

Mathematics

Delprov D

Årskurs

9

Elevens namn och klass/grupp

Instructions – part D

Complete solutions are required for most of the tasks. A complete solution means that you have shown your work clearly enough for another person to read and understand it. It is important that you show all of your work. You can get points for a partly solved task.

No points are given for the correct answer on its own, other than in the tasks marked *Only the answer is required*.

The maximum number of points you can get for your solution is shown after each task. For example, (2/1/0) means that the task can give 2 E-points, 1 C-point and 0 A-points.

Aids: Digital devices and formula sheet.

Time for the part: 100 minutes.

Solutions and answers must be written on a separate sheet of paper, not in the test booklet. This test booklet must be handed in along with the solutions.

Name: _____

School: _____

Class: _____

Birth date (year/month/day): _____

Good luck!

Illustrations: Jens Ahlbom



When assessing your work, the teacher will consider

- what mathematical knowledge you have shown, and how well you have completed the tasks
- how well you have shown your work
- how well you have motivated the answers.

21.



SEK 0.04/litre



SEK 15 for 0.75 litres

Kim claims that bottled water is 500 times more expensive per litre than tap water. Is that correct? Motivate your answer.

(3/0/0)

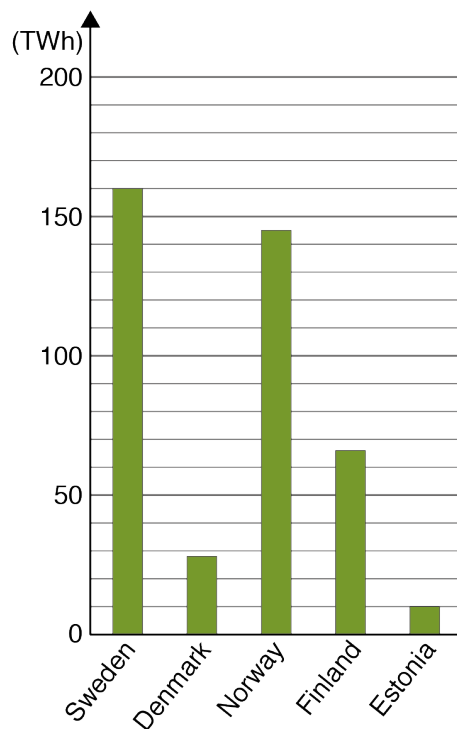
22. Leila is returning cans for a refund of the deposit. She has a total of 60 red and yellow cans in a black garbage bag. There are 12 more red cans than yellow cans. Without looking, Leila pulls out a can. What is the probability that it is a yellow can?

(2/0/0)

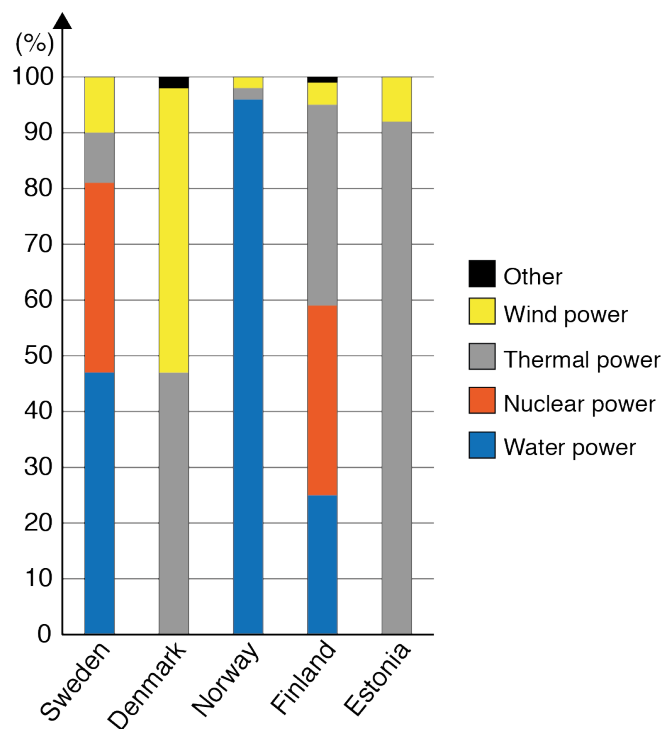


23. The diagrams show electricity production in various countries in 2015.

Electricity production year 2015 (TWh)



Electricity production year 2015 divided by energy sources (%)



- How much electricity was produced in Sweden year 2015?
Only the answer is required. (1/0/0)
- What percentage of electricity production in Finland came from nuclear power?
Only the answer is required. (1/0/0)
- Adam says that in Sweden and Estonia the same amount of electricity was produced from thermal power. Is he correct? Motivate your answer with reasoning and/or calculations. (1/1/0)

24. A school has the goal over the course of a school year to reduce the amount of food thrown away by the pupils. The school is attended by 680 pupils.

