Skolverket
(National Agency for Education)

MATHEMATICS TEST

Year 9

Spring 2006

Part A – Oral Part

The contents of this test material must remain *secret* until 2006-06-09.

Teacher material – For copying
Information about the different versions

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PRIM gruppen

Stockholm Institute of Education
PRIM-gruppen

Information about the different versions

Accompanying each version there are common discussion questions for the closing discussion and a description of the mathematical content tested by the given statements and the questions respectively. When going through the given statements you may deal with the common discussion questions or even other questions arising from these.

Version A – Material standard

Common discussion questions

a. Explain why not all of the lines start in 1975?
b. What advantages and disadvantages does the diagram have?
c. How can you see from the diagram that Swedes, on the average have access to almost eight of the described facilities in 2003?

Statement/question	*Mathematical content to be tested*
1, 2, 3, 4	Simple reading off and/or interpretation of the axis scales.
1, 2	Different ways of expressing proportion (fraction/percent).
4, 6, 7, 8, 11, a, b, c	Understanding of the diagram's way of presenting data and its limitations.
5, 9, 10, 11, 12, c	Understanding of the concept of percent, e g what constitutes the whole, and the distinction between percentage increase and percentage proportion.

Version B – EU's population

Common discussion questions

a. What do you think about the diagrams, what advantages/disadvantages do they have?
b. Have you found anything in the diagrams that can be misinterpreted? (E g bars that overlap or are truncated.)
c. How can you determine which country has the greatest/least area?
d. How can you determine the area of a country?
e. Portugal's population is shown as a figure of a person and a number (10,4). Compare that with the corresponding person and number for Finland. What do you discover? (E g that Finland's population is half that of Portugal's while Finland's "person" seems to be about one quarter of Portugal's; length scale, area scale.)

Statement/question	*Mathematical content to be tested*
1, 2, 3, 4	Simple reading off and/or comparisons in the diagrams.
5, 6, 8	Calculating proportions (fractions or percent).
7, 9	Understanding what constitutes the whole, when making comparisons.
7, 10, 11, 12, c, d	Understanding the relationship population – population density – area.
a, b, e	Careful scrutiny of diagrams.
b, e	Understanding length scale, area scale.

Version C – Smoking is declining

Common discussion questions

a. Is the heading ”Smoking is declining” well chosen? (Has the proportion/number of smokers decreased?)
b. Can you see from the diagrams how many have quit smoking in the time period 1981–2003?
c. Can you justify the claim that the bars for older women are short because of the fact that so few are still living?
d. Even some older women have quit smoking. Why then is the bar for 2003 the longest?

Statement/question	*Mathematical content to be tested*
1, 2, 3	Simple reading off of a bar graph.
3	Different ways of expressing proportions (fractions or percent).
4, 5	Simple comparison of two bars.
6, 7, 8, 9, 10	Understanding the concept of percent, e.g. what constitutes the whole in comparisons, and the distinction between a part as a percentage and a percentage unit.
11, 12, a, b, c, d	Understanding of diagrams as a whole, e.g. change over time.
10, 12, a, b, c, d	Understanding that the number of smokers depends both on the proportion and the total number of individuals in the age group.

Information for students

This is a description of the oral part of the national test. This part is to be carried out in groups of 3–4 students sitting together with the teacher around a table.

- Each student receives a paper with one or two diagrams. You may study the diagrams for a few minutes. Then you receive a paper with a number of statements about the diagram/diagrams. The teacher tells you in what order you are to report your arguments.
- Each student explains some of the statements for the others in the group. You should explain how you decided whether the statement about the diagram was true or false. After each explanation your fellow-students may ask questions, make additional comments or support or argue against you.
- After everyone in the group has presented their explanations, the group will discuss some questions that the teacher presents.
- The evaluation of your efforts and contributions for this oral test will be based on three aspects:

