



YEAR 7 ENTRANCE AND SCHOLARSHIP EXAMINATION

Mathematics – Specimen Paper K

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 of each page.
- The marks available for each part of a question are given in square brackets.

1. Work out:

a) $4126 - 2381$

Answer: _____ [2]

b) 29×351

Answer: _____ [2]

c) $330.4 \div 8$

Answer: _____ [2]

d) $12.861 + \frac{3}{4}$

Answer: _____ [3]

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2. Fill in the missing numbers in these sequences:

a) 19 , 23.5 , 28 , _____ , 37 , _____

[2]

b) 9 , 2 , -5 , _____ , _____

[2]

c) 136 , 68 , 34 , 17 , _____ , _____

[2]

3. A farmer has 240 animals. $\frac{5}{12}$ of them are sheep. 40% of them are cows.

a) How many sheep does the farmer have?

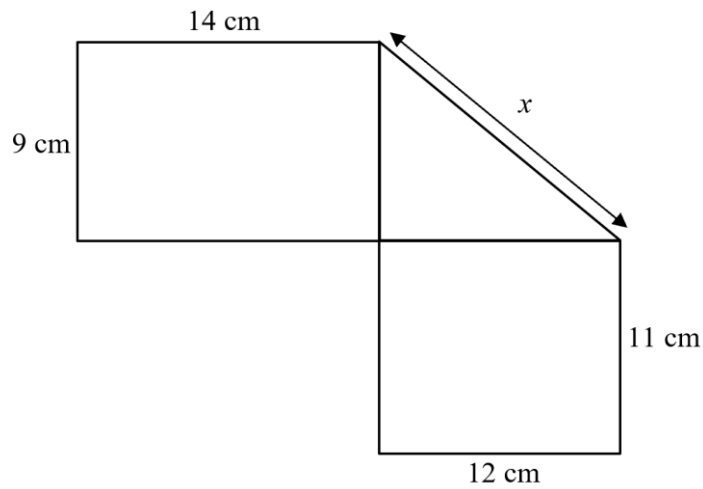
Answer: _____ [2]

b) How many cows does the farmer have?

Answer: _____ [2]

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4. The compound shape below is made up of two rectangles and a right-angled triangle.



- a) The outside perimeter of the compound shape is 86 cm. What is value of x ?

$$x = \text{_____ cm [2]}$$

- b) What fraction of the compound shape's total area is the triangle?
Give your answer in its simplest form.

5. Fill in the blanks to make the calculation correct.

a) $50 - (10 \div 2) = \underline{\hspace{2cm}}$

[1]

b) $(30 - \underline{\hspace{2cm}}) \times 2 = 28$

[1]

c) $8 + (2 \times \underline{\hspace{2cm}}) = 3^2 + \underline{\hspace{2cm}} = 20$

[2]

6. Below is the train timetable for the service from Poole to Southampton.

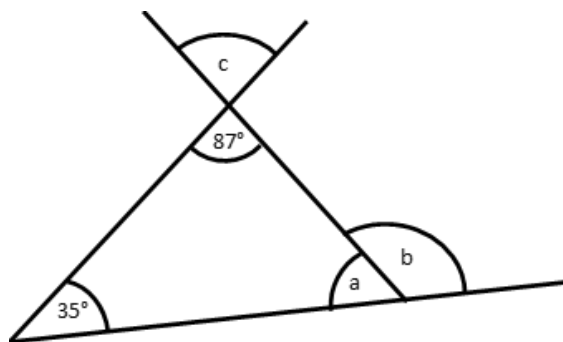
Poole	10:51	11:14	11:52	12:16
Parkstone	11:01	11:24	12:03	12:26
Bournemouth	11:09	11:36	-	12:38
Brockenhurst	11:21	11:49	-	12:51
Southampton	11:40	12:18	12:46	13:20

To get to work John has to walk 12 minutes to Parkstone Station, get the train to Southampton, and then walk 16 minutes to his office. If John has to get to work before 12:30 today, what is the latest time he can leave the house?

Answer: [3]

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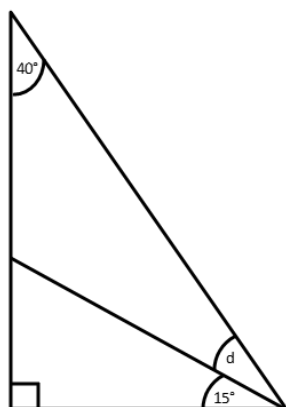
7. Find the missing angles (diagrams not to scale):



Answer: $a =$ _____ $^\circ$ [2]

