

# Sarajevo School of Science and Technology

## Entrance Examination

### Mathematics

Duration: 1,5 hours

Use of calculators: Allowed

**Department of study: Game Design and Development**

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#### Question 1.

All the trees in the park are flowering trees.  
Some of the trees in the park are dogwoods.  
All dogwoods in the park are flowering trees.

If the first two statements are true, the third statement is

- a) true
- b) false
- c) uncertain

#### Question 2.

Which number replaces the question mark?

5		6		5	
7	3	2	10	5	?

- a) 8
- b) 9
- c) 11
- d) 5

### Question 3.

In the following question, select a figure from amongst the four alternatives, which when placed in the blank space of figure (x) would complete the pattern.

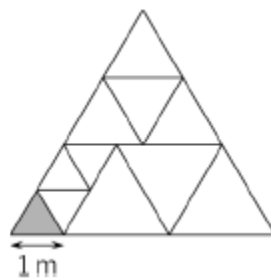
Identify the figure that completes the pattern.



- a) 1,
- b) 2
- c) 3
- d) 4

### Question 4.

The big triangle is divided into smaller equilateral triangles as it is given in the figure. The length of a side of the small shaded triangle is equal 1m. Evaluate the perimeter of the big triangle.



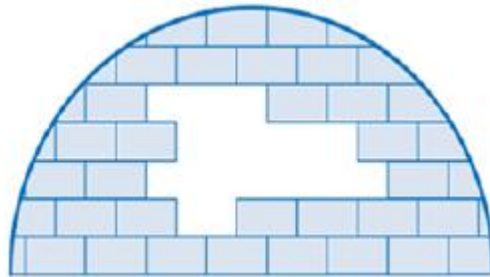
### Question 5.

Divide the following expressions:

$$\frac{b+c-a}{a+b+c} \div \frac{2(a-b-c)}{a((b+c)^2 - a^2)}$$

**Question 6.**

What is the maximum number of the bricks that one can put into an igloo given in the figure?

**Question 7.**

Which of the following expressions is not a factor of  $x^4 - 5x^2 + 4$  ?

- a)  $x - 1$
- b)  $x - 2$
- c)  $x - 3$
- d)  $x + 2$

**Question 8.**

The manufacturer of a bag of sweets claims that there is a 95% chance that the bag contains some toffees. If 21 bags are chosen, what is the probability that all bags contain toffees?

**Question 9.**

A point A(1,2) belongs to a graph of function  $mx - 2x = f(x) - m$ . Evaluate the unknown value  $m$ .

**Question 10.**

Evaluate the unknown angles  $\alpha, \beta, \gamma$  of a triangle if it holds:

$$\alpha : \beta = 2 : 3 \text{ and } \alpha + \beta - 25^\circ = \gamma .$$