

# SEVENOAKS SCHOOL



## YEAR 9 (13+) SCHOLARSHIP

May 2024  
for entry in September 2024

## MATHEMATICS

Your Name: \_\_\_\_\_

Your School: \_\_\_\_\_

**Time allowed:** 1 hour

**Equipment needed:** Pen, Pencil, Eraser.

**Information for candidates:**

1. Calculators, Rulers and Protractors are NOT allowed.
2. Write your name and school on this page.
3. Write your answers on the question paper in the spaces provided.
4. There are 5 questions in this paper. You are not expected to answer all of them, so you should work on the questions you feel most comfortable with first.
5. There are 5 marks available for each question in this paper.
6. Show all your working to justify your answers, most of the marks are awarded for this working. Answers without justification will receive no marks.

### Question 1

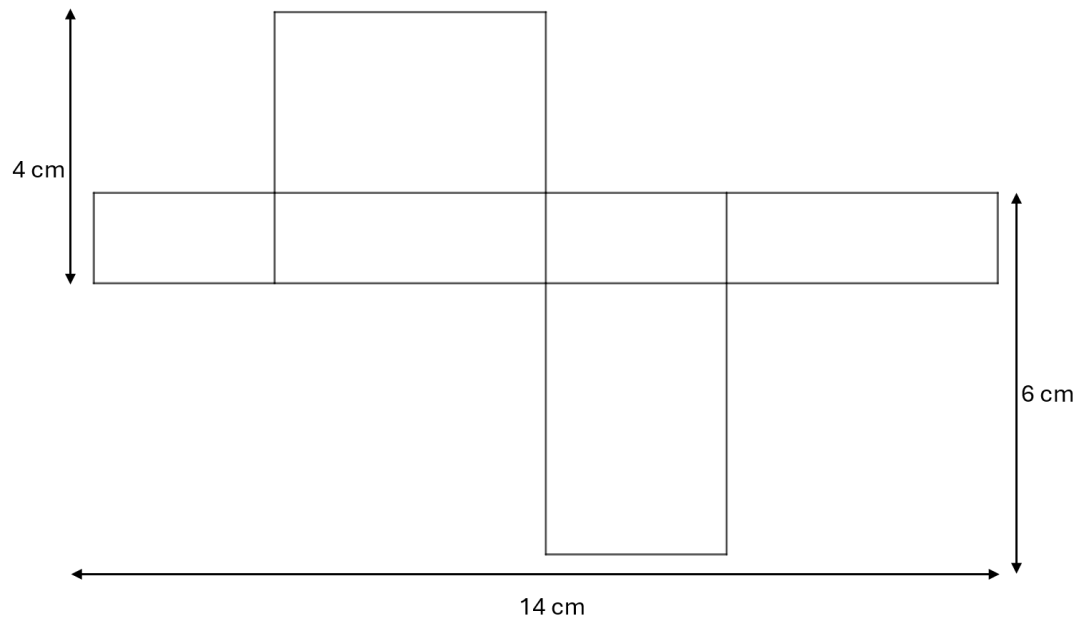
In the addition sum below,  $S$ ,  $V$  and  $N$  stand for different digits.

$$\begin{array}{r} S V N \\ + S N V \\ \hline N 4 S \end{array}$$

What is the value of  $S + V + N$ ?

## Question 2

Below is the net of a cuboid.



What is the volume of this cuboid?

### Question 3

In a sequence, every term after the second is equal to the sum of the two previous terms. The seventh term is 111.

- a) If the first term is  $x$  and the second term is  $y$ , write an expression in terms of  $x$  and  $y$  for the seventh term in this sequence.
- b) Given that all the terms in the sequence are positive integers. Find the smallest possible value of the third term in the sequence.

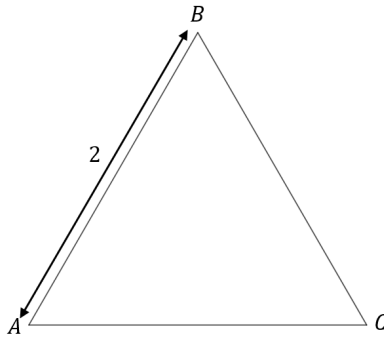
#### Question 4

Two maths teacher Mr  $X$  and Ms  $Y$  collect calculators. Initially they have three calculators each. Ms  $Y$  feels generous and gives one of her calculators worth £25 to Mr  $X$  as a gift. Both teachers are surprised to find out that the average value of each of their calculator collections rose by £1.

What is the total value of all six calculators?

### Question 5

Consider an equilateral triangle  $ABC$ , with side length 2 as shown below.



In the diagram below three outward pointing squares  $ABVU$ ,  $BCXW$  and  $CAZY$  have been constructed on the sides of the equilateral triangle  $ABC$  forming a hexagon  $UVWXYZ$ .

What is the area of hexagon  $UVWXYZ$ ? You may leave square roots in your answer.

