SEVENOAKS SCHOOL

YEAR 9 (13+) ENTRANCE EXAMINATION

May 2019
for entry in September 2020

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 space provided.
4. There are 20 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 mark.

1. Calculate the value of $(-3) - (-8) + (-6)$.

_____ [1 mark]

2. Calculate the value of:

   (a) $1.44 \div 1.2$

_____ [1 mark]

   (b) 759 x 38

_____ [2 marks]

3. Add a single pair of brackets to make the following expression correct:

$$3^2 + 4 \text{ x } 5 - 2^2 = 13$$

[1 mark]

4. Calculate $3\frac{1}{5} - 2\frac{2}{3}$

_____ [3 marks]

5. Calculate two-thirds of three-quarters of one half.

_____ [2 marks]

6. Simplify $5a - 7b + 9ab - b - 11ba$.

_____ [2 marks]

7. Solve:

(a) $4x - 15 = 25$

_____ [1 mark]

(b) $3x - 6 = x + 2$

_____ [2 marks]

(c) $\frac{x}{7} - 2 = 8$

_____ [2 marks]

8. Solve $4(x - 1) - 3(7 - x) = 38$.

_____ [3 marks]

9. A train sets off on a journey at 11.47 and arrives at its destination at 13.24. How long does the journey take in hours and minutes?

_____ [2 marks]

10. ABD is a straight line. ABC is an isosceles triangle, where $AC = BC$. Find the size of the angle x.
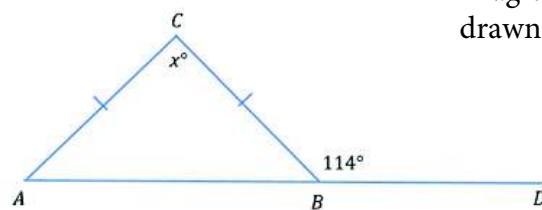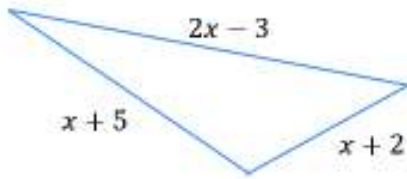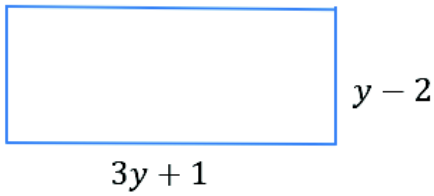
Diagram not drawn to scale

_____ [2 marks]

11. Write down and simplify expressions for the perimeter of each shape below.

Diagrams not drawn to scale

$2x - 3$

$x + 5$

$x + 2$

(a)

_____ [2 marks]

$y - 2$

$3y + 1$

(b)

_____ [2 marks]

12. For the fractions $\frac{2}{3}$, $\frac{1}{2}$ and $\frac{3}{4}$, calculate:

(a) the median

_____ [1 mark]

(b) the range

_____ [2 marks]

(c) the mean

_____ [3 marks]

13. Three sausages and five burgers costs £11.25. Seven sausages costs £9.10.

    (a) How much does one burger cost?

    _____ [3 marks]

    (b) Each sausage weighs 80g and each burger weighs 113g. If I buy four sausages and four burgers, what is the difference between the total weight of the food purchased and 1kg?

    _____ [3 marks]

14. (a) In a **year group** of 100 students at School A, 73 students study Maths and 58 students study Physics. Two students study neither Maths nor Physics. How many students study both Maths and Physics?

    _____ [2 marks]

    (b) In a **year group** of 150 students at School B, 24% of students study both Maths and Physics. In which school are there more pupils studying both Maths and Physics? **You must show workings to support your answer.**

    _____ [2 marks]

15. Emma chooses two numbers from the list below:

| 47.38 | 47.42 | 47.48 | 47.52 | 47.58 | 47.62 |

When Emma's numbers are rounded to one decimal place, they are equal. When Emma's numbers are rounded to two significant figures, they are **not** equal.

Write down Emma's two numbers.
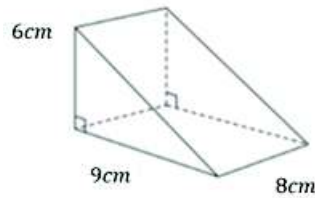
_____ [2 marks]

16. Below is a triangular prism.

Diagram not drawn to scale

6cm

9cm

8cm

(a) Find the area of the triangular cross-section of the prism.

_____ [2 marks]

(b) The volume of the prism is the same as the volume of a cube.

Find the length of one side of the cube.

_____ [3 marks]

17. If 16 people can do a job in 20 days, how long would it take 32 people who each work twice as quickly to do the same job?

_____ [2 marks]

18. Six Pounds are worth seven Euros, and two Euros are worth three Australian Dollars. How many Australian Dollars are four Pounds worth?

_____ [2 marks]

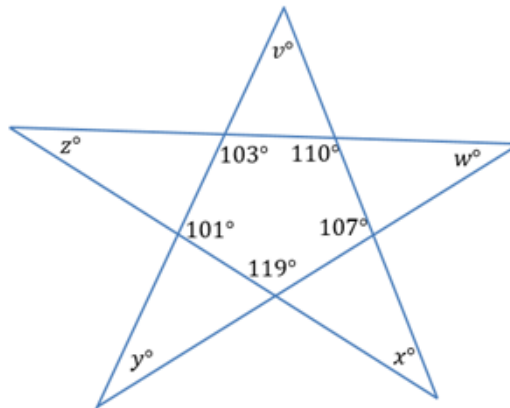19. For the shape below, what is the value of $v + w + x + y + z$?

Diagram not drawn to scale

_____ [3 marks]

20. A book starts at page 1 and is numbered on every page. If the total number of digits used is 516, how many pages are there in the book?

_____ [2 marks]

TOTAL MARKS = 60