the steepest part, and the gently sloping part and to recognize what is uphill or downhill. Using the contour lines (brown colour) it will be easy to understand how hills and valleys, ridges and re-entrants appear in reality.

The boulder from above



TO UNDERSTAND HILLS AND VALLEYS

The peak from different directions

The "Globe Arena" in Stockholm and other round buildings have regular shape. They look the same no matter where you stand and look at them. Peaks or hills are very different. Hills and valleys are irregular.

The peak of Idre Fjäll; Städjan

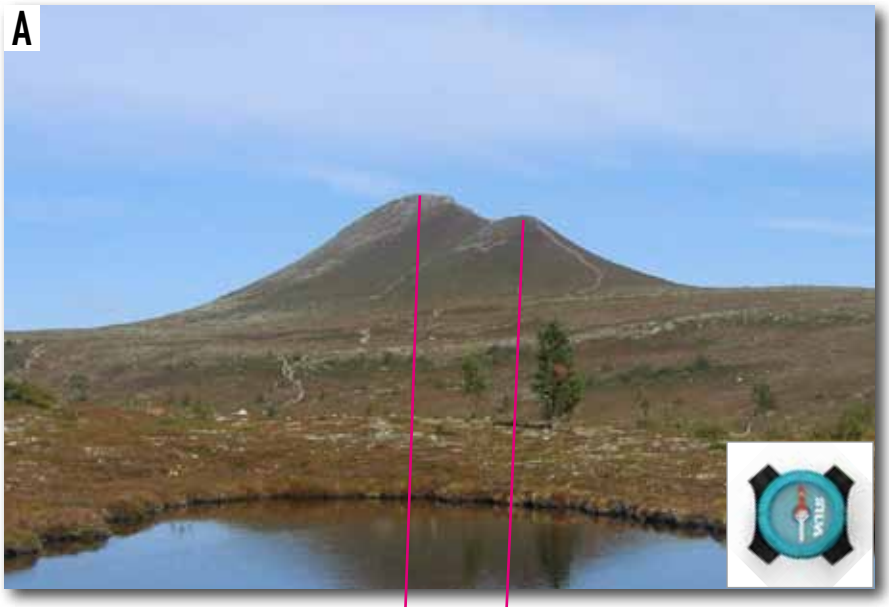
Städjan is Sweden's southernmost mountain top. The mountain is very steep. It is visible from all directions. The top of the hill extends in a north-south direction. Städjan has a higher peak in the north and lower in the south. The highest peak is 1131 metres above sea level.

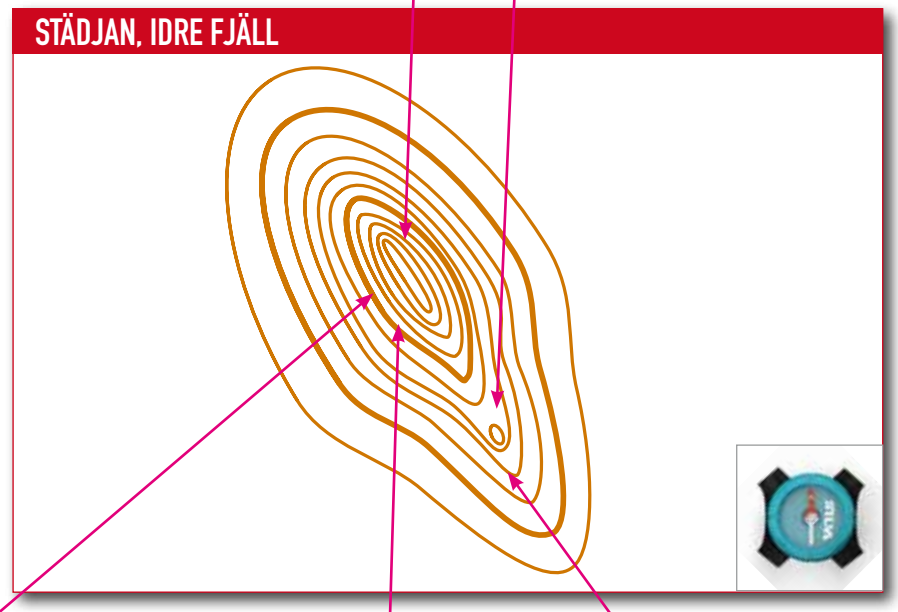
Different directions

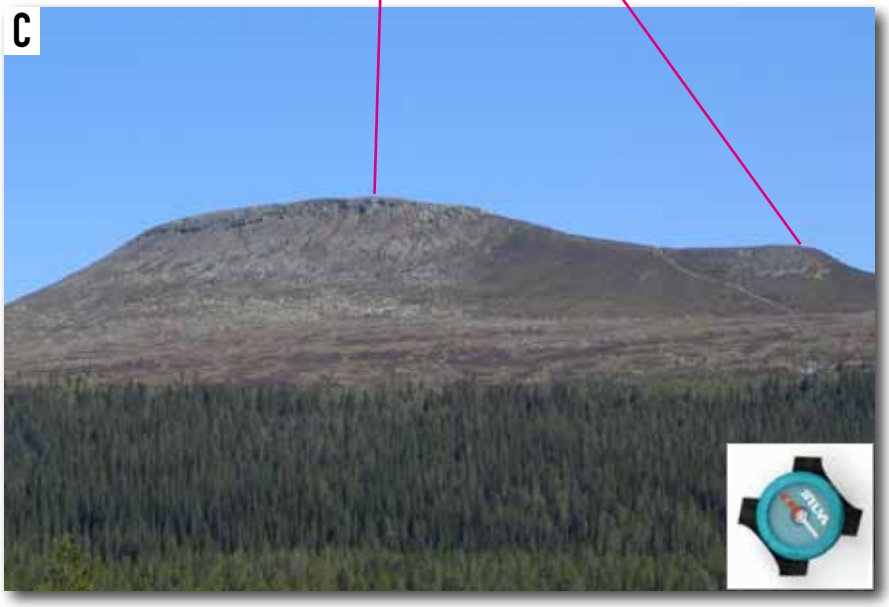
The photos A-C are showing Städjan from different directions. Photo A is taken from South to North, photo B is taken from North West to South East and photo C is taken from South West to North East. You see the mountain in three different directions. It's hard to know whether it is the same mountain from the photos. However, on the map the mountain is the same no matter where you are.

10 or 2 metres contour interval

The height between each contour line at a mountain map is 10 metres. Similar distance at a school map is 1 or 2 metres.







TO UNDERSTAND HILLS AND VALLEYS

Draw a map of a hill

In Hansbyn outside Dala-Husby in Sweden, where I live, there are a lot of boulders. I can choose which boulder I want. The boulder, photo on the right, I have chosen to draw a map of contour lines.

The boulder's different shapes

The map of the boulder is a simplified picture of reality. The purpose of the map is to show different shapes of the boulder. The steep sides. The highest points. The deep notches. These are the key elements to draw first. Then I draw the smaller details, such as a small groove or protruding parts.

The contour lines

It is the same distance between the contour lines. It is steep where the contour lines are very close together. Longer distance between the contour lines shows that there is a flatter area.

On most maps the fifth contour line is drawn with thicker line. Thanks to the thick contour lines you get a much better idea what the hills and valleys look like.

The boulder from above

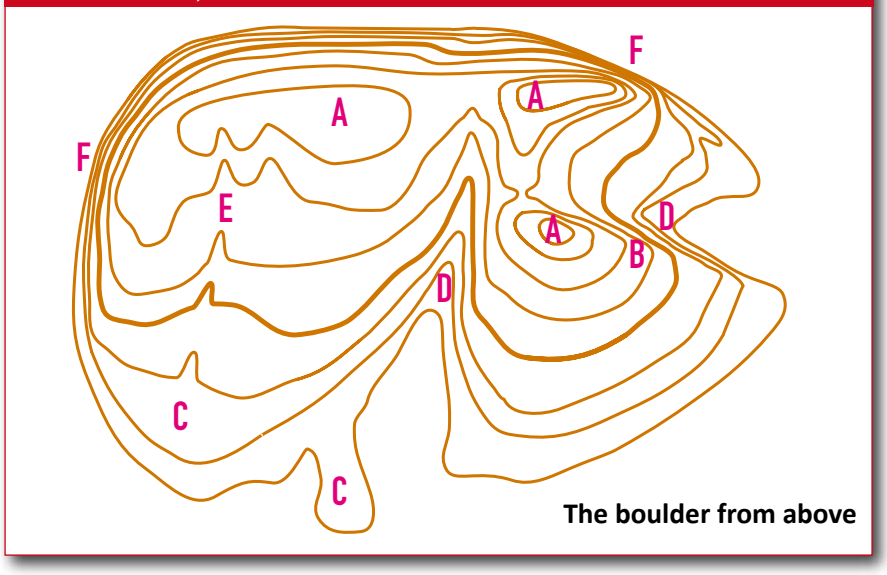
Test yourself!

On the following pages you will find some "Test yourself exercises." You will understand better how the hills and valleys are drawn on a map.

Explanations of the map's contour lines

A Hill, highest point
B Ridge or spur
C Terrace or plateau
D Re-entrant or valley, large
E Re-entrant or valley, small
F Steepest part of the hill

"HÖJDSTENEN", HANSBYN



The boulder from above

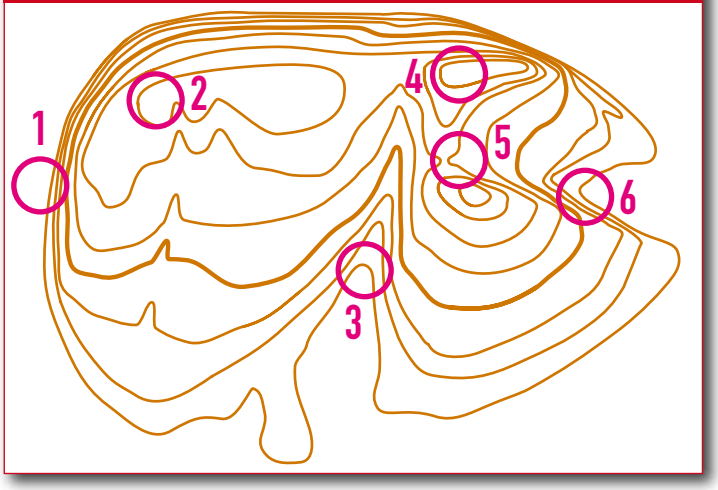
TO UNDERSTAND HILLS AND VALLEYS, exercise

Test yourself!
In the photos A-F a small control marker is placed in different locations. Put the correct letter together with the correct number on the map ”Höjdstenen”:

A _____ **D** _____
B _____ **E** _____
C _____ **F** _____

You will find the correct answers on page 56.

”HÖJDSTENEN”, HANSBYN



TO UNDERSTAND HILLS AND VALLEYS, exercise

Test yourself!

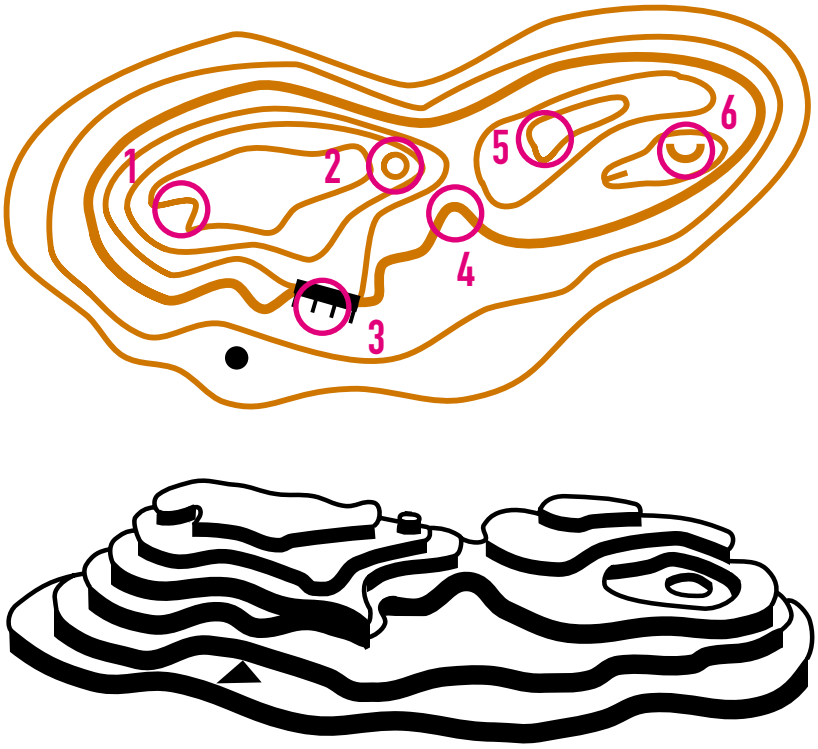
To the right you will find a map and a drawn model of a hill. On the map there are a number of controls (6) marked. Mark on the model where you think the controls are drawn on the map.

Using the map below, answer the following questions:

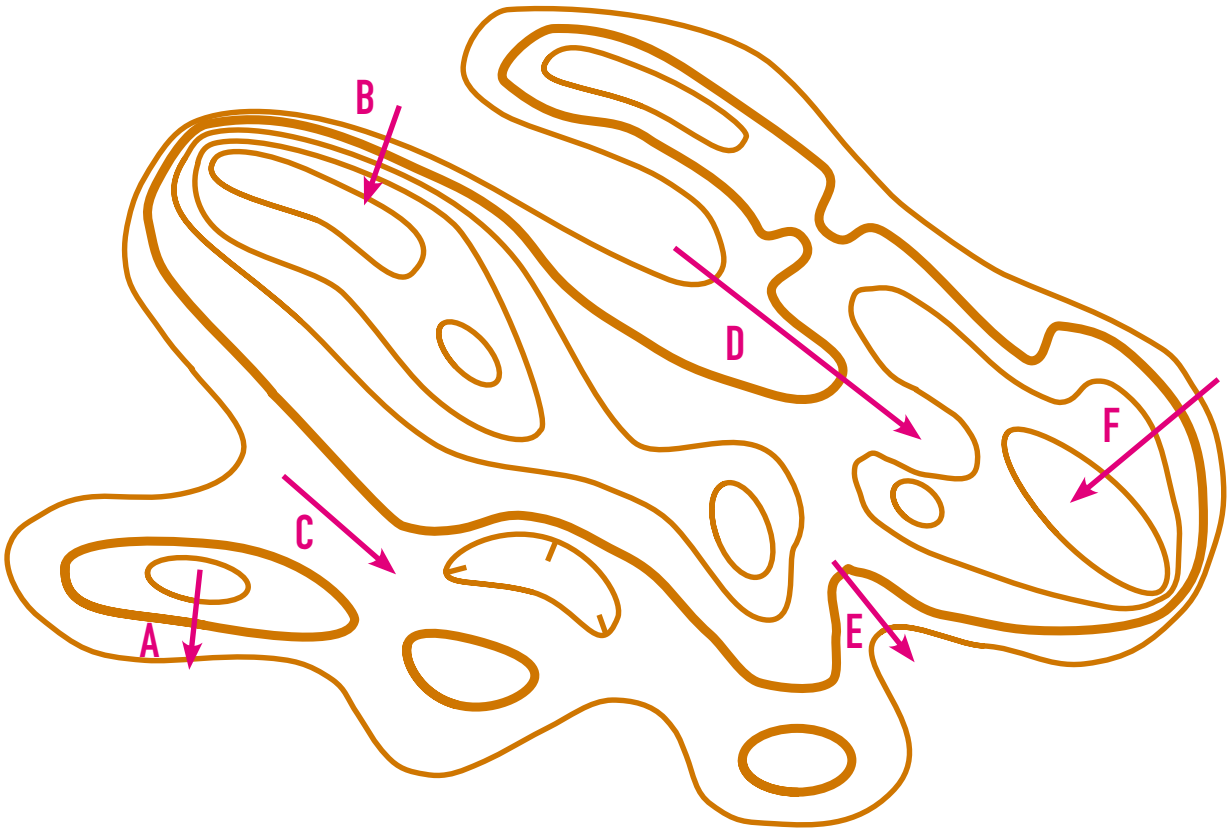
- How many hills can you find?
- Which hills are on the same level?
- Which hill is on the highest level?
- How many depressions can you find?
- Where are the steepest parts?
- Which arrows show direction uphill?
- Which arrows show direction downhill?
- Which arrows show flat area?

The answers to these "Test yourself" you will find in the Appendix on page 56.

TEST YOURSELF!



TEST YOURSELF!



GREEN MAP SHOWS DENSE VEGETATION

As mapmaker of orienteering maps you are trying to draw the reality as much detail as possible. In addition to small details you want to show visibility and runnability of the terrain. This page shows the main colours for this.

The white colour indicates easy running in the forest. The forest may consist of deciduous, coniferous or mixed forest.

The yellow colour shows the open areas with very good runnability. Cultivated land, meadow or lawn.

The yellow-white colour shows mostly lawn with several trees in the area. Same runnabilty as "yellow".

The light yellow colour shows open areas with tall grass. Usually good visibility but some reduced runnability.

The light green colour shows that there is a certain reduced visibility and somewhat reduced runnability.

The medium green colour shows some reduced visibility and reduced runnability.

The dark green colour shows much reduced visibility, and it is very difficult to run.

The green-black colour shows it is impossible to cross. E.g. hedges are drawn in this manner.

An area of dense undergrowth (reduced runnability) but otherwise good visibility.

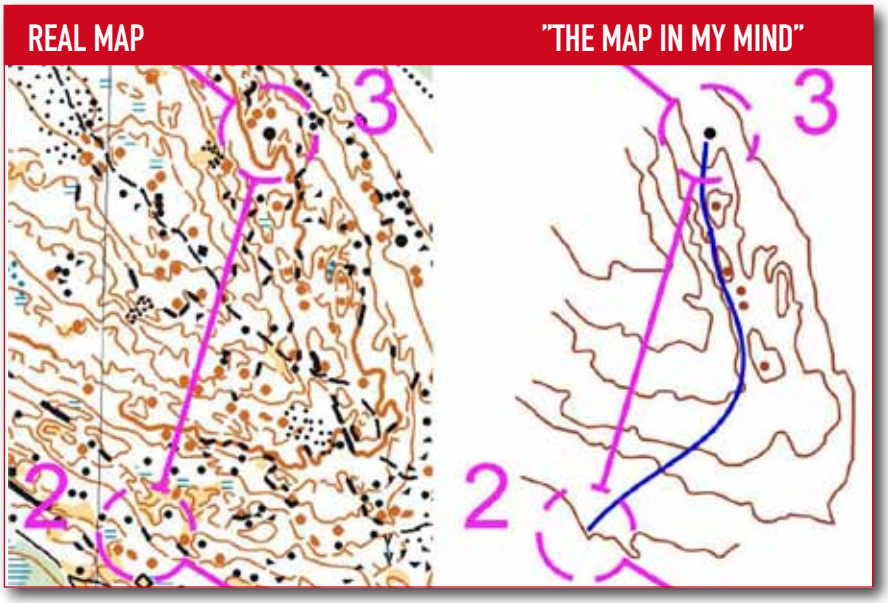
THREE FACTORS FOR SUCCESS

Learn from the best in the World!

The best male orienteer of the World, Thierry Gueorgiou from France, has three simple advices to anyone who wants to learn to orientate. It doesn't matter if you are a beginner or if you compete at the absolute world class level. The same principles apply to anyone who wants to find the controls in a quick, easy and safe way.

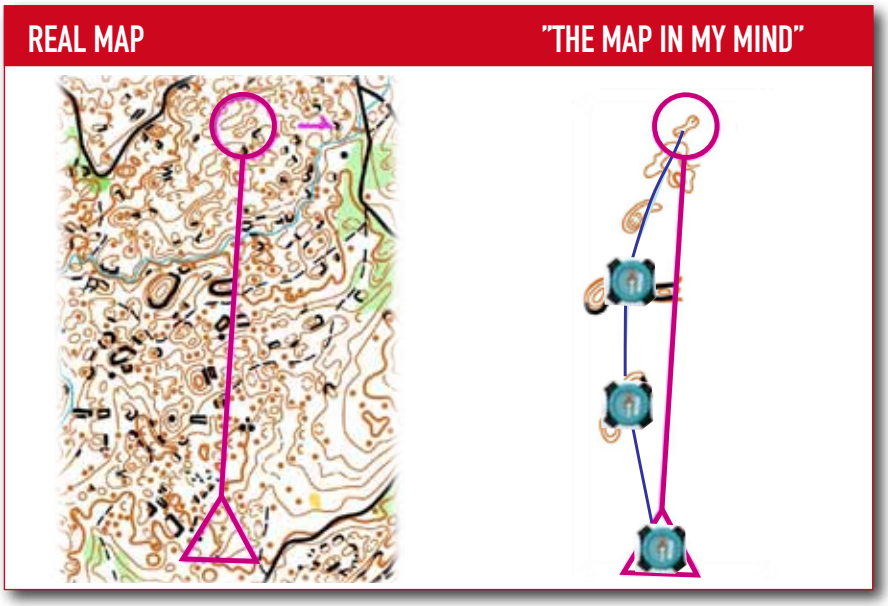
1 Make it simple

Schoolyard maps are pretty simple to understand. The further out you come into the wilderness the more complicated details are drawn on the map. Not least the height formations can be very complex. Thierry Gueorgiou claims that he uses the same technology today when he runs the most challenging courses such as the World Cup as he did when he started to learn orienteering. From the "real map" he creates a simplified picture of the map. He picks out the height formations and the details that are unique to this area and orientates with help of these. He draws a new "visual map" in his mind.