One serving: 300 g
Cost of ingredients: SEK 10/serving
Food thrown away: 30 g/serving

- a) How many kilograms of food do the pupils throw away, in total, in one week of school (5 days)?
- b) The school council wants the quantity of food thrown away in the course of a school year to be reduced by 2 500 kg (35 school weeks). That way, the school kitchen would not need to make as much food. The money that the school would save could be used for a trip to the theatre for all of the pupils. One ticket costs SEK 120. Will the money saved by the school be enough for the theatre trip?

(2/0/0)

(0/3/0)



25. Kim has decided to run every day for a week. The table shows how far Kim runs during the first five days of the week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Distance (km)	1.5	4.4	2.7	2.2	1.7		

- a) Calculate the mean for Monday–Friday.
- b) The mean for the entire week (Monday–Sunday) is 2.7 km. The median for the entire week is the same as for the first five days. Investigate how far Kim might have run on Saturday and Sunday respectively.

(2/0/0)

(1/1/1)



26. The organisers of an environmental festival are to hire a sound system and a DJ. The cost of the sound system is fixed. The DJ is paid per hour. Here are two examples of one company's pricing:
- Sound system and DJ for 5 hours cost SEK 5 950.
 - Sound system and DJ for 9 hours cost SEK 8 550.

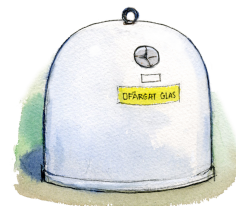
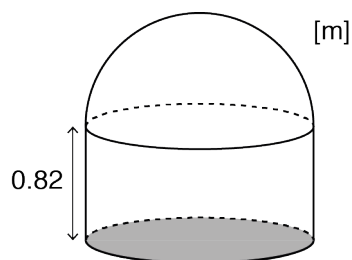
How much is the cost for the sound system alone?

(2/1/0)



27. The container for recycled glass can be described as a cylinder combined with an upper part which has the shape of a hemisphere. The bottom of the cylinder has a circumference of 5.4 m. What is the total volume of the container?

(1/2/1)



The figure is not drawn to scale.

28. Adam is going to return cans and bottles for a refund of the deposit.

He has

- 3 times as many cans as glass bottles
- 4 fewer small PET bottles than glass bottles
- half as many large PET bottles as cans.

Deposit per unit

Cans SEK 1

Glass bottles SEK 1

Small PET bottles SEK 1

Large PET bottles SEK 2

When Adam returns his cans and bottles, he receives a refund of SEK 92. How many cans has he returned?

(1/2/1)

29. Ecological footprint is a measure of how large surface we humans use to produce what we need and to take care of our waste. For this purpose we can use $1.3 \times 10^8 \text{ km}^2$ of the globe's total surface.

Earth's population: 7.5×10^9 people
 $1 \text{ km}^2 = 100 \text{ hectares (ha)}$

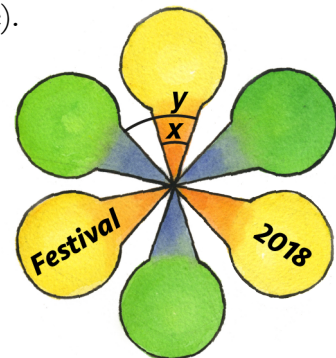
Ecological footprint per person in some countries



Sweden's ecological footprint is 6.9 hectares (ha) per person.
 How many globes would we need if the whole world's population had the same ecological footprint as we have in Sweden?

(0/1/2)

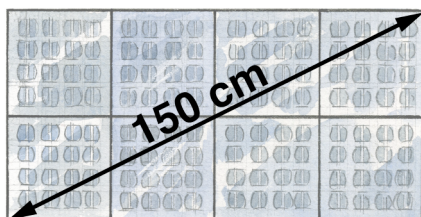
30. The environmental festival has its own logo (see picture).
 The ratio between angle x and angle y is 5:8.
 What is angle x ?



(0/1/1)

31. A solar panel has the shape of a rectangle.
 It consists of 8 quadratic solar cells.
 What is the area of the solar panel?

(0/1/2)



The figure is not drawn to scale.

