

THE G C SCHOOL OF CAREERS



MATHEMATICS DEPARTMENT SCHOOL YEAR 2019-2020

SAMPLE EXAMINATION PAPER FORM 1

<u>Name:</u>	
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INFORMATION TO CANDIDATES

No calculator is allowed.

Full marks may be obtained for answers to ALL questions.

This paper has **21** questions.

The total mark for this paper is 106.

ADVICE TO CANDIDATES

You must show sufficient working to make your methods clear to the examiner.

Answers without working may gain no credit.

1.

(a) Write down a multiple of 7 between 40 and 50.

Answer: _____

(1 mark)

(b) Is 48 a factor of 8?

TRUE / FALSE

(1 mark)

(c) Write down a square number between 140 and 170.

Answer: _____

(1 mark)

(d) Write the following numbers in order, starting from the smallest.

55% $\frac{5}{9}$ 0.5

Answer: _____

(1 mark)

(e) Convert the fraction $\frac{3}{16}$ into a decimal and a percentage.

Decimal:

Percentage:

(1 mark)

2. Evaluate :

$$5 \cdot [(-1)^8 - (-9) \div (-3)^{10 \div 5}] =$$

Answer: _____
(4 marks)

3. A recipe book gives this rule to find the cooking time for a leg of lamb.

$\text{Cooking time in minutes} = 15 \times \text{weight in kg} + 30$

(a) Jamie Oliver is cooking a leg of lamb that weights 5 kg.
Work out the cooking time in minutes.

Answer: _____
(1 mark)

(b) A lamb leg took **2 hours** to cook. Find the weight of the leg.

Answer: _____
(2 marks)

4. The diagram below shows a square (1), an isosceles right-angled triangle (2) and an equilateral triangle (3).
By showing all the steps in your workings and giving reasons for your answers, find the size of angle x .

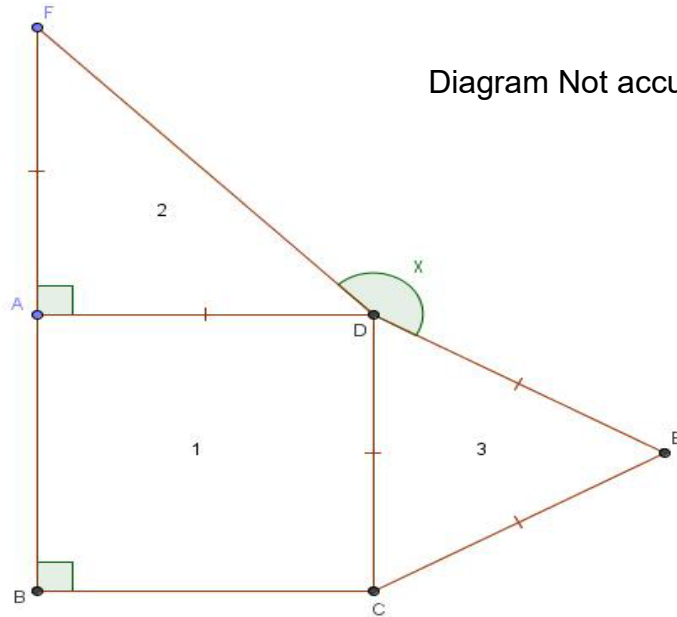


Diagram Not accurately drawn.

