# Mathematics

## Delprov B

# 1b

Elevens namn och klass/grupp

*Skolverket*

# Instructions – Part B

| | |
|---|---|
| **Time for the test** | 60 minutes for Part B. |
| **Aids** | Allowed aids on Part B are formula sheet and ruler. |
| **Tasks** | This part consists of tasks to be solved without using digital devices. Answers and solutions are to be written in the test booklet. Some of the tasks require working, which is to be shown in the figure and the box next to the task. For the other tasks only the answer is required. The maximum number of points that you can get for your answer/solution is shown after each task. |
| **Grading limits** | The test (Part A–D) gives a total maximum of 89 points. |

Limit for test grade

E:   At least 21 points.
D:   At least 36 points of which at least 13 points at level C or higher.
C:   At least 47 points of which at least 22 points at level C or higher.
B:   At least 59 points of which at least 7 points at level A.
A:   At least 68 points of which at least 12 points at level A.

Name: _____

Date of birth: _____

Program: _____ Class:_____

Illustration: Jens Ahlbom

**1.** Write the number 20 as a product of two negative numbers.

Answer:_____ (1/0/0)

**2.** By what percentage have the prices risen between 1990 and 2013?

| Year | 1990 | 2013 |
|------|------|------|
| **CPI** (Consumer Price Index) | 100 | 151 |

Answer:_____% (1/0/0)

**3.** Determine the square root of 0.25.

Answer:_____ (1/0/0)

**4.** The variable $x$ represents a number.
Write an expression for another number
which is 5 more than half of the number $x$.

Answer:_____ (1/0/0)

**5.** Simplify the expression $2(2a + b) + 3 - (2 + 2b)$
as much as possible. Show your simplification.

Answer:_____ (1/1/0)

**6.** What value of $x$ does *not* satisfy the condition $2x + 1 > 5$?
Circle your answer.

7        5        4        3        2        (2/0/0)

**7.** Enter the appropriate symbol in the box between the statements below.
Choose between the symbols $\Leftarrow$, $\Rightarrow$ and $\Leftrightarrow$. Motivate your choice.

A number's numerical sum is divisible by 9. ☐ A number is divisible by 3.
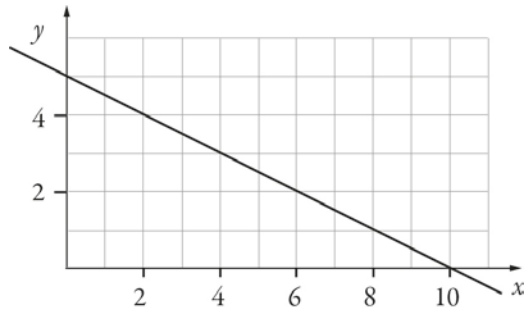
(1/2/0)

**8.** The carbon dioxide concentration of air is 393 ppm.
Write this concentration as a decimal.        Answer:_____        (1/0/0)

**9.**   The figure below shows the graph of the function $y = f(x)$.



a) Use the graph to determine $f(2)$.            Answer: $f(2) =$ _____        (0/1/0)

b) Use the graph to solve the equation $f(x) = 2$.       Answer: $x =$ _____        (0/1/0)

**10.**   The number 113 is written in base 7. Write the number in base 10.
Show your solution.

Answer: _____        (0/2/0)

**11.**  Svante is going to spin the three wheels A, B and C. What is the probability that the sum of what the three wheels will show is going to be odd?
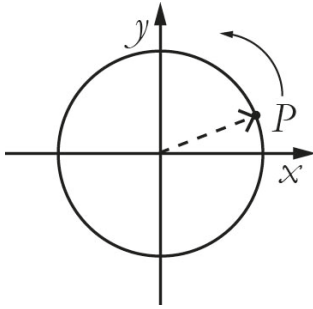Show your solution.

A                B                C
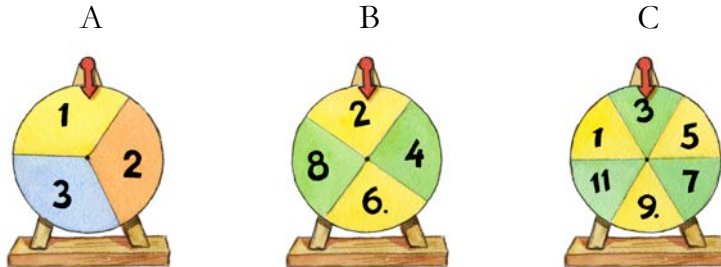
(0/1/2)

**12.**  What number is to be written in the empty box in the table?

| $x$ | $xy$ | $xy^2$ |
|---|---|---|
| 2 | −10 | |

Answer: _____  (0/0/1)

**13.** A circle in a coordinate system has its centre in the origin.
A pointer in the circle is pointing at the point $P$.
$P$ has the coordinates $(a, b)$.
The pointer is turned 90° counter clockwise, now pointing at point $S$.
What are the coordinates of point $S$?



Answer:_____ (0/1/1)

**14.** Determine $n$ if $2^4 \times 3^8 = 9^n \times 6^4$    Answer: $n =$ _____ (0/0/2)

# Test result – Student summary

National test in mathematics, course 1b autumn 2014

| Name: | | | | | | | | Test grade: |
|---|---|---|---|---|---|---|---|---|

| | E-points | | C-points | | A-points | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Your score | Maximum score | Your score | Maximum score | Your score | Maximum score | Your score | Maximum score |
| **Part A** | | 3 | | 4 | | 4 | | 11 |
| **Part B** | | 9 | | 9 | | 6 | | 24 |
| **Part C** | | 3 | | 6 | | 4 | | 13 |
| **Part D** | | 15 | | 18 | | 8 | | 41 |
| **Total** | | **30** | | **37** | | **22** | | **89** |

| Part A | E | C | A | Score | Comment |
|---|---|---|---|---|---|
| Method and carrying through | $+E_{PL}$ | $+C_{PL}$ | $+A_{PL}$ | | |
| Reasoning | $+E_R$ | $+C_R$ | $+A_R$ | | |
| | $+E_R$ | $+C_R$ | $+A_R$ | | |
| Communication | | $+C_K$ | $+A_K$ | | |
| **Total** | **3** | **4** | **4** | | |

| Part C | E | C | A | Score | Comment |
|---|---|---|---|---|---|
| Method and carrying through | $+E_B$ $+E_P$ $+E_{PL}$ | $+C_B$ $+C_{PL}$ $+C_{PL}$ | $+A_{PL}$ $+A_M$ | | |
| Reasoning | | $+C_R$ $+C_R$ | $+A_R$ | | |
| Communication | | $+C_K$ | $+A_K$ | | |
| **Total** | **3** | **6** | **4** | | |

## Grading limits

Limit for test grade

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## Test grade

The test grade sums up the knowledge that the student has shown on the national test. The course grade does not have to be the same as the test grade since the course grade is based on all the knowledge that the student has shown during the course.

| Comments: |
|---|

PRIM gruppen