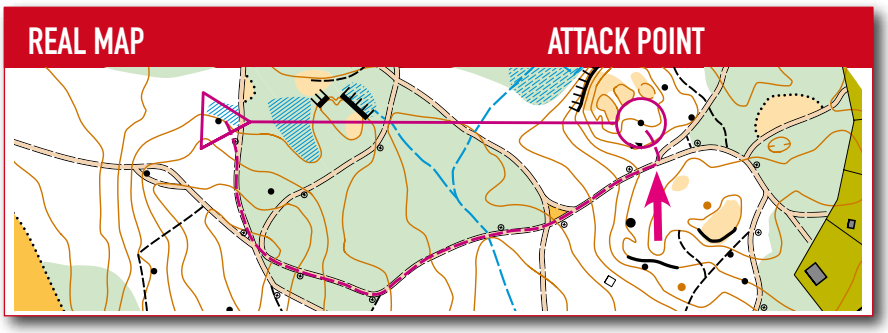
2 Accurate direction

Similarly he picks out the unique details of the map to the right and at the same time, he uses the compass to keep the correct direction. Every time he looks at the map as he looks at the compass to check that he is in correct direction towards the next terrain objects. It is even so that he sometimes can put down the map, but he never does so with the compass. It is partly thanks to his ability to use the compass that he runs faster than any other when he orientates.



3 Attack point

The idea of the attack point is to get as close to the control as possible. From the attack point you can locate the control easily, quickly and safely. In this case, the arrow shows a good attack point, while the dotted line shows the fastest track.



LINE ORIENTEERING

In the known area (school yard)

LINE-O, 1: The teacher follows the dashed line and makes a stop at distinct objects/places. Students have a blank map and follow the teacher. The teacher reminds the students to "thumb your map" and especially "red-to-red". The teacher asks the students "Where are we? "Where is for example the boulder on the map? "In which direction do I point now?"

Students work together in pairs and show and answer the teacher's questions by pointing on the map.

LINE-O, 2 and 3: The students will be divided into two groups and should follow the dashed lines. There are control markers placed at different distinct points along each dashed line. The task is to highlight where these are situated. The teacher reminds students to "thumb your map" and to focus on the "red-to-red".

Students can usefully cooperate two and two.

In the unknown area (can be forest)

LINE-O, 4: In this exercise, we will visit the forest or a more unknown area. The dotted line shows the student to follow handrails (paths, roads, slopes and height formations). On a number of occasions the line turns from the handrail, at or close to a distinctive objects. At these times you can change the direction, and it is important to fit the map to the reality or to use "red-to-red" to get the correct direction.

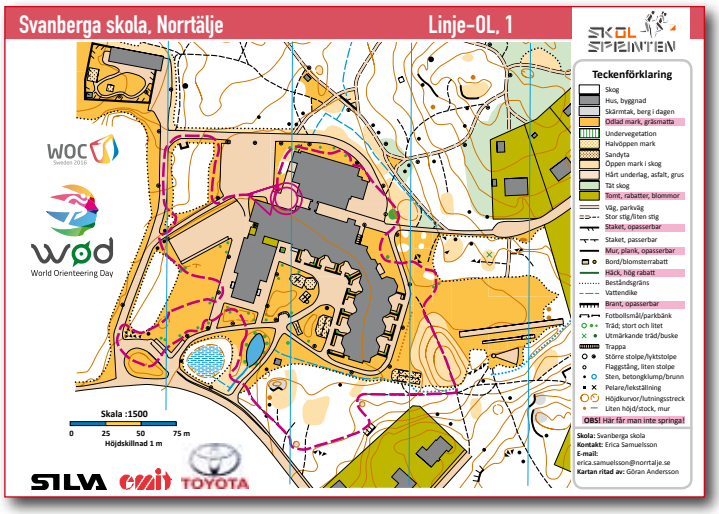
After such a "short-cut", the student will follow the next handrail to the coming short-cut. The controls, which the students are looking for, should be placed either at the short-cut or at an object which appear after the short-cut, e.g. a boulder.

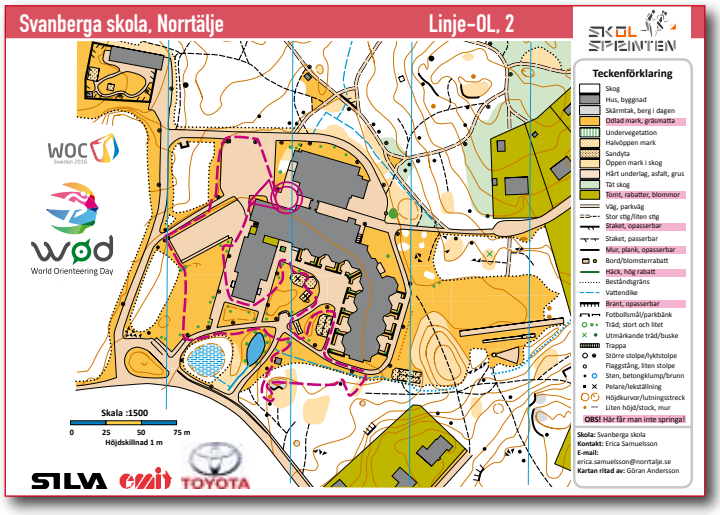
Students can usefully cooperate two and two.

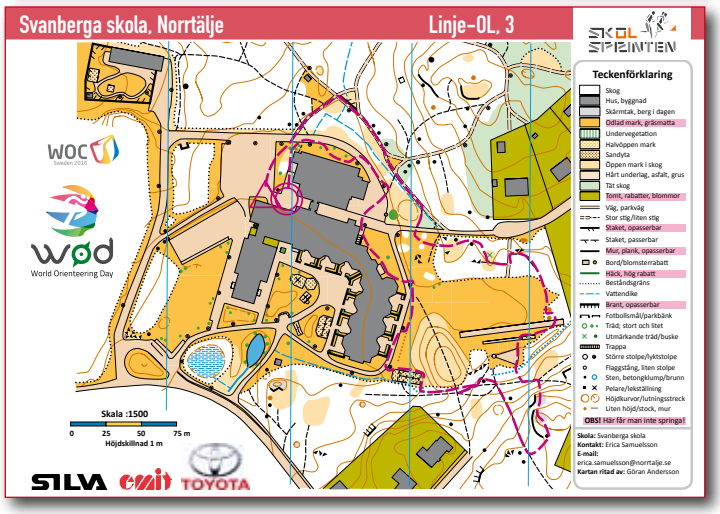
Practical information

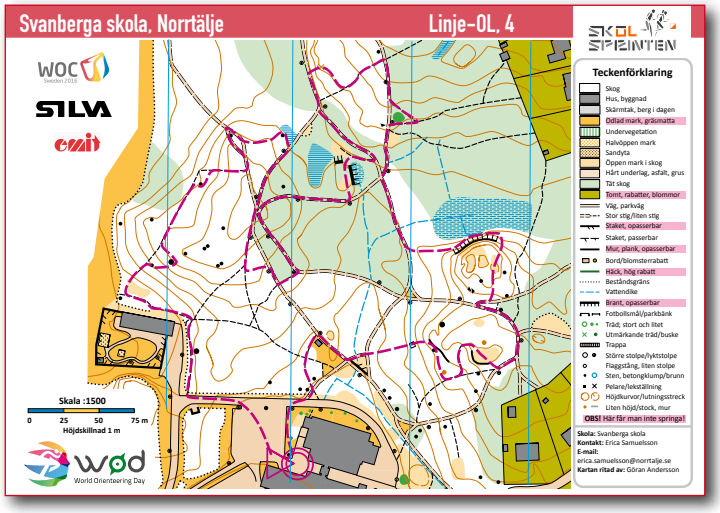
The controls may be marked with orienteering markers and pin punches. If you have access to electronic punching systems such as EMIT or SPORTident these can be used advantageously. The checkpoints may also be marked in a simple way using plastic tape in bright colours.

As a warm up, the students can put out 1-2 controls and as warm down bring the same controls back again. However, this requires that you have a map for each control, but it may be worthwhile to produce these additional master maps.









SIX PEAKS

Up on top and look around!

It takes a while to learn how hills, pits, ridges and re-entrants are drawn on a map. Out in the terrain you can more easily compare the map with reality.

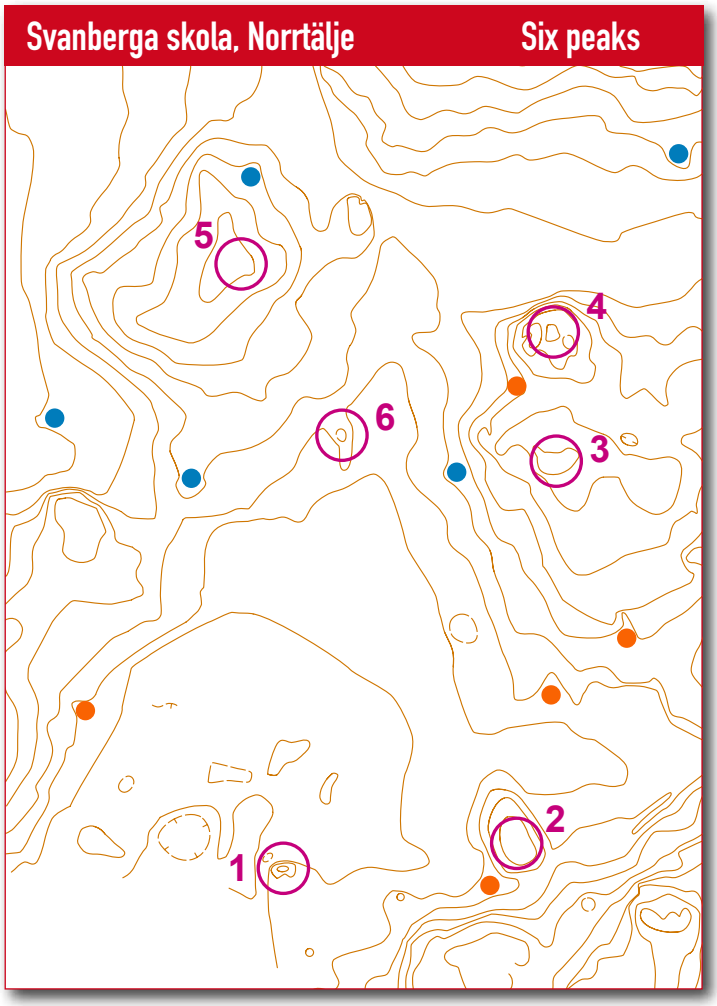
360 degrees

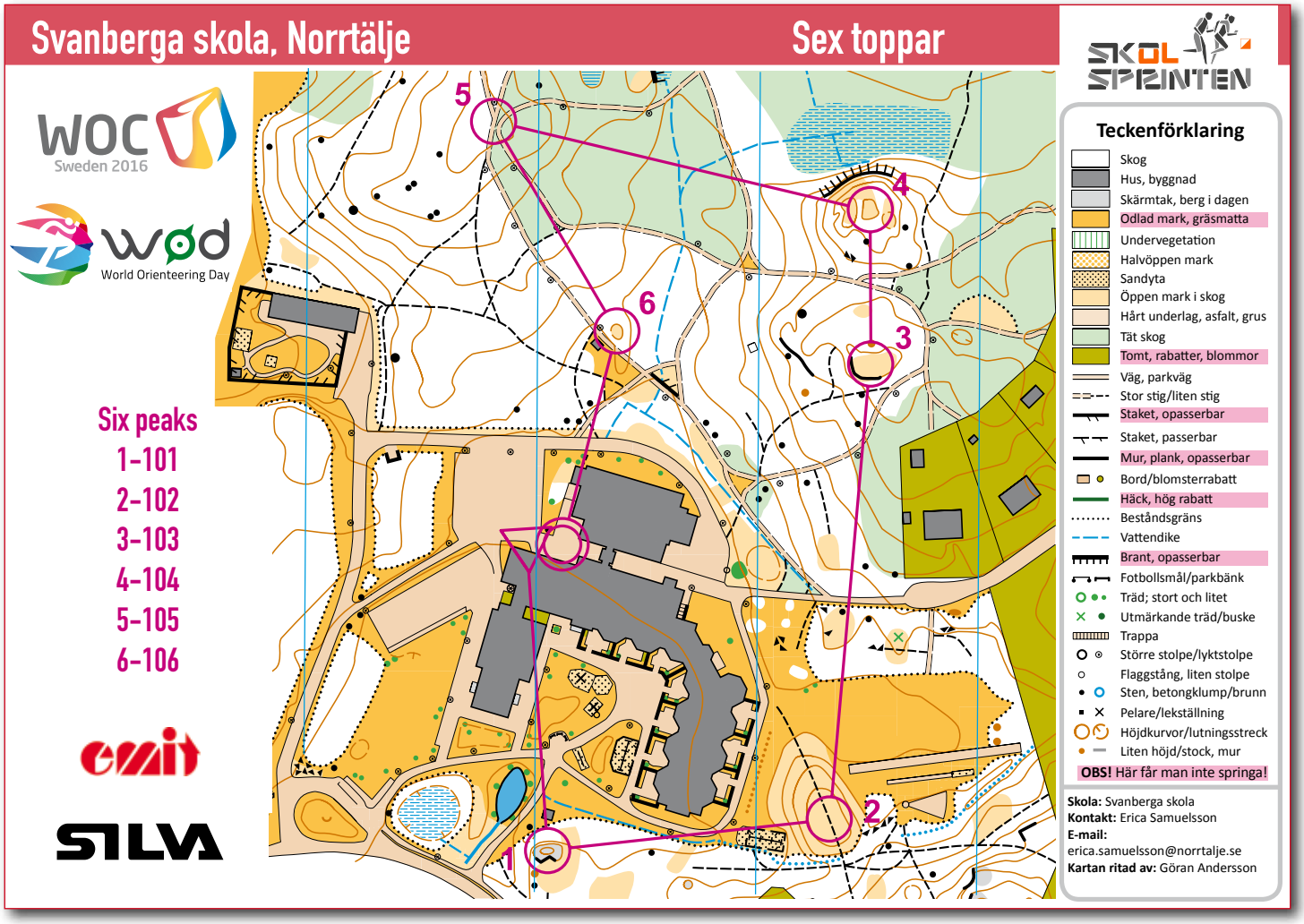
Find a number of peaks around the terrain. From the top of the hill scout 360 degrees around. You may see how the terrain ahead shapes itself as the fingers on your hand. Ridges ● rise up while re-entrants ● sink into the terrain.

Three things to remember!

A good exercise is that the teacher will take the students to the different hills. The teacher can discuss following issue with the students:

- how to simplify
- how to keep the direction
- how to find a suitable attack point to find the controls safely





STAR-O, 1 CONTROL

Orientate the map (Star-O part A, control 1-12)

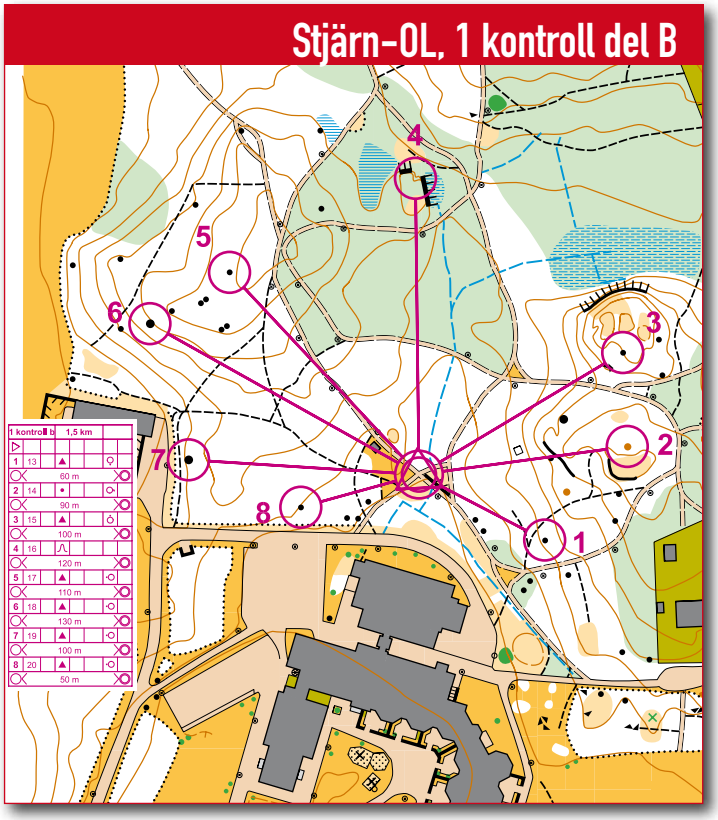
This is a perfect activity both for developing the technique to orientate the map and to develop the students' fitness. The exercise can preferably be carried out as an interval session. Only one control per map. Students can work in pairs or in groups during warm up putting out control markers.

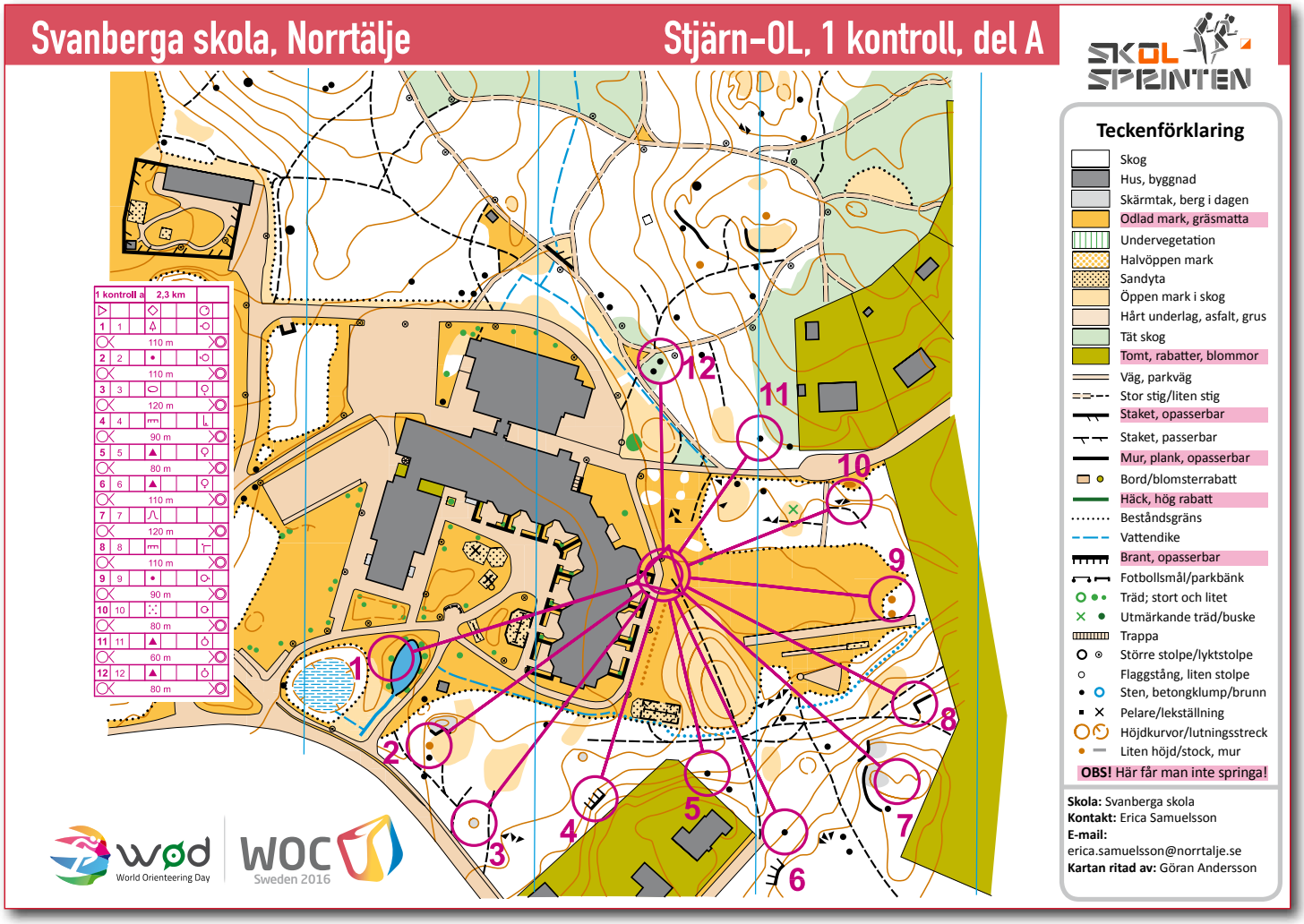
The teacher directs students from the start and finish (same location). "Thumb your map" and especially "red to red" emphasised. When the students have orientated the map and made a decision how to run to the control the task is: ***The students navigate to the control, punch and run at full speed back to start/finish.***

Orientate the map (Star-O, part B control 1-8)

After all the 12 controls are completed the teacher and students move to the next start and finish to conduct the next exercise in the same way.

