

Mathematics

Delprov D

1a

Elevens namn och klass/grupp

Instructions – Part D

Time for the test 120 minutes for Part D.

Aids Allowed aids on part D are digital devices, formula sheet and ruler.

Tasks This part consists of several tasks. The solutions are to be written on separate paper, which is to be submitted together with the test booklet. For most of the tasks in this part it is not enough to only give an answer, you also have to

- show your solutions
- explain/motivate your thinking
- draw figures when required.

For some tasks only the answer needs to be given. They are marked with “*Only answer required*”.

Grading limits The test (Part A–D) gives a total maximum of 80 points.

Limit for test grade

E: At least 21 points.

D: At least 34 points of which at least 11 points at level C or higher.

C: At least 45 points of which at least 19 points at level C or higher.

B: At least 55 points of which at least 6 points at level A.

A: At least 64 points of which at least 10 points at level A.

Name: _____

Date of birth: _____

Program: _____ Class: _____

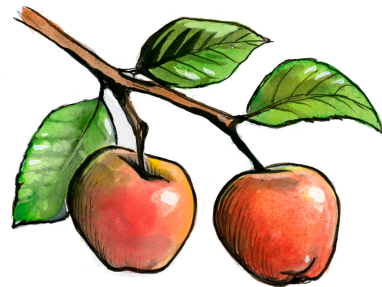
Also write your name, date of birth, program and class on the sheets you hand in.

Illustration: Jens Ahlbom

16. Amina has taken out an interest-only mortgage of SEK 800 000.
How much does she pay in interest per month if
the annual interest rate is 3.6 %? (2/0/0)
17. You are travelling 80 km in one hour,
How many seconds does it take to travel 100 m? (2/0/0)
18. A hair on a person's head grows at an average of 0.35 mm/day.
a) Approximately how much does a hair grow in a month?
b) One of Adam's hairs is 5.6 cm long.
How long will it take for Adam's hair to become twice as long? (2/0/0)
19. The volume of a breath is approximately 500 ml.
The air in a single breath consists of 21 % oxygen,
but only $\frac{1}{4}$ of this oxygen is absorbed by the blood.
How many millilitres of oxygen is absorbed by the blood
in a single breath? (2/0/0)

20. A fruit wholesaler compared the price of apples in six countries in Europe. The prices are given in SEK.

Country	Price (SEK/kg)
Sweden	22.95
Holland	12.85
England	18.74
France	22.11
Norway	28.63
Denmark	16.53



- a) How many kilogrammes of apples would you get for SEK 100 in Denmark? (2/0/0)
- b) How many per cent higher is the price of the most expensive apples compared to that of the cheapest? (1/1/0)
21. In 2014, the price of electricity was 27 öre per kWh. That was 40 % lower than the year before. How much did 1 kWh cost in 2013?

1 kWh = 1 kilowatt hour

(0/2/0)

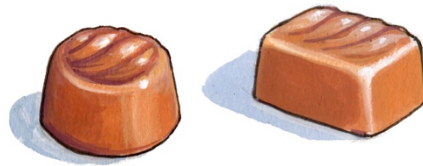
22. The chocolate factory sells boxes of different sizes with pieces of chocolate. Each box has two sorts of pieces of chocolate in the ratio of 3:5.

a) How many pieces of each sort are there if a box contains 16 pieces of chocolate?

(2/0/0)

b) One box has 15 pieces of chocolate of one sort. Investigate how many pieces of chocolate there can be in the box in total.

(1/2/0)



23. You roll two dice. One die has four sides, numbered 1 to 4. The other die has six sides, numbered 1 to 6. Show that the probability of at least one of the dice showing a “three” is $\frac{3}{8}$.



(1/2/0)

24. Frida takes out an SMS loan of SEK 1 000. The loan is to be repaid after one month and the monthly interest rate is 20 %. At the end of the month Frida cannot afford to pay her debt.

In order to pay her debt she takes out a new SMS loan for the whole amount she owes. The new loan has the same monthly interest rate.

Frida continues to borrow in the same way every month.

How large is Frida's debt one year after she took out her first SMS loan? (0/2/1)

25. Emre is going to take out a new mobile phone subscription. His grandmother lives in Turkey and in an average month Emre makes 3 hours of domestic calls and 2 hours of international calls.

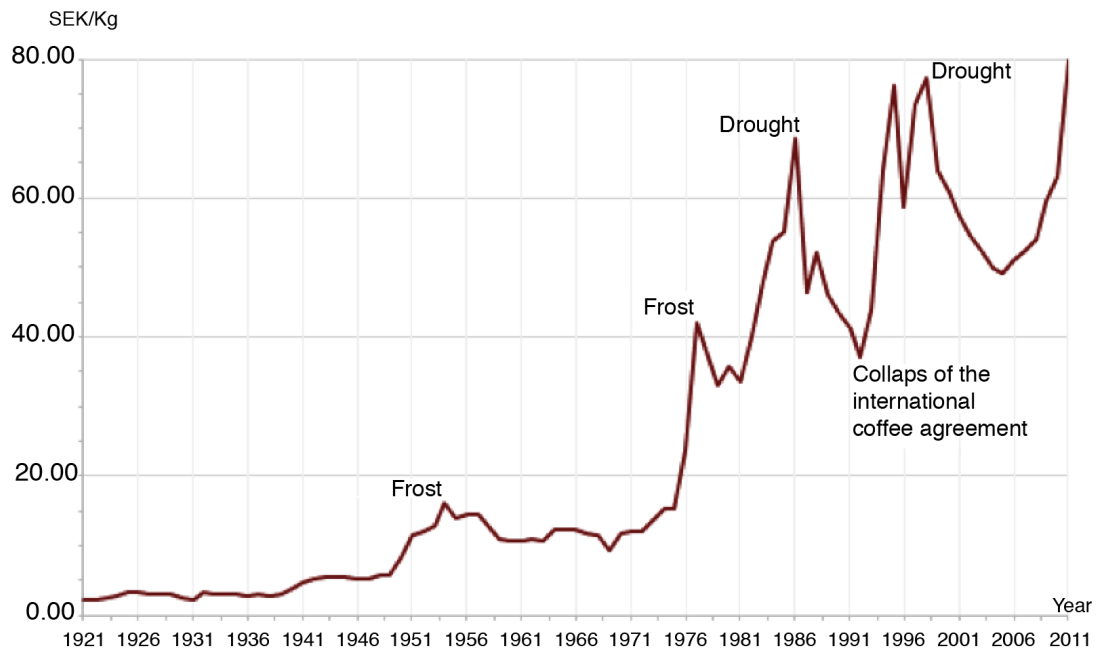
- a) Which of the following subscriptions is the cheapest for him? (1/1/0)

	Subscription A	Subscription B
Fixed monthly rate	SEK 100	SEK 289
Call rate, domestic	SEK 0.49/min	SEK 0.49/min
Call rate, international	SEK 4.69/min	SEK 0.49/min

- b) Write one formula for Subscription A and one for Subscription B, in which T is the total cost per month, d is the number of minutes of domestic calls, and i is the number of minutes of international calls. (0/2/0)

- c) For which call durations (domestic and international) do the two subscriptions cost the same? (0/1/2)

26. The graph shows the price development for one kilogramme of coffee in Sweden. According to an index series, the index for the coffee price was 330 in the year 2011. What year was the index series' base year?



(0/0/2)

