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**National Test in
MATHEMATICS
COURSE A
Autumn 2008**

Part I

Instructions

Time	90 minutes for Part I. It is recommended that you use a maximum of 40 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 16: Calculator, approved formula page and ruler.
Short answer part	This part consists of questions to be solved <i>without a calculator</i> . <i>Only the answer are required</i> . A correct answer gives 1 g-point (1/0) or 1 vg-point (0/1).
Question 16	This question is a larger question which normally requires more time. In the grey 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 off 61 points, of which 28 are vg-points. <i>Lower limits for examination grade</i> Pass: 19 points Pass with distinction: 35 points of which at least 11 vg-points Pass with special distinction: At least 19 vg-points. In addition you must demonstrate several of the MVG-qualities that are possible to show in the questions marked ■ .

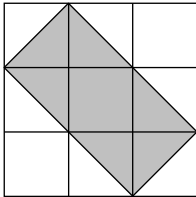
Name: _____ Date of birth: _____

Adult education/Secondary school program: _____

Name: Class/Group:

Part I

1. What portion of the area of the large square is shaded?



Answer: _____ (1/0)

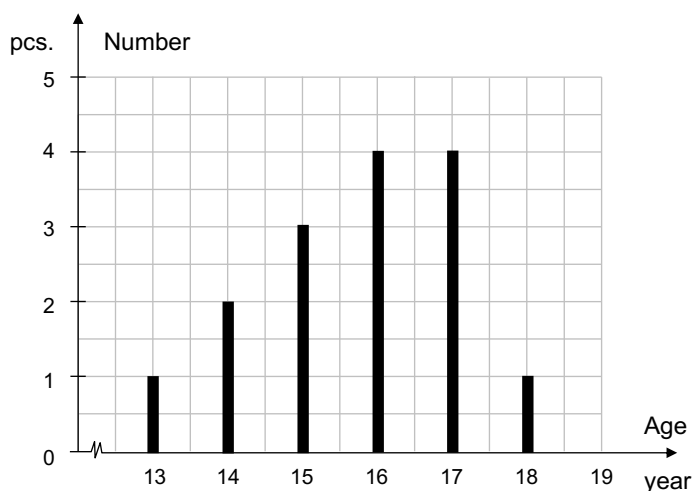
2. What number lies exactly *midway between* -4 and 2 ?

Answer: _____ (1/0)

3. How many minutes are there in 0.75 hours?

Answer: _____ min (1/0)

4. The diagram below shows the age of the members in a swimming club.



- a) How many members are there in the swimming club?

Answer: _____ pcs. (1/0)

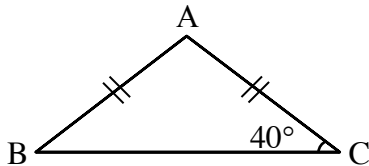
- b) Find the median age of the members.

Answer: _____ year (1/0)

5. What number is 0.1 less than 4.06?

Answer: _____ (1/0)

6. Find angle A in the isosceles triangle.



Answer: $\angle A =$ _____ $^{\circ}$ (1/0)

7. Write the correct prefix (*m*, *c*, *d*, *h* or *k*) at the arrow before the unit m so that equality holds.

Answer: $5,4 \cdot 10^2 \text{ m} = 5,4$ _____ (1/0)

8. A salary increase of 3 % gave Jakob an additional 900 SEK more per month. What was Jacob's monthly salary before this increase?

Answer: _____ SEK (0/1)

9. Calculate $\frac{102 \cdot 102 \cdot 102 \cdot 102 \cdot 102}{102 \cdot 102}$

Answer: _____ (0/1)

10. Stina runs 3 kilometres in 18 minutes. What is her average speed in km/h?

Answer: _____ km/h (0/1)

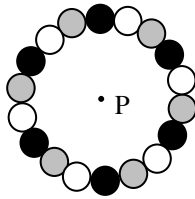
11. Solve the equation $7(x - 4) = 0.7$

Answer: $x =$ _____ (0/1)

12. Write a number in the box so that equality holds.

Answer: $\frac{2}{3} + \boxed{} + \frac{1}{9} = 1$ (0/1)

13. The ring is rotated around its midpoint P.
Find *the least possible* number of degrees
for this rotation so that the pattern will
coincide with the original pattern.



Answer: _____° (0/1)

14. What value must x have for equality to hold?
 $2 \cdot 10^3 \cdot 10^x = 10^7$

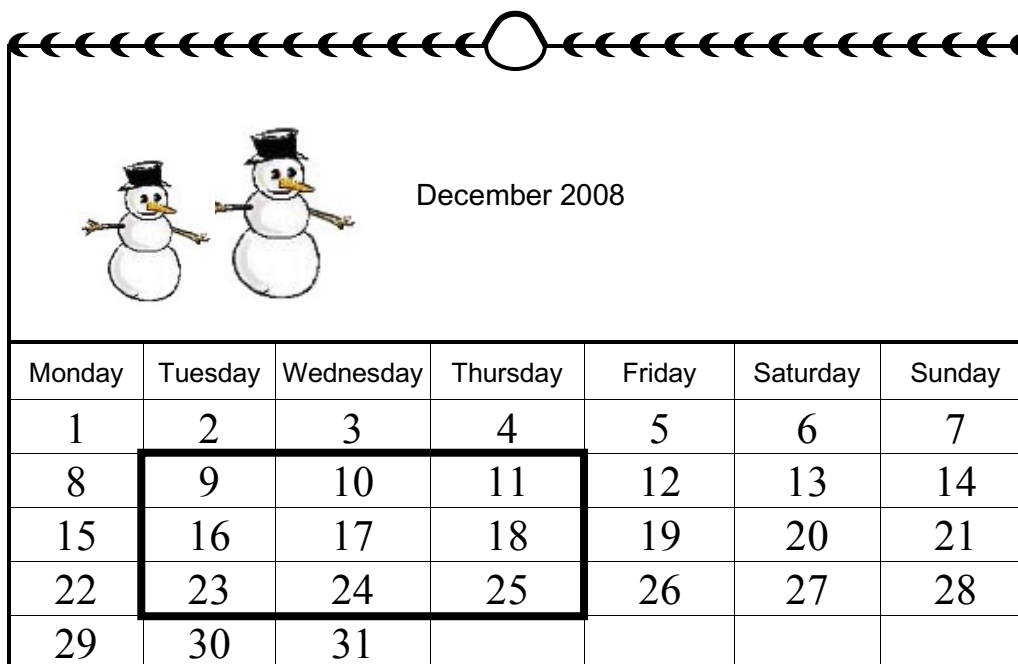
Answer: $x =$ _____ (0/1)

15. What number should be in the empty space
in the table?

x	xy	xy^2
2	10	

Answer: $xy^2 =$ _____ (0/1)

Question 16 – A Calendar Page



Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

On a calendar page a rectangular “window” is placed so that nine dates clearly appear in the window. You can move the window so that nine other dates on the calendar appear in the window.

- ➔ Calculate the mean of the numbers at the corners of the rectangle (9, 11, 23 and 25).
- ➔ Calculate the mean of the four dates (10, 16, 18 and 24) that appear on the “sides” of the rectangle.
- ➔ Compare the results for the two means.
- ➔ Move the rectangular window on the calendar page. Investigate and describe what happens with both of the new means.
- ➔ Show using words and formulas that the relationship between the two means holds irrespective of the position of the rectangle.

(4/4) 

In assessing your work the teacher will take into consideration

- what mathematical knowledge you demonstrate
- what conclusions you reach and how well you explain your reasoning
- how well you present your solution and make your calculations.