The advantages of "Star-O" are that the teacher very often can give instructions and feedback to the students. This is normally very difficult when you teach orienteering. Students can usually work one by one during these exercises. If some students want to run together it is of course absolutely fine.





STAR-O, 3 CONTROLS

Orientate the map (Star-O, Course A-D)

This is a perfect activity both for developing the technique to orientate the map and to develop the students' fitness when you have completed the first part of the yellow level. The exercise can preferably be carried out as an interval session. You can draw two courses on each map. The maps below show courses A and B, C and D. The students can start four at a time to get a student on each track. The student doesn't have to run by themselves, and it is perfectly possible to work in pairs. The most important thing is to focus on "make it simple" and to find the controls.

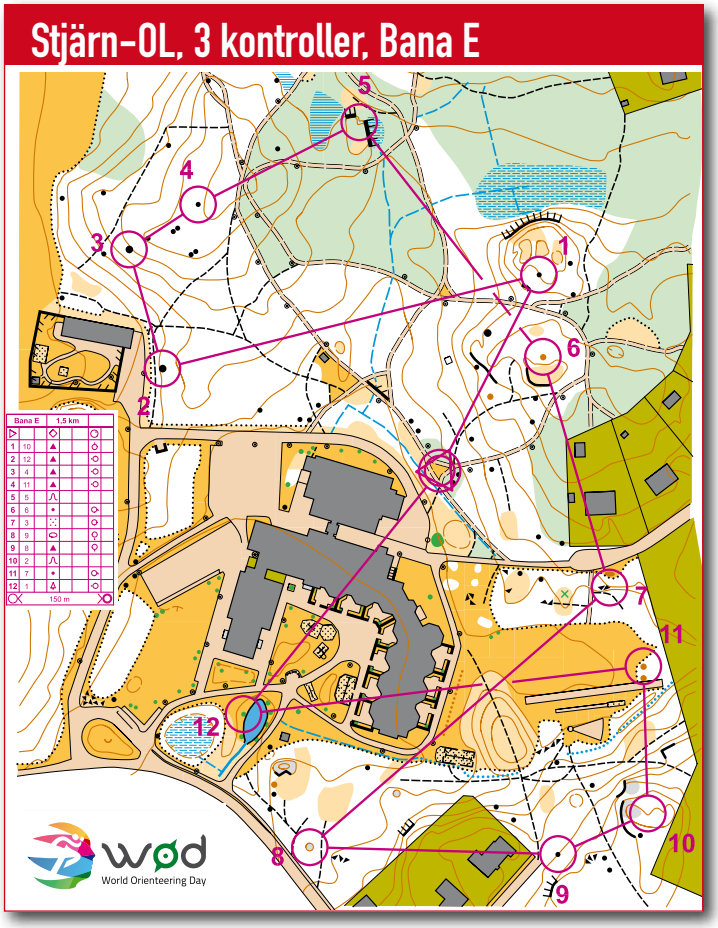
The students can work in pairs or in groups during the warm up by putting out the control markers.

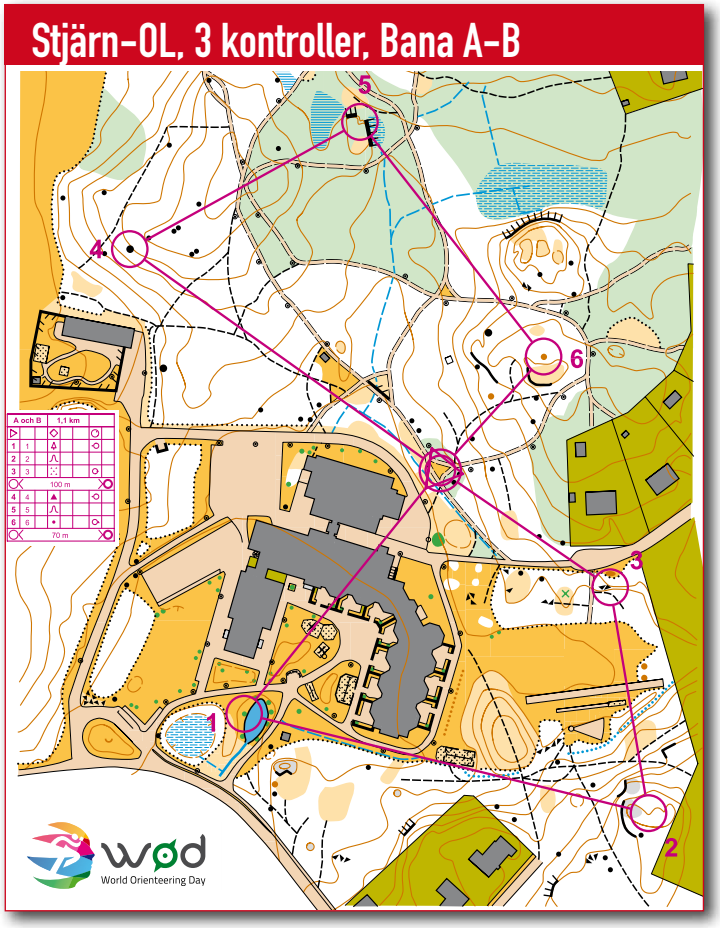
The teacher directs students from the start/finish location (same place). "Thumb your map" and "red to red" have to be highlighted. When the students have orientated the map and made a decision how to run to the controls the task is:

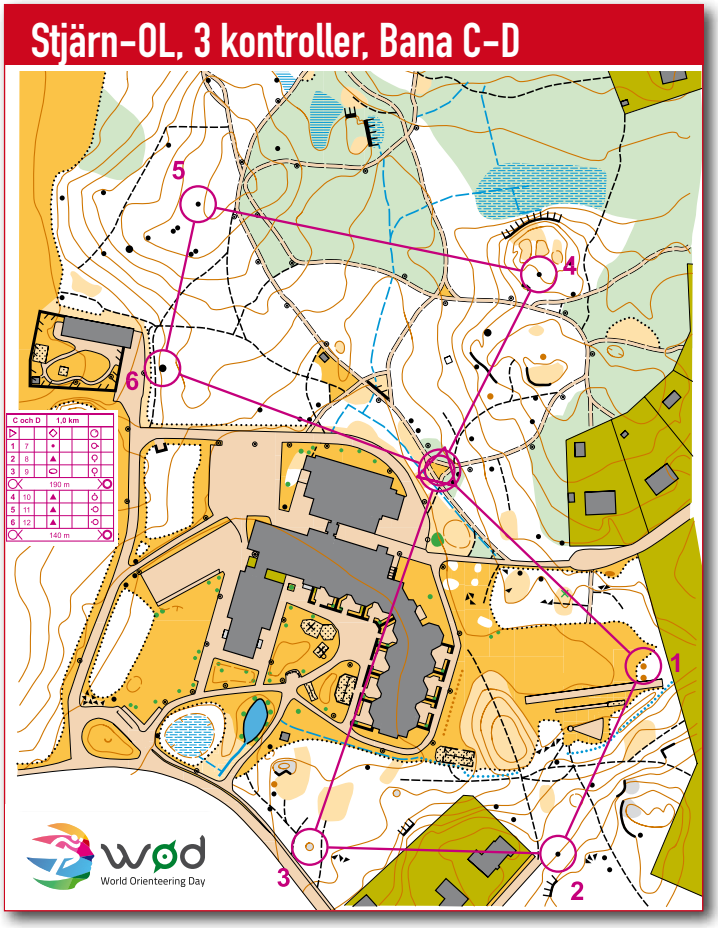
The students navigate to all controls, punch and run at full speed from the last control to start/finish.

Course E

Course E (right) is applied to all controls from the courses A-D. This is a bonus track for those who want to do more and that have reached a higher technical level.







CONTROL PICKING ALONG HANDRAIL

Simplify, keep the direction and attack!

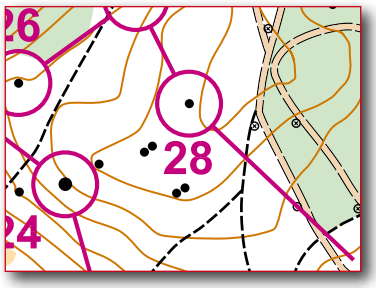
We return to Thierry Gueorgiou's three important messages i.e. make it simple, accurate direction and to find the last safe attack point. The purpose of this exercise is to:

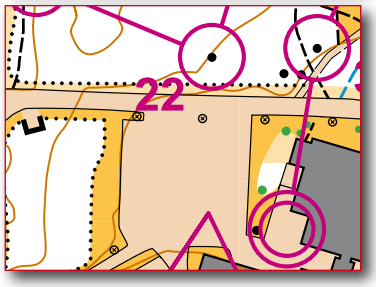
- Ensure the student picks up the height formations and the details that are unique to this area and navigates only with help of these
- Make the student orientate the map to reality at every stop, and also before the student runs forward to the next detail
- Allow the student to chooses an attack point as close to the control as possible and navigate to this before the student finds the control

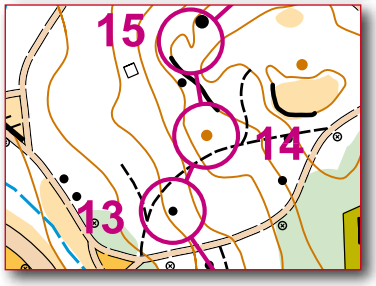
Make a stop at five controls!

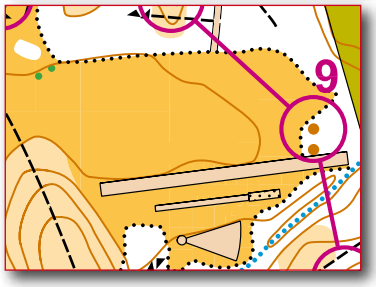
The best effect of this exercise is that the students will get to work in pairs. One in the pair navigates to the control and the other follows behind. At every control they give each other feedback regarding the navigation.

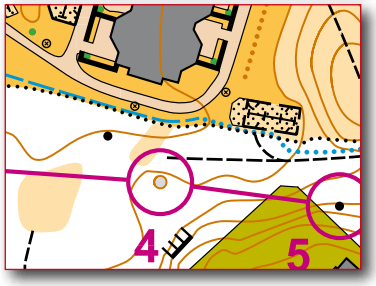
At these five controls (4, 9, 14, 22 and 28) the students stop to orientate themselves in the environment. Climbing up on the hill or on the boulder and working in pairs. One student points at different objects, while the other student shows what he or she thinks is correct object on the map.

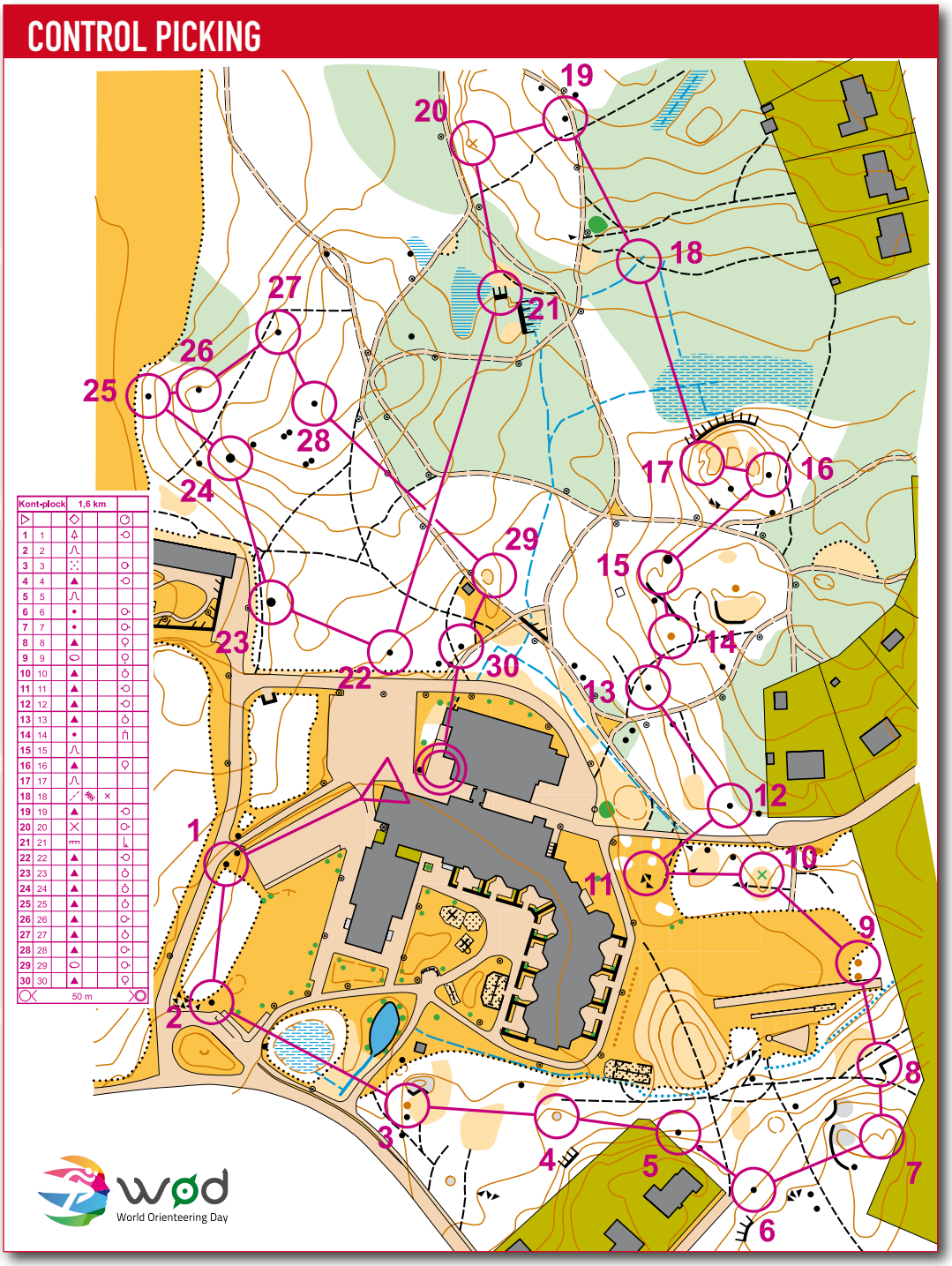












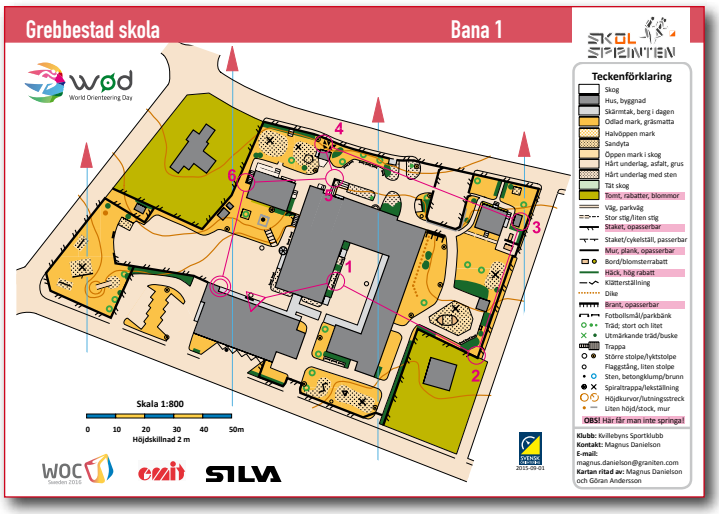
ONE MAN RELAY

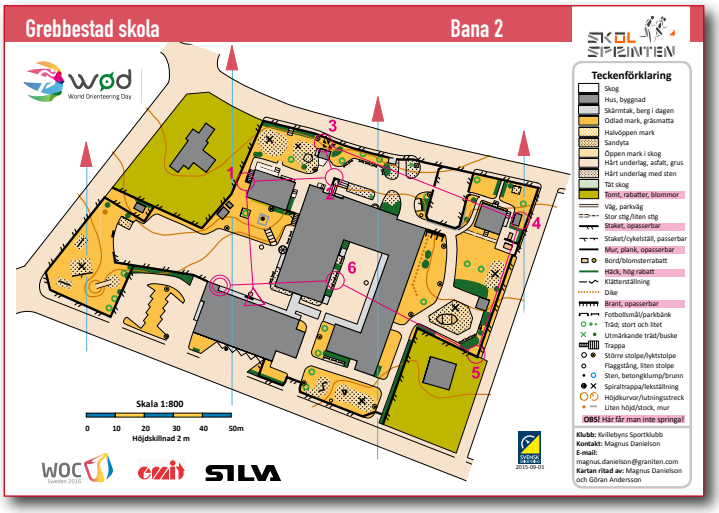
Relay with yourself!

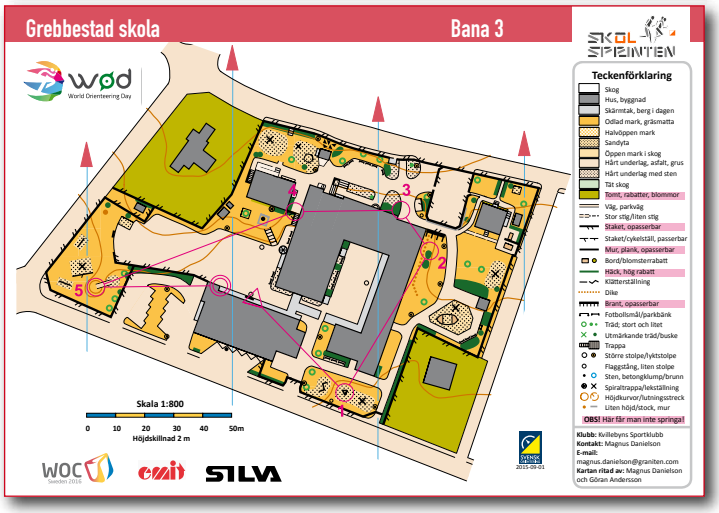
The students carry out this exercise on their own or in pairs. Have a mass start or wave start every half-minute on all four courses. In the example below the students run six courses, but it works just as well with four or eight courses. Lesson time determines the participation in the activity. The base is four courses but also implements each course in the opposite direction. If you have eight courses, start every minute, all the students will start after four minutes.

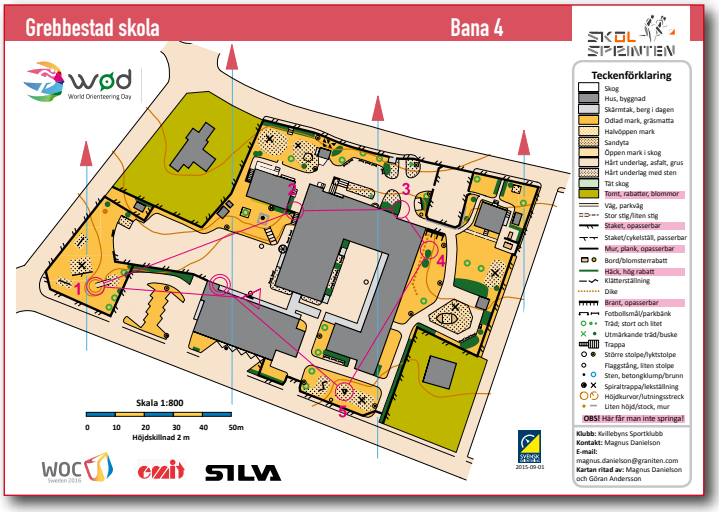
After each completed course the students have a shorter break, checking their performance, getting feedback from the teacher and then preparing for the next lap, finding the controls in a smoother way if possible.

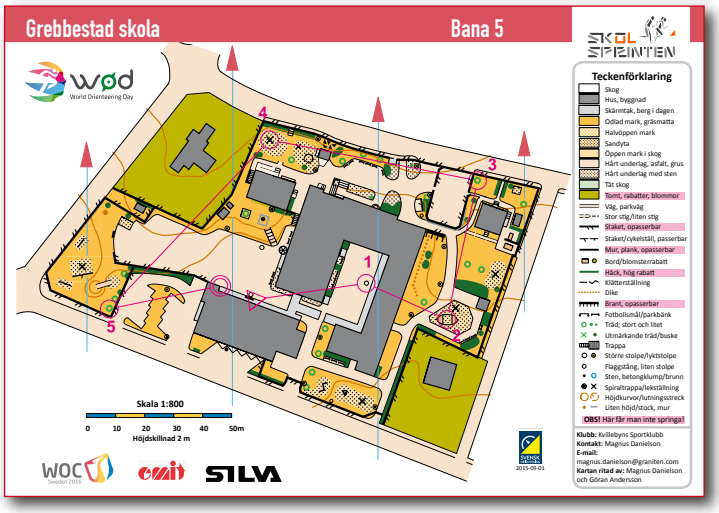
This is a very good form of interval training were the students get the opportunity to run individually.

