SEVENOAKS SCHOOL

YEAR 7 (11+) ENTRANCE EXAMINATION

SAMPLE PAPER

MATHEMATICS

Your Name: ……..

Your School: …….

Time allowed: 1 hour

Equipment needed: Pen, pencil, eraser and ruler.
Calculators are **not** permitted.

Information for candidates:

1. Write your name and school on this sheet.
2. Write all of your answers on the question paper in the space provided and show all your working.
3. Try to answer all the questions, but don't worry if you cannot complete all of them. If you are stuck, just go on to the next question and, if you have time, come back to the one you left.
4. There are 75 marks available for this paper in total. Marks for each question are shown in square brackets [ ] after the question.

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1. Work out $56 - 69 + 311$

Answer: . . . . . [3]

2. Work out 813×72

Answer: . . . . . [3]

3. Work out $4992 \div 16$

Answer: . . . . . [3]

4. Subtract eight hundred and thirty one from one thousand and fifty:

Answer: . . . . . [3]

5. Write the correct operations (+ or – or × or ÷) in these statements.

a ..... $a = 0$

a ..... $a = 1$

a ..... $a = 2a$

a ..... $a = a^2$

[2]

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6. Solve the following equations:

(a) $3x - 5 = 31$

Answer: $x =$ . . . . . [2]

(b) $5x - 2 = 2x - 8$

Answer: $x =$ . . . . . [2]

(c) $\frac{x}{4} - 7 = 12$

Answer: $x =$ . . . . . [3]

(d) $\frac{x - 7}{4} = 12$

Answer: $x =$ . . . . . [3]

7. (a)Write down the prime numbers between 10 and 20

Answer: . . . . . [2]

(b) Write down the first three multiples of 15

Answer: . . . . . [2]

(c) Write down the factors of 49

Answer: . . . . . [2]

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8. Write the following fractions as decimals:

(a) $\frac{3}{5}$

Answer: . . . . . [1]

(b) $1\frac{3}{8}$

Answer: . . . . . [2]

9. A sunflower is one hundred and fifty centimetres tall.
How tall will it be if its height increases by ten per cent?

Answer: . . . . . *cm* [2]

10. In a box of pens, one half are black, one sixth are red and the rest are blue.
What fraction of the pens is blue?

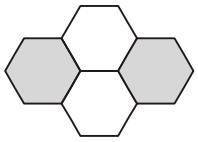
Answer: . . . . . [2]

11. Bella makes purple paint by mixing blue paint and red paint in the ratio of 4 : 3. How much blue paint is needed to make 21 litres of purple paint?

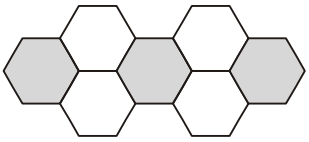
Answer: . . . . . *.litres* [3]

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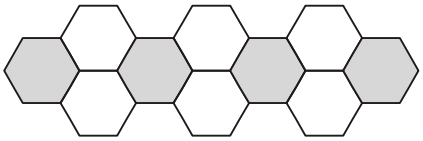
12. Look at this sequence of patterns made with hexagons.



pattern number **1**



pattern number **2**



pattern number **3**

To find the number of hexagons in pattern number n you can use these rules:

Number of grey hexagons =	$n + 1$
Number of white hexagons	$= 2n$

Altogether, what is the total number of hexagons in pattern number 20?

Answer: . . . . . [2]

13. Put these values in order of size with the **smallest first**.

5^2 3^2 3^3 2^4

....

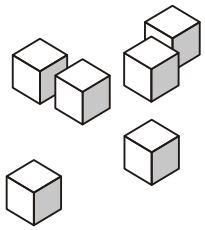
smallest largest

[2]

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14. Six cubes **each** have a **surface area** of **24 cm²**

They are joined together to make a cuboid.



What could the **surface area** of this cuboid be?

There are two different answers. Write them both.

Answer: . . . . . cm² and . . . . . cm² [2]

15. The table below shows which sports pupils in Year 7 name as their favourite.

Football	Rugby	Hockey	Table Tennis	Badminton
48%	12%	24%		8%

(a) What percentage

(i) Prefer football or rugby?

Answer: . . . . . [1]

(ii) Prefer table tennis?

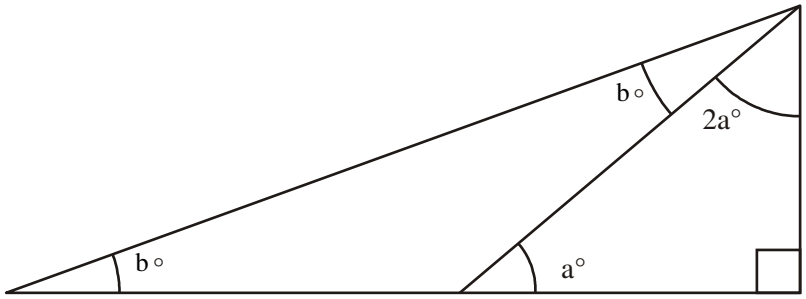
Answer: . . . . . [1]

(b) If there are 50 pupils in Year 7, how many prefer football?

Answer: . . . . . [2]

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16. Look at the triangle.



Not drawn accurately

Work out the value of *a* and b

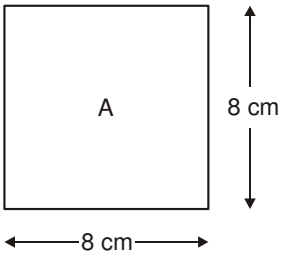
Answer: a = ... °

b = ... °

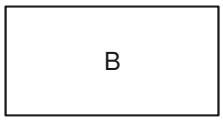
[3]

17. (a) I have a square piece of paper.

