Mathematics

Delprov D

Elevhäfte

1a

_____

Skolverket
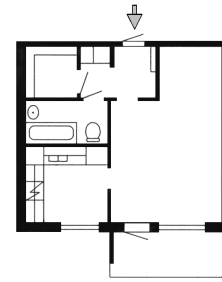
Instructions – Part D

Name: _____

Date of birth:_____

Secondary program:_____ Class: _____

**Also write your name, date of birth, secondary program
and class on the sheets you hand in.**

Illustration: Jens Ahlbom

15. Louise has bought her first apartment. The apartment is 38 m² and she paid SEK 627 000 for it. How much did the apartment cost per square metre? (1/0/0)

**16.** Anne is driving an American car where the speedometer scale is in miles/hour (mph).

> **1 mile ≈ 1.609 m**

She is driving on a motorway in Sweden, where the speed limit is set at 120 km/h. Which approximate value would that correspond to on the car's speedometer? (2/0/0)

17. On her way to the centre, Alex crosses two zebra crossings.
The tree diagram shows the probability of a red light and a green light.
What is the probability that Alex will get a red light exactly once? (1/1/0)
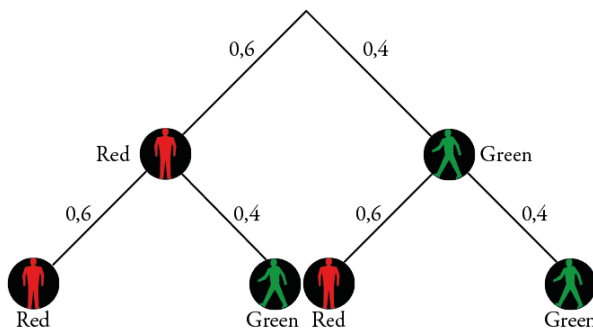
18. At a café, a cup of coffee was SEK 12 in 2007.
What would the cost have been in 2012, if the price followed the CPI?

Year	CPI
2012	314.20
2011	311.43
2010	303.46
2009	299.66
2008	300.61
2007	290.51
2006	284.22

CPI = Consumer price index (0/2/0)

19. Erik, who is in the Hotel and Tourism Programme, and Sarah, who is in the Arts Programme, are looking at a diagram concerning occupational injuries.

Erik is of the opinion that there is a greater risk of getting injured in the hotel and restaurant sector than in the culture, entertainment and leisure sector. Sara disagrees with him. Who is right? Motivate your answer. (1/2/0)

The number of occupational injuries per sector in 2010

Sector	Number of employees	Number of occupational injuries
Companies in agriculture, forestry and fishing	36 200	331
Construction	235 900	2 940
Hotel and restaurant	123 800	500
Property companies and property managers	52 900	295
Nursing and healthcare, social services	173 800	5 239
Culture, entertainment and leisure	50 400	366

Source: The Swedish Work Environment Authority and Statistics Sweden

20. Aron is working out by running and would like to calculate his estimated maximum heart rate. Your maximum heart rate changes as you get older. Using the following formulas it is possible to calculate the maximum heart rate of a person at a given age.

Formula A: $y = 220 - x$

Formula B: $y = 210 - \dfrac{x}{2}$

where y is the maximum heart rate in number of beats/min and x is the age in years.