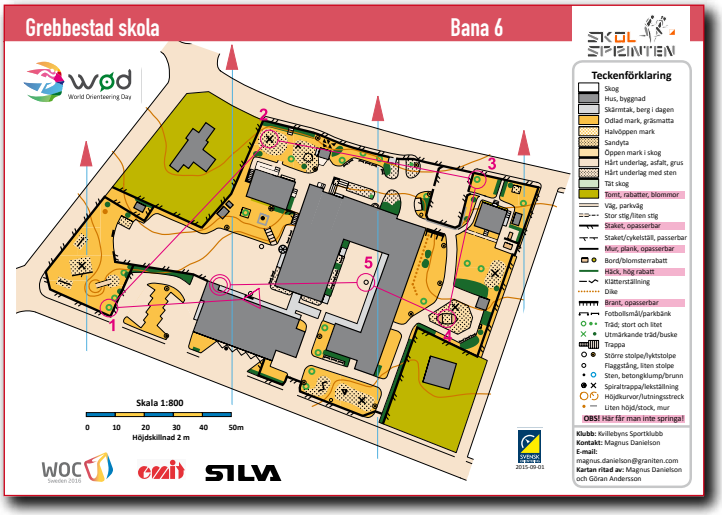












GET TO KNOW YOUR SCHOOL

Permanent orienteering courses can be useful to get more spontaneous use of maps. Photo-orienteering in different ways usually work very well. Bosön IFHS is an example of how to use the map as a traditional paper map or downloaded in the phone via the MOBO application.

The start of the MOBO (Mobile Orienteering) is outside the reception. Each checkpoint (total 18 pcs, 2 shown here) is marked as the picture to the right (number 1-18). With MOBO app you are also allowed to "punch" at each checkpoint with the phone (via barcode scanning). The app is free of charge and works for Android, Apple and Windows. You can also download maps to your phone or tablet from the website www.boson.nu.

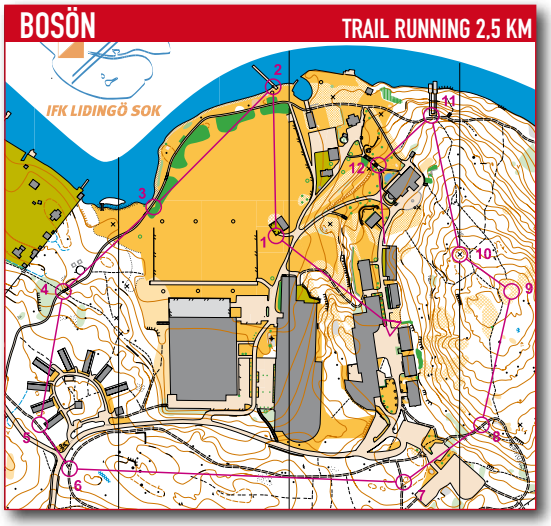
1 THE HEADMATSER'S HOUSE

The view from the terrace of the headmaster's house over Askrikefjärden is adorable. Previous Bosön's principals stayed here but today the villa converted into a kitchen so our guests can enjoy home-cooked banquets.

6 THE HOUSE OF CHAMPIONS

1924 Paul U Bergström (PUB) moved to Bosön and built "the house of champions". 1938 the Swedish Sports Confederation (RF) bought the property and the year after the first sport's conference was held at Bosön as 10-days education for 25 cyclists.

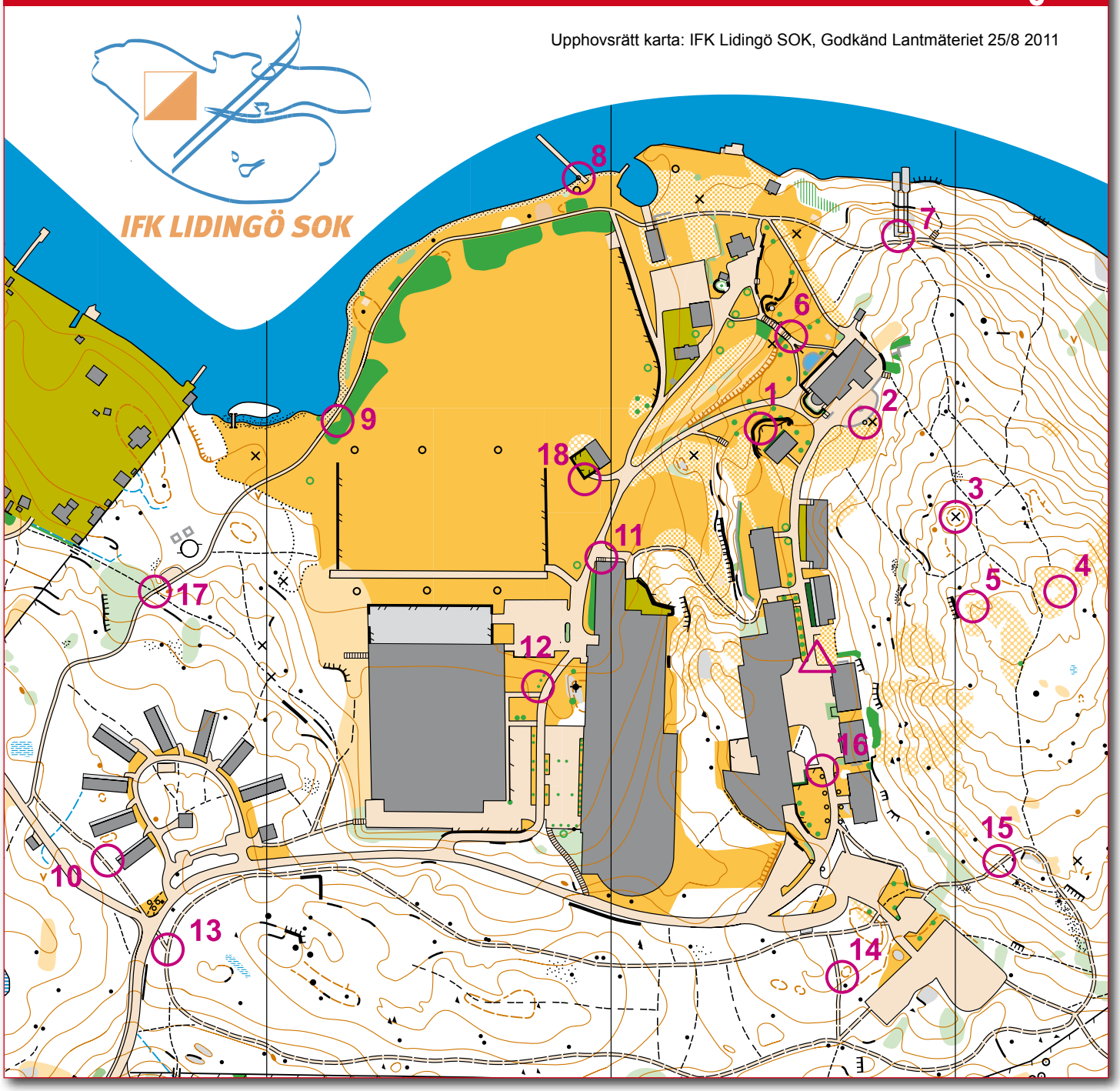
GET TO KNOW YOUR SCHOOL



With the help of solid controls and permanent courses you can carry out activities whenever you want. At Bosön Sports High School we have created four permanent courses using 18 controls. "History Tour", "Walk and Talk", "Active Rehab Tour" (wheelchair friendly path) and "Trail Running" (see map at right).

"Trail running" is a simple orienteering course along the handrails (tracks and paths) with some tough hills. The course has 12 checkpoints (controls) and is about 2.5 km long. "History Tour" is a very good option to get to know their surroundings when you start at a new school. You will quickly learn the most important things about the school's history and its present, while being provided with a good knowledge of the school's premises and surroundings.

BOSÖN MOBile Orienteering



MOBO, MOBile Orienteering

All in one!

MOBO (Mobile Orienteering) involves the use of a smartphone or a tablet instead of the traditional paper map. MOBO is available worldwide, but you find these maps in Estonia and Finland mostly. At a number of schools in Sweden, particularly in Avesta and Stockholm, you can use the app MOBO.

Maps, compasses and barcode scanners (for “punching”) are available in the app. At the start you use your smartphone to scan the QR code. A beep indicates that your start punch is registered. At each check point you repeat the process. Press the app’s camera symbol, scan the QR code and the check point is registered.

Using the zoom you can enlarge or reduce the map. The map is very clear and you can see all details very distinctly.

More information about the MOBO can be found at:
www.mobo.osport.ee.

The app is free of charge and is available for Android, Apple and Windows.

ALPINE ORIENTEERING

Downhill skiing at high speed!

In our daily life we face lots of different maps and we are informed constantly with different messages. At the ski slopes, both in Sweden and abroad, they try to inform skiers where to go and what challenges each slope contains. There are different colours (green, blue, red and black) that indicates the difficulty every downhill slope has. Green is the easy one, we call this slope for “the child slope”. The black colour is the slope with the highest difficulty.

The map below is an attempt to show both the difficulties of the ski slopes and show the skiers how they can orientate during their stay in the ski slopes. Based on your skill ability you can choose the slopes that suit you, and afterwards you can challenge yourself and test another more difficult slope.

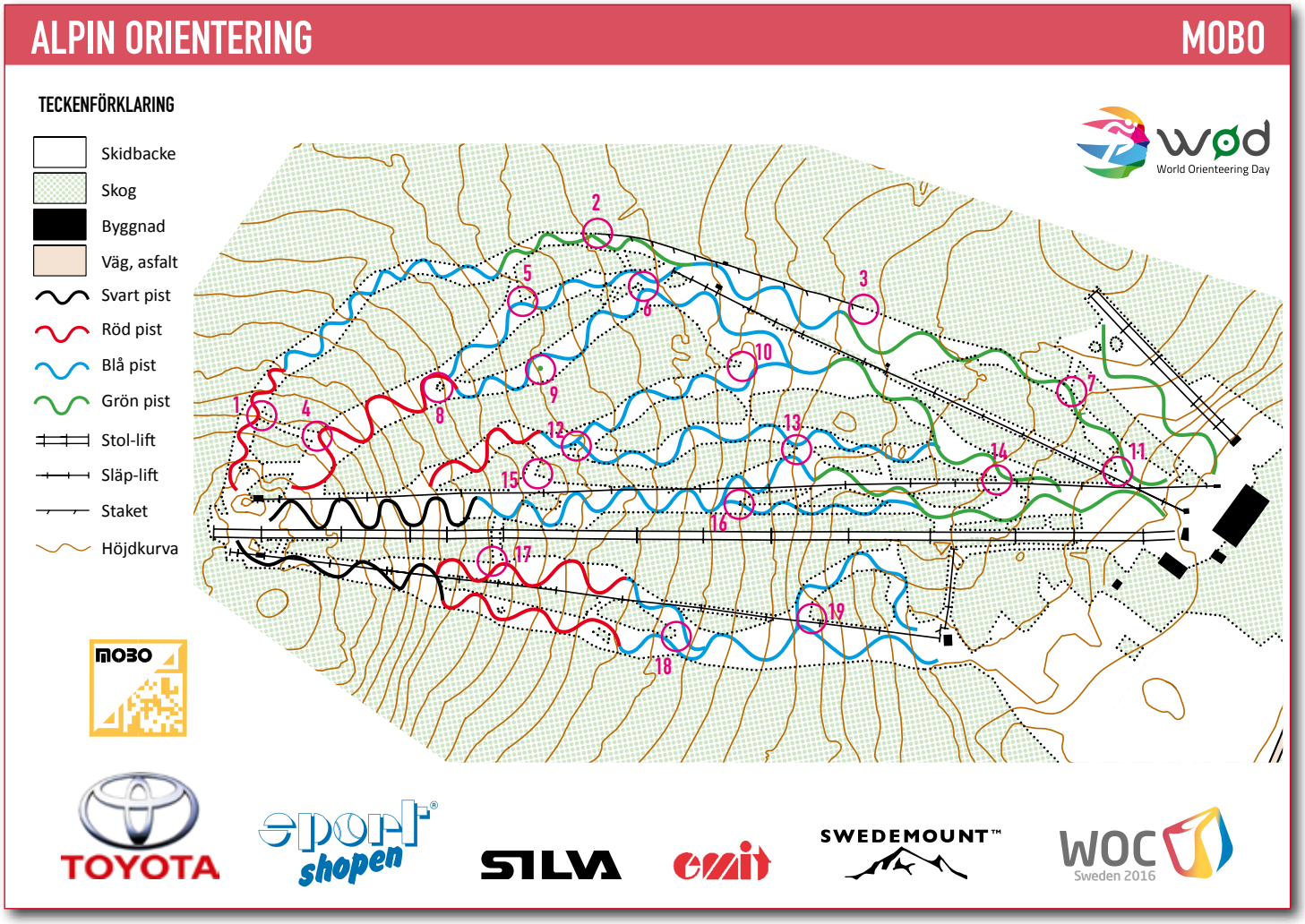
On the map, there are a number of checkpoints (none in the black slopes due these are too steep). These can be used to implement exercises that develop the knowledge of orienteering. E.g. you can decide for a certain period of time (45-60 minutes) whether you should visit as many checkpoints as possible. Another option is to find the checkpoints in numerical order.

Download the map in the phone!

The checkpoints can be marked in the same manner as in MOBO, i.e. a laminated orienteering control with control number and QR code. The checkpoints are placed on the edge of the slope or at another suitable place to avoid preventing other skiers. Via barcode scanner in the phone you scan the QR code to get a registration.

In connection with the school’s outdoor events in a ski slope you can add this kind of activity to be part of teaching ”to orientate”.

This activity of ”Alpine Orienteering” is quite new, but hopefully we can find similar activities in many ski slopes world wide in the future.



ORIENTEERING AMONG MATHEMATICAL FORMULAS

An Orienteering lesson in Mathematics

Using the map below, and mathematical formulas, answer a number of questions regarding:

- Area
- Perimeter
- Volume
- Mass
- Scale
- Per cent

Checkpoint 1

1a What is the sandbox's area of the football field's area in percentage?

1b If the height of sand in the sandbox is 15 cm, how much is the weight of the sand?

Checkpoint 2

2a What is the sandbox's area? How many times larger is this area compared to the sandbox in Question 1a?

2b If the height of sand in the sandbox is 15 cm, how much is the weight of the sand?

Checkpoint 3

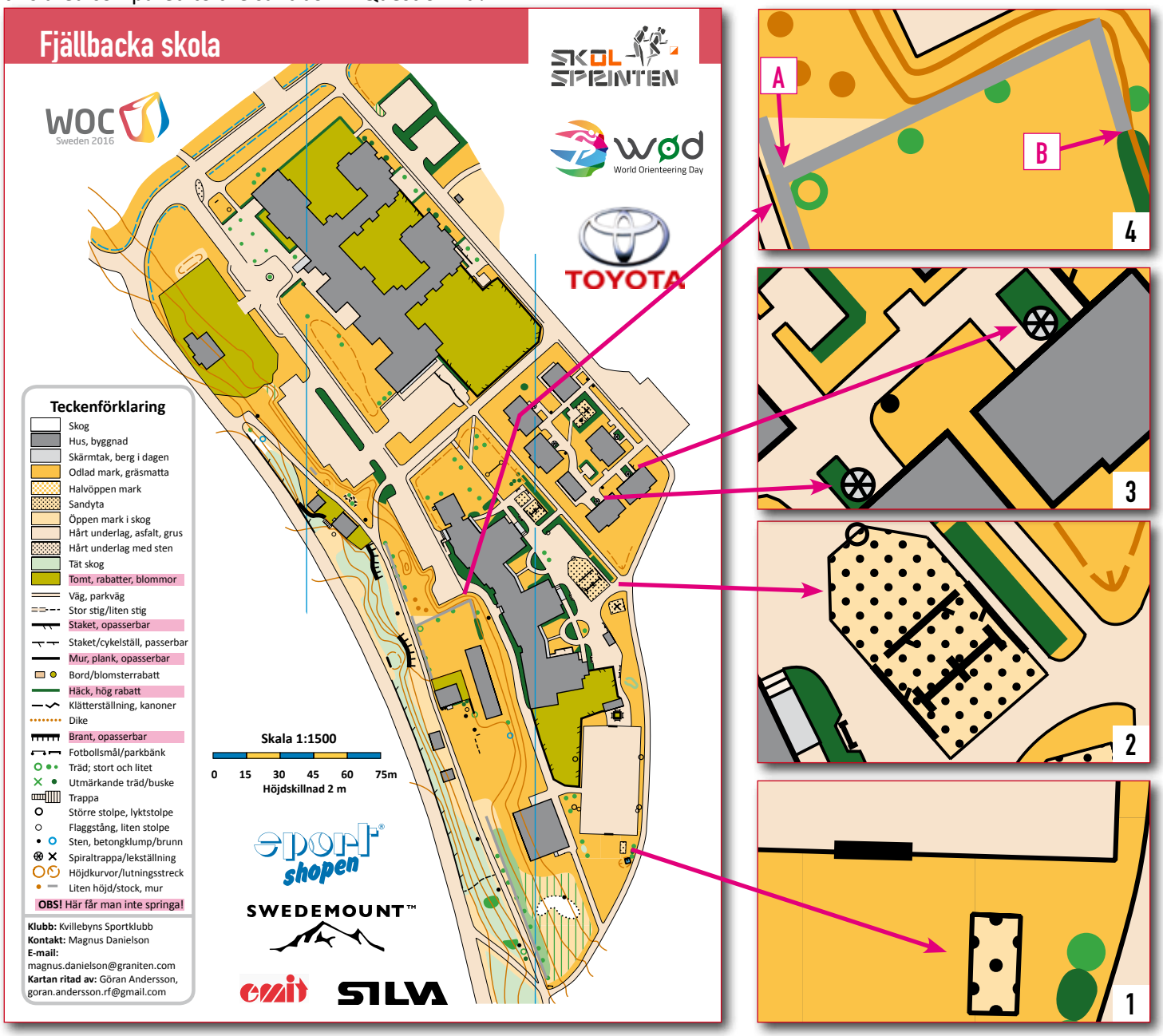
3a If the spiral staircases were a cylinder, how large would the volume in each cylinder be, and what would the total volume be of all the cylinders in the area?"

3b If these "cylinders" were filled with water, how much would these cylinders weigh altogether?

Checkpoint 4

4a If the stone wall were one meter high, how much would the whole stone wall weigh from A to B?

4b How long would you draw this piece of stone if you draw a map with the scale of 1:500 and 1:2 500?



ORIENTEERING IN THE SPIRIT OF LINNAEUS

Systema naturae

Systema Naturae is a book written by Carl Linnaeus, and the first draft was published in 1735. In the book Linnaeus describes all species of plants, animals and minerals that he knew. He grouped these species based on observations of the species' characteristics.

Spruce (Picea abies)

The spruce arrived to Sweden via Finland about 3500 years ago and it is our most common tree (covering 43% of the forest area). The spruce prefers a nutrient-rich moist soil, but is sensitive to dry climate, air pollution and storm. While pine's root system grows in depth the spruce has a shallow root system which means the spruce is very sensitive to storm damage. The spruce is felled normally at 70-150 years. It will be the tallest tree in our forest and can grow to over 50 m high with a perimeter of 5 metres. The timber can be used for many purposes, primarily as a raw material for paper pulp, buildings and, indeed, the production of artificial silk.

- Sweden has about 25 different kinds of trees. What trees grow on your schoolyard? Visit all 30 controls and check!
- Describe each tree in the same way as the spruce above.

Skogsbo skola, Avesta — Trädkarta

Teckenförklaring

- Skog
- Hus, byggnad
- Skärmtak
- Öppen mark, gräsmatta
- Uppväxande vegetation
- Många träd på gräsmatta
- Sandyta
- Öppen mark i skog
- Hårt underlag, asfalt, grus
- Tät skog
- Tomt, rabatter, blommor
- Väg, parkväg
- Stor stig/liten stig
- Staket, opasserbar
- Staket, passerbar
- Mur, plank, opasserbar
- Skateboardramp
- Häck, hög rabatt
- Beståndsgräns
- Vattendike
- Brant, opasserbar
- Fotbollsmål
- Träd; stort och litet
- Utmärkande träd/buske
- Trappa
- Större stolpe/lyktstolpe
- Flaggstång, liten stolpe
- Sten, betongklump/brunn
- Frisbeemål/lekställning
- Höjdkurvor/lutningsstreck
- Liten höjd/stock, mur

OBS! Här får man inte springa!