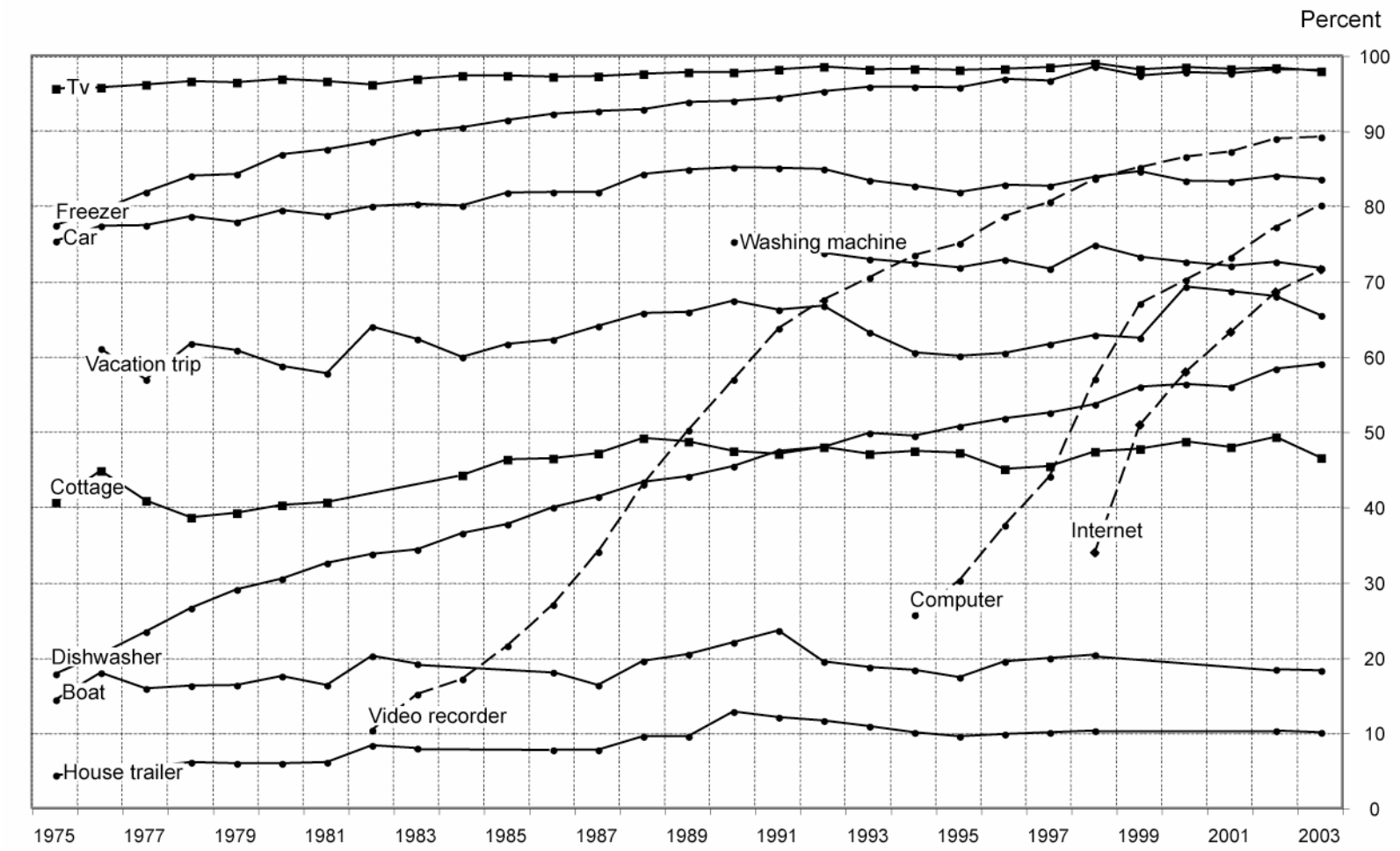
  Understanding
  To what extent you show that you have understood the question, the concepts and relationships between them.

  Language
  How clear your explanation is, and how well you use mathematical language.

  Degree of participation
  To what extent you participate in the discussion, can argue for your ideas and respond to the explanations of other students.

Remember that this is an opportunity to demonstrate your knowledge both when presenting your explanations, when discussing other students' explanations and in the closing discussion. Your achievement on this oral part of the examination gives a number of g- and vg-points and you may also show MVG-quality on this part. The result of this oral part is then combined with your results on the other parts of the national test.

