

SEVENOAKS SCHOOL



YEAR 7 (11+) ENTRANCE EXAMINATION

January 2022

for entry in September 2022

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 15 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. Calculate the following:

a) $12 - 6 \div 2$

_____ [1 mark]

b) $13 - 4 + 5$

_____ [1 mark]

c) $(1 - 3)^2 + 6$

_____ [2 mark]

2. Nat gets to the bus stop at 9:38am – the next bus is at 10:02am. How long does she have to wait for the bus?

_____ minutes [1 mark]

3. Julie has a box of different coloured ribbons.

12 are blue

27 are yellow

9 are red

2 are green.

a) How many ribbons does Julie have altogether?

_____ [1 mark]

b) What fraction of the ribbons are blue? Give your answer in its simplest form.

_____ [2 marks]

c) What percentage of the ribbons are green?

_____ [2 marks]

4. Put the following fractions in **ascending** order: $\frac{1}{2}, \frac{4}{7}, \frac{10}{21}, \frac{1}{3}$

Smallest

Biggest

[2 marks]

5. James goes on a bike ride. He cycles at 15km/hour for 3 hours.

- a) How far does James cycle?

_____ km [2 marks]

- b) Jonathan cycles 20km in 90 minutes – is he faster or slower than James? Show your working.

_____ [2 marks]

6. Find x in the following equations:

a) $2x - 5 = 13$

_____ [2 marks]

b) $4x + 2 = -7 + x$

_____ [2 marks]

c) $\frac{1}{2}(x + 1) = 11$

_____ [2 marks]

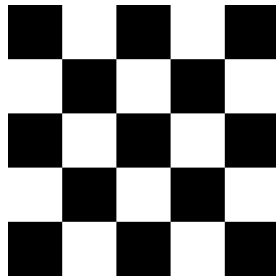
7. a) Farmer Freddie is checking on the animals in his field. He knows that the ratio of sheep to cows is 2:3. If he counts 50 sheep, how many cows should there be in the field?

_____ [2 marks]

- b) When he counts, Freddie realises that there are actually 100 cows in the field. What is the ratio of sheep to cows now? Give your answer in its simplest form.

_____ [2 marks]

8. Draw all lines of reflectional symmetry on the below shape:



[2 marks]

9. Calculate the following, leaving your answers in their simplest form:

a) $\frac{1}{3} + 2\frac{1}{6}$

_____ [2 marks]

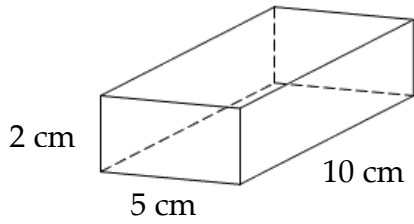
b) $3\frac{1}{5} \times 1\frac{1}{2}$

_____ [2 marks]

c) $1 - \frac{1}{4} \div \frac{1}{8}$

_____ [2 marks]

10. a) Peter is making chocolate bars in the shape of a cuboid, with dimensions as shown below. What is the volume of his chocolate bar?

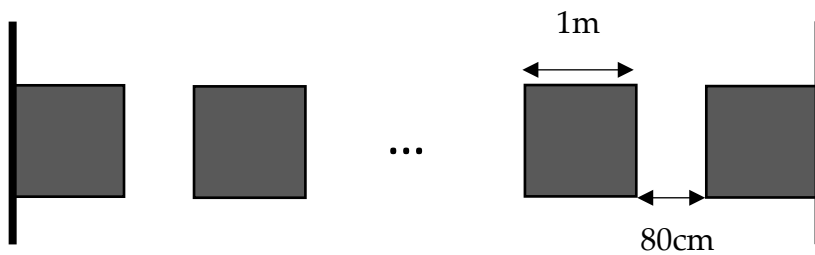


_____ cm³ [2 marks]

- b) Peter decides to sell his chocolate bars at the local market. If he sells each one for 80p and his ingredients cost £50, what is the minimum number of bars he must sell to start making a profit?

_____ [3 marks]

11. In a school exam hall, the desks are set up, with 80cm between them, as shown below.



If each desk is 1m wide and the end desks are put against the wall, how many desks can you fit across a room that is 19m wide?

_____ [3 marks]

12. Paul and Ashley are trying to decide who is the best at bowling. Below are their scores for the past 3 games. Who has the best mean average score? Show all of your working.

Name	Game 1 Score	Game 2 Score	Game 3 Score
Paul	78	72	60
Ashley	53	56	116

_____ [3 marks]

13. Find the next 2 numbers in the following sequences:

a) 2,5,8 ...

_____ [2 marks]

b) $0.3, \frac{2}{5}, \frac{1}{2} \dots$

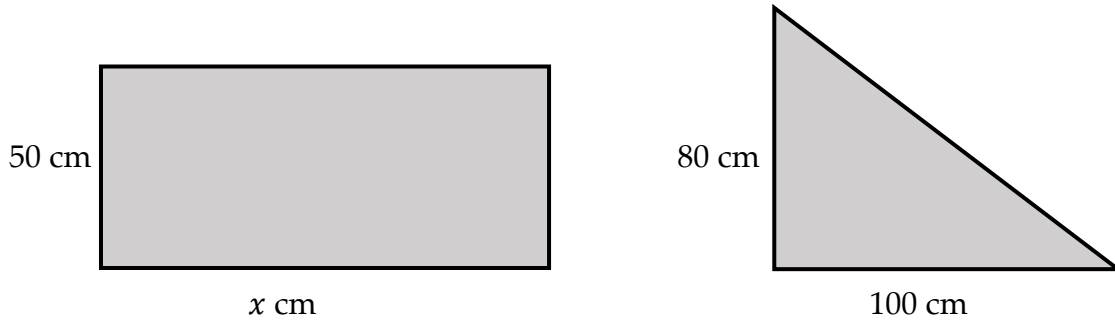
_____ [2 marks]

c) 12, 6, 3 ...

_____ [2 marks]

14. Alanna has three flower beds in her garden.

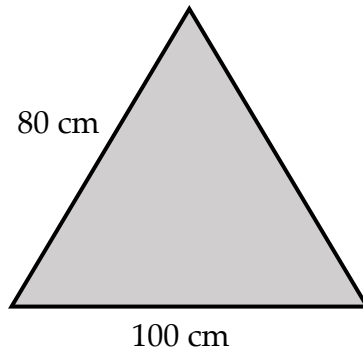
a) The first two, shown below, have the same area.



Find the value of x .

_____ [2 marks]

b) The third flower bed is also triangular, but with a sloping height of 80cm.



Does it have smaller, larger or the same area as the other flower beds? Give a reason for your answer.

[2 marks]

15. Guy and Tim created a new mathematical rule where $[x]$ is the smallest whole number bigger than or equal to x .

For example, $[5.3] = 6$, $[0.9] = 1$, $[-1.7] = -1$.

Calculate the following:

a) $12.4 - [5.2]$

_____ [1 mark]

b) $[4.8 \div [1.7]]$

_____ [2 marks]

c) Tim claims that $[a + b] = [a] + [b]$. Guy says this is not always true. Who is correct? Explain your answer.

[2 marks]