The National Agency for Education, referring to 4 kap 3 § Sekretesslagen, emphasizes that this material must be kept confidential. **This material must remain confidential until December 31, 2013.**

National Test in MATHEMATICS COURSE A

Autumn 2007

Part I

Instructions

Time	60 minutes for Part I. It is recommended that you use a maximum of 25 minutes for working with the short answer questions. You may not use your calculator until you have submitted your answers to the short answer questions.
Aids	**Short answer part:** Approved formula page and ruler. **Question 10:** Calculator, approved formula page and ruler.
Short answer part	This part consists of questions to be solved without a calculator. *Only the answers are required*. A correct answer gives 1 g-point (1/0) or 1 vg-point (0/1).
Question 10	This question is a larger question which normally requires more time. In the box below the question you can see what considerations the teacher will make in assessing your solution.
Grading	The test (Part I + Part II) gives a total maximum of 58 points, of which 23 are vg-points.

Lower limits for examination grade

Pass:	19 points
Pass with distinction:	33 points of which at least 10 vg-points
Pass with special distinction:	At least 16 vg-points. In addition you must demonstrate several of the MVG-qualities that are possible to show in the questions marked ¤.

Name:_____ Date of birth: _____

Adult education/Secondary school program: _____

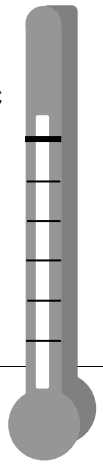
Name: .....

Class/Group: .....

Part I

1. Write seventeen thousandths in decimal form. Answer:_____ (1/0)

2. Wind in combination with snow and coldness can produce low temperatures in the mountains. Perhaps –10 °C and "medium wind" doesn't sound so severe. But if "medium wind" means a wind speed of 7 m/s, what will the chilling effect be?



Chilling effect, with wind

°C	*2 m/s*	*7 m/s*	*11m/s*	*16 m/s*	*20 m/s*	*Wind speed*
0	–2	–11	–16	–18	–19	
–5	–7	–17	–23	–26	–28	
–10	–12	–25	–31	–34	–36	
–15	–17	–32	–38	–42	–43	
–20	–23	–38	–46	–49	–52	
–25	–28	–45	–53	–57	–59	

Source: Naturvårdsverket, Fjällsäkerhetsrådet

Answer:_____ °C (1/0)

3. 1 tablespoon is 15 ml.
How many dl correspond to 8 tablespoons? Answer:_____ dl (1/0)

4. State the number which is *halfway between* 100 and 1000. Answer:_____ (1/0)

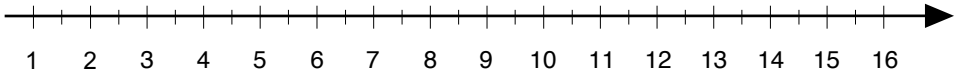
5. Solve the equation $25 - 5x = 10$ Answer: $x =$_____ (1/0)

6. Adam buys a used moped.
The formula $y = 100000.8^x$ describes
the moped's value y kronor after x year.

a) How much is the moped worth after 1 year? Answer:_____ kr (1/0)

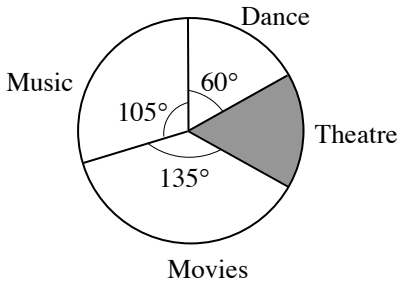
b) The annual depreciation percentage is
the same every year. How much is it? Answer:____ % per year (0/1)

7. Mark $\sqrt{8}$ on the number line.



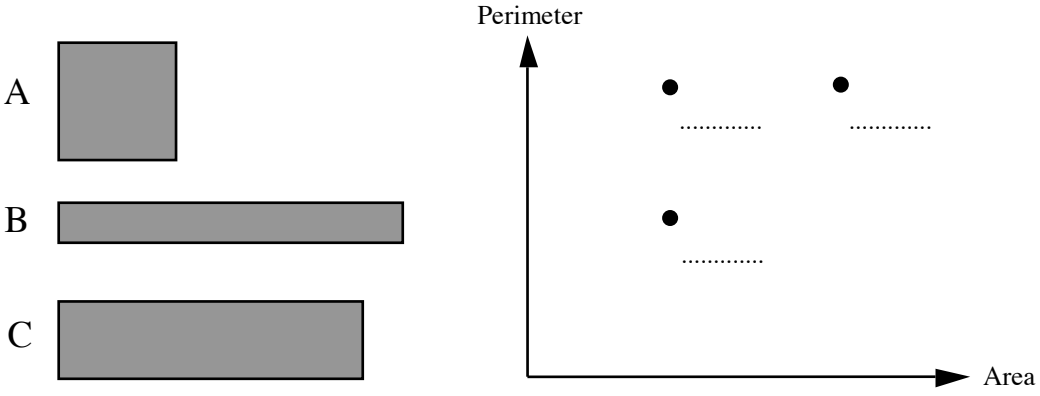
(0/1)

8. 24 pupils in a class in the aesthetics program
chose their favourite activity.
How many pupils chose theatre?



Answer:_____ (0/1)

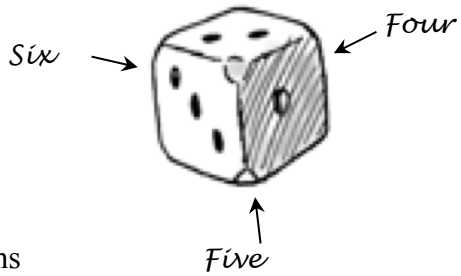
9. Mark A, B and C at the correct places
in the diagram.



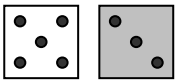
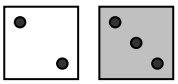
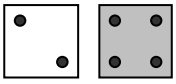
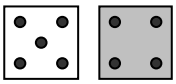
(0/1)

10. Playing Dice

On an ordinary 6-sided die the side with the 1 is always opposite the 6, the 2 is opposite the 5 and the 3 is opposite the 4.



Lisa rolls two dice. She multiplies the number of dots that come up on the two dice together (see step 1 in the table). Then she turns each die upside down, one at a time, and makes the calculations indicated in the table below.

Step no			**Product**
1		Here you see what Lisa's dice showed at first.	$5 \cdot 3 = 15$
2		Here Lisa has turned the white die upside down so that *the opposite* side comes up.	$2 \cdot 3 = 6$
3		Here Lisa has turned the grey die upside down so that *the opposite* side comes up.	$2 \cdot 4 = 8$
4		Here Lisa has turned the white die back to its original position.	$5 \cdot 4 = 20$
5		Finally Lisa calculates the sum of the products.	$15 + 6 + 8 + 20 = 49$

I Choose yourself what the dice show at the start. Follow the same steps as in the table above. What sum do you get?

II What conclusion can you make? Show that your conclusion is correct no matter what the dice show at the start.

III On an 8-sided die the 1 is always opposite the 8, the 2 is opposite the 7 etc. Make a similar investigation for two 8-sided dice as you did for the 6-sided dice. What conclusion can you make?

IV What will be the sum of the products if you use 12-sided or 20-sided dice? Describe the relationship between the number of sides on the dice and the sum of the products. You may use words and/or formulas.

In assessing your work the teacher will take into consideration
- what mathematical knowledge you have shown
- what conclusions you have made
- how well you have presented your work and carried out your calculations.

(5/4)