Klubb: Dalaportens OL
Info: www.dalaporten.se
E-mail: info@dalaporten.se
Kontaktperson: Lisa Silvemark och Linda Mattsson
Kartan ritad av: Göran Andersson

ADVENTURE DAY BY ORIENTEERING

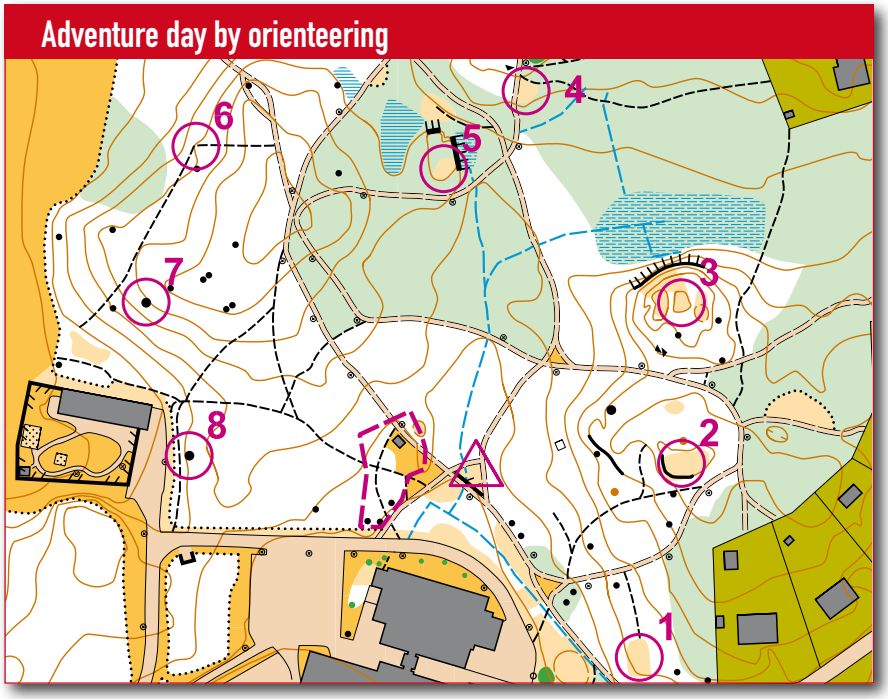
"The school battle"

This proposal of "Adventure Day" is based on co-operation between the students, knowledge of nature, outdoor activity, mathematics, orienteering and adventure. You can also use this event as a "School battle" between the classes and divide each class into groups of 4-6 students in each group, split equally between boys and girls. It is great to use the nearby recreation area.

In the "School battle" the students collect points and each collected point (by individual or by the team) counts. In this teamwork all individual performances are valuable. Be it theoretical or practical.

The adventure day is divided into three parts. In the first part the group will visit seven controls and at each checkpoint, carry out a task that gives points to the group and to its class The second part consists of an O-course with punching, close to the start (see the dashed line on the map). Each completed round gives 1 point. Part 3 consists of a number of riddles that the group has to solve (5 points/correct answer).

The final "winner" is the class that together have collected the most points.



1 Birds

At the first station the students have to connect our most common birds with the sound of bird song. The teacher of Biology is responsible for the activity. The teacher plays six different songs of bird (15 seconds per bird) and the students have to connect the song to the correct bird.

- Max time: 3 minutes
- Each correct answer: 2 points

2 Map Memory

The students have to connect two similar "map card" with each other. From the beginning, all cards are up and down and the students turn up the cards as they do in the "Memory Games".

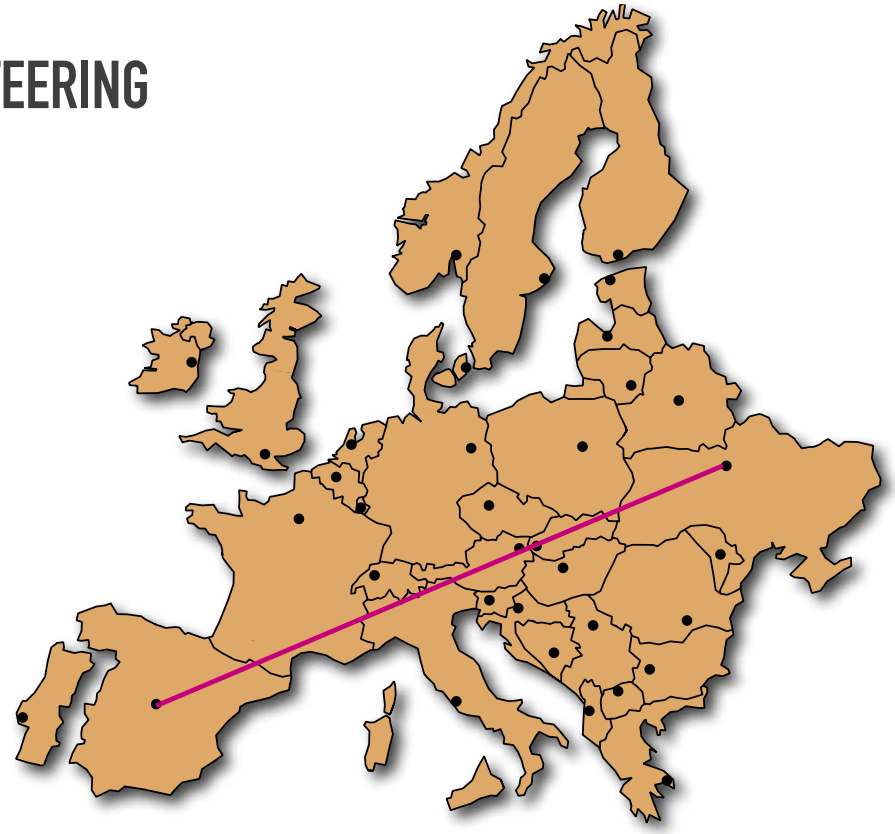
- Max time: 3 minutes
- Each correct pair: 2 points

3 Puncture

Mending a puncture of a bicycle tube using a bucket of water and bike repairing stuff that you usually have in the saddle.

- Less than 2 minutes: 10 points
- Less than 3 minutes: 9 points, and so on

ADVENTURE DAY BY ORIENTEERING



4 The European puzzle

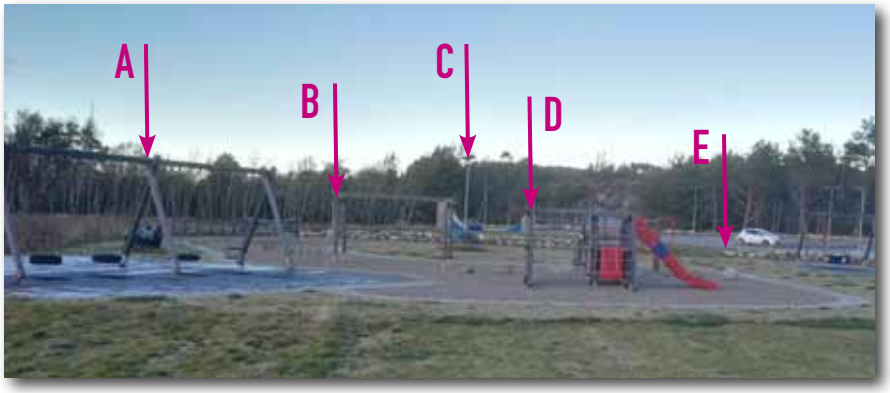
Students put the puzzle together to figure Students put the puzzle together to figure out how far it is e.g. between the capitals of Spain and Ukraine. The students have to know where the countries are located and what scale the map puzzle has. We say that the scale is 1: 100 000 000, and the measured distance between Madrid and Kiev is 283 mm, which means that there are 2830 km between these capitals. You don't need to put all the pieces together, it is enough to put the pieces of the puzzle needed to measure the distance between the points.

- Max time: 3 minutes
- 2830 km (+-) 100 km: 10 points
- 1 point deduction for every 100 km more or less than 2830 km

5 Connecting object with symbol

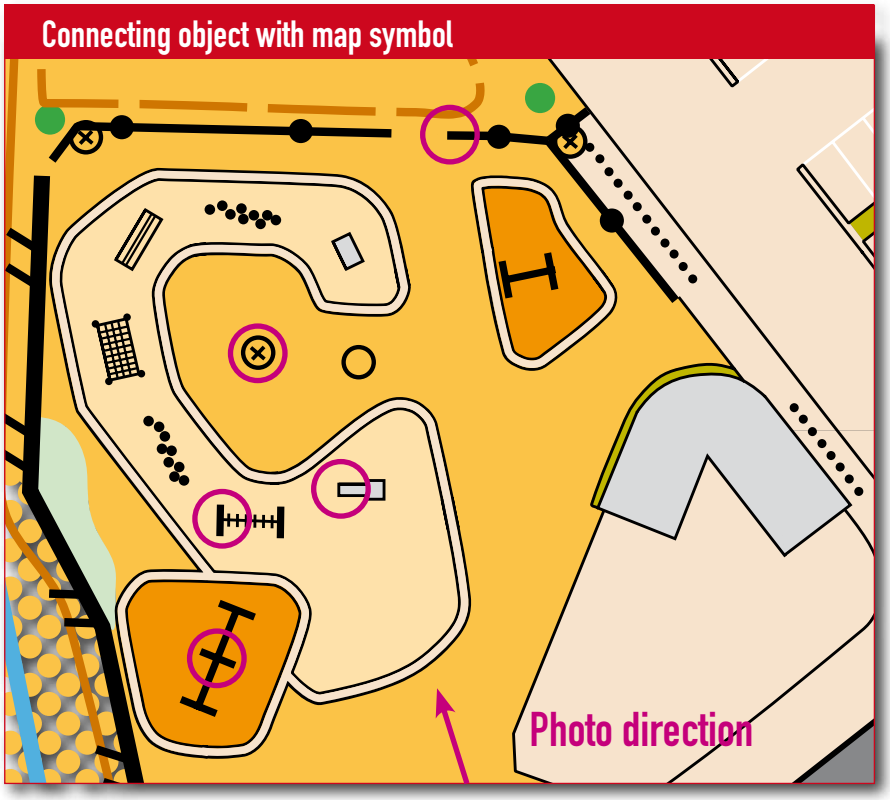
At the fifth station, the students should transfer a number of terrain objects to the correct location on the map. The option is to show a picture and a map from another area.

- Max time: 3 minutes
- Each correct answer: 2 points



6 Building a stretcher

- Two poles and a roll with thicker string is enough to build a sustainable stretcher. The students build the stretcher in a smart way, one member of group plays injured and the rest of the group have to carry the wounded comrade a round of about 50 meters in the forest.
- Less than 3 minutes: 10 points
- Less than 3.30 minutes: 9 points
- Less than 4 minutes: 8 points and so on



7 The wooden log

At the last station, the students have to be agile and smart. The teacher puts the students on the wooden log in the order of age from left to right. The youngest student at left. At the teacher's starting signal, students move on the wooden log so that the ranks from left to right are on the basis of the shortest to the tallest student.

- Less than 1 minute: 10 points
- Less than 1,15 minutes: 9 points
- Less than 1,30 minutes: 8 points and so on
- Every step on the ground: -1 point

ORIENTEERING WITH GPS

WOD POP-IN, orienteering by gps and O-map in smartphone

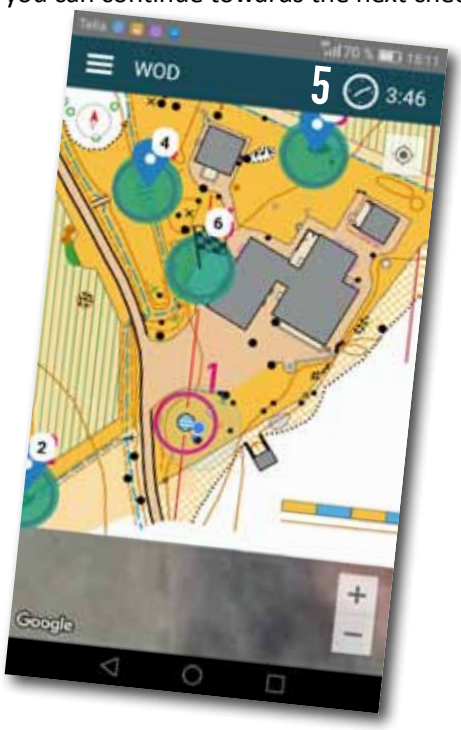
As you maybe know the organiser of WOC2016 created a new possibility to enjoy orienteering in new different way. They called it “POP-IN” and it is a little bit similar to the new Pokemon GO game. If you want to test it at your location, please send me your gps coordinates and you will get a “check point” from me. You have to download the app “Loquiz” and the username is “ww” and the password is “1111”.

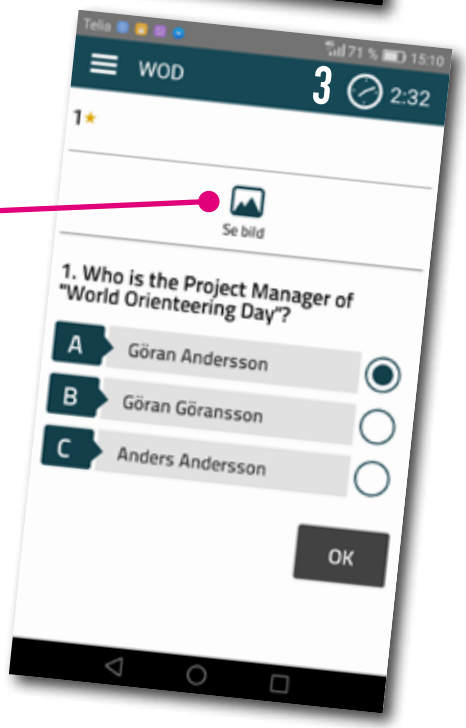
WOD POP-IN is an incredibly fun activity you can do with both children and adults! It is highly recommended to schools and clubs that want a different activity that makes you laugh and engages everyone. Of course, you can do normal orienteering as well. The best with WOD POP-IN is the virtual checkpoints you just put out by your computer. As a teacher you also will get these positive responses:

- Motivate students to be physically active and learn new things at the same time
- Cooperate with colleagues and use question banks to set up educational games anywhere quickly
- Create and conduct campus tours or orienteering as a game or competition
- Real time results about the pupil’s progress and knowledge

Thanks to the GPS signal, you will never get lost in the terrain. You can use it either as a guide or feedback that you are on the right track. When you are in the green circle, your phone beeps and a question pops up on the screen. You can also add a photo to the question. Tick your answer and press OK. You will then know whether your answer is correct or incorrect. The green circle will disappear from the map and you can continue towards the next check point. Have fun!

Are you interested?
Please contact Göran Andersson for more information and how to try it.
See page 54!

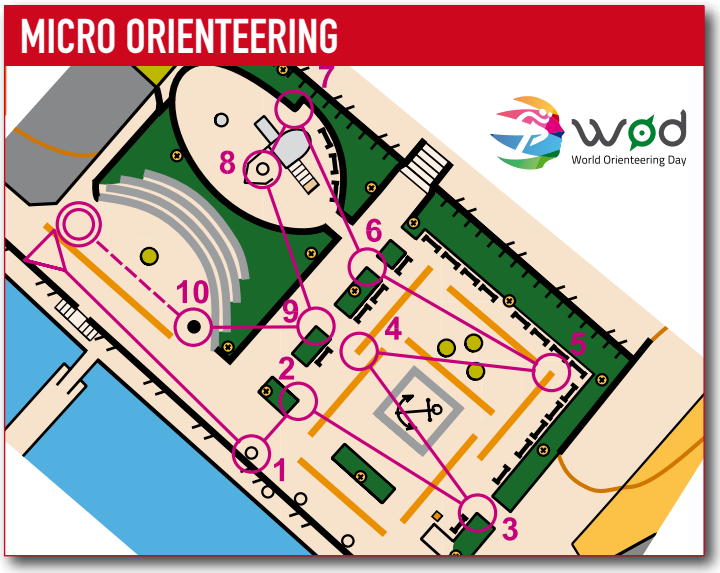




MICRO AND NIGHT ORIENTEERING

Micro Orienteering

Micro Orienteering is something you can implement in a very, very small area. Suitable areas can be playgrounds, small groves, small parks or the map of Strömstad (below), part of the harbour park. At the Micro Orienteering you will be forced to focus on the map and its details. It covers very short distances between the controls and it is easy to act hastily. Perfect learning to that can be transferred from the terrain to the map and vice versa.



Night Orienteering

A challenging adventure in the dark. An easy course along a handrail with checkpoints on or close to the handrail. Suitable to implement in connection with overnight activities. All participating pairs need to have flashlights or headlamps. Reflective controls.

ASSESSMENT YEAR 9, AGE 15

Assessment of the student's knowledge is always a hard nut to crack for most of teachers. It's "knowledge of map" that should be assessed mainly, not how fast the student runs. According to the curriculum (Swedish) we can read as follows:

Year 1-3: To orientate (navigate) themselves in the local environment and understand simple map's structure.
Year 4-6: To orientate in nearby nature and outdoor environment using maps. Understand map's structure and symbols.
Year 7-9: To orientate in unknown environments using maps and other assistive devices for positioning.

Knowledge requirements primary school "orienteering"

According to the curriculum the student shall achieve the following knowledge requirements for different levels of grade at the end of Year 9, age 15:

Knowledge requirements for grade E

Students can carry out various activities in nature and outdoor environment with some adaptation to different conditions and to the right of public access rules. In addition, the students can, with some certainty, orientate themselves in unknown environments using maps.

Knowledge requirements for grade C

Students can carry out various activities in nature and outdoor environment with relatively good adaptation to different conditions and to the right of public access rules. In addition, the students can with relative accuracy orientate themselves in unknown environments using maps.

Knowledge requirements for grade A

Students can carry out various activities in nature and outdoor environment with good adaptation to different conditions and to the right of public access rules. In addition, the students can with high degree of accuracy orientate themselves in unknown environments using maps.

Suggestions for Assessment

"Some certainty" (grade E) means that the students make some errors and need some guidance before the students can orientate themselves.
"Relatively good certainty" (grade C) means that the students make errors choice before the students can orientate themselves.
"Good certainty" (grade A) means that the students don't make any errors or don't need any guidance in order to orientate themselves.

Basis for Assessment, Year 9

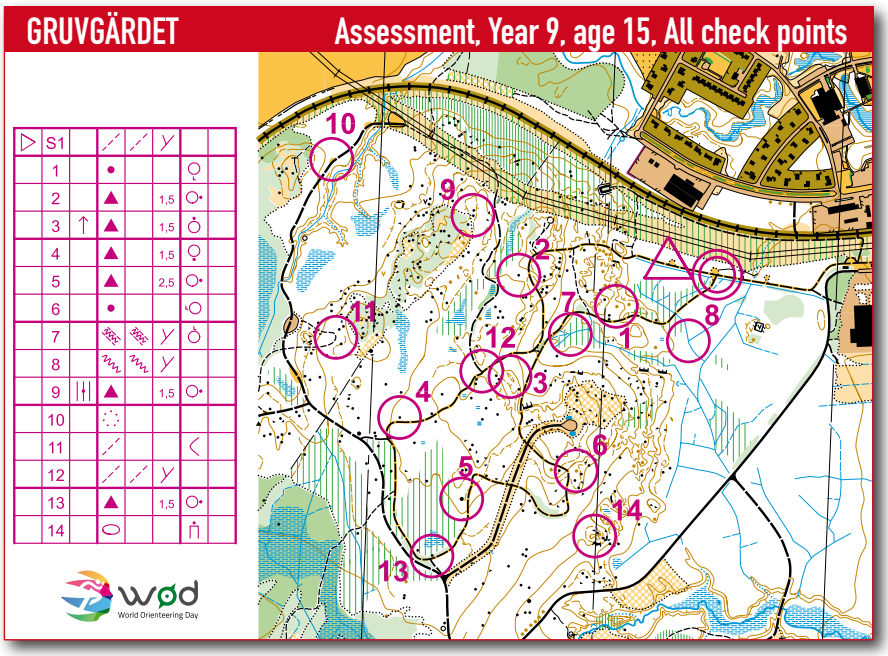
From the above, you should assess students' knowledge of being able to orientate in a known environment:

1/ The map's colours and symbols and map's structure.
2/ Using map to move between several locations.
3/ Assess and choose best route between several objects.

IMPLEMENTATION

Generally

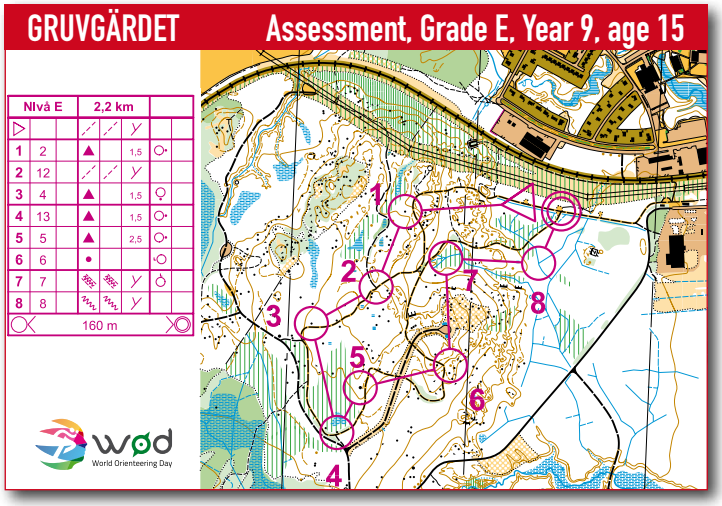
The following courses check if the students can orientate the map correctly (red to red), and plan and move between several locations in an unknown and some hilly area (e.g. a small forest close to the school). Students will visit a number of check points (controls) without code numbers and punch at the controls the students have on the map. In this example, there are 14 controls placed in the terrain (see the master map to the right).