Material standard 1975–2003



Persons aged 16-74 have answerd the question wether they have access to TV, freezer, video, car etc in their household.
The result is shown in the diagram.

Source: Statistics Sweden

The diagram shows that

1. one fifth of the persons responding to the survey had access to a house trailer in 2003.

2. about 2 % of the respondents did not have access to TV in 2003.

3. in 1998 the proportion of households with access to video was the same as the proportion of households with access to a dishwasher.

4. in 1984 and 1985 house trailers were not included in the survey.

5. the access to video recorders doubled from 1987 to 1992.

6. in 1992 all cottages had dishwashers.

7. no TV-s were sold during the period 1999–2001.

8. time spent watching TV was about the same during the whole period 1975–2003.

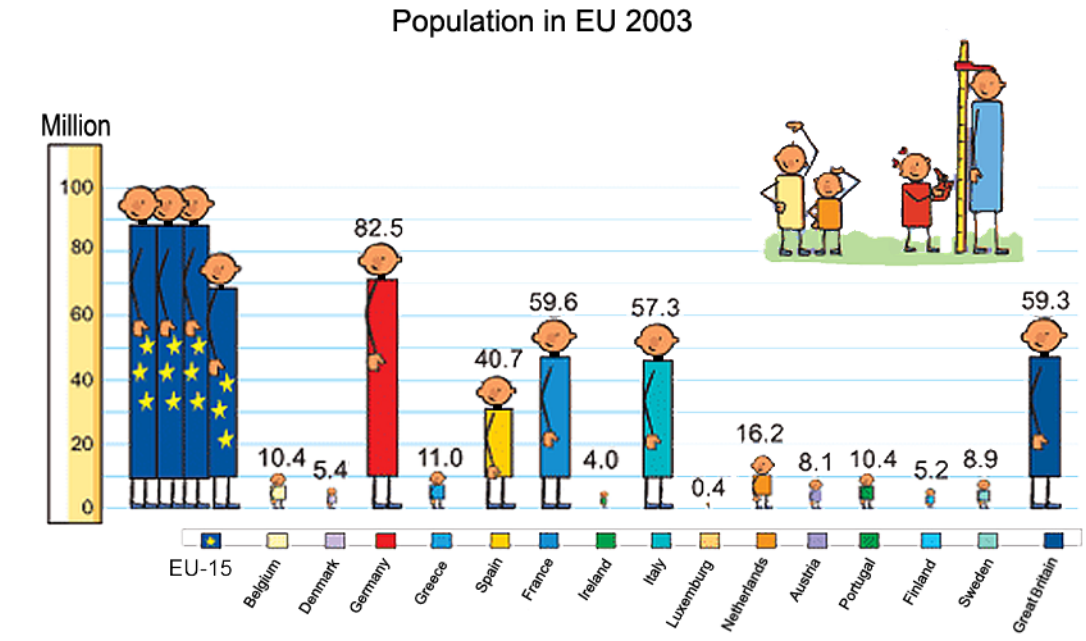
9. the proportion with access to a computer increased by about 55 % during the period 1994–2003.

