

MATHEMATICS TEST
Year 9 – Part C
Spring 2004

The contents of this test material must remain *secret* until June 11, 2004.

After each question the maximum total number of points possible for your solution is shown. For example (2/1) indicates that the question can give a maximum of 2 g-points and 1 vg-point. You may demonstrate MVG-quality in your solutions to questions marked with the symbol α .

Almost all questions require complete solutions.

Merely a correct answer does not give any points except for the questions marked with *Only the answer is required*.

Your solution must be clear enough so that others can easily read and understand your reasoning. It is important that you show all your work since it is possible to obtain part of the points for a partial solution.

Aids: calculator, ruler.

Time: 80 minutes.

Name: _____

School: _____ Class: _____

Birth date: Year _____ Month _____ Day _____

Girl ☐ Boy ☐

All solutions and answers must be written on separate paper. This question paper must be handed in together with your solutions.

Åshöjdens IF

Åshöjdens IF is a sports club with many active members. The club has a football section, an athletic section, and an archery section.



Source: Per Johnsson/Bodestorpsskolan

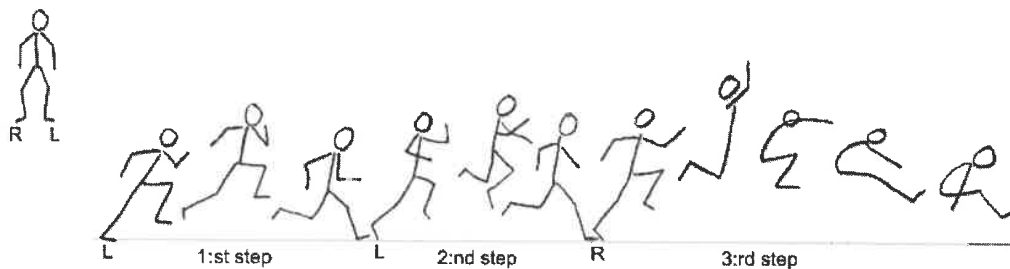


Source: Pär Eliasson/Pressens Bild

1. A football match lasts $2 \cdot 45$ minutes. After one third of the match there is a player exchange. Cecilia comes in and replaces Hanna. How long will Cecilia play? (2/0)

2. In the Åshöjdens IF club there are 192 members who play football. That is 40 % of the total number of members in the club. How many members are there in the club? (1/1)

3. When Victor does the triple jump, the ratio between the lengths of the 1:st step, the 2:nd step and the 3:rd step is 3:2:4. How far does he jump in total if the second step is 2.70 m? (1/2)



4. The membership fee for Åshöjdens IF is 80 kr for children and 150 kr for adults. In the Kvist family, both the parents and their three children are members. How much does the family pay in membership fees? (2/0)

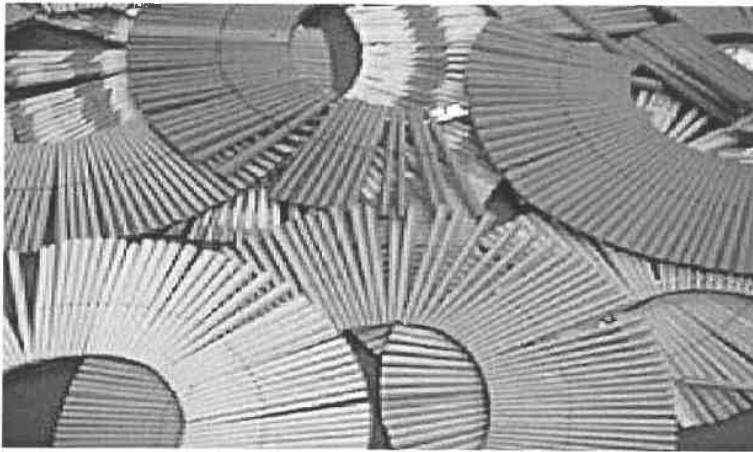
5. The treasurer in Åshöjdens IF has received a total of 51 000 kr in membership fees. She sets up the following equation: $80 \cdot x + 150 \cdot (480 - x) = 51\,000$.

a) What does x stand for in this equation? *Only the answer is required.* (0/1)

b) What does 480 stand for? *Only the answer is required.* (0/1)

c) Help the treasurer to solve the equation. (0/2)

✖



6. In a lottery there are 1 000 tickets. They are numbered from 1 to 1 000. All lottery tickets with numbers ending with the digits 77 get 100 kr as a prize and all tickets ending with the digit 3 get 10 kr as a prize. Pia is the first person to pick out a lottery ticket.

a) Find the probability that she will win 100 kr? Explain your reasoning. (2/0)

