Mathematics

Delprov D

1b

Elevens namn och klass/grupp

Prov som återanvänds av Skolverket omfattas av sekretess
enligt **17 kap. 4 § offentlighets- och sekretesslagen.**
Detta prov återanvänds av Skolverket t.o.m. **2020-06-30.**

Skolverket

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 92 points.

Limit for test grade

E: At least 22 points.
D: At least 36 points of which at least 12 points at level C or higher.
C: At least 49 points of which at least 23 points at level C or higher.
B: At least 62 points of which at least 7 points at level A.
A: At least 71 points of which at least 12 points at level A.

Name: _____

Date of birth: _____

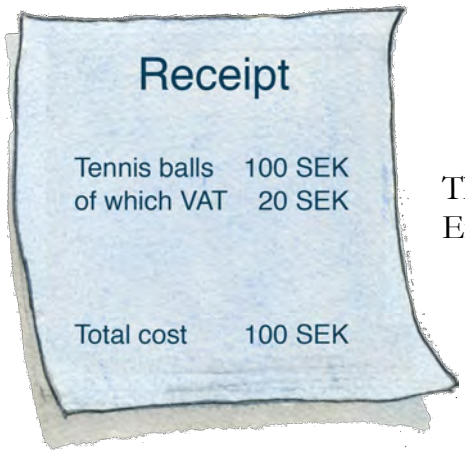
Program: _____ Class: _____

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

Illustration: Jens Ahlbom

17. Göran has taken an interest-only mortgage of SEK 800,000. How much does he pay in interest per month if the annual interest rate is 3.6 %? (2/0/0)

18. VAT on sports and leisure articles is 25 per cent of the price without VAT. Maria received the following receipt when she bought tennis balls.



There is nothing wrong with the receipt. Explain why the VAT amount is SEK 20. (1/1/0)

19. One year 30 apples grow on an apple tree. One year later, 35 apples grow on the apple tree.

a) How many apples will grow on the apple tree after a further 9 years if the number of apples increase by the same number every year? (2/0/0)

b) If the number of apples instead were to increase every year by the same percentage as in the first year, how many apples will then grow after the further 9 years? (1/2/1)

20. The Romans played with a symmetrical four-sided dice, called the talus. Its sides had 1, 3, 4 and 6 dots. Suppose you throw two talus dice and then add the number of dots.

a) What is the most probable sum? (1/2/0)

b) What is the probability that at least one of the dice shows an even number of dots? (0/2/0)

21. Uppgift under sekretess. Kommer att läggas till så snart sekretesstiden har gått ut.

22. The size of a bicycle is determined by the length of the saddle tube. To know what size of bicycle to have, we can measure the inside leg of the person who will be using the bicycle. We can then calculate the appropriate size of the bicycle in two different ways