10. access to video recorders increased by 800 % during the period 1982–2003. ¤

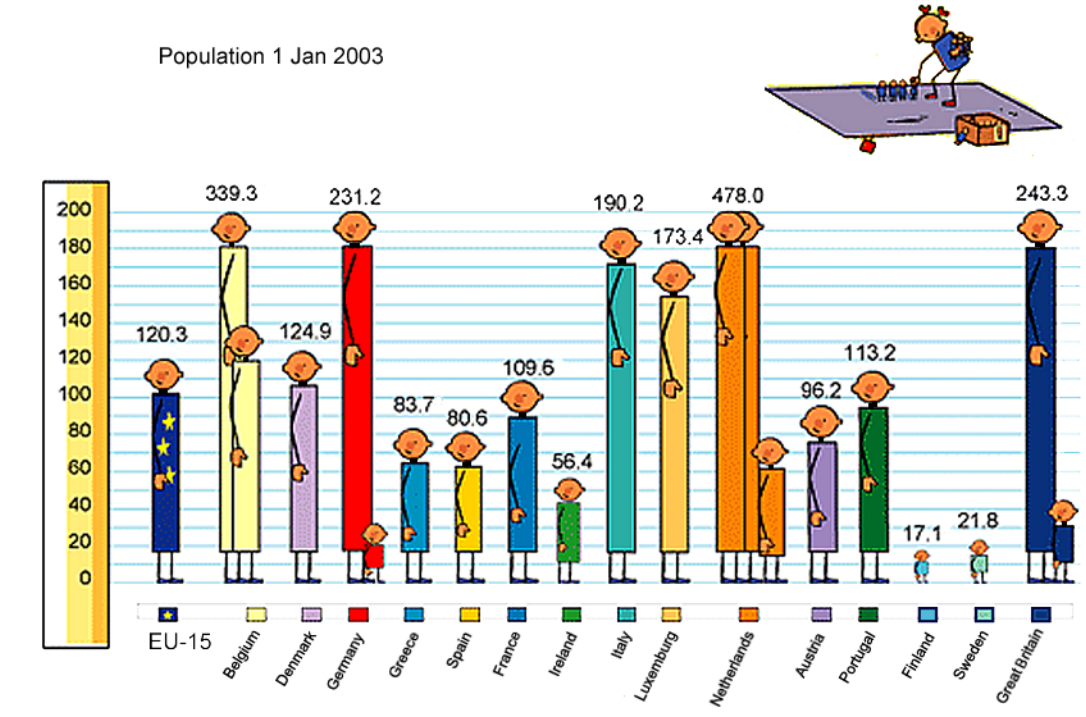
11. 70 % of the population in 1998 had access to neither boat nor house trailer. ¤

12. access to Internet increased more than access to computers during the years 2000–2003. ¤

Version B – EU's population



Source: Eurostat



Population density: inhabitants per square kilometre, 1 Jan 2003

Source: Eurostat

Version B – EU's population

The diagram shows that

1. the population of Spain is about 80 million.

2. Finland is the country with the lowest population density in EU.

3. EU has about 380 million inhabitants.

4. the country with the most inhabitants is also the most densely populated.

5. a little more than one tenth of the population of EU lives in Spain.

6. the three countries with the greatest number of inhabitants have, together, about 50 % of EU's population.

7. in Great Britain there is about twice as much area per person as there is in the Netherlands.

8. 5 % of EU's population lives in Sweden.

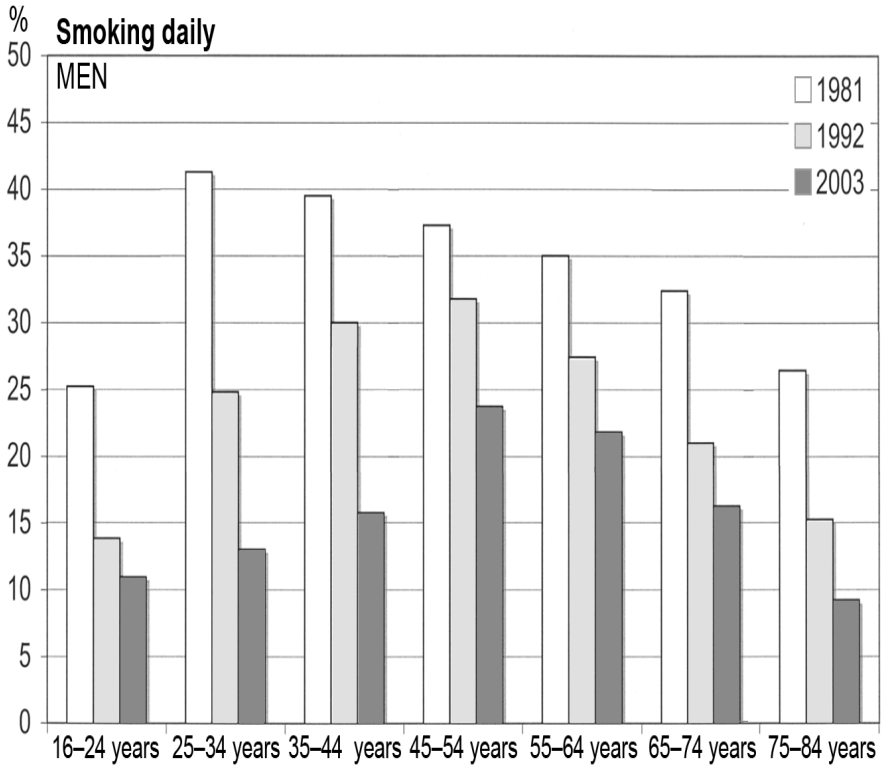
9. Portugal has 50 % more inhabitants than Finland.