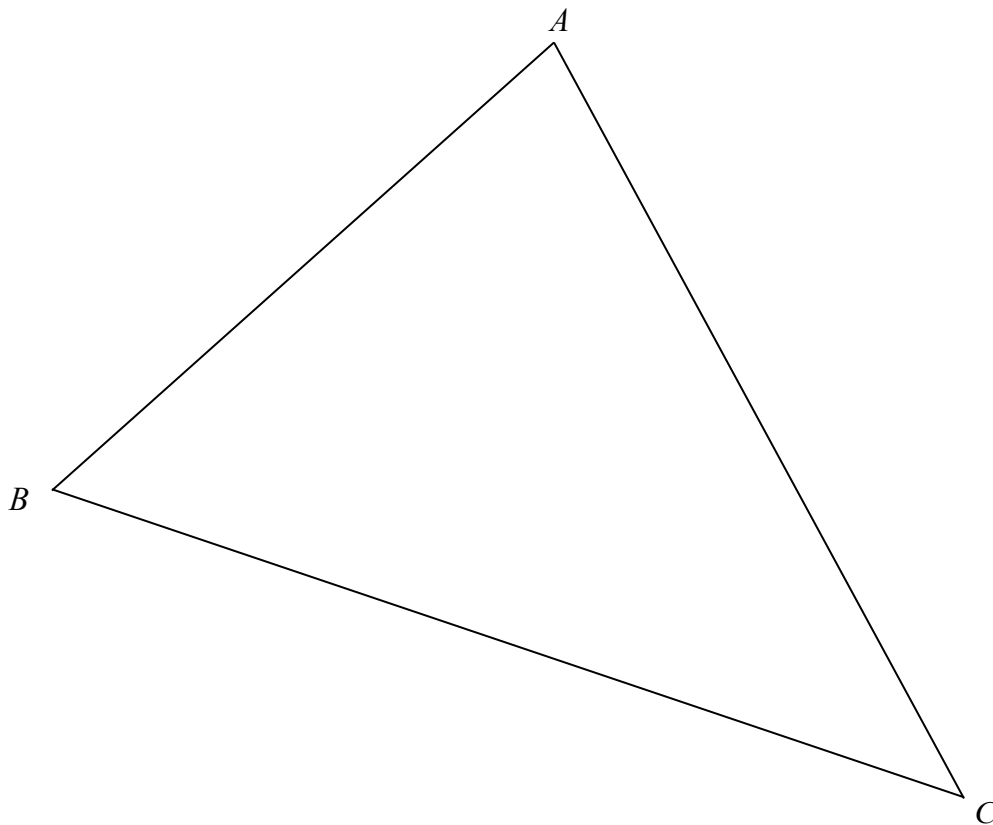
Answer: $x =$ _____
(3 marks)

5. The metal used to make a coin is a mixture of steel and copper. The mass of steel to the mass of copper is given by the ratio 108:7.
The coin has a total mass of 230 milligrams.
Calculate the mass of copper in this coin.

Answer: _____

(2 marks)

6. On the diagram given below construct the bisector of $\angle ABC$.
Show all your construction lines.



(3 marks)

7. Simplify the following expressions. Give your answer in its simplest form.

a) $(9 - 7a)(a - 4) =$

Answer: _____
(3 marks)

b) $(3x + 5)^2 - (x - 2)^2 =$

Answer: _____
(7 marks)

8. Alan is going on vacation to Germany and Sweden.

He has £ 5000 to spend in both countries. He will exchange 60% of his money in euro for his visit in Germany and the **rest** in Krona for his visit in Sweden.

Given that $1\text{€} = \text{£ } 0.75$, find, how many euro he will take in Germany.

Answer: _____
(3 marks)

9. Given that $d = \frac{4}{5}$, $e = \frac{1}{2}$ and $f = \frac{2}{5}$, work out the value of $A = d + e \times f$.

Answer: $A =$ _____
(3 marks)

10. A shopkeeper buys cheese for €3.75 per kilogram and sells it for €5.10 per kilogram.

- (a) Calculate his percentage profit.

Answer: _____

(2 marks)

- (b) Mrs. Taylor buys cheese from the shopkeeper.

Calculate the number of **grams** of cheese she can buy for €2.04.

Answer: _____

(2 marks)

- (c) The shopkeeper reduces his selling price of €5.10 per kilogram by 70%.

Calculate the new price.

Answer: _____

(2 marks)

11.

- (a) Express 36 and 81 as a product of their prime factors, giving your answers in index form.

Answers: $36 =$ _____

$81 =$ _____

(4 marks)

- (b) Hence, calculate the Highest Common Factor (HCF) of 36 and 81.

Answer: HCF = _____

(1 mark)

- (c) Hence, calculate the Lowest Common Multiple (LCM) of 36 and 81.

Answer: LCM = _____

(1 mark)

12. The right-angled triangle has sides as shown.

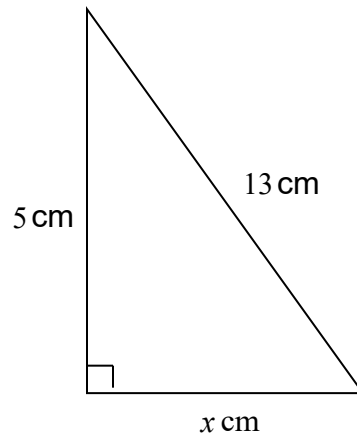


Diagram Not accurately drawn.

Show that $x = 12$ cm.

(3 marks)

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13. A model is made of the Airbus A300 aeroplane.