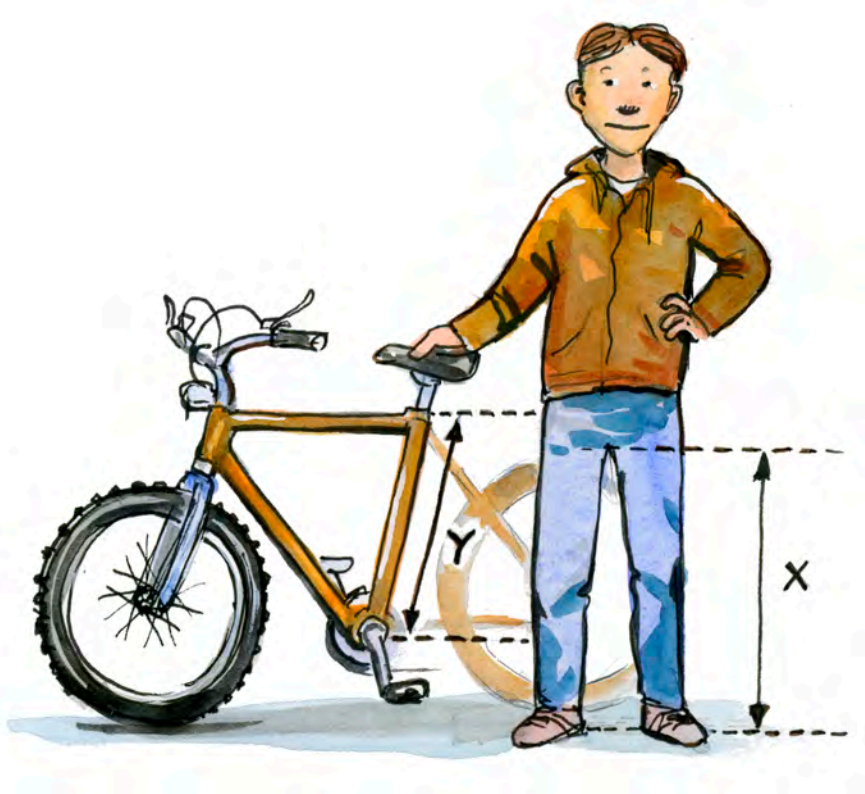
formula A: $y = x - 23$

formula B: $y = \frac{2x}{3}$

where x is the length of the inside leg in cm and y is the length of the saddle tube in cm. The formulas apply for inside legs measuring between 30 cm and 90 cm.

a) Mika is going to buy a bicycle and he has an inside leg length of 63 cm. Using formula A and formula B, calculate the length of the saddle tube that Mika should have.
Only answer required. (2/0/0)

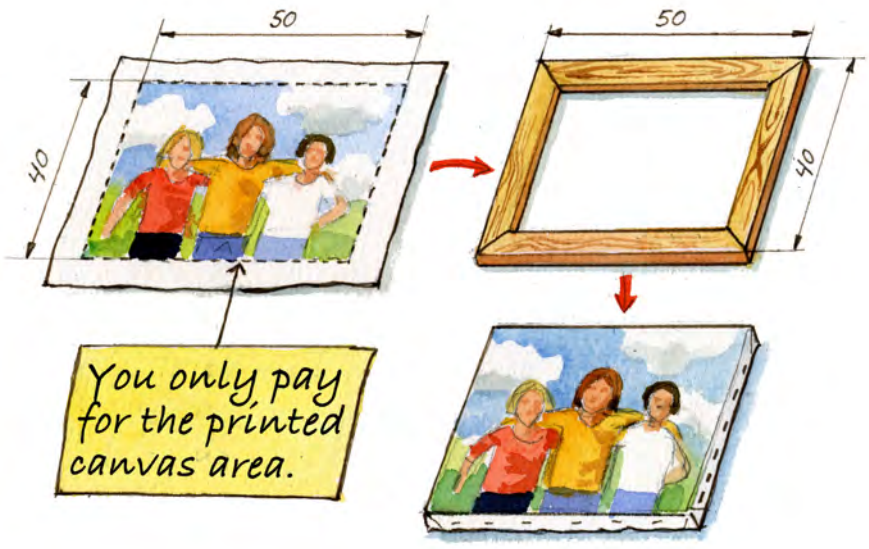
b) What inside leg length gives the same length of saddle tube with both formulas? (0/2/2)



23. In the year 2010, about 1.3 per mille of the entire world's population lived in Sweden. Of those living in Europe, around 1.3 per cent lived in Sweden. How great a proportion of the world's population lived in Europe? (1/2/0)

24. Uppgift under sekretess. Kommer att läggas till så snart sekretesstiden har gått ut.

25. A photographic dealer's prints rectangular pictures on canvas and then mounts the picture on a wooden frame. The wooden frame costs SEK 0.45/cm. Canvas with print costs SEK 0.12/cm^2.
The cost of mounting is SEK 169 for all frame sizes.



a) Yasmin wants to print a picture and have it mounted. She wants the picture 50 cm high and 40 cm wide. What will be the cost? (1/2/0)

b) To calculate the price of mounted pictures, the staff needs a formula which includes height and width. The price has to include the canvas, with printing, frame and cost of mounting. Help the photographic dealer's to create such a formula. (0/2/2)

26. In the late 1700s, a different way of dividing time was used in France (French clock).

- the day was divided into 10 "hours"
- each "hour" had 100 "minutes"
- each "minute" was divided into 100 "seconds"

French clock 1 revolution per day	⟵ corresponds to ⟶	"Normal" clock 2 revolutions per day
In digital form:		In digital form:
02:50	⟵ corresponds to ⟶	06:00

a) What time does the "normal" clock show when the French clock shows 5:00? Motivate your answer. (0/1/0)

b) What time does the French clock show when the "normal" clock shows 15:00? Motivate your answer. (0/1/2)

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PRIM gruppen