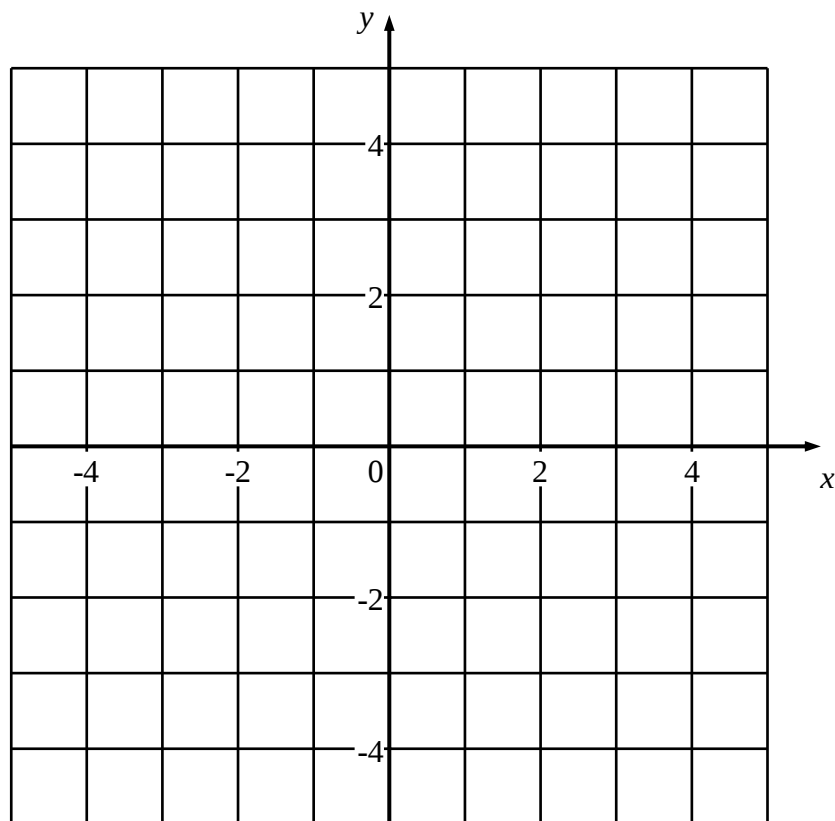
Answer: $b =$ _____ $^\circ$ [1]

Answer: $c =$ _____ $^\circ$ [1]



Answer: $d =$ _____ $^\circ$ [3]

8.



a) Plot and label the following points: $A(-1, -2)$, $B(1, 1)$ and $C(5, 1)$.

[2]

b) Plot a fourth point and label it D such that $ABCD$ is a parallelogram.

[1]

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

What are the co-ordinates of the point E ?

Answer : (_____ , _____) [2]

9. There are 5 boys playing patball. Abdul is 5 years old, Bill is 7 years old, Calvin is 8 years old, Dmitri is 9 years old and Ethan is 11 years old.

a) What is the mean age of the group of boys?

Answer: _____ [2]

b) If one of the 5 boys leaves the game and the mean age of the remaining boys doesn't change, who would have left the game?

Answer : _____ [1]

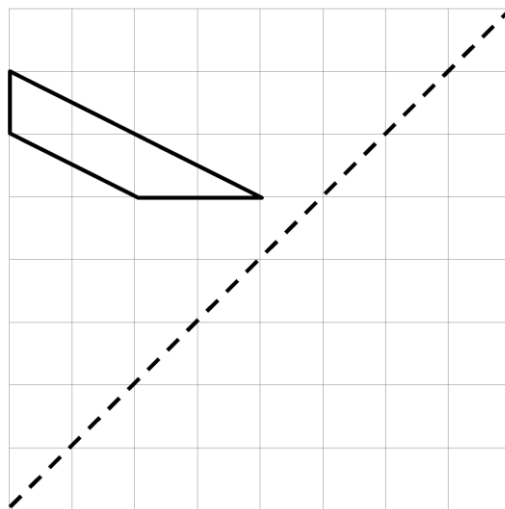
c) If two of the 5 boys leave the game and the mean age of the remaining boys becomes 7 years old, who would have left the game?

Answer : _____ and _____ [3]

10. Mark drives a 100 mile journey in 2 and a half hours.
How much faster would he have to drive if he wanted to complete the journey in 2 hours?

Answer : _____ miles per hour [3]

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



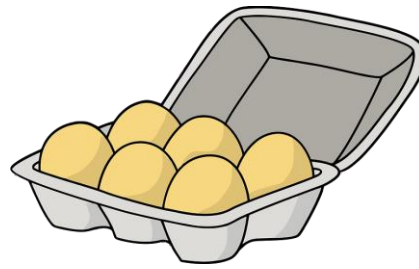
[2]

- b) What type of quadrilateral is the original shape?

Answer : _____ [1]

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12. Benny is making pancakes for a pancake party and needs to buy flour and eggs.



A bag of flour costs £1.15

A box of 6 eggs costs 95p

a) If Benny has £10 and buys 3 bags of flour, what is the maximum number of boxes of eggs he can buy?

