

SUBJECT TEST

Mathematics

GRADE

9

Spring
2008

Secrecy until 2008-06-30

Version 1

Part C

Time: 100 minutes

Aids: Access to calculator, ruler and formula sheet

Name

Skolverket

Part C

The contents of this test paper must remain *confidential* until June 30, 2008.

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.

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, ruler 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.

Chocolate

This examination contains many questions about chocolate. **If you have time and wish to**, you may read more here about how chocolate is made.

The main natural product needed to produce chocolate comes from the cocoa tree. The cocoa pods on the tree are harvested by hand. The cocoa beans are found inside the cocoa pods. After harvest the beans must first ferment before they are dried. Then the cocoa beans are cleaned, roasted, de-hulled and ground into cocoa paste. This cocoa paste contains a lot of fat and after being compressed it can be separated into cocoa butter and cocoa powder.

To make chocolate for bars and candies, cocoa powder, cocoa butter and sugar is mixed to form liquid chocolate paste. This paste is poured into forms where it solidifies.



Illustrations: Jens Ahlbom

1. You have bought a chocolate bar that weighs 180 grams.

- a) How many grams of cocoa are there in the bar if it contains 70 % cocoa?
- b) The chocolate bar consists of 36 identical squares. You want to bake a cake and need 120 grams of chocolate. How many squares should you use?



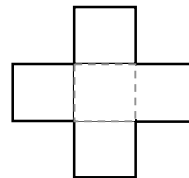
(2/0)

(2/0)

2. Anton has to choose between two chocolate bars. One weighs 150 g and costs 12 kr. The other one weighs 250 g and costs 19 kr. Which one has the lowest price per kilo?

(2/1)

3. The figure shows 5 squares, each with the same area. The area of the whole figure is 405 cm^2 . Determine the perimeter of the whole figure.



(2/1)

4. In a candy package there are n candies of which r are red and b are black.

- a) Explain in your own words what the following mathematical expression means:

$$r + 5 = b$$

- b) What do you calculate using the expression:

$$\frac{r}{n}$$



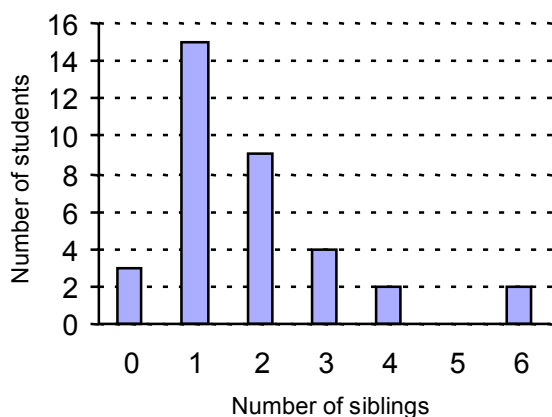
(1/0)

(0/1)

5. Suppose you transport finished chocolate paste in the shape of a rectangular block that weighs 5 kg. Give two alternatives as to how the block might look. Make figures, mark the dimensions and show that the volume is correct. You may assume that 1 dm^3 of chocolate weighs 1 kg.

(2/1)

6. The pupils in a school investigated how many siblings (brothers and sisters) they had. The result of the survey is shown in the diagram.



- a) How many students took part in the survey? Explain your answer. (2/0)
- b) Determine *the mean and the median* for the number of siblings. (1/2)

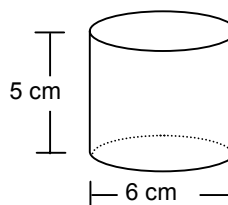
7. Hanna is going to make chocolate mousse according to the recipe from the chocolate factory:

Dark chocolate mousse
(6 persons)

230 g dark chocolate
1 1/2 dl whipping cream to boil
3 3/4 dl whipping cream to whip
1/2 dl sugar
35 ml water
3 eggs



- a) How many grams of dark chocolate does she need if she wants to make chocolate mousse for 15 persons? (2/0)
- b) The chocolate mousse is to be served in cylindrical glasses that are 5 cm high and have a diameter of 6 cm. When Hanna has made the mousse, she has 2 litres of mousse. Will there be enough room for it all in the 15 glasses? Explain your conclusion with reasoning and calculations. (1/2) ✖



8. At Christmas time many boxed chocolates are sold. On Christmas day a shop had a sale and sold its chocolate boxes at a 20 % discount. A week later, on New Year's Day, there was a further 50 % discount on the sale price. How many percent lower was the final price compared to the original price?



(1/1) ✖

9. Sofia and Anna each have a chocolate bar. Sofia eats one third of her bar and Anna eats two fifths of hers. They have then eaten the same amount. Who had the biggest chocolate bar from the start?

(0/2) ✖



10. On Valentine's Day chocolate hearts are made in two sizes. The hearts have the same shape and the same thickness. See the figures below.



- a) A small heart costs 5 kr. Calculate the price per kilo.
- b) How many of the large hearts can you make with 100 g chocolate?
Remember to explain your reasoning and answer.

(2/0)

(0/2) ✖

11.



A shop sells especially fine chocolates of various kinds and they are sold by weight.

Customers get a gift box and then choose various chocolates which are placed in the box. All customers get identical gift boxes. Then the cashier weighs *the box together with the chocolates inside*. The cashier knows what the box itself weighs, so the customer pays only for the chocolate.

Oscar, Hanna, William and Alicia buy chocolates at this shop.

In the table you can see the weights and prices.

	<i>Weight of gift box with chocolates inside</i>	<i>Price</i>
Oscar's box	3.4 hg	176 kr
Hanna's box	2.2 hg	110 kr
William's box	1.6 hg	77 kr
Alicia's box	0.8 hg	33 kr

a) What does the chocolate cost per hg? Explain your answer.

(1/2)

b) How much does an empty gift box weigh?

(0/1)

✕