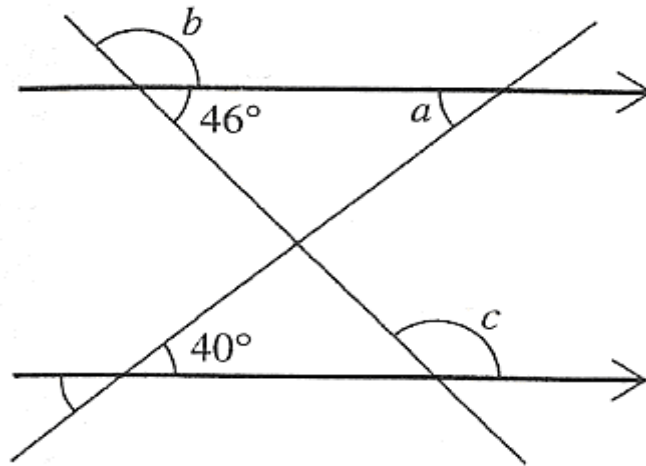
The length of the real aeroplane is 54 m.

The ratio of the model to the real length of the Airbus is 1: 150.

Find the length of the model aeroplane, giving your answer in cm.

Answer: _____
(3 marks)

14. Find the size of the missing angles. Give reasons for your answers.



$$\hat{a} =$$

Reason: _____

(2 marks)

$$\hat{b} =$$

Reason: _____

(2 marks)

$$\hat{c} =$$

Reason: _____

(2 marks)

15. Simplify fully the following algebraic expressions.

a. $\frac{2}{x} + \frac{1}{2x} + \frac{1}{2} =$

Answer: _____
(2 marks)
























b. $7(3xy - 4y^2) - 3(5x^2 + 2y) - 2x(x - 2y) =$


Answer: _____
(4 marks)

c. $\frac{-25x^2a^3y^5}{16y^3b} \div \frac{5x^3a^3y^2}{4ab} =$

Answer: _____
(4 marks)

16. In a survey, 1000 people in each of 6 countries were asked if they owned a computer. The pictogram shows the results of the survey.

Greece	 
Hong Kong	      
Italy	   
Korea	    
Kuwait	  
Malaysia	 

 represents 50 people who owned a computer.

- (a) In which country did the greatest number of people owned a computer?
- (b) Write down the number of people in Malaysia that owned a computer.
- (c) Write down the number of people in Italy that owned a computer.
- (d) In which country did 240 people owned a computer?

(4 marks)

17. Solve the following equations. Show all the steps in your workings.

(a) $\sqrt{\frac{2x+6}{2}} = 3$

Answer: _____

(4 marks)

(b) $\frac{6x-7}{4} - \frac{3x-5}{7} = \frac{5x+21}{28}$

Answer: _____

(5 marks)

(c) $\frac{3x}{4} + \frac{5}{6} = 5x - \frac{125}{3}$

Answer: _____

(2 marks)

18. Mrs. Smart won € 3800 in the lottery. She has decided to share this money amongst her three children. Clara, who was the oldest child, got three times the amount of money Mike got. George got €400 less than twice the amount of money Mike got. Form an equation and solve it to find the amount of money each child got.

Answers: Clara = €
George = €
Mike = €

(2 marks)

19. The bell of the Lower school rings every 30 minutes. The bell of the Upper school rings every 45 minutes. If the two bells ring together at 8:00am, find the time at which they will ring together for the second time.

Answer: _____

(3 marks)

20. A biased die was thrown a number of times. The number shown on the upper face was recorded each time. The results are summarised in the table. The total number of times the die is thrown is 78.

Number recorded	1	2	3	4	5	6
Frequency	12	24	x	4	7	10

Find:

(a) The value of x ,

Answer: _____

(2 marks)

(b) The mean, giving your answer to 2 decimal places,

Answer: _____

(3 marks)

(c) The median,

Answer: _____

(2 marks)

(d) The range,

Answer: _____

(1 mark)

(e) The mode.

Answer: _____

(1 mark)

21. The grouped frequency table gives information about the distance each of 150 people travel to work.

Distance travelled (d km)	Frequency
$0 < d \leq 5$	34
$5 < d \leq 10$	48
$10 < d \leq 15$	26
$15 < d \leq 20$	18
$20 < d \leq 25$	16
$25 < d \leq 30$	8

(a) Work out an estimate for the mean distance travelled to work by the people.

Answer: _____

(4 marks)

(b) Work out what percentage of the 150 people travel more than 20 km to work.

Answer: _____

(3 marks)

THE END