





***NO DIGITAL DEVICES ALLOWED***

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

Answer: \_\_\_\_\_ (1/0/0)

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

7            5            4            3            2

(2/0/0)

3. The following relations are either equivalences or implications.  
Mark equivalence with a  $\Leftrightarrow$  and implication with a correct implication  $\Rightarrow$  or  $\Leftarrow$ .

Pernilla lives in Sweden.

Pernilla lives in Europe.

The quadrangle F is a rectangle.

The quadrangle F is a square.

(1/0/0)

4. The flower is rotated around its centre axis. State the *minimum* number of degrees when the figure overlaps with the original figure.



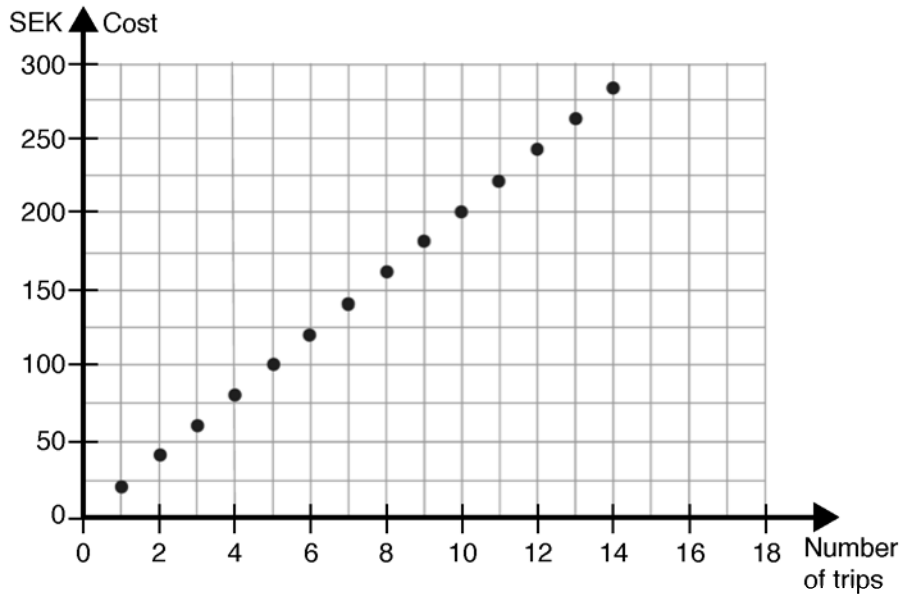
Answer: \_\_\_\_\_° (1/0/0)

5. The carbon dioxide concentration of air is 393 ppm.  
Write this concentration as a decimal.

Answer: \_\_\_\_\_ (1/0/0)

6. Elin has started in a new school and has to go to and from school by bus every day.  
The diagram shows the cost of single trips, i.e. for a trip to or from school.

- a) A monthly bus pass costs SEK 230. What is the *minimum* number of single trips Elin has to make in order for it to be cheaper for her to buy a monthly bus pass?

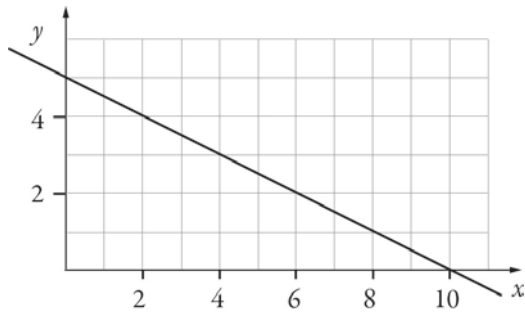


Answer: \_\_\_\_\_ (1/0/0)

- b) What does a single trip cost according to the diagram?  
Motivate your answer.

Answer: SEK \_\_\_\_\_ (1/1/0)

7. 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)

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

Answer: \_\_\_\_\_ (0/2/0)

9. Simplify the expression  $3(x + 5) - (x + 1)$  as far as possible.

Answer: \_\_\_\_\_ (0/1/0)

10.  $A = \frac{B}{B+1}$  where  $B$  is a positive number.

Will  $A$  be greater or smaller if  $B$  is doubled?  
Motivate your answer.

Answer: \_\_\_\_\_ (1/1/1)

11. What expression(s) are greater than 2 per mille?  
Circle your answer(s).

$$\frac{2}{2\,000}$$

0.00201

$$\frac{1}{499}$$

$$\frac{1}{501}$$

$1.9 \times 10^{-3}$

(0/1/1)

12. Confidential task. Will be added/included as soon as confidentiality has expired.

13. Which number should be in the empty box in the table?

$x$	$xy$	$xy^2$
2	-10	

Answer:  $xy^2 =$  \_\_\_\_\_ (0/0/1)

14. An icicle has the volume  $V(t)$  cm<sup>3</sup> where  $t$  is the time in minutes after 08:00. At 09:00 the icicle has the volume 21 cm<sup>3</sup>. Use the function  $V(t)$  and write this statement using mathematical symbols.



Answer: \_\_\_\_\_ (0/0/1)

15. Determine  $n$  if  $2^4 \times 3^8 = 9^n \times 6^4$

Answer:  $n =$  \_\_\_\_\_ (0/0/2)





# Compilation of student results

National test in mathematics 1b, autumn 2016

Name:	Test grade:
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	E-points		C-points		A-points		Total	
	Your score	Maximum score	Your score	Maximum score	Your score	Maximum score	Your score	Maximum score
<b>Part A</b>		3		4		4		11
<b>Part B</b>		9		8		7		24
<b>Part C</b>		3		5		3		11
<b>Part D</b>		15		19		8		42
<b>Total</b>		<b>30</b>		<b>36</b>		<b>22</b>		<b>88</b>

Part A	E	C	A	Score	Comment
Method and carrying through	+E	+C	+A		
Presentation	+E +E	+C +C +C	+A +A +A		
Total	3	4	4		

Part C	E	C	A	Score	Comment
Method and carrying through	+E +E +E	+C +C +C	+A		
Presentation		+C +C	+A +A		
Total	3	5	3		

## Grading limits

Limit for test grade

- E: At least 20 points.
- D: At least 35 points of which at least 12 points at level C or higher.
- C: At least 45 points of which at least 20 points at level C or higher.
- B: At least 57 points of which at least 6 points at level A.
- A: At least 66 points of which at least 11 points at level A.

## 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:
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