



YEAR 7 ENTRANCE AND SCHOLARSHIP EXAMINATION

Mathematics Specimen Paper - B

Your Last Name	
Your First Name	
Your Current School	
Candidate Number	

Time allowed for this paper: 1 hour

Instructions

- Attempt all the questions.
- Calculators must not be used.
- This test is designed to be challenging, so you may not find all the questions straightforward and you may not finish the whole paper. Do not spend too much time on any one question.
- All workings and calculations should be written in the spaces provided. Marks are awarded for correct workings, even if you don't get as far as an answer.
- Keep working steadily and carefully. Then if you have time at the end, go back and try to tackle any questions you did not find so easy when you first saw them.
- There are 100 marks available in total for this test.
- You must not write in the squares on the bottom right of each page.
- The marks available for each part of a question are given in square brackets.

1. Work out:

a) $3825 - 1389$

Answer: _____ [2]

b) 37×618

Answer: _____ [2]

c) $370.4 \div 8$

Answer: _____ [2]

d) $13.785 + 994.54$

Answer: _____ [2]

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2. Fill in the missing numbers in these sequences:

a) 15 , 18.5 , 22 , _____ , 29 , _____

[2]

b) 1 , -5 , -11 , _____ , _____

[2]

c) $\frac{1}{12}$, $\frac{1}{6}$, $\frac{1}{4}$, $\frac{1}{3}$, _____ , _____

[2]

3. Find:

a) Two fifths of £330

Answer: £_____ [2]

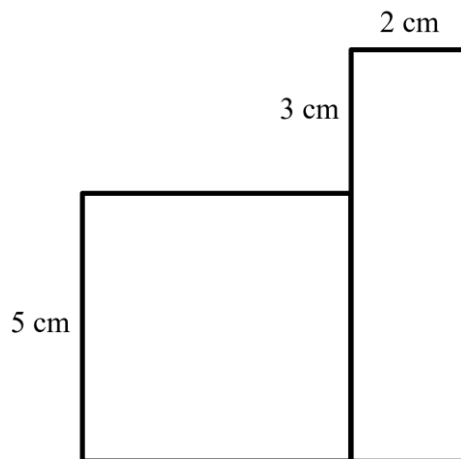
b) 30% of £163

Answer: £_____ [2]

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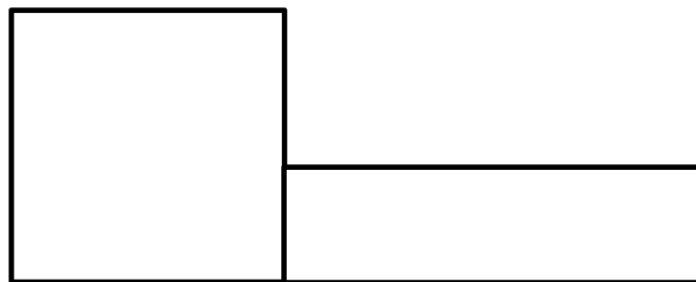
4. The shape below is made up of a square and a rectangle.



a) What is the area of the whole shape?

_____ cm² [2]

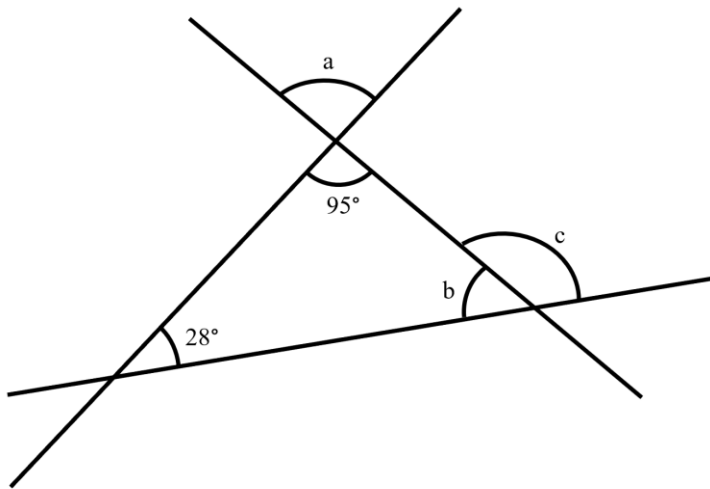
The square and rectangle are re-arranged to make a new shape below.



b) What is the perimeter of this second shape?

