

Mathematics

Part B
Student Booklet

1C

Elevens namn och klass/grupp

Instructions – Part B

Time for the test 90 minutes for Part B and Part C. You will get both parts at the same time. We recommend that you use no more than 45 minutes for work on Part B. When you have handed in your answers to Part B you may start using digital devices.

Aids Allowed aids on Part B are formula sheet and ruler.

Tasks This part consists of tasks to be solved without using digital devices. 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 91 points.

Lower limit for test grade

- E: At least 18 points.
- D: At least 30 points of which at least 11 points at level C or higher.
- C: At least 40 points of which at least 20 points at level C or higher.
- B: At least 54 points of which at least 8 points at level A.
- A: At least 64 points of which at least 15 points at level A.

Name: _____

Date of birth: _____

Secondary program: _____

Part B

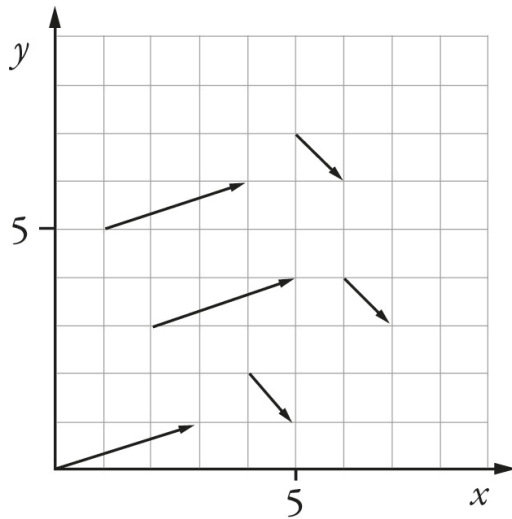
1. Solve the equation $9x + 102 = 103$ Answer: $x =$ _____ (1/0/0)

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

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

3. Some vectors have been drawn in the grid. What coordinates do the vectors have? Circle your answer.

(3,1) (5,4) (4,6) (1,-1) (5,-1) (6,6)

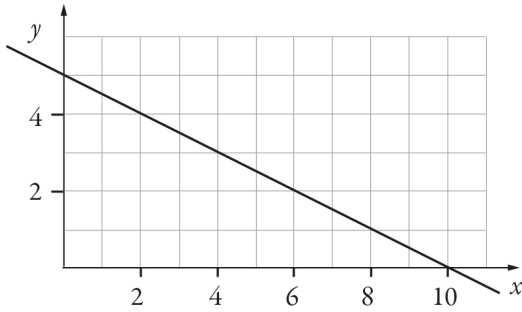


(1/1/0)

4. Calculate the value of $a^3 - 3a$ when $a = 3$ Answer: _____ (0/1/0)

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

6. 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)

7. There are two sweets of the same size left in a bag. One is green. The other sweet is either red or green. If you take a sweet, what is the probability that the sweet you take will be green? Show your solution in the box.

Answer: _____ (0/2/0)

8. The number 113 is written in base 7. Convert the number to base 10.
Show your solution in the box.

Answer: _____

(0/2/0)

9. 15 % of a is equal to b . Write 30 % of $3a$ expressed in terms of b .
Show your solution in the box.

Answer: _____

(0/1/1)

10. $n - 3$ is an odd whole number. Which of the following expressions gives the next largest odd whole number?
Circle your answer.

$n - 5$ $n - 2$ $n - 1$ n $n + 1$

(0/1/0)

11. Determine n if $2^4 \cdot 3^8 = 9^n \cdot 6^4$

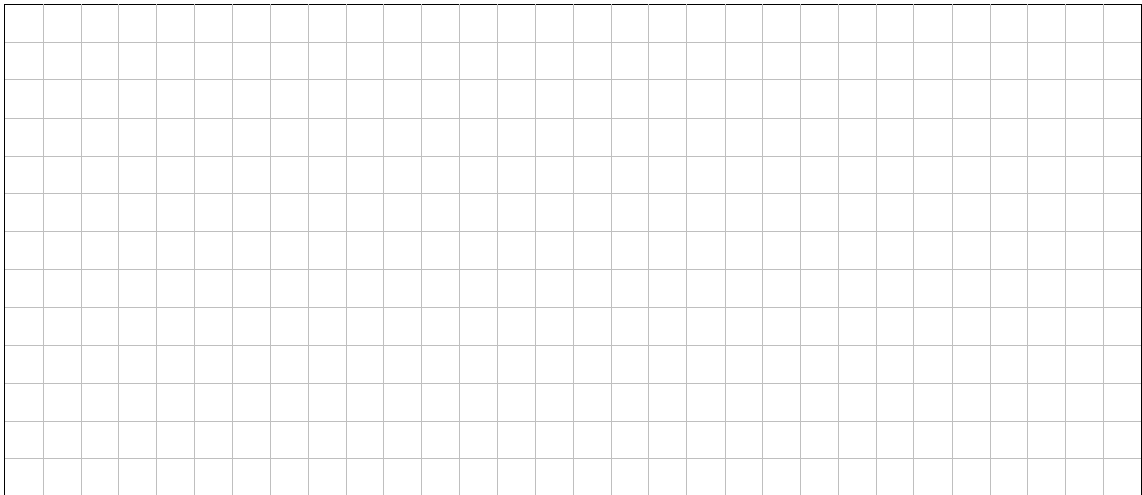
Answer: $n =$ _____

(0/0/2)

12. The two shortest sides of a right triangle have the lengths of $\sqrt{3}$ and 2. Let v be the smallest angle in the triangle. What is the value of $\sin v$?
Circle your answer and give your reasons in the box.

$\sqrt{\frac{3}{7}}$ $\sqrt{\frac{4}{7}}$ $\sqrt{\frac{3}{5}}$ $\sqrt{\frac{3}{4}}$ $\sqrt{\frac{4}{5}}$

(0/1/3)



13. Sketch in the coordinate system where the points fulfil both the conditions: $x + y \leq 0$ and $x \geq 2$.
Give reasons for your sketch.

(0/2/2)