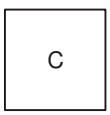
The diagram shows information about this square labelled A.



I fold square A **in half** to make rectangle B.



Then I fold rectangle B **in half** to make square C.



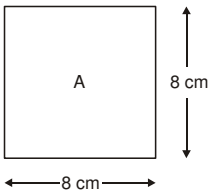
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Complete the table below to show the area and perimeter of each shape.

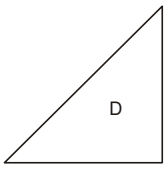
	Area	Perimeter
Square A	cm^2	cm
Rectangle B	cm^2	cm
Square C	cm^2	cm

[6]

(b) I start again with square A.



Then I fold it **in half** to make triangle D.



What is the **area** of triangle D?

Answer: . . . . . cm^2 [2]

(c) One of the statements below is true for the **perimeter** of triangle D.
Tick the correct one.

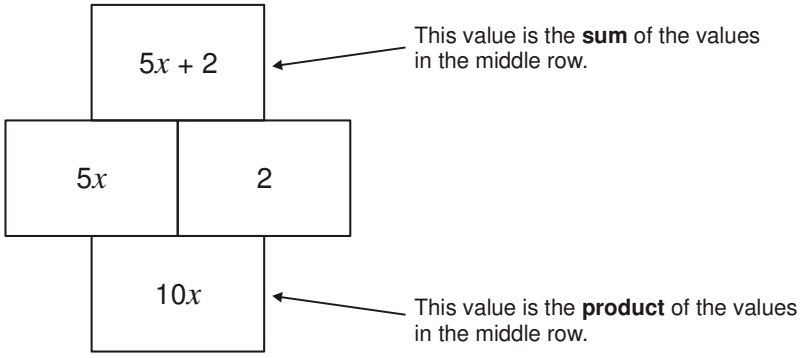
The perimeter is less than 24 cm.	
The perimeter is 24 cm.	
The perimeter is greater than 24 cm.	

Explain your answer.

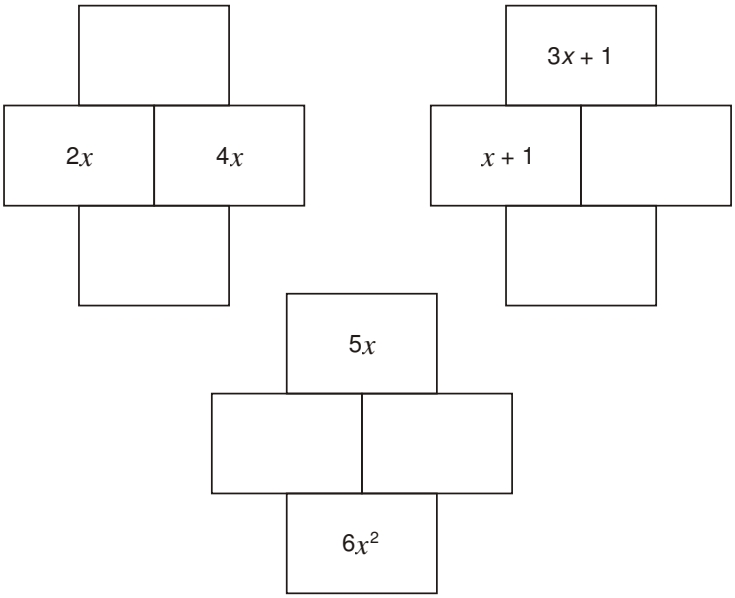
Answer: . . . . . [2]

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18. Here are the rules for an algebra grid.



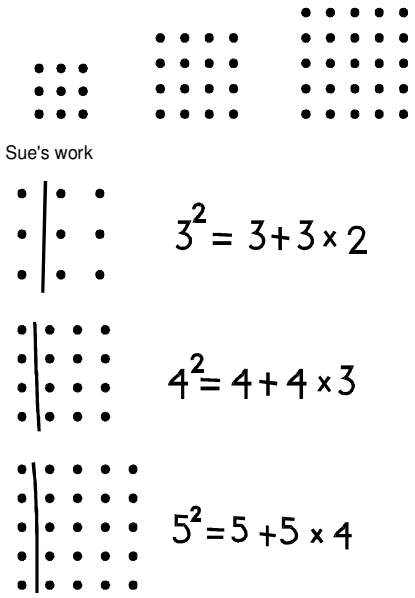
Use these rules to complete the algebra grids below. Write your expressions as simply as possible.



[6]

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19. Sue and Owen are using square patterns of dots to find different expressions for n^2.



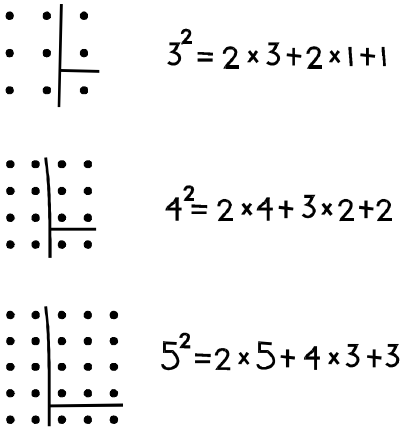
(a) Sue wants to write an expression for 12.
Complete Sue's expression for 12^2.

$12^2 = 12 +$. . . . . [2]

(b) Now sue wants to write an expression for n^2
Complete Sue's Expression for n^2.

$n^2 = n +$. . . . . [2]

Owen's work:



(c) Write down Owen's expression for n^2.

$n^2 =$ . . . . . [2]

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