Grade E, Year 9, age 15

The task is managed normally within 30 minutes walking pace. The content must be at least 6 check points with at least 5 check points correct. Maximum time 60 minutes.

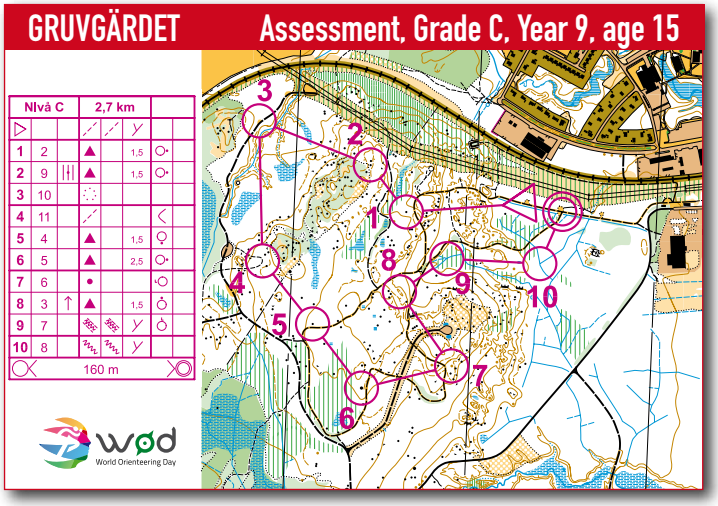
In this case, at least 7 of 8 check points must be correct.



Grade C, Year 9, age 15

The task is managed normally within 30 minutes walking pace. The content must be at least 6 check points with at least 5 check points correct. Maximum time 60 minutes.

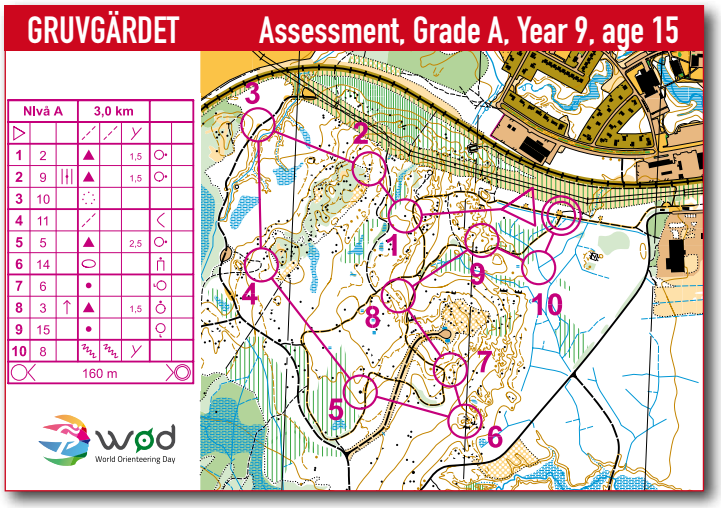
In this case, at least 9 of 10 check points must be correct.



Grade A, Year 9, age 15

The task is managed normally within 30 minutes walking pace. The content must be at least 6 check points and all check points must be correct. Maximum time 60 minutes.

In this case, all 10 check points must be correct.



NOTES

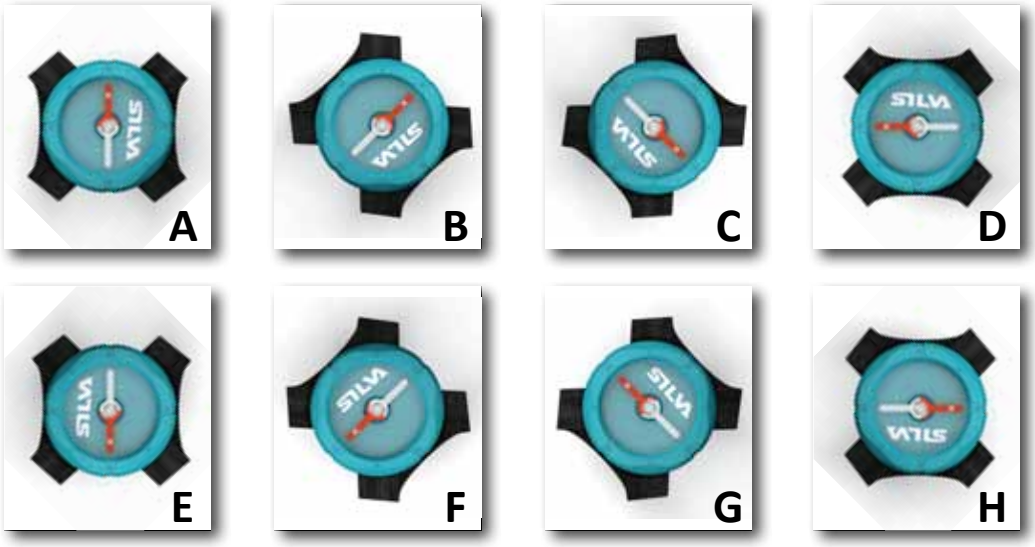
CONTENTS, APPENDIX

Theoretical exercises	**48-53**
Red to Red	48
Map's symbols	49
To understand hills and valleys	50
Compare the terrain to the map	51
Five symbols have disappeared	52
Five symbols have changed	53
Support to school and club	**54-55**
How can the school get help?	54
Silva Sweden AB	55
Correct answers to the exercises	**56-59**

RED TO RED, exercise

Orientate correct map to correct compass

Draw a line between the **number** and the **letter** that you think is correct "Red to Red":

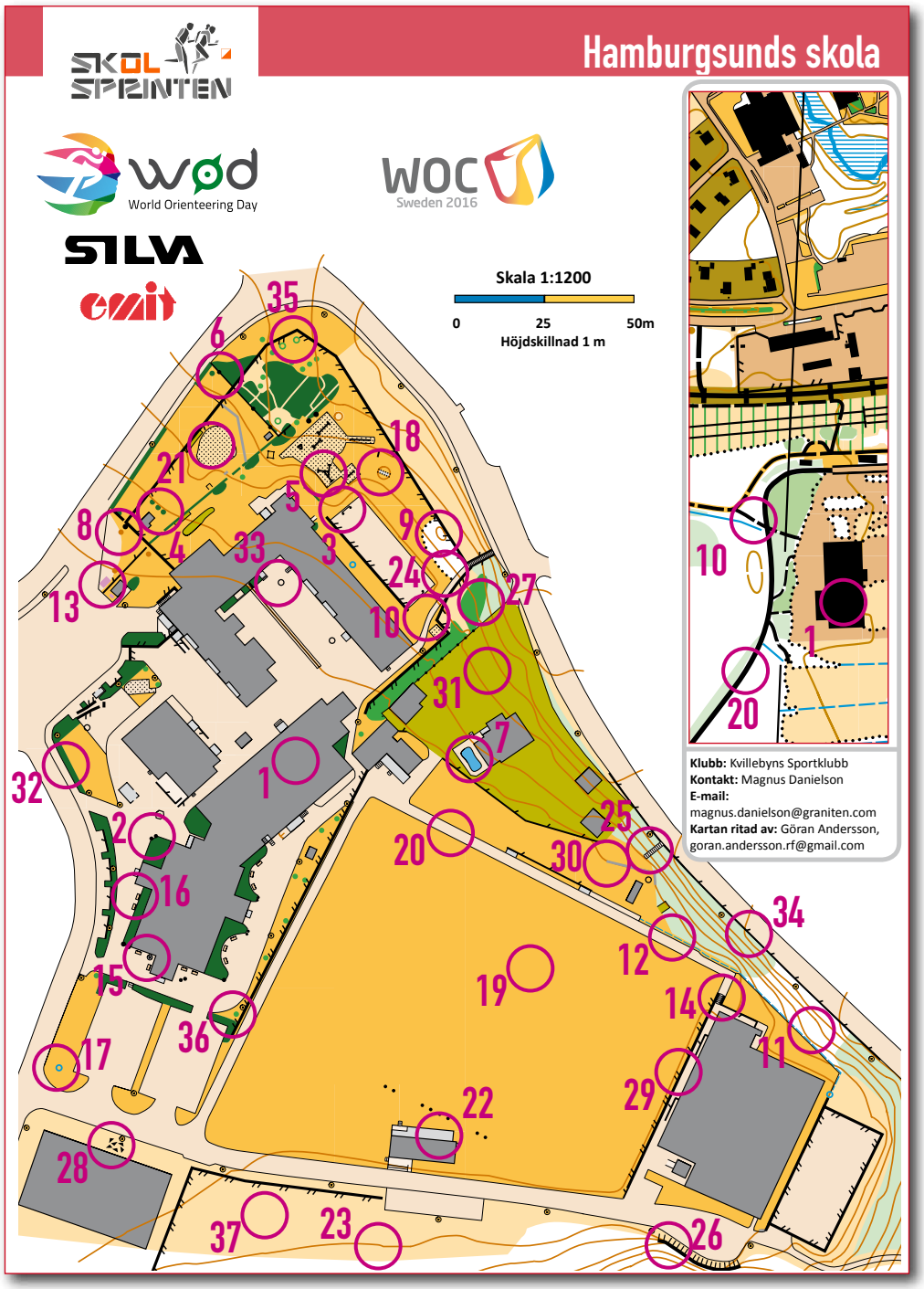


1	A
2	B
3	C
4	D
5	E
6	F
7	G
8	H

Correct answers on page 57.

THE MAP´S SYMBOLS

Test yourself!
The map is drawn according to ISSOM. It differs in some details from the forest map (inset). Complete in the boxes with numbers you believe match the controls (correct answers on page):



- ☐ House, building
- ☐ Forest
- ☐ Canopy
- ☐ Lawn, open land
- ☐ Sandy ground
- ☐ Boulder
- ☐ Road, park road
- ☐ Big path
- ☐ Hill, contour line
- ☐ Stone wall
- ☐ Big tree
- ☐ Small tree
- ☐ Tunnel
- ☐ Stair
- ☐ Hill
- ☐ Knoll
- ☐ Vegetation boundary
- ☐ Impassable cliff
- ☐ Bush
- ☐ Football goal
- ☐ Minor watercourse
- ☐ Flag pole, small post
- ☐ Private area, flower bed
- ☐ Well
- ☐ Play equipment
- ☐ Dense vegetation
- ☐ Open field in forest
- ☐ Passable fence
- ☐ Impassable fence
- ☐ Impassable wall
- ☐ Passable wall
- ☐ Impassable vegetation, hedge
- ☐ Boulder field
- ☐ Table
- ☐ Spiral stair
- ☐ Water, pool
- ☐ Temporary building

TO UNDERSTAND HILLS AND VALLEYS, exercise

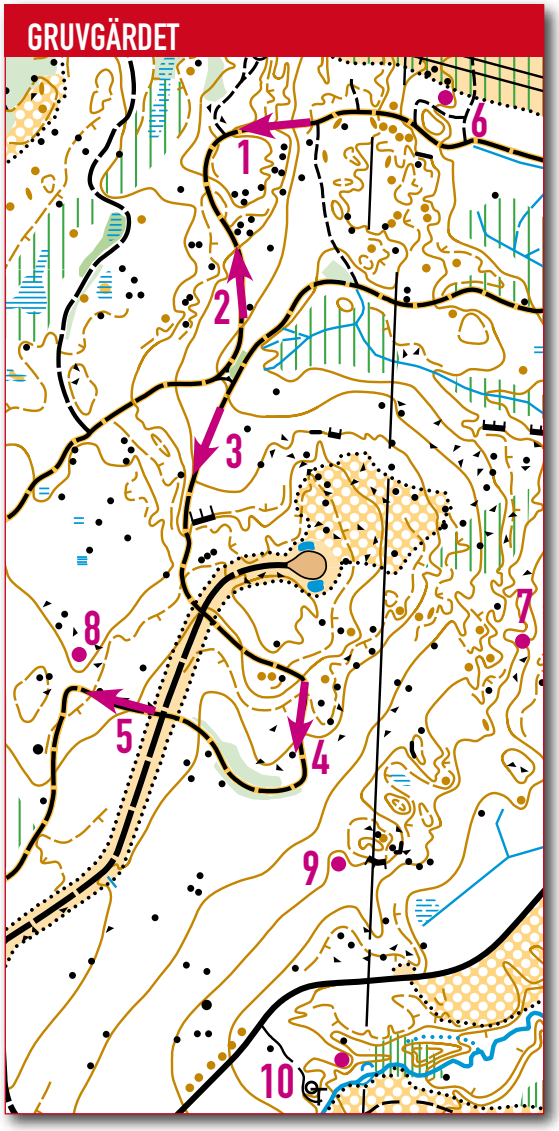
Test yourself!

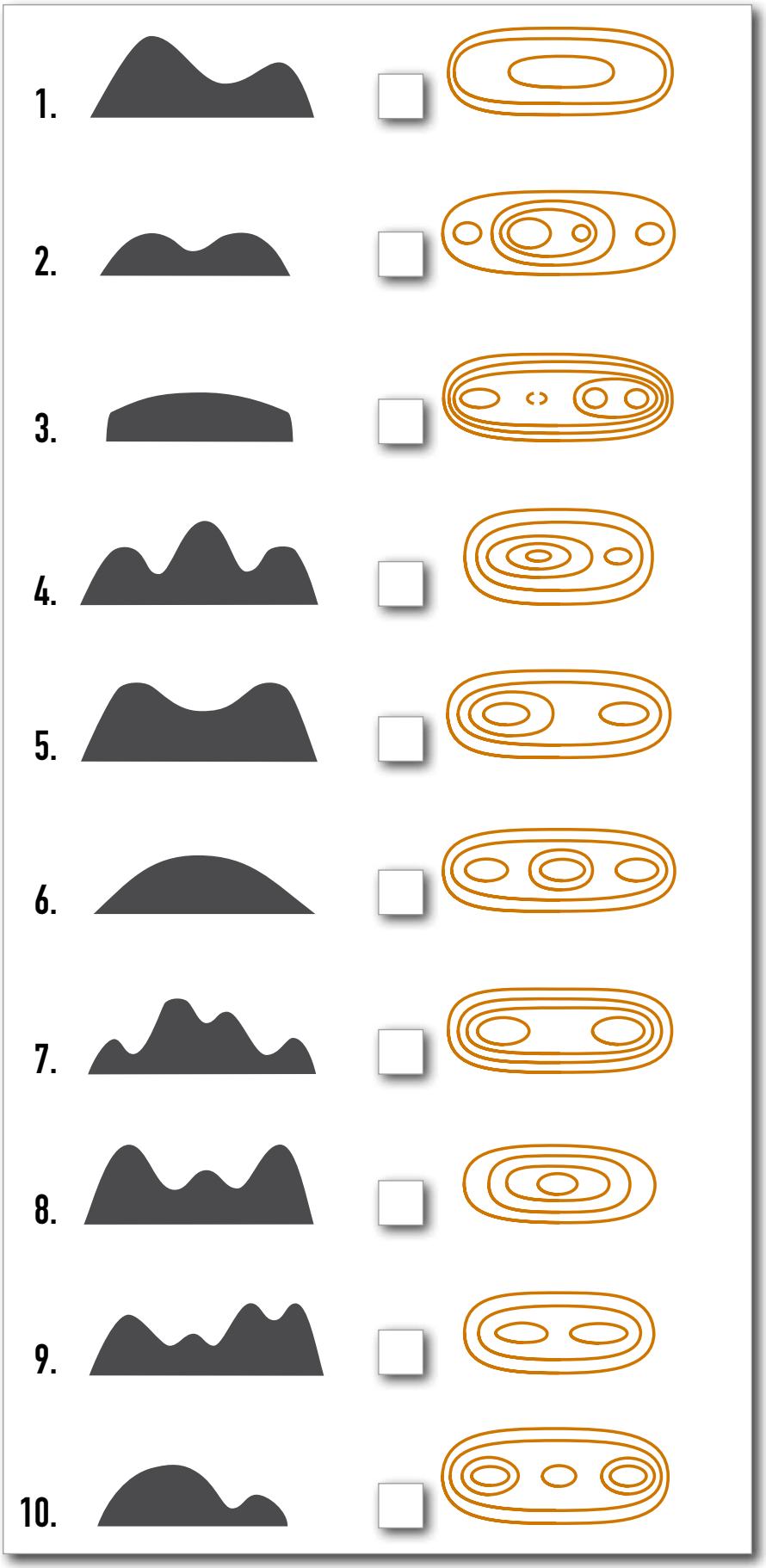
To the right you will find profiles of 10 different hills. Beside you will find the map of the hills. These are drawn from the top. Put the correct profile together with the correct map. In the box, please write the number that you think fit with the profile.

Below you will find a map with 5 → and 5 ● . Which of the arrows are showing uphill and which are showing downhill? Which ● are showing re-entrants or spurs?

1	6
2	7
3	8
4	9
5	10

The correct answers on pages 56 and 57.





COMPARE THE TERRAIN TO THE MAP

Test yourself!

The following images are photographed at the World Cup during the first WC sprint relay 2014 in Turkey. Put photos of the terrain together with the correct controls on the map below. To make this exercise more challenging, I have just picked seven of the 16 controls. The compass shows how the image is orientated to reality, for example, the image 1 is photographed in the direction of northwest.

You will find the correct answers on page 57.