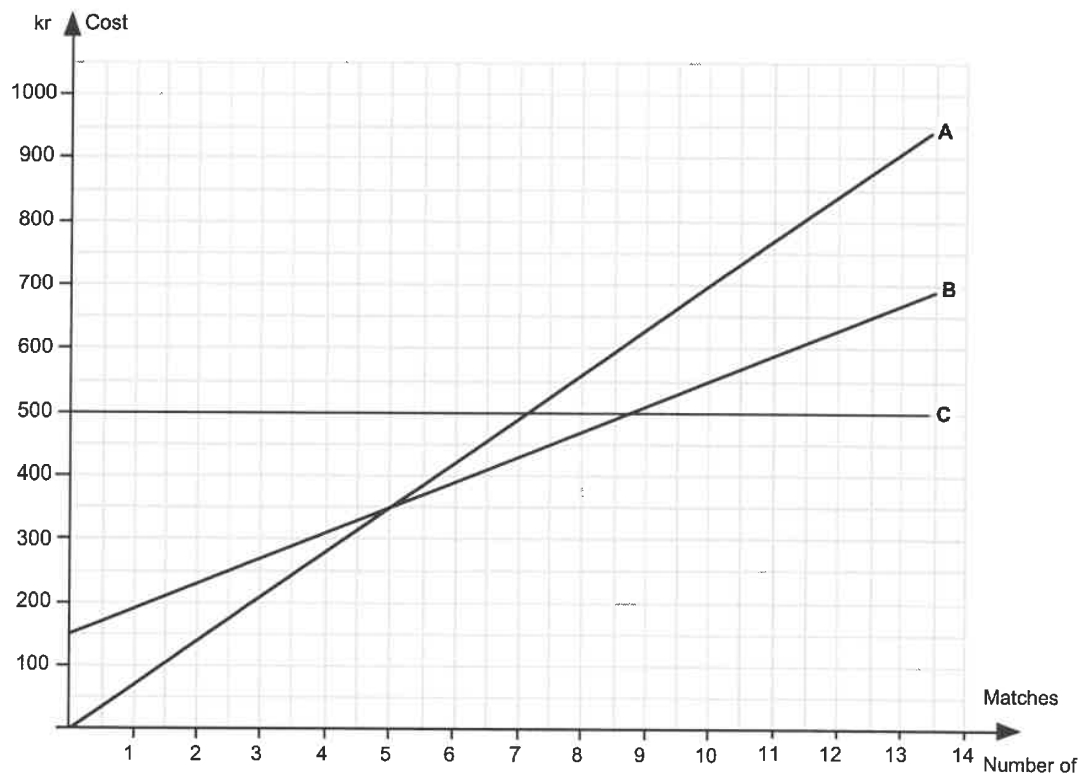
b) According to law, *at least half* of the money taken in for the sale of lottery tickets must be given back as lottery prize money. What is the *highest* possible price for each lottery ticket? (2/1)

7. There are three different alternatives for paying when you go to the home matches for Åshöjdens IF. The alternatives depend on whether you have paid the membership fee or bought a season's ticket.

Alt I: With a season's ticket, that costs 500 kr, you have free admittance to all matches.

Alt II: Members who have paid the membership fee of 150 kr pay 40 kr per match.

Alt III: With neither season's ticket nor paid membership fee, you must pay 70 kr for each match.



- a) Which of the graphs A, B and C correspond to the three alternatives I, II and III for paying. Pair them together correctly. *Only the answer is required.*

(2/0)

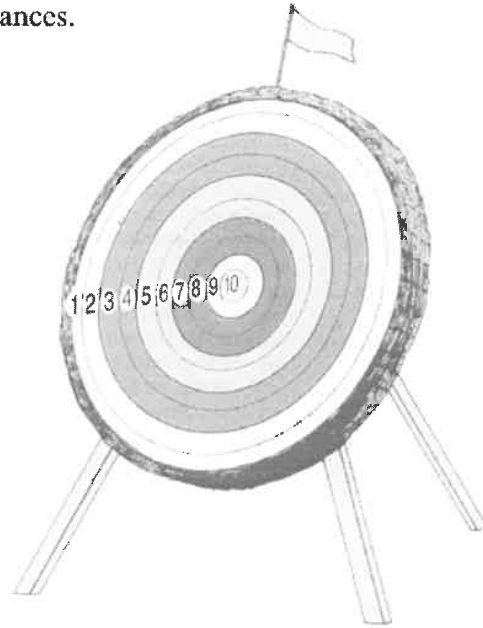
- b) Describe for what number of matches the different alternatives are the cheapest.

(2/1) ✖

- c) Determine a formula, for each of the alternatives II and III, that can be used to calculate the cost for your tickets, if you know how many matches you will go to see.

(0/2) ✖

8. In archery you shoot from different distances. When shooting from a distance of 30 m the target used has a diameter of 80 cm. When shooting from greater distances a target with twice the area is used. What diameter should this target have?



(1/2) ✖

9. Lisa competes in archery. Each arrow can score at least 0 points and at most 10 points. At a competition Lisa shot 5 arrows. The mean score was 8 points and the median was 10 points. How might she have shot? Explain your choice and discuss various possibilities.

(1/2) ✖



Source: Johan Persson/Pressens Bild



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