

Mathematics

Part I and Part II

1c

Elevens namn och klass/grupp

Instructions – Part I and Part II

Time	90 minutes for Part I and Part II. It is recommended that you use a maximum of 45 minutes for working with Part I. You may not use digital calculating devices until you have submitted your answers to Part I.
Aids	Part I: Approved formula page and ruler. Part II: Digital calculating devices, approved formula page and ruler.
Part I	This part consists of questions to be solved without digital calculating devices. Some of the questions require that you explain your solution. Present your solutions in the figure and the box nearby the question. The rest of the questions require only the answer. After each question the maximum number of points available for your answer/solution is shown.
Part II	This question is a larger question, which normally requires more time. In the box nearby the question you can see what considerations the teacher will make in assessing your solution.
Grading	The test (oral part and written parts) gives a total maximum of 94 points.

Lower limits for examination grade

- E: At least 19 points.
- D: At least 33 points of which at least 11 points on lowest level C.
- C: At least 44 points of which at least 19 points on lowest level C.
- B: At least 60 points of which at least 7 points on level A.
- A: At least 72 points of which at least 13 points on level A.

An additional requirement is that you score points in various abilities.

Name: _____

Date of birth: _____

Secondary school program: _____

Part II

Question 14 – Think of a number

Game with numbers

- Think of a two-digit positive integer.
- Calculate the sum of the digits.
- Subtract the sum from the number you first thought of.

Example

I am thinking of the number 68

The sum of the digits is $6+8=14$

$68 - 14 = 54$ Answer = 54

- ➡ Think of a new two-digit integer and do the same steps as above for this number.
- ➡ Repeat this investigation with new numbers until you discover what the resulting answers have in common. What do the resulting (answers) have in common?
- ➡ Show that your conclusion is true for all two-digit positive integers.
Hint: The value of the two-digit number ab can be written as $10 \cdot a + b$
- ➡ Investigate whether your conclusion is also true for three-digit positive integers.

(3/5/4)

In assessing your work the teacher will take into consideration

- what mathematical knowledge you have shown and how well you have carried out the task
- how well you have explained your reasoning and defended your conclusions
- how well you have presented your written solution.