Control:_____

Control:_____

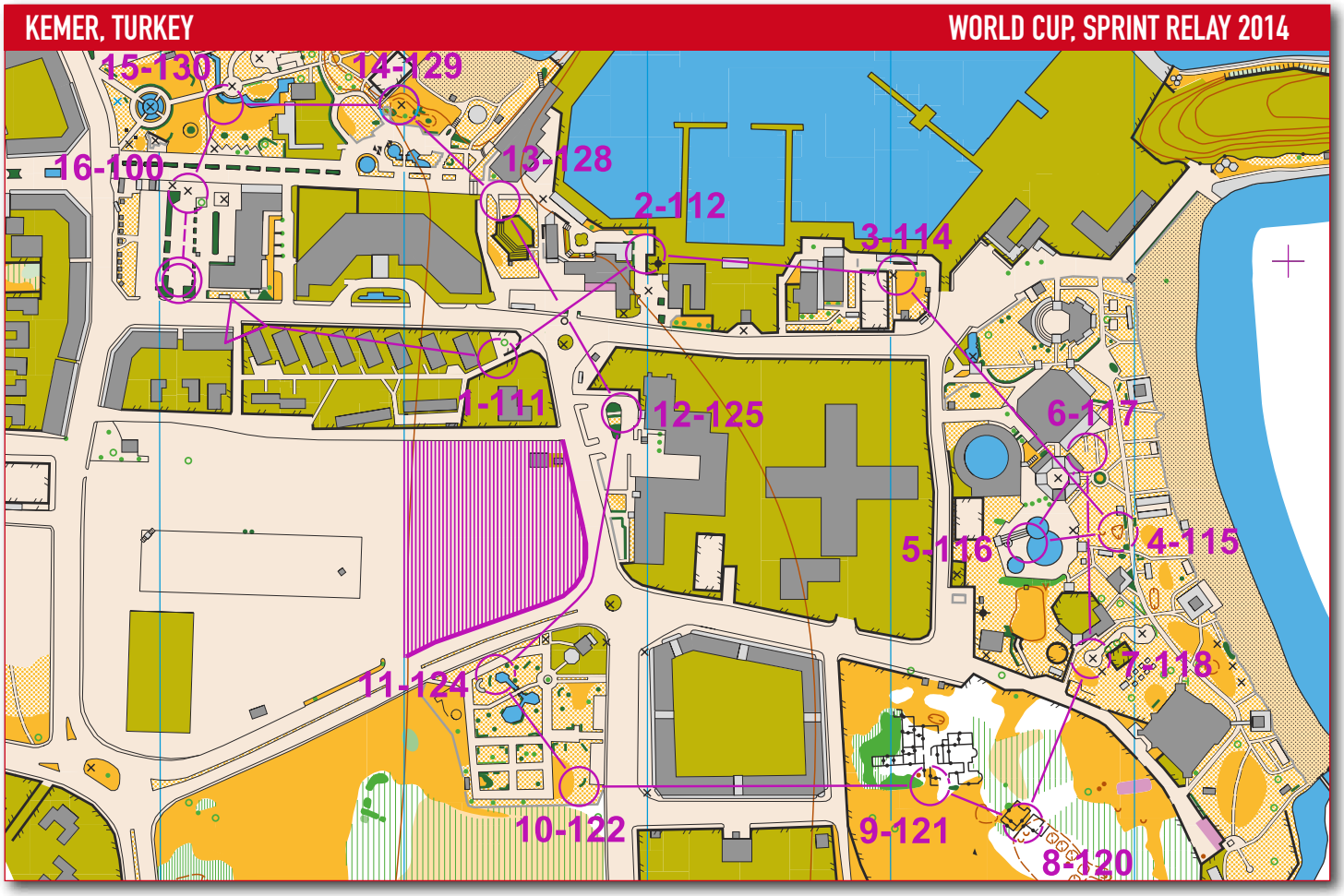
Control:_____

Control:_____

Control:_____

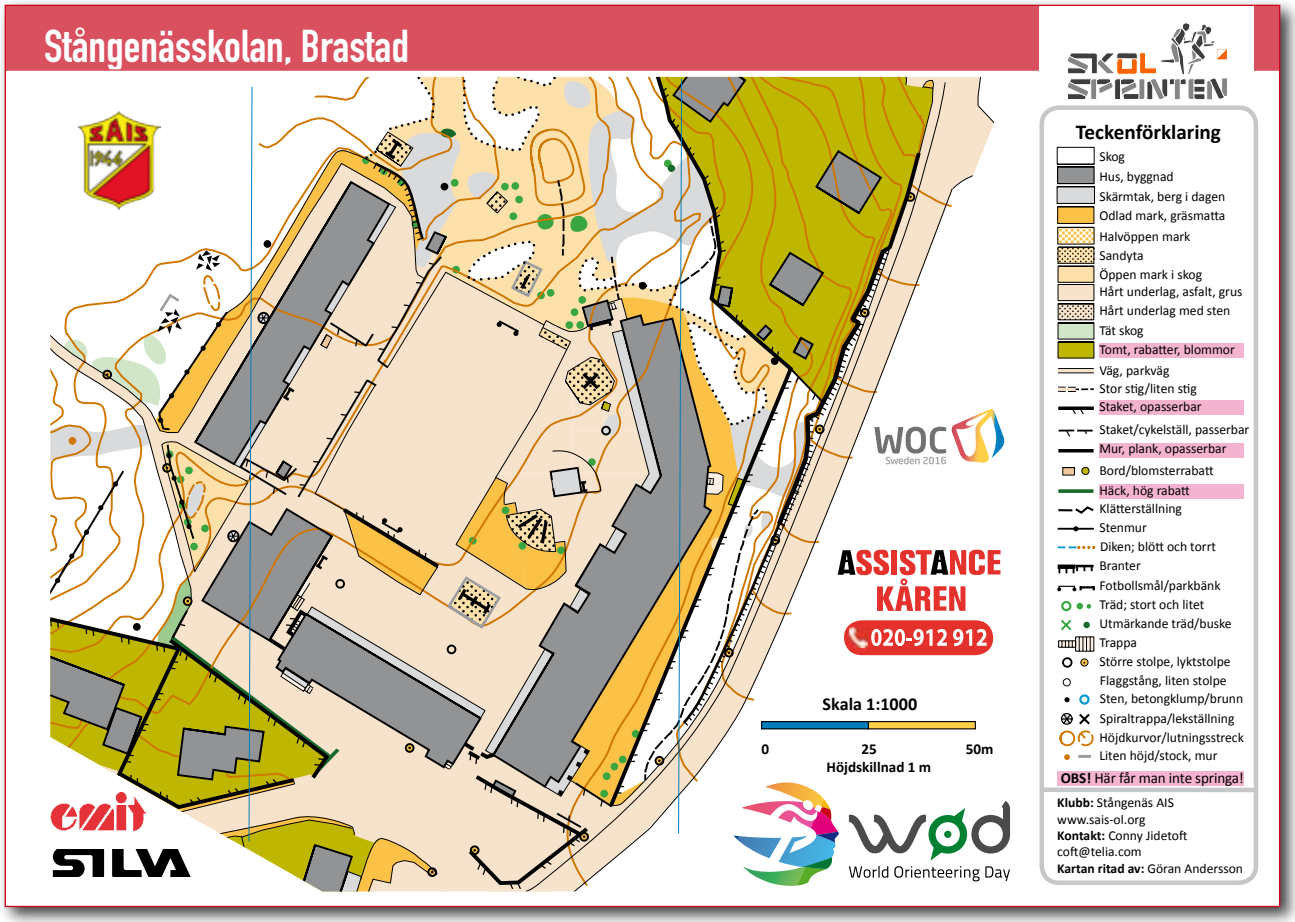
Control:_____

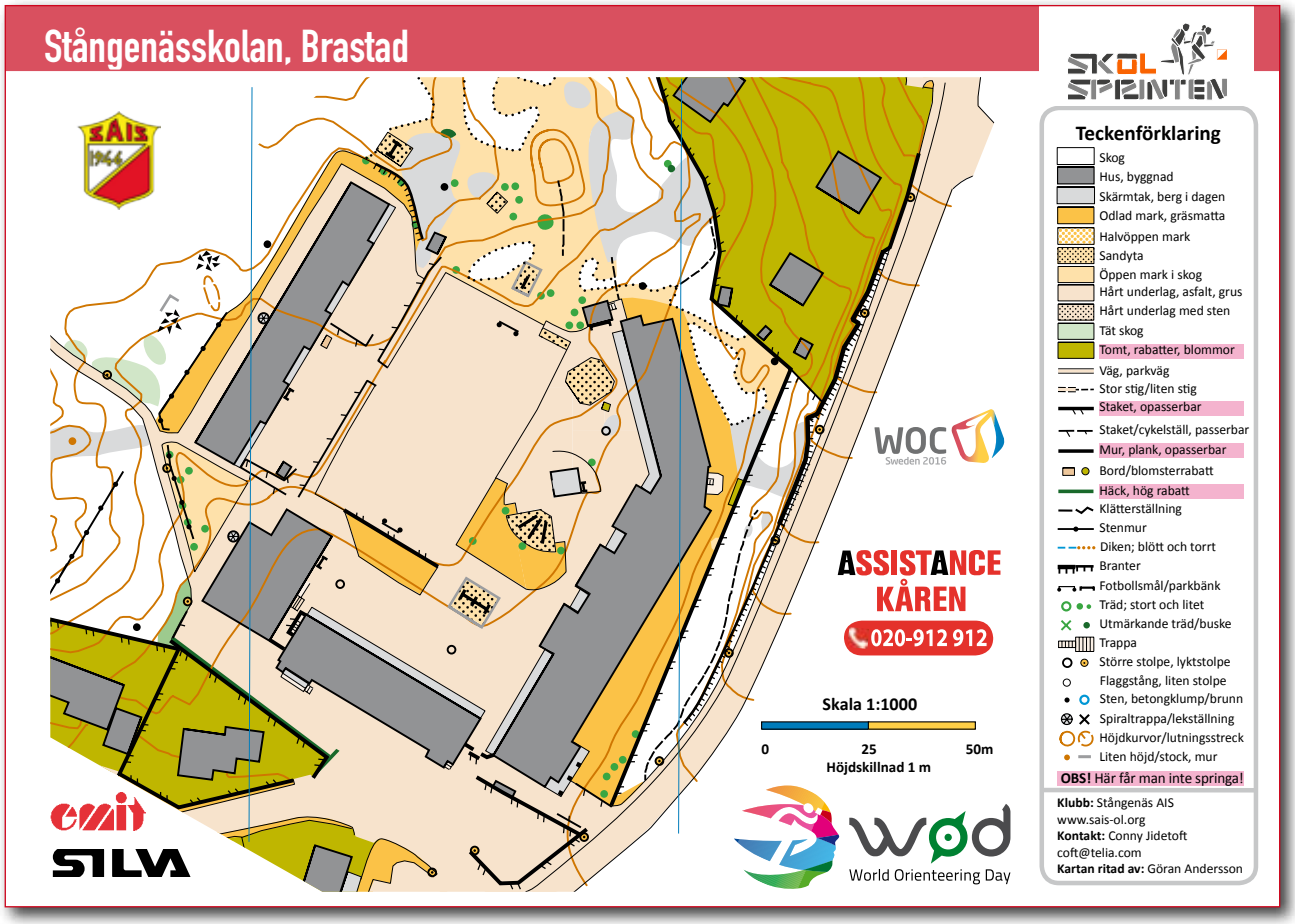
Control:_____



FIVE MAP SYMBOLS HAVE DISAPPEARED, exercise

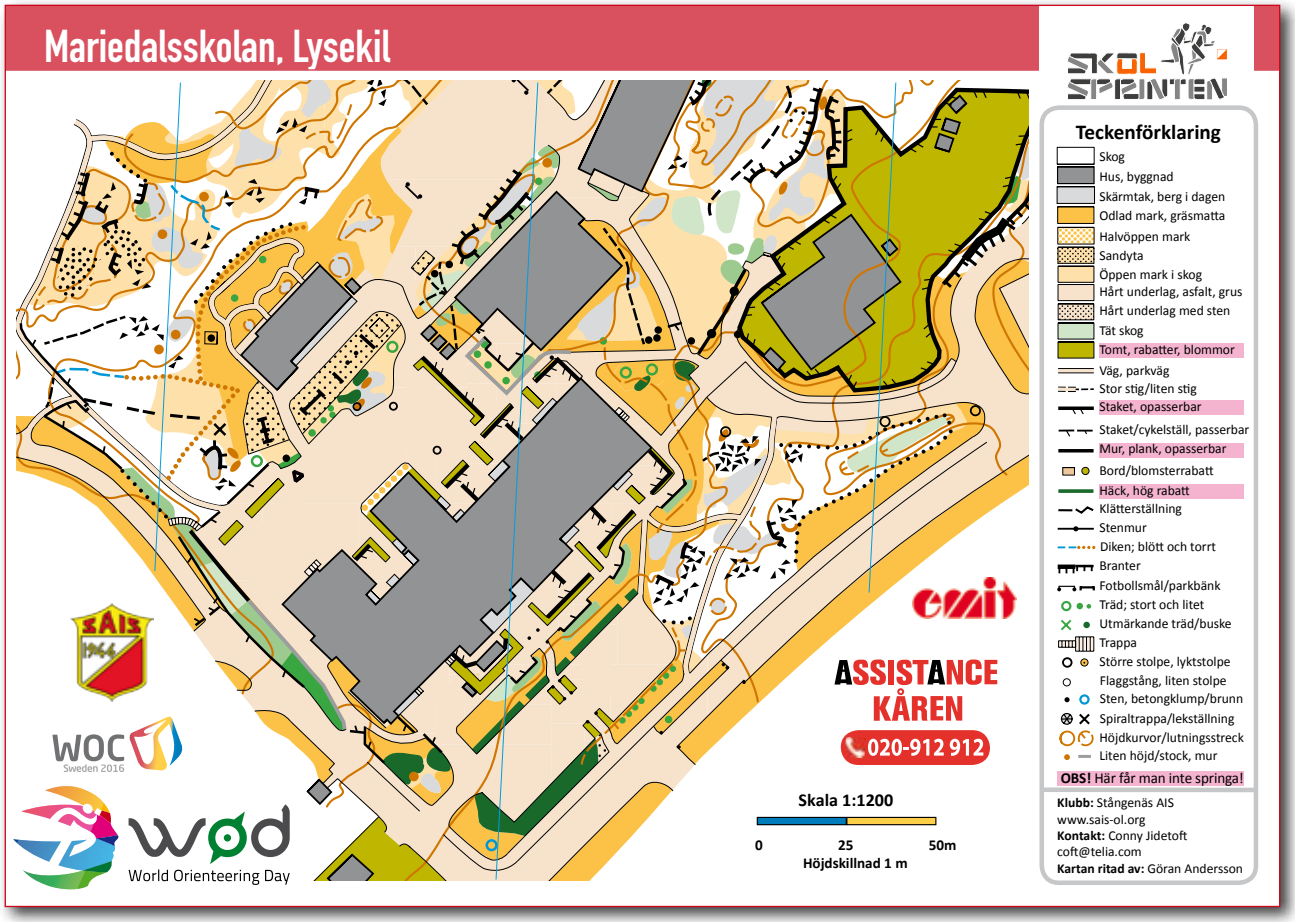
Compare these maps with each other. On the map at the bottom five symbols have disappeared. Which?

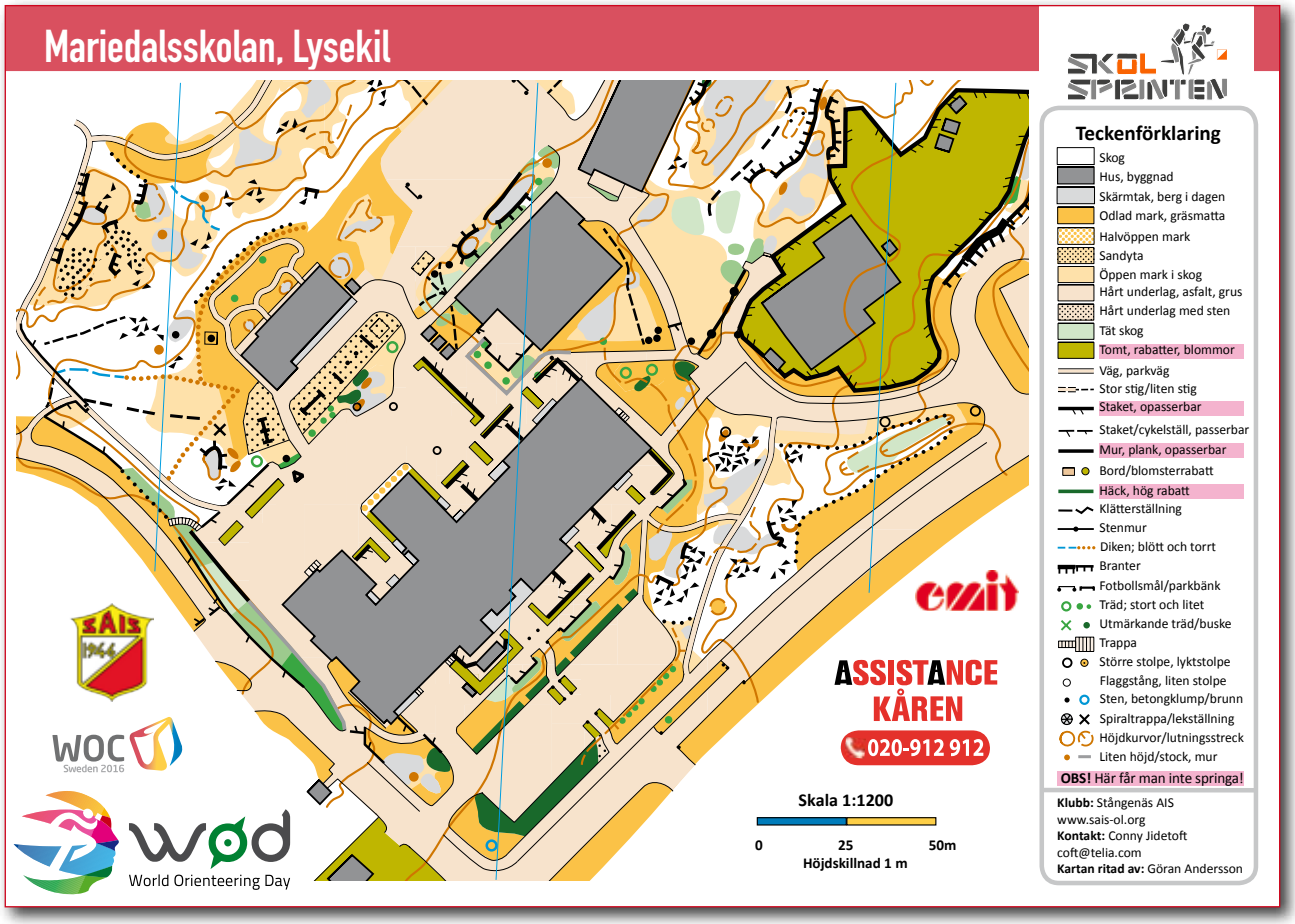




FIVE MAP SYMBOLS HAVE CHANGED, exercise

Compare these maps with each other. On the map at the bottom five symbols have changed. Which?





HOW CAN THE SCHOOL GET HELP?

The map is an educational tool

Maps and compasses are closely interconnected when you navigate in forest or cities. To learn orienteering and at the same time achieve the requirements that the National Agency for Education is setting by the curriculum, each school requires teaching materials to implement a relevant education.

The intention of the project ”Skol-Sprinten” and this guideline is to show how to create great conditions for an education in orienteering that the students can perceive as ”cool, awesome and educational.” The main school of thought has always been that students should experience joy when they perform orienteering ”for real”, with a colourful map conforming to reality, a cool compass and an electronic punching system.

In conjunction with Silva Sweden AB and EMIT AS as collaborative partners, Dalaportens OL and sixteen schools in Dalarna, we have created a concept that is very attractive for education in schools. The response has been fantastic both from students, teachers and school leaders.

Try to find cooperation partners

Collaboration with the local orienteering club provides great opportunities to apply for financial support from the “Sport Foundation” especially being able to draw a map of the school grounds.

Furthermore, each school and municipality must prioritise its budget and set aside money annually for mapping of schools. A municipality in Stockholm has an on-going contract with an orienteering club to ensure that school maps are drawn and that the maps are updated annually.

What kind of help do you need?

If you want some more information about: help on submitting an application, implementation of mapping or own exercises for education, please contact Göran Andersson.

wod World Orienteering Day

SKOL SPRINTEN

+46 70 601 53 26
goran.andersson.rf@gmail.com
www.byorienteering.se

SILVA SWEDEN AB

History

The year was 1933, just 14 years after orienteering had become a competitive sport, when a trio of Swedish Champions in orienteering put their heads together to improve their equipment to achieve better results. The first real competition compass was created. Since then, Silva has taken the lead of developing compasses in many different areas and today, Silva is the world leader in compasses for orienteering.

In the past the map was very underdeveloped and in those days orienteering was all about following the compass. Today it is very different. The maps are very detailed and well-drawn. Today's orienteering is very much about map reading and orientating the map to the terrain and the reality.

15 years ago the compass "66 OMC Spectra" was developed for this purpose, i.e. emphasis on map reading with only short glimpses of direction. Together with the latest Silva thumb compass "Race 360 JET", these are the most used compasses in the sport of orienteering.

A few years ago Silva developed the small compass "Metro" as an accessory to key ring or to hang available on the backpack strap for hikers.

Silva Begin Wrist Compass

The functions of "66 OMC Spectra" and "Metro" have been merged into the new school compass "Begin". This wrist compass is the perfect beginner's compass for interested young people and school orienteering. The compact size, with rubberised compass house, make it ideal for a small hands and tough challenges. The strap fits securely in the hand so the user can focus on map reading and running direction.

Other products from Silva Sweden AB

In addition to compasses Silva also delivers orienteering markers (with reflex), pin punches and headlamps for all activity within orienteering.