_____ cm [2]

7. Find the missing angles (diagrams not to scale):



Answer: a = _____° [1]

Answer: b = _____° [2]

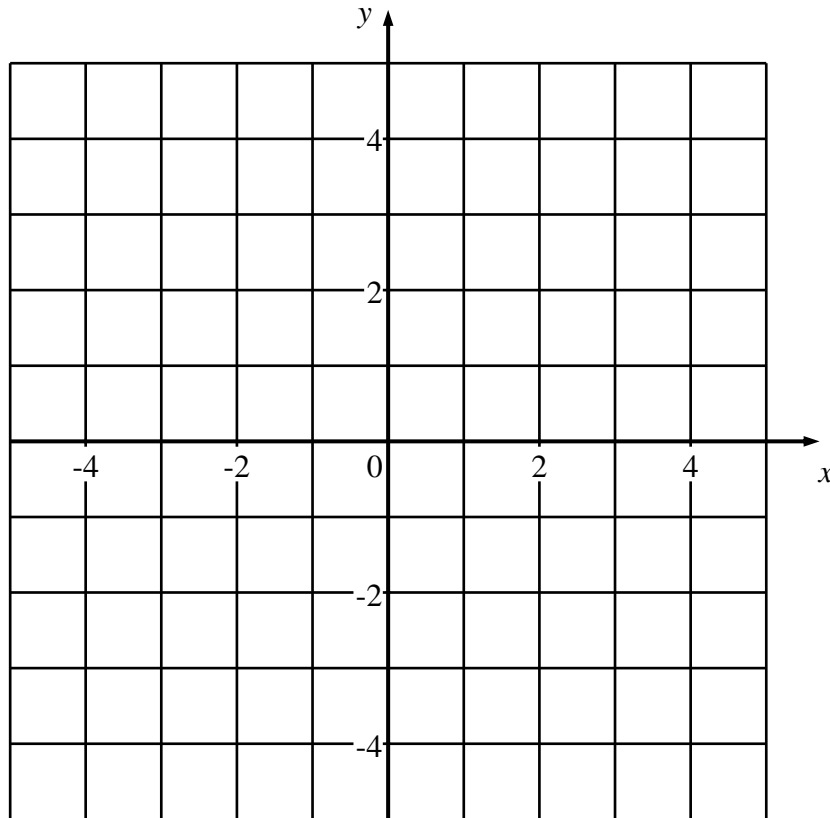
Answer: c = _____° [1]

8. Put the following in order from smallest to largest.

0.734, $\frac{3}{4}$, $\frac{7}{10}$

_____, _____, _____ [2]

9.



a) Plot and label the following points; $A(1, 4)$, $B(-2, 2)$ and $C(1, -3)$.

[2]

b) Plot a fourth point and label it D such that $ABCD$ is a quadrilateral with exactly one line of symmetry.

[1]

c) B is midway between A and another point E .

What are the co-ordinates of the point E ?

(_____ , _____) [2]

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10. You are given the following list of numbers;

3, 6, 7, 13, 6

a) What is the mode of the numbers?

_____ [1]

b) What is the mean of the numbers?

_____ [2]

c) Two more numbers are added to the list.
This changes the mode and increases the mean.
What are the two numbers that have been added?

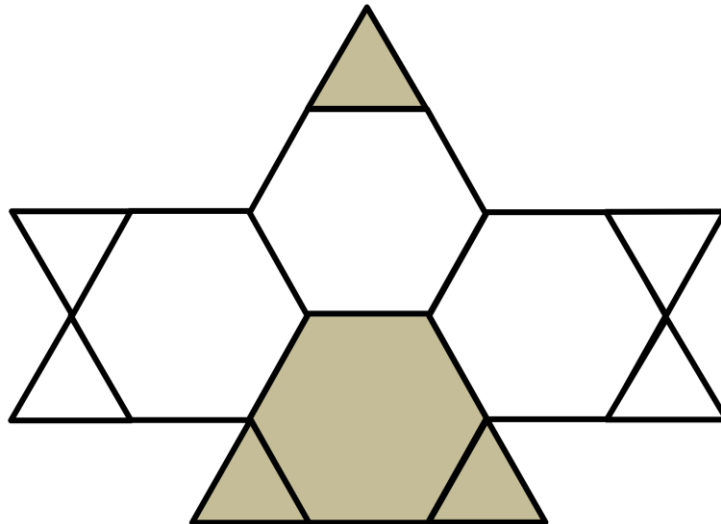
_____ and _____ [2]

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11. What is the third smallest number which is a multiple of 1, 2, 3, 4 and 5?

