

SUBJECT TEST

Mathematics

GRADE

9

Tests which are re-used are protected by paragraph 3 of Chapter 4 of the Official Secrets Act.

The intention is for this test to be re-used until **2017-06-30**.

This should be considered when determining the applicability of the Official Secrets Act.

Spring 2011

Part C

Name

Instructions – Part C

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-qualities in your solutions to questions marked with the symbol α .

Complete solutions are required for all questions.

A mere answer does not give any points except for the question marked *Only answer is required*.

Complete solution means that your solution must be clear enough so that other persons may easily read and understand what you mean. It is important that you present all your work. You may get some points, even for a partial solution.

Aids: Access to calculator and formula page.

Time: 100 minutes.

Name: _____

School: _____ Class: _____

Birth date: Year____ Month____ Day____

Female ☐ Male ☐

Solutions and answers must be written on separate paper, not on this question paper. The question paper must be handed in, together with your solution.

Illustrations: Jens Ahlbom

A first apartment



Marcus and Leyla have just bought their first apartment. It is 60 m² and they had to pay 750 000 kr for the apartment.

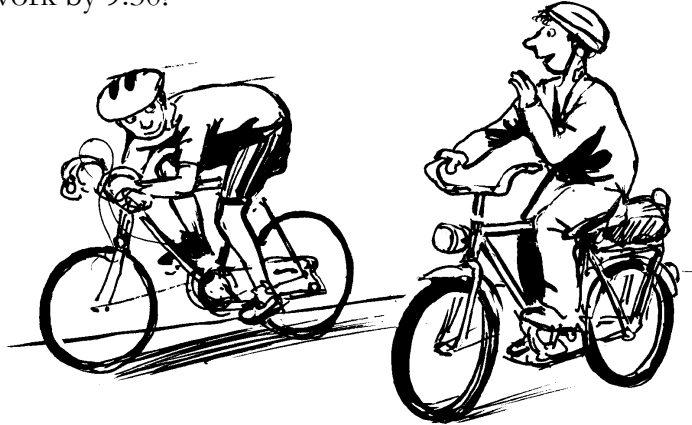
1. How much did the apartment cost per square meter? (1/0)
2. Before they bought the apartment, they had saved 150 000 kr together, but they also had to borrow 600 000 kr.
 - a) The interest rate was 3.5 %. How much is their *annual* interest payment on this loan? (1/0)
 - b) Each month they have to pay 3 600 kr as a service fee to their apartment building's association. What will the total *monthly* cost be (interest + service fee) for their apartment? (2/0)
 - c) Marcus and Leyla are worried that the interest rate might go up. They have calculated that they could afford a *monthly cost* (interest + fee) of 8 000 kr. At what interest rate would their monthly cost be this high? (2/1) ✖

3. Marcus and Leyla buy ceramic tiles for the kitchen. The tiles measure $20\text{ cm} \times 20\text{ cm}$. One box of these tiles contains 1 m^2 . How many tiles are there in the box?

(2/0)

4. Marcus lives 15 km from his place of work. He bikes to work and his bike computer has calculated that his average speed is usually 20 km/h . What time, at the latest, must he leave home in order to get to work by 9.30?

(2/0)

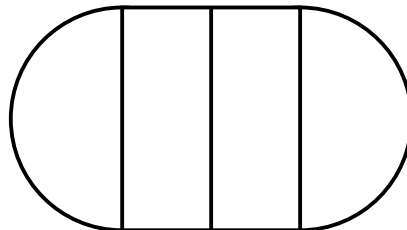


5. One day the weather is so bad that Marcus decides to take the bus instead. He knows that the buses go at intervals of 20 minutes, but he has no bus schedule to look at. What is the probability that he will have to wait for a bus for 5 minutes or more?

(1/1)

6. A round kitchen table has a diameter of 100 cm and can be extended using two extra boards so that it becomes oval. Each board is 45 cm wide. You can reckon that each person needs about 60 cm at a dinner table. How many persons can you seat at this kitchen table for dinner?
The figure is not in correct scale.

(2/1)

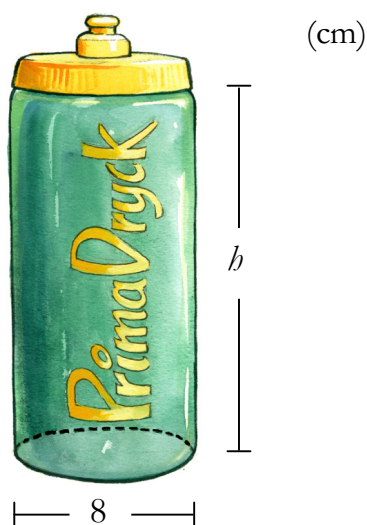


7. Marcus works as a salesman for a company. He has a basic salary and in addition a commission on his sales. This means that his salary varies from month to month. Here is what he earned in the first 5 months working for this company:

July	17 500 kr
August	18 750 kr
September	17 800 kr
October	19 200 kr
November	18 900 kr

- a) What was his average monthly salary for these months? (2/0)
- b) When he started working for the company they said that he would make about 20 000 kr per month. How much must he earn in December in order to reach that average monthly salary for his first half year at the company? (1/1)
- c) Marcus' basic salary is 15 000 kr per month. On top of this basic salary he gets 2 % of his sales amount, i.e. he gets a 2 % commission. How much must his sales be every month in order to have a monthly salary of 20 000 kr? (0/2)

8. Leyla wants to pour 1 liter of juice into a water bottle (see picture). What height, h , must the bottle have, at least, if there is to be enough room in the bottle for all the juice? (The figure is not in correct scale.) (1/2)



9. The table shows the number of sms sent per customer and month, in Sweden. Leyla says that the increase is greatest from 2006 to 2007, while Marcus claims that it is greatest from 2008 to 2009. Both are right. Explain using calculations and reasoning why both Marcus and Leyla can be said to be right.

(1/2) ✖

Year	Number of sms sent per customer and month
2005	19
2006	24
2007	48
2008	79
2009	112



10. Marcus and Leyla often go swimming. When you go to the swimming pool you can either pay an entrance fee of 50 kr each time or buy a membership card and then pay a lower entrance fee each time you go swimming there. Marcus and Leyla both choose to buy a membership card each.

One year Leyla went swimming 34 times and Marcus went 26 times. Leyla paid 1 220 kr in total for her membership card and entrance fees, while Marcus paid 980 kr in total. How much did they have to pay as entrance fee each time and how much did the membership card cost?

(1/2) ✖

11. Leyla is a party organizer for her group of apartments. Every year they have a summer party. Adults pay 120 kr and children pay 50 kr. This year the party participants paid 17 340 kr in total. Leyla knows how many came to the party, but she also needs to know how many of them were adults and how many were children. She sets up the following equation:

$$50 \cdot x + 120 \cdot (176 - x) = 17\,340$$

- a) Help Leyla to solve the equation and show your written solution. (0/2)
- b) How many adults and how many children were at the party? (0/2)

✖