66 OMC Spectra

Begin

NOR Spectra

Race Spectra JET

Race JET

Race 360 JET

Compass Race Plate Zoom

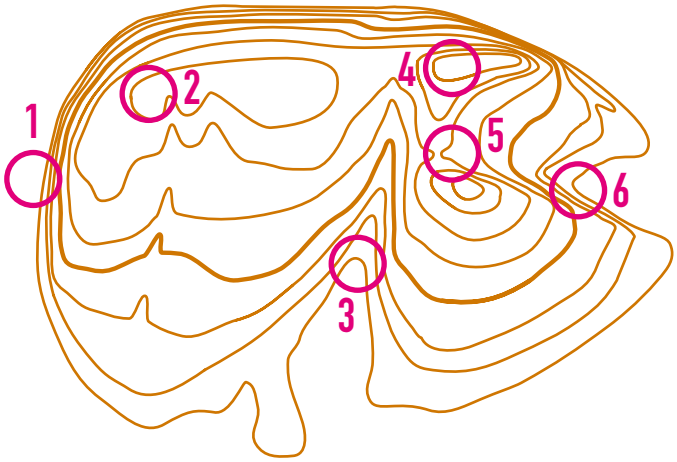
Compass Race Plate

CORRECT ANSWERS TO THE EXERCISES

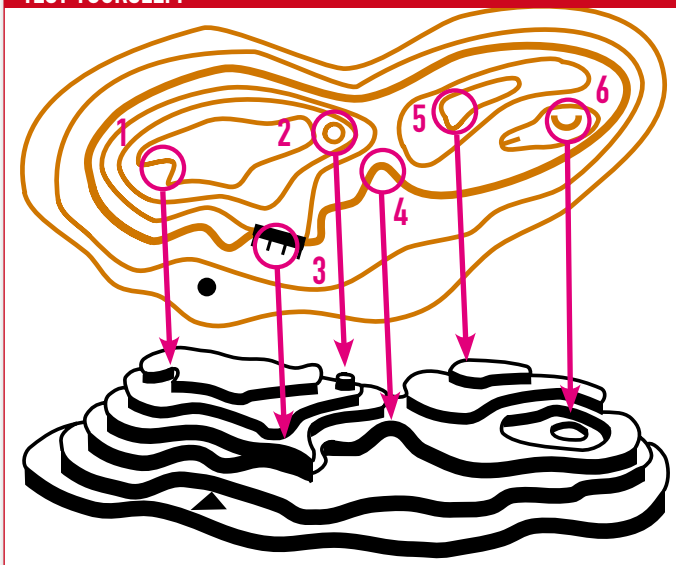
Answers to "Test yourself", pages 24–25 and page 50

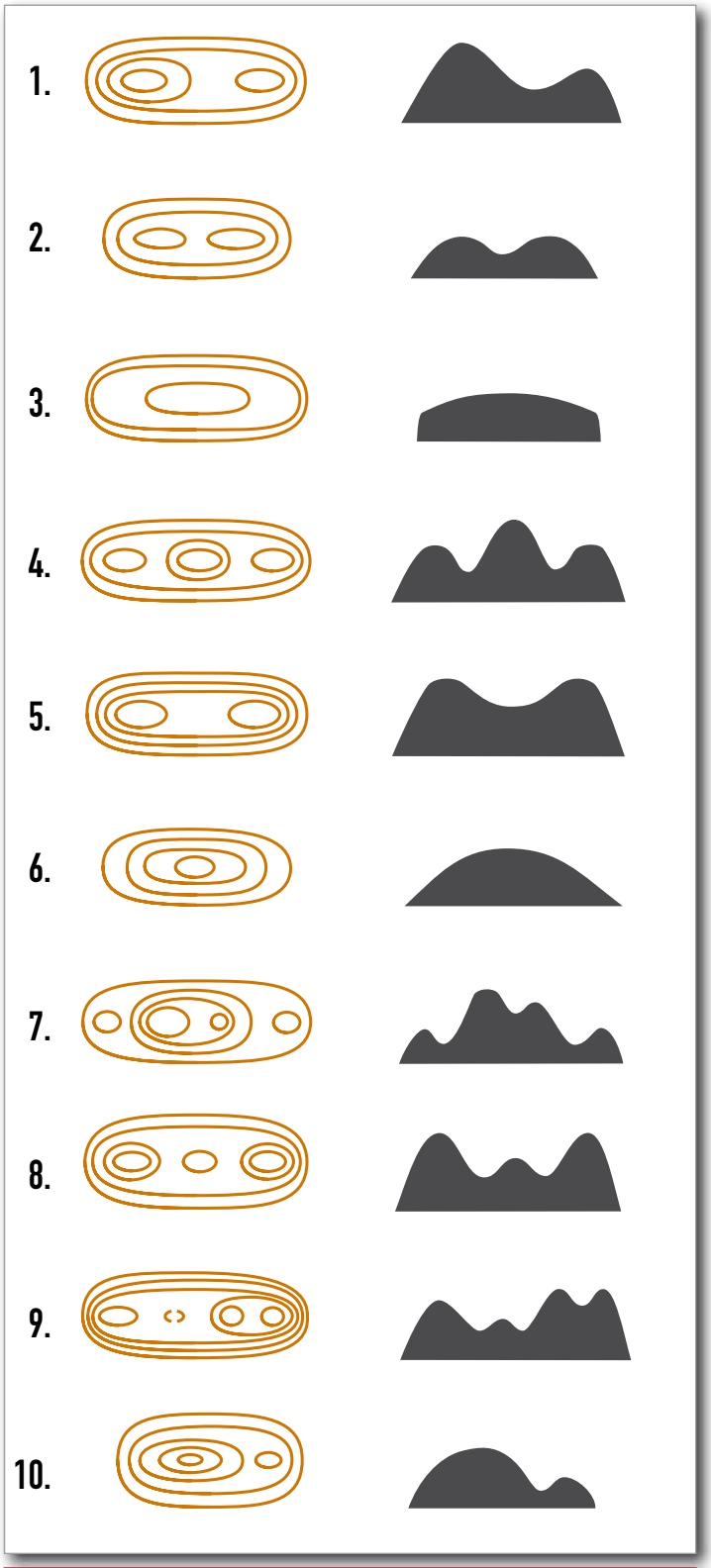
A 4	D 1
B 5	E 3
C 2	F 6

"HÖJDSTENEN", HANSBYN

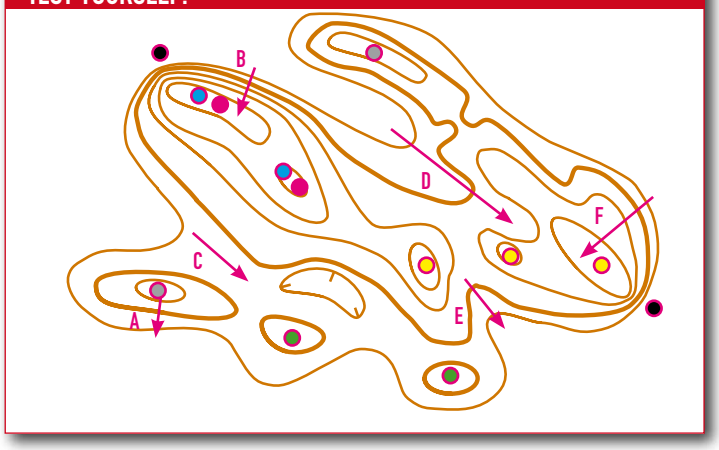


TEST YOURSELF!





TEST YOURSELF!



Answers to "Test yourself", page 25:

- How many hills can you find? **9**
- Which hills are on the same level? **SAME colour symbols**
- Which hill is on the highest level? ●
- How many depressions can you find? **1 st**
- Where are the steepest parts? ●
- Which arrows show direction uphill? **B, D, F**
- Which arrows show direction downhill? **A, E**
- Which arrows show flat area? **C**

CORRECT ANSWERS TO THE EXERCISES

Answers to "Test yourself", pages 48, 50 and 51

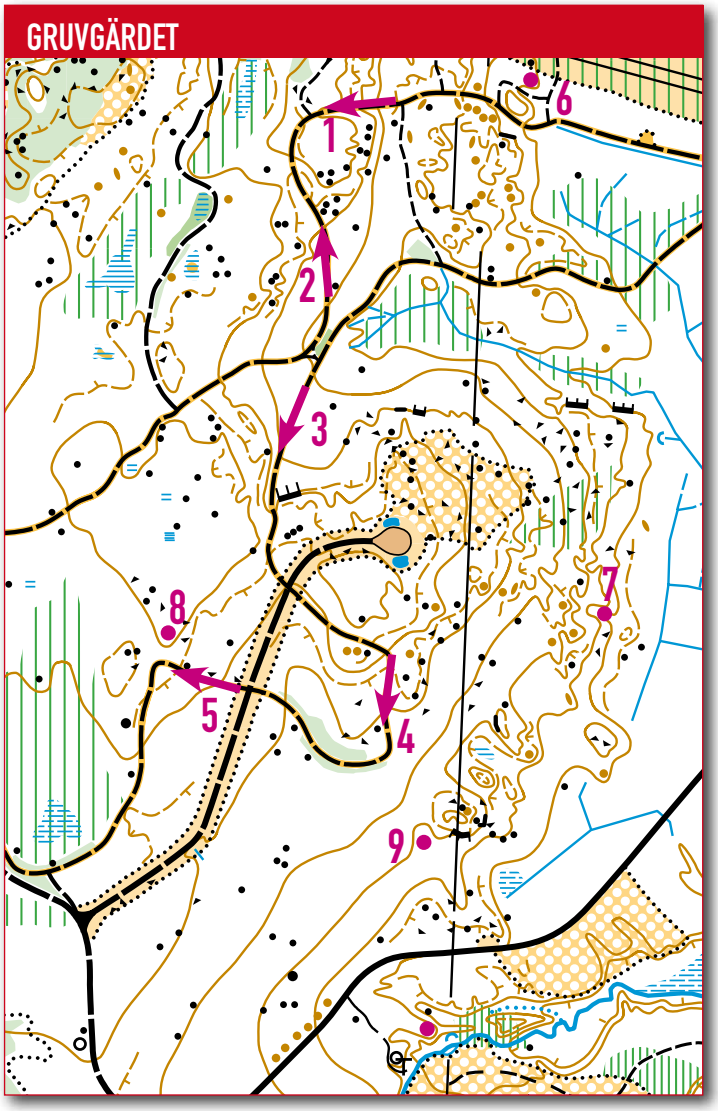
Correct answers "Gruvgärdet".

1	Uphill	6	Ridge
2	Uphill	7	Re-entrant
3	Uphill	8	Ridge
4	Downhill	9	Re-entrant
5	Uphill	10	Ridge

Correct answers to the map of World Cup in Turkey:

Control: 14-129

Control: 5-116



Control: 9-121

Control: 11-124

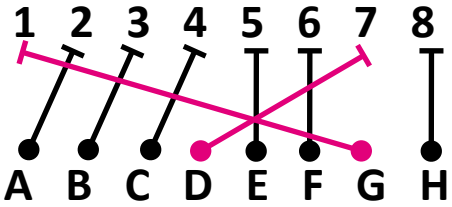
Control: 7-118

Control: 4-115

Control: 3-114

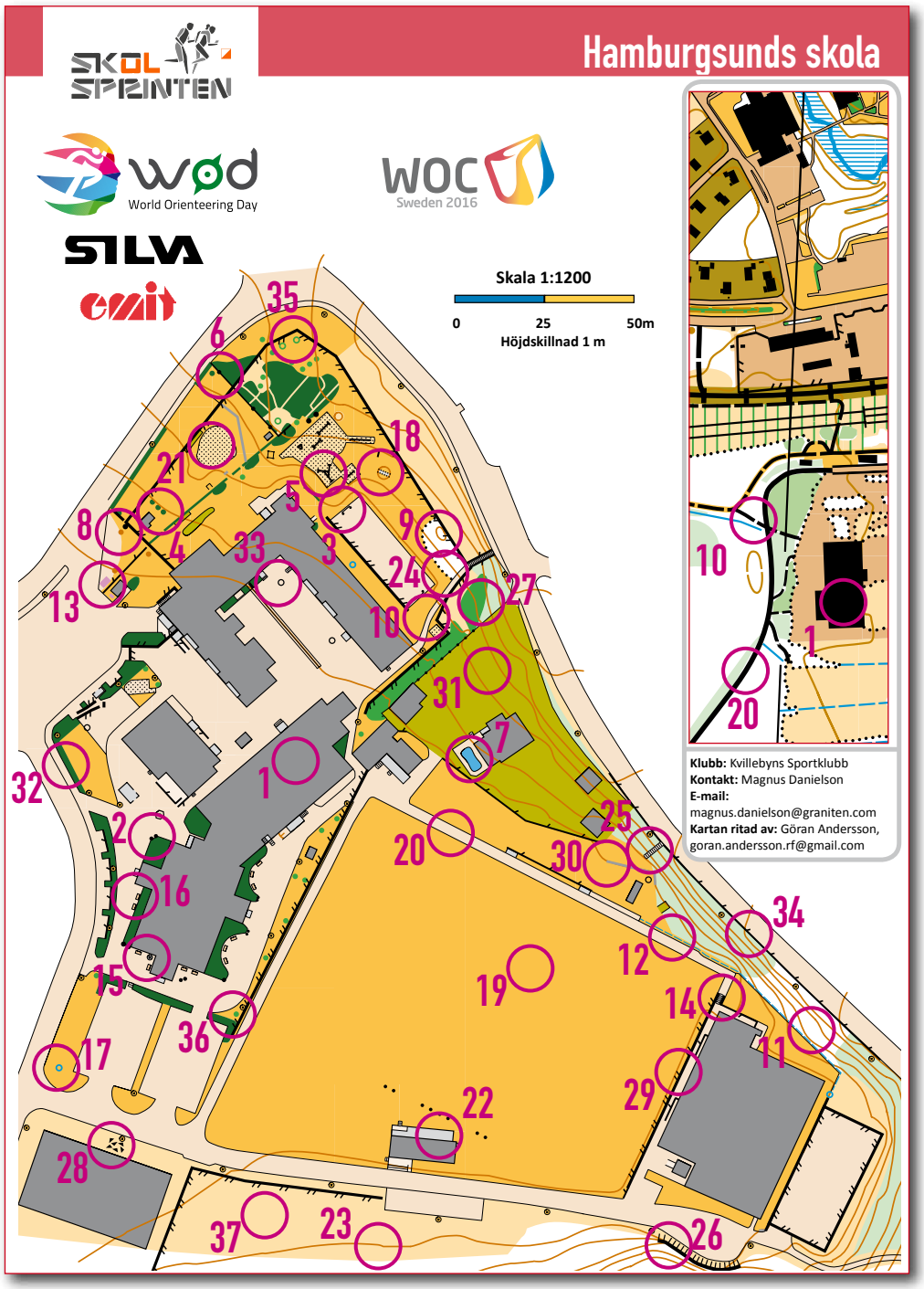
Correct answers to "Red to Red":

Draw a line between the **number** and the **letter** that you think is correct "Red to Red":



THE MAP´S SYMBOLS

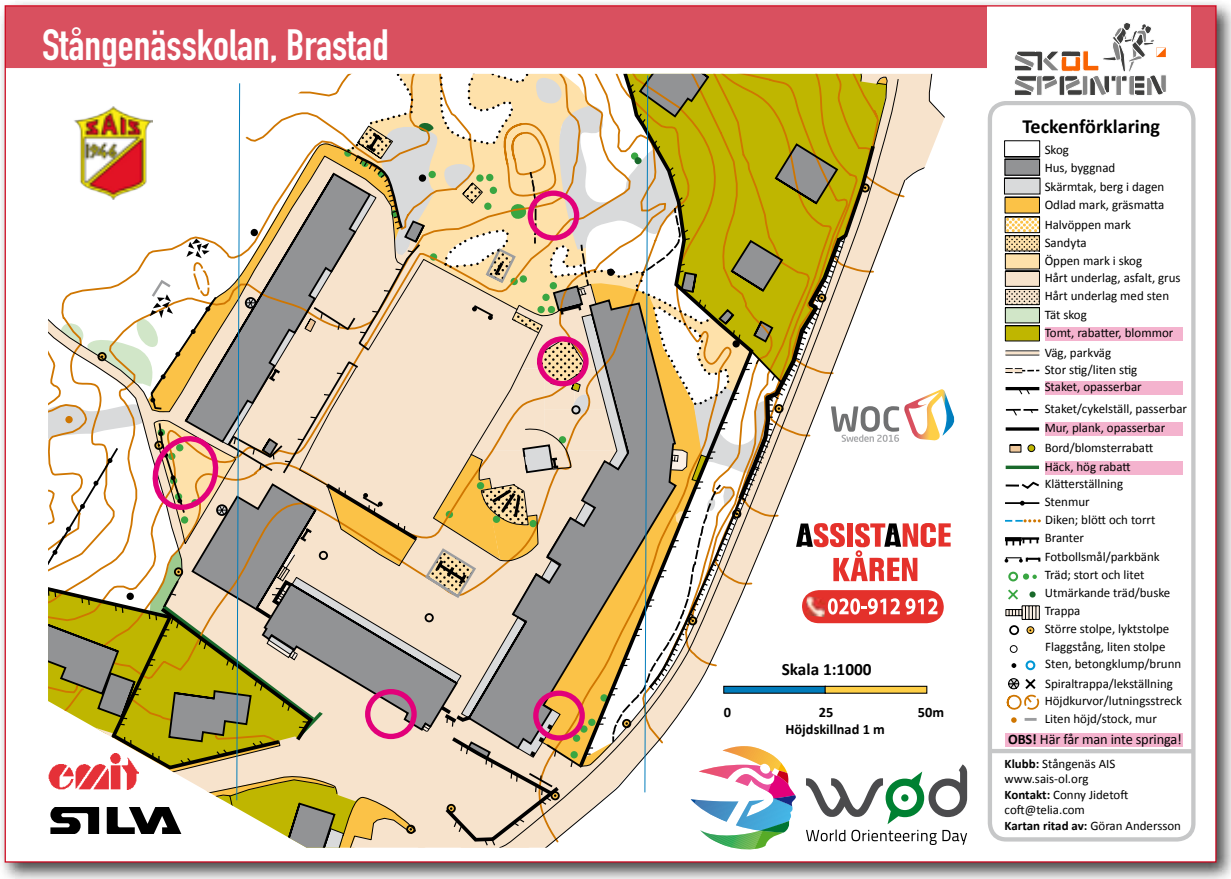
Test yourself!
The map over the school of Hamburgersund is drawn according to ISSOM. It differs in some details from the forest map (inset).
Correct answers as follow:



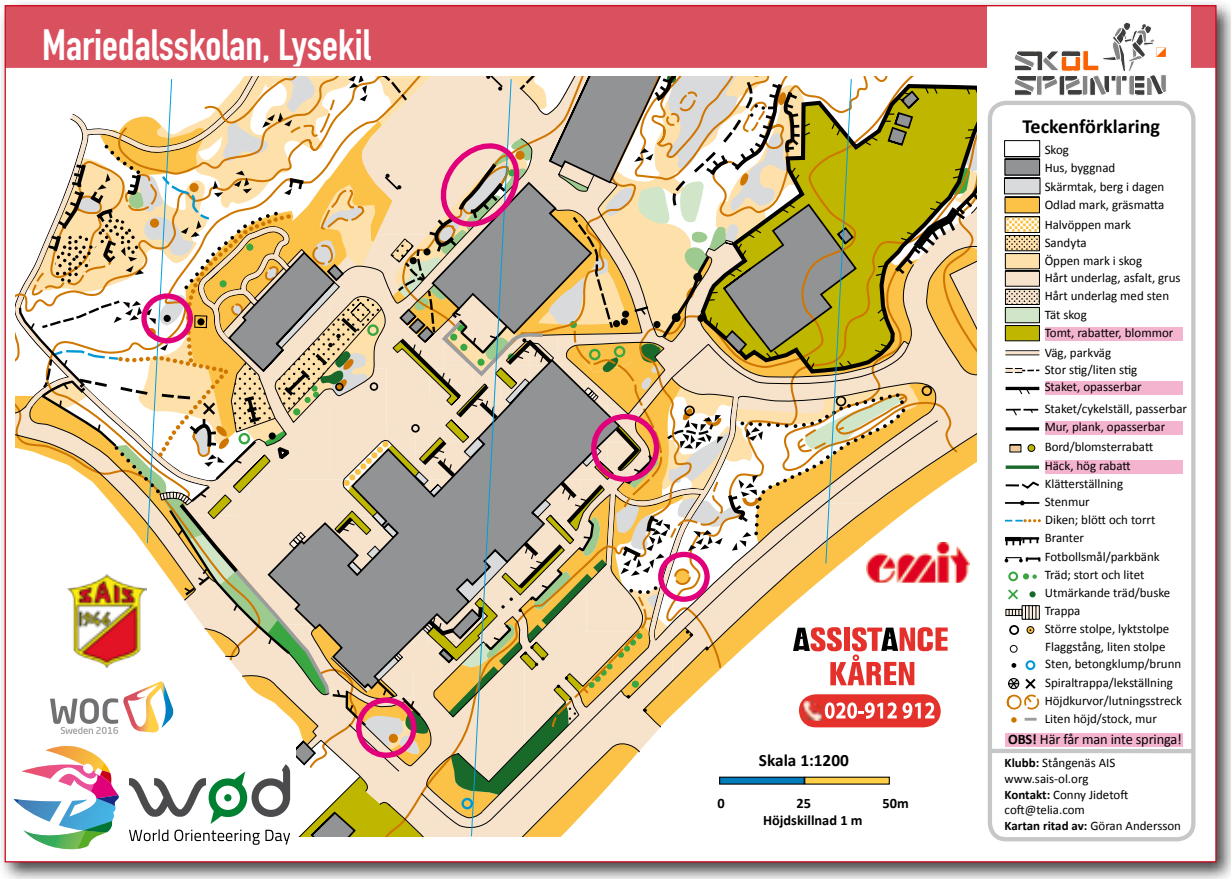
1	House, building
11	Forest
22	Canopy
19	Lawn, open land
21	Sandy ground
2	Boulder
20	Road, park road
10	Big path
23	Hill, contour line
6	Stone wall
35	Big tree
36	Small tree
18	Tunnel
25	Stair
9	Hill
8	Knoll
24	Vegetation boundary
26	Impassable cliff
4	Bush
3	Football goal
12	Minor watercourse
33	Flag pole, small post
31	Private area, flower bed
17	Well
5	Play equipment
27	Dense vegetation
37	Open field in forest
34	Passable fence
29	Impassable fence
14	Impassable wall
30	Passable wall
32	Impassable vegetation, hedge
28	Boulder field
16	Table
15	Spiral stair
7	Water, pool
13	Temporary building

FIVE MAP SYMBOLS, correct answers

Five map symbols have disappeared



Five map symbols have changed



SILVA

PRODUCT TIPS FROM SILVA

COMPASSES – HEADLAMPS – ORIENTEERING MARKERS

We proudly present our updated series of thumb compasses - now with improved design and an even more durable construction. The improved NOR compass series offers better grip and more transparency.

We also offer a wide range of powerful and compact headlamps, as well as our classic orienteering markers - now with reflective elements.

SKOLSPRINTEN