_____ [3]

12. The pattern below is made up of 4 regular hexagons and 7 equilateral triangles.



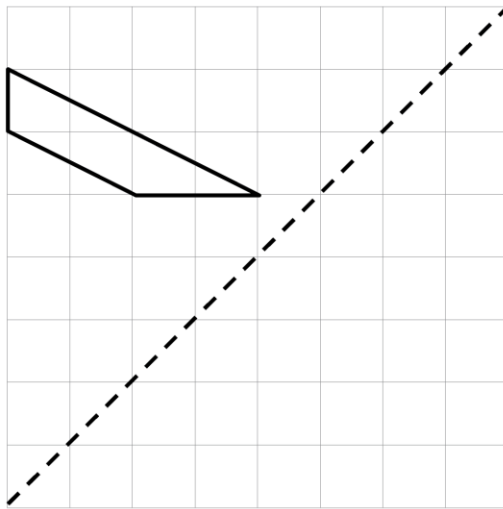
What fraction of the shape is shaded?

_____ [3]

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13. a) Reflect the shape in the dotted line.



[2]

b) What type of quadrilateral is the original shape?

_____ [1]

c) If each square on the grid is 1 cm by 1 cm, what is the area of the original shape?

_____ cm² [3]

14. Benny is having a dinner party and has £10 to spend on ingredients for some soup. He chooses to spend it on tomatoes and onions



Each pack of tomatoes costs £1.35p and each bag of onions costs 80p

a) If Benny buys 8 bags of onions, what is the maximum number of packs of tomatoes he can buy?

Answer _____ [2]

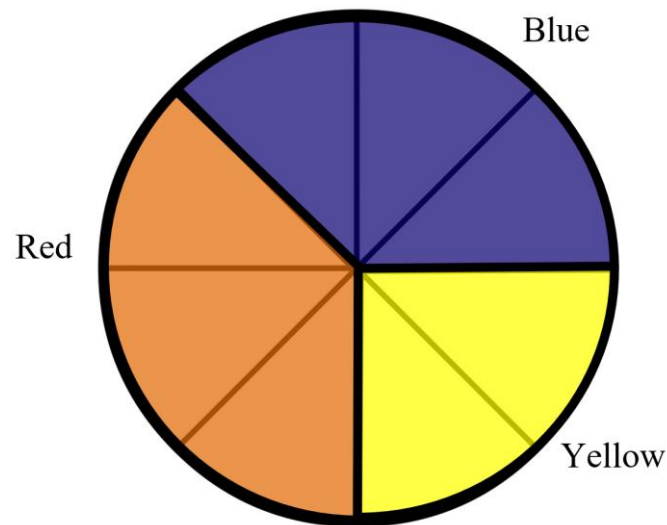
b) If instead Benny ends up with £1.70 left of his money how many packs of tomatoes and how many bags of onions did he buy?

Tomatoes _____ Onions _____ [3]

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15. Below is a pie chart showing the responses of a Year 7 class when asked what their favourite colour was.



a) If 4 more students chose red than yellow, how many students were in the class altogether?

_____ [2]

b) By inserting the word "less", "more" or "equally", complete the following statements.

If a student is chosen at random it is _____ likely that they chose blue rather than yellow.

If a student is chosen at random it is _____ likely that they chose red rather than blue.