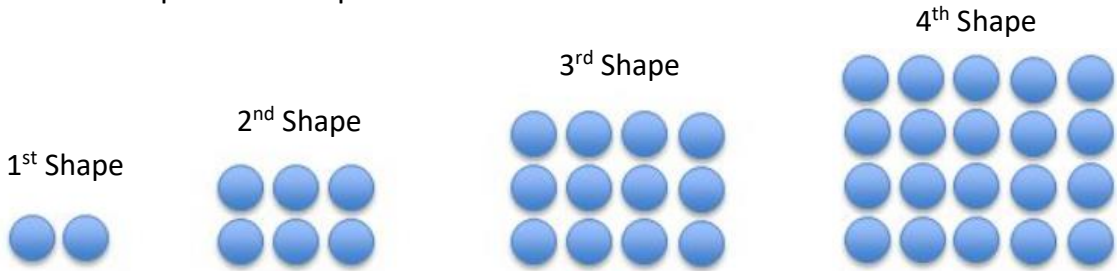
Answer _____ [2]

b) If Benny has £10 and buys only flour and eggs and this leaves him with £1.40 change, how much of each must he have bought?

Page total:

Answer : _____ bags of flour, _____ boxes of eggs [4]

13. The below sequence of shapes is formed by adding a new row and column of dots onto the previous shape.



What is the first shape to be made up of more than 400 dots, and how many dots does it have?

Answer : _____ Shape

_____ Dots [3]

14. Put the numbers 1 to 9 in the boxes below, using each number only once, to make the horizontal and vertical multiplications correct.

	×		×		=	15
×		×		×		
	×		×		=	144
×		×		×		
	×		×		=	168
=		=		=		
32		70		162		

[5]

15. The instruction $x \oplus y$ means subtract x from y and then divide 360 by the result.

For example: $2 \oplus 6 = 360 \div (6 - 2) = 90$

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

Answer: _____ [1]

- b) Work out the value of $\frac{1}{2} \oplus 1$

Answer: _____ [2]

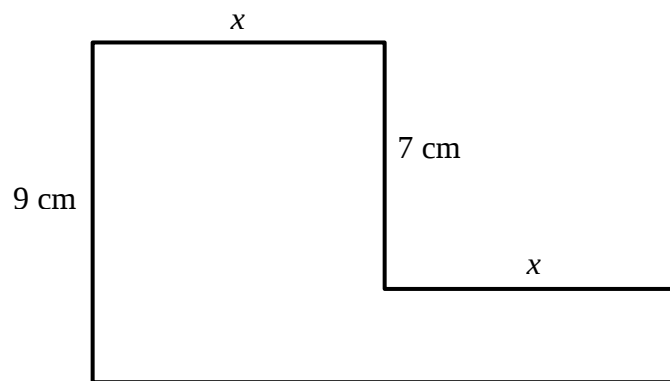
- c) Work out the value of a if $a \oplus 5 = 180$

Answer: $a =$ _____ [2]

- d) Work out the value of b , if c is 4 times bigger than b and $b \oplus c = 12$.

Answer: $b =$ _____ [2]

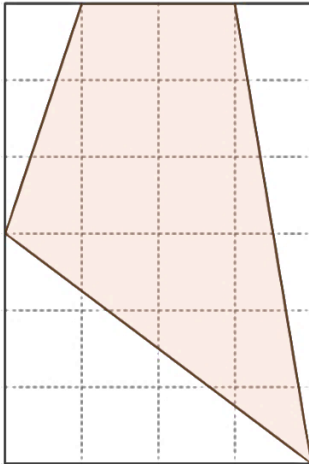
16. Every x labelled on the shape below has the same value.



If the area of the shape is 88 cm^2 , what is the perimeter of the shape?

Answer : _____ cm [4]

17. Work out the area of the shaded quadrilateral below which is drawn on the grid that is made up of centimetre squares.



Answer : _____ cm² [3]

18. Wilfred lists all the factors of an even number.
He finds that the second largest factor of the number is 54 bigger than the second smallest factor of the number.
What was the even number?

Answer : _____ [4]

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19. It takes 2 bricklayers 4 and a half hours to build 3 walls.

Assuming the bricklayers work at the same pace and the walls are the same size,

a) How long would it take 2 bricklayers to build 1 wall?

Answer : _____ hours _____ minutes [2]

b) How long would it take 1 bricklayer to build 5 walls?

Answer : _____ hours _____ minutes [2]

c) How long would it take 5 bricklayers to build 4 walls?

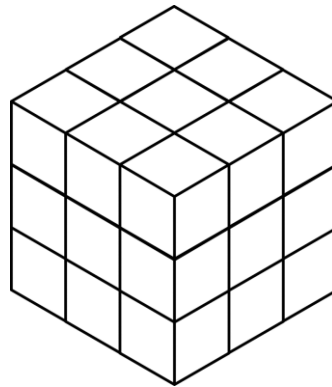
Answer : _____ hours _____ minutes [3]

20. A large cube is made up of a number of smaller cubes.

The number of small cubes that touch exactly four other small cubes face-to-face is 84.

How many small cubes make up the large cube?

(A 3 by 3 by 3 cube is shown purely to help you think about the problem, it is not the solution to the problem)



Answer : _____ small cubes [5]

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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.