

Instructions – Part I

Time	90 minutes for Part I. It is recommended that you use a maximum of 45 minutes for working with the part where calculator is not allowed. You may not use your calculator until you have submitted your answers to this part.
Aids	Part where calculator is not allowed: Approved formula page and ruler. Question 15: Calculator, approved formula page and ruler.
The part without calculator	This part consists of questions to be solved without a calculator. Two 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.
Question 15	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 59 points, of which 23 are vg-points. <i>Lower limits for examination grade</i> Pass: 20 points. Pass with distinction: 36 points of which at least 9 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. Calculate $0.1 + 3.96$ Answer: _____ (1/0)

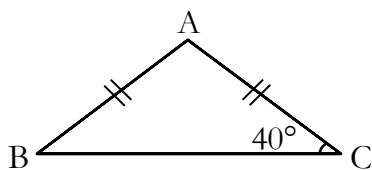
2. Which of the following numbers is the best approximate value for ~~635~~ 3.2? Circle your answer. (1/0)

0.2032 2.032 20.32 203.2 2032

3. What number should be written in the box for equality to hold? Answer: _____ (1/0)

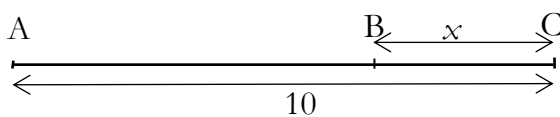
$$(-4) \cdot \boxed{} = 8$$

4. Find angle A in the isosceles triangle.



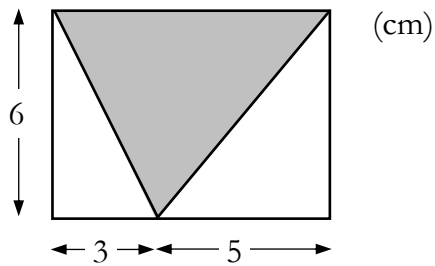
Answer: A = _____ ° (1/0)

5. Write an expression for the length of the line segment AB.



Answer: _____ (1/0)

6. Find the area for the shaded triangle.



Answer: _____ cm^2 (1/0)

7. The diagram shows the use of internet in the world for 1999 and 2009. In 1999 there were 350 million internet users. About how many were there in 2009? Show your solution in the figure and in the box.



8. The maximum pulse (per minute), P , is called max pulse. The max pulse can be calculated using this formula as a model:

$$P = 220 - \text{person's age}$$

Philip has a max pulse of 190. Clara is half as old as Philip. What is Clara's max pulse?

Answer: _____ pulses/min (0/1)

9. Anna is going to put her spices into little bags. In each bag there is to be 25 g. How many little bags will there be if she has 2 kg of spices?

Answer: _____ st (0/1)

10. Each edge of a cube has length $2a$. Write a simplified expression for the volume of the cube.

Answer: _____ (0/1)

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

Answer: _____ kr (0/1)

12. Solve the equation $2(2x + 1) = 5 - 2x$

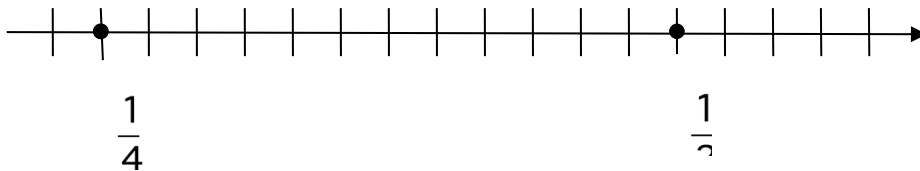
Answer: $x =$ _____ (0/1)

13. The numbers $\frac{1}{4}$ and $\frac{1}{2}$ are marked on the number line.

Mark the number $\frac{1}{3}$ with an X on the number line.

Explain your solution in the figure and in the box.

(0/2)



14. Which of the following equations has no solution? Circle your answer.

(0/1)

$x + 1 = 4$

$x + 2 = 0$

$1 + x = x - 1$

$2 = x$

$x - 5 = 2x - 7$

Question 15 – A Calender Page

August 2011						
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				

A rectangle is placed on a calendar page so that nine dates clearly show within the rectangle. You can move the rectangle so that nine other dates on the calendar show up in the rectangle.

- Calculate the mean of the numbers at the corners of the rectangle (9, 11, 23 and 25).
- Calculate the mean of the four dates on the “sides” of the rectangle (10, 16, 18 and 24).
- Compare these two means.
- Move the rectangle around to different locations on the calendar page. Investigate and describe what happens to the new means calculated in the same way as above.
- Show by using words and formulas that the relationship between the two means is always true independent of the placing of the rectangle.

(5/3) ■

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.