[2]

16. The instruction $x \oplus y$ means divide x by y and then subtract from 100.

For example $6 \oplus 2 = 100 - (6 \div 2) = 97$

a) Work out the value of $65 \oplus 5$

Answer: _____ [1]

b) Work out the value of $10 \oplus 20$

Answer: _____ [1]

c) Work out the value of a if $a \oplus 3 = 88$

Answer: _____ [2]

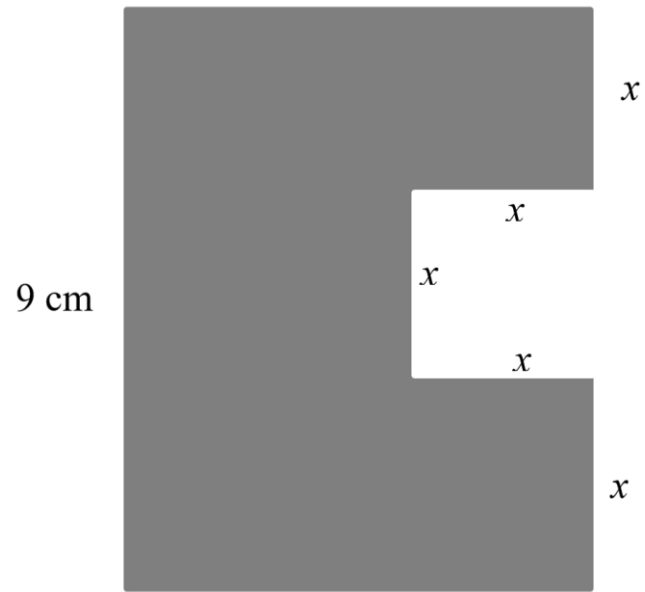
d) Work out the value of b if $36 \oplus b = b \oplus 4$, given that b is positive.

Answer: _____ [2]

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17. Every x labelled on the shape below has the same value.



If the perimeter of the shape is 40 cm, what is the area of the shape?

_____ cm² [4]

18. In 2018 Mark, Julian and Neill all decided to take up running.
The 1st of January 2018 was a Monday. 2018 was not a leap year.
January has 31 days, February has 28 days.
Mark went for a run every Wednesday.
Julian first went running on the 4th of January and every 4 days after that.
Neill only went running on dates in the month where the day was one greater than a prime number.

a) Which was the only date in January when all three went for a run?

_____ [4]

b) Which two men will not run on the same day as each other in February?

_____ [3]

c) Without making any further calculations, explain why these two will also not run on the same day at all in March.

[1]

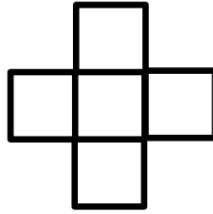
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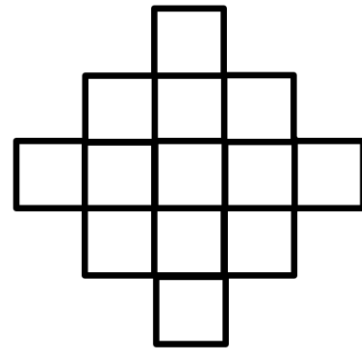
19. Below are the first three shapes in a sequence where each new shape is made by adding more small squares around the outside of the last shape.



First
Shape



Second
Shape



Third
Shape

a) How many small squares will make up the fourth shape in the sequence?

_____ [2]

b) Which shape in the sequence will be the first one to have over 100 small squares? How many little squares will it be made up of?

Which shape? _____

How many little squares? _____ [3]

20. It takes 4 decorators 3 hours to paint two rooms.
Assuming the decorators work at the same pace and the rooms are the same size;

a) How long would it take 4 decorators to paint 5 rooms?

_____ hours _____ minutes [2]

b) How long would it take 8 decorators to paint two rooms?

_____ hours _____ minutes [1]

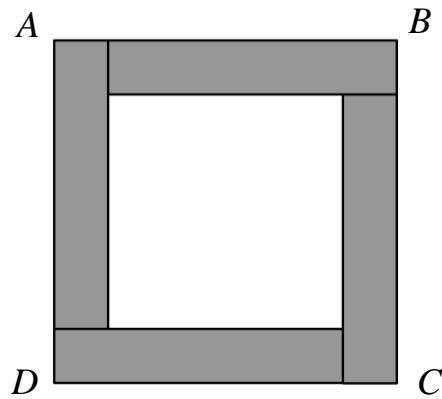
c) How long would it take 5 decorators to paint 3 rooms?

_____ hours _____ minutes [2]

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21. The square $ABCD$ consists of four identical rectangles arranged around a central square.
Each rectangle has a perimeter of 36 cm.
The area of the central square is 5 times bigger than the area of each rectangle.



What is the length of each side of the central square to the nearest cm?

_____ cm² [6]

End of the Examination

If you have time, go back and check your answers and make sure that you have shown all of your working.