# SEVENOAKS SCHOOL

## YEAR 7 (11+) ENTRANCE EXAMINATION
### January 2024
### for entry in September 2024

# MATHEMATICS

Name: _____

School: _____

**Time allowed:** 1 hour

**Equipment needed:** Pen, pencil, eraser, ruler.

**Information for candidates:**
1. Calculators are NOT allowed.
2. Write your name and school on this sheet.
3. Write your answers on the question paper in the space provided.
4. There are 16 questions in this paper, try to answer all of them, but don't worry if you don't complete the paper. If you get stuck, just go on to the next question and if you have time at the end come back to the one(s) you left.
5. There are 60 marks in total available for this paper. Marks for each question are shown in square brackets [ ] after the question.
6. Show all your working. You may be awarded marks for correct working even if your final answer is incorrect, and a correct answer unsupported by correct working may not receive full marks.

1. Simplify the following ratios:

   a)  $15 : 18$

   _____

   b)  $52 : 39$

   _____

   c)  $0.72 : \frac{1}{2}$

   _____
   [4 marks]

2. Given the set of numbers: 5, 6, 9, 13, 7, 8, 5, 3. Calculate the:

   a)  Mode

   _____

   b)  Range

   _____

   c)  Median

   _____

   d)  Mean

   _____
   [6 marks]

3. Evaluate the following:

a) $3\frac{2}{5} - 1.75$

_____

b) $1\frac{3}{4} \times 1\frac{1}{7}$

_____

c) $5 \div 2\frac{2}{3}$

_____

[6 marks]

4.  A sports shop sells football kits to a local club. The shirts cost £16 each and the jackets cost £25 each.

    a)  How much does it cost the club to buy 19 shirts and 14 jackets?

    £ _____

    b)  If a club buys 20 of each item, the shop will give them a 20% discount. Will it be cheaper for the club to buy 20 of each item instead of 19 shirts and 14 jackets?
        *You __must__ show all working to justify your answer.*

    _____
    [6 marks]

5.  Jim rounds a number, to 1 decimal place, his answer is 201.6. What was the smallest possible value of Jim's number?

    _____
    [1 mark]

6.  Sarah thinks of a number. She doubles it and adds 5.
    If she ends up with -7, find the original number.

    _____
    [2 marks]

7.  The temperature in Toronto is 7°C colder than it is in London.
    The temperature in Moscow is 4 times that of Toronto.
    The temperature in Bogota is 45°C more than half the temperature of Moscow.
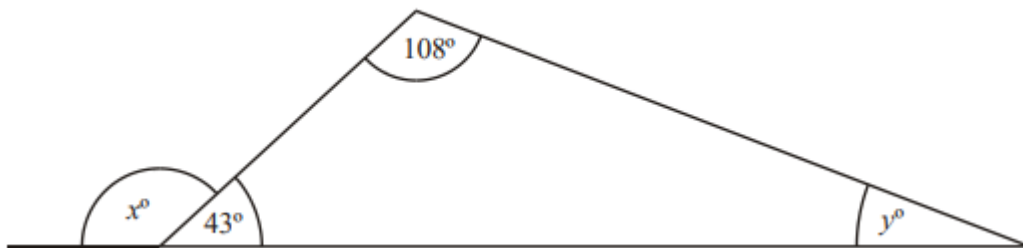    If the temperature in London is -2°C, find the temperatures in each city.

    Toronto: _____°C

    Moscow: _____°C

    Bogota: _____°C

    [3 marks]

8.  Find the difference between the values of $x$ and $y$ below.



    _____

    [3 marks]

9. Sarah and Krish share sweets in the ratio 5 : 9. If Krish receives 36 sweets, how many sweets would Krish need to give to Sarah for them to end up with the same number?

_____ sweets

[3 marks]

10. Keya is making a journey of 240 km.

Setting off at 08:30, she travels at an average speed of 80 km/h for the first 2 hours of the journey. She needs to arrive at her destination by 11:00. What is the minimum speed she must drive for the remaining journey to arrive on time?

_____ km/h

[3 marks]

11. Elise creates a code where each letter corresponds to the answer of a mathematics question.

| A | 22 |
|---|---|
| B | 12 |
| C | 33 |
| D | 19 |

Work out the answers to the questions below <u>in order</u> then match them up to the letters to find the code.
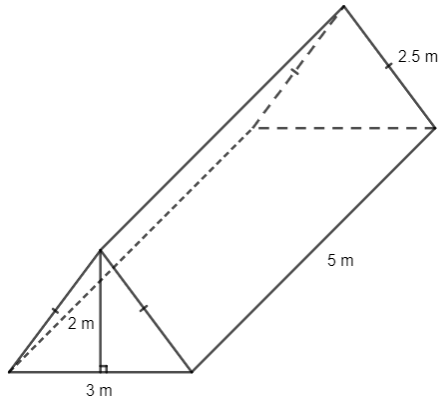
i)    $7 + 3 \times (4 - 2)^2$
ii)   $(15 - 3) \div 2 + 6$
iii)  $4 \times 5 + 2^3 - 6$
iv)   $(9 - 2) \times \sqrt{16} + 5$

Code: _____

[4 marks]

12. What is 20% of 30% of 40% of £60?

_____

[3 marks]

13. McDonalds are advertising at a festival. The advertising sign is a triangular prism made out of wood that will rest on the ground:



a)    Find the volume of the sign.

_____ m³

b)    All the sides apart from the base are to be painted red. One can of red paint covers 5 m² of wood. How many cans are needed to paint the sign? <u>You must show all working.</u>

_____ cans

[6 marks]

14. Evaluate: $\sqrt{4 + \sqrt{16 + \sqrt{81}}}$

_____
[3 marks]

15. Three different integers have a sum of 1 and a product of 36. What could they be?

_____

_____

_____
[3 marks]

16. Two thirds of five sixths of a number, $x$, is the same as three quarters of four fifths of a number, $y$. What is the value of the fraction $\frac{x}{y}$ in its simplest form?

_____
[4 marks]

**END OF EXAM**