a) Aron is 16 years old. Calculate Aron's maximum heart rate according to the two formulas. (1/0/0)
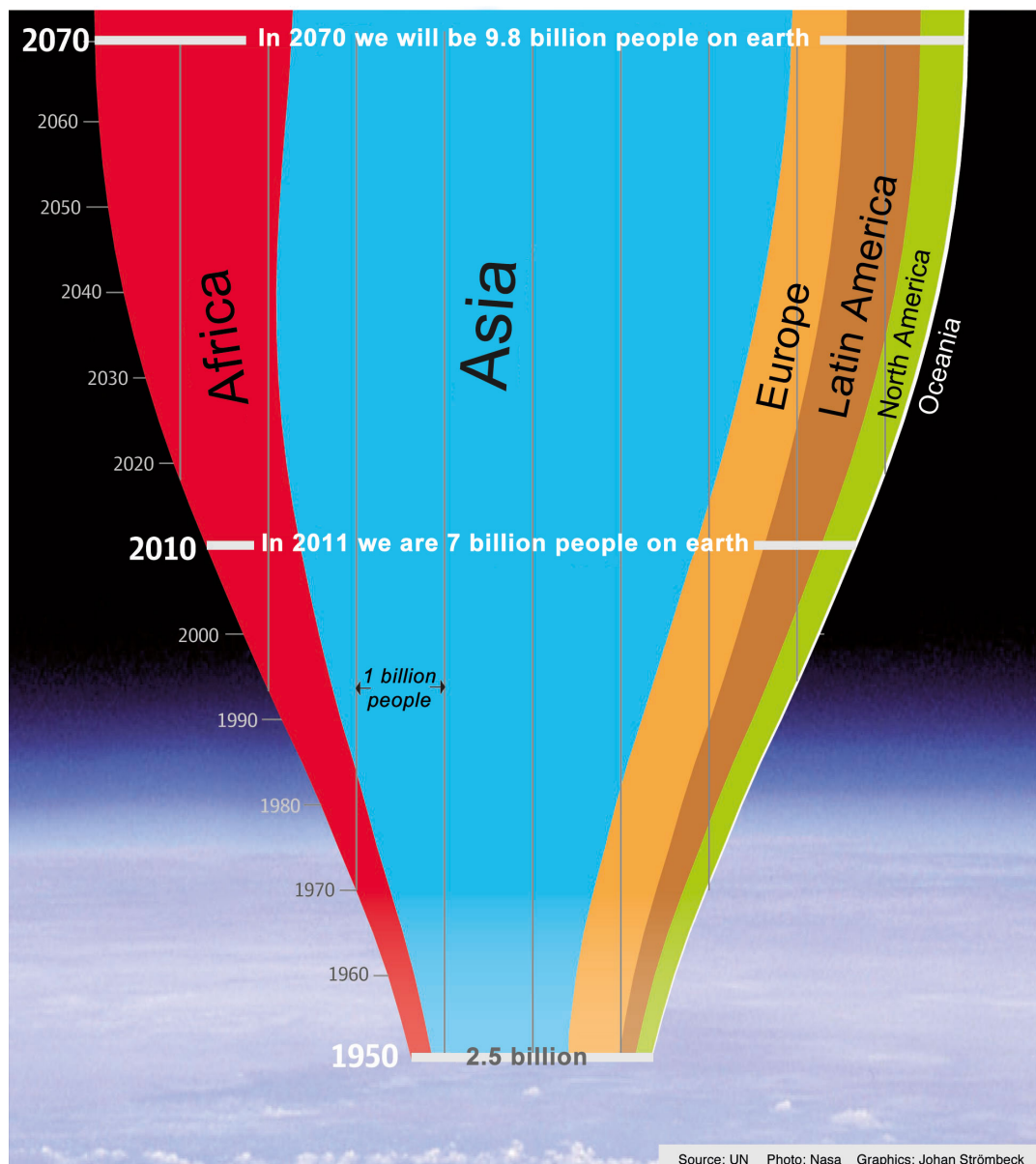
b) At what age do both formulas result in the same maximum heart rate? (0/2/1)

21. On November 30 2011, the population on earth reached 7 billion people.
The diagram shows the change in the number of people on earth
at a given period in time.

a) Using the diagram, estimate how big a part of the population
was living in Asia in 2011. (2/0/0)

b) By how many per cent did the population on earth increase
between 1950 and 2011? (1/1/0)

c) Compare the estimated percentage change in the population
between 2010 and 2070 to the percentage change in the population
between 1950 and 2010. What is your conclusion? (0/2/0)

2070 ━━━ In 2070 we will be 9.8 billion people on earth ━
2060
2050
2040
2030
2020
2010 ━━ In 2011 we are 7 billion people on earth ━
2000
1990
1980
1970
1960
1950 ━ 2.5 billion

Africa   Asia   Europe   Latin America   North America   Oceania

1 billion people

Source: UN   Photo: Nasa   Graphics: Johan Strömbeck

22. Two six-sided dice are thrown. If the product of the number of dots on both dice is an even number, how great is the probability then that the sum of the dots on both dice is also an even number? (1/1/2)

23. The figure shows a field consisting of three rectangles.
Both *a* and *b* are *positive integers* and they indicate the length of the sides.
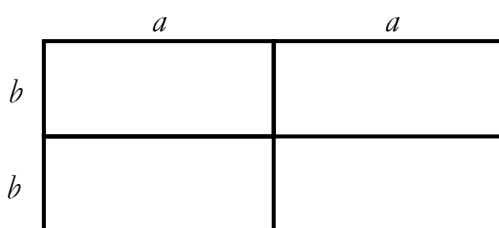
a) Write an expression for the perimeter of the entire field.
Only answer required. (1/0/0)

b) Investigate the area of the entire field, if its perimeter is 28 metres. (0/2/3)

24.

> Borrow SEK 2 000 pay SEK 2 455 after 1 month.

a) Which interest rate, in per cent, is paid on the loan?
Only answer required. (1/0/0)

b) If the loan is not paid back on time, the debt after the first month will amount to SEK 2 455. After yet another month you must pay interest on this amount, at the same percentage rate as for the first month.
How much will you owe after two months? (1/0/0)

c) If the debt is not repaid, it will keep growing in the same way.
How much will you owe one year after borrowing SEK 2 000? (1/1/1)

d) How much will the annual interest (annual percentage rate) be on the loan? (0/1/1)

PRIM
gruppen