10. in Sweden we have about 6 times more area per person than the average in EU.

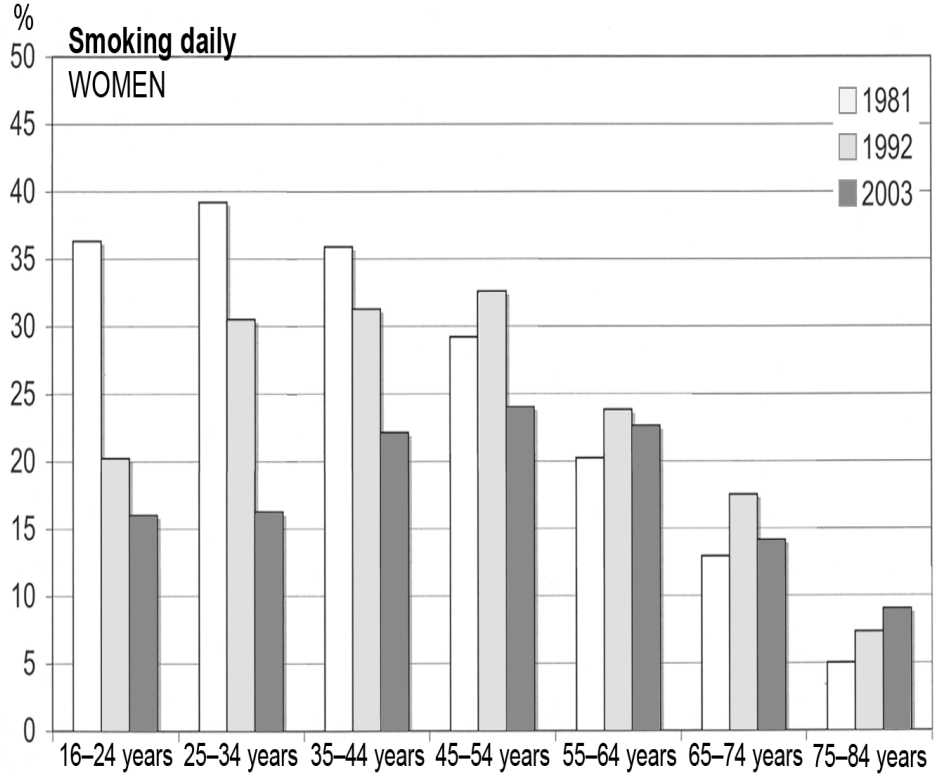
11. the area of Spain is greater than that of Greece. ¤

12. the area of France is almost double that of Italy. ¤

Smoking is declining



Source: SCB



Source: SCB

Version C – Smoking is declining

The diagram shows that

1. in 1981 about 35 % of the women in age group 16–24 were smokers.

2. in 1992 about 25 % of the men in age group 16–24 were smokers.

3. in 2003, $\frac{1}{4}$ of the women in age group 45–54 were smokers.

4. in the age group 16–24, women smoked more than men.

5. among the women in age group 25–34, the proportion of smokers was halved between 1992 and 2003.

6. in 2003 a little more than 25 % of those in the age group 16–24 were smokers.

7. in 2003 the proportion of female smokers was 50 % higher than that for males, in the age group 16–24.

8. in 1981, in the age group 16–24, there were 10 % more women than men who smoked.

9. in 2003 the proportion of smokers was about 50 % lower for men than for women, in the age group 16–24.

10. in 1981 about 25 % of all women were smokers. ¤

11. of all the men in the age group 16–24 in 1981, there were many who had quit smoking by 1992. ¤

12. older women is the only category, which began smoking during the period 